# The Implications of the Global Financial Crisis for Low-Income Countries

INTERNATIONAL MONETARY FUND

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## Contents

## Preface

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The views expressed in this paper do not necessarily reflect the views of the Executive Directors of the IMF, or national authorities.

## Executive Summary

*The global financial crisis is expected to have a major impact on low-income countries (LICs), especially in sub-Saharan Africa—and urgent action is required by LIC policymakers and the international community. The crisis is projected to increase the financing needs of LICs by at least US$25 billion in 2009, and much larger needs are possible. Twenty-six LICs appear particularly vulnerable to the unfolding crisis. Additional external assistance and foreign financing will be essential to mitigate the impact of the crisis on LICs. The Fund is deploying its own financing facilities for LICs, while making efforts to sustain and catalyze additional assistance from other institutions and donors. Fund financing to LICs has already increased significantly; new financing arrangements jumped from 5 in 2007 to 23 in 2008, representing an increase in total (GRA and PRGF/ESF) disbursements from US$0.6 billion to US$5.4 billion. The Fund has also launched a broad examination of its LIC facilities and financing framework to ensure its financial assistance meets the diverse needs of its low-income members.*

The global economy is in the midst of a deep downturn, affecting the real and financial sectors, that is taking its toll both in advanced and in emerging and developing countries. All major advanced economies are in recession, while activity in emerging and developing economies is slowing abruptly.

LICs are exposed to the current global downturn more than in previous episodes, as they are more integrated than before with the world economy through trade, FDI, and remittances. The crisis significantly impacts these countries through reduced demand for their exports. Since many are commodity exporters, they will be hard hit by the sharp decline in demand for commodities and in their prices. Many LICs are also hit by lower remittances and foreign direct investment (FDI) while aid flows are under threat. Growth of remittances was flat in the second half of 2008, and is expected to be negative in 2009. A sharp slowdown in FDI is expected in about half of all LICs. Prospects for higher aid to offset these effects are particularly uncertain, given budgetary pressures faced by many donor countries.

LICs' financial systems have so far not been strongly affected by the global crisis. Their banks have little, if any, exposure to complex financial instruments. However, those LICs that had begun to access international financial markets have seen this access come virtually to an end. Foreign lenders may become more reluctant or unable to roll over sovereign and private debt falling due. Domestic banks may be hit by second-round effects, as the economic downturn increases the number of borrowers unable to repay their loans.

The global financial crisis will worsen the budgetary position of many LIC governments. Government revenues are expected to suffer as economic activity slows and commodity prices fall. Potential declines in donor support and tighter financing conditions will likely impose further pressures on LICs' budgets. At the same time, many countries will need to increase spending to protect the poor, and additional spending pressures may arise from currency depreciation and rising interest rates, which could raise debt service costs.

There is a risk that the impact on LICs could be more serious—26 countries appear particularly vulnerable to the unfolding crisis. These include countries heavily dependent on commodity exports, such as oil exporters, as well as fragile states with little room for maneuver. Baseline projections for 2009 foresee a total balance of payments shock of US$165 billion. They also suggest that LICs may need at least US$25 billion to offset the impact of the shock on their international reserves; given the heavy downside risks to the forecast, the needs could be much larger—approaching US$140 billion in a "bad case" scenario.

Countries in initially strong budget positions may have some scope to accommodate the cyclical fiscal deterioration and, in some cases, to increase spending to cushion the impact of the crisis. These are countries without public debt sustainability and financing constraints that have achieved macroeconomic stability. Commodity producers that built up financial cushions during the boom may be able to maintain spending or adjust gradually.

In many LICs, however, the ability to offset adverse shocks through spending hinges on higher donor support. With many countries facing binding fiscal constraints, and the outlook for significantly increased bilateral aid flows unlikely, many countries will need to rationalize spending and increase its efficiency to create fiscal space for protecting social and MDG-related spending. Efforts will also be required to strengthen revenue mobilization.

Given the economic downturn, efforts to strengthen safety net programs to protect the poor become more urgent. Transfer programs that effectively target the poorest often result in a larger stimulus to aggregate demand, given their higher propensity to consume. The capacity of many LICs to put in place new targeted programs will be limited in the near term. There may be scope, however, to scale up existing spending programs in targeted ways. For example, countries can implement public works programs and/or provide income supplements through existing programs. Additional resources can be channeled to targeted programs, such as targeted food distribution or school meal programs.

Countries should focus on macroeconomic stability. In some countries with falling inflation there may be scope for monetary easing; others, however, still experience continued or renewed price pressures. Those with flexible exchange rates should allow them to move, so that they function as shock absorbers. Fixed exchange rate regimes may come under particular pressure owing to the adverse direct impact of the crisis. Steps are also needed to prevent the global financial crisis from spreading to their domestic financial sectors.

The Fund is assisting members in their crisis planning and response efforts and will continue to adapt its financial toolkit and policies to better serve its low-income members. The Fund will provide financial support to LICs that responds to their economic circumstances, the nature of the balance of payments problem, and their existing program relationship, if any, with the Fund. LICs' demand for Fund financing has already increased in 2008 and will likely increase further, as will technical assistance needs.

# I. Introduction

The global financial crisis has spread rapidly since the fall of 2008, leading to a global downturn of uncertain severity and duration. The impact of financial sector turmoil on real activity has become increasingly evident, propagating beyond its initial epicenters to affect other advanced economies, emerging markets, and LICs.

This paper analyzes the impact of the global financial crisis on LICs.[1] It provides an overview of the possible impact of the crisis on the short-term macroeconomic outlook. To assess the magnitude of the effects, the paper compares current (January 2009) projections with those made before the crisis. In addition, simulations illustrate the heavy downside risks to these projections.

While for many LICs the effects of the crisis have lagged the rest of the world, its eventual impact may be severe, especially given their often limited scope for countercyclical policies. Many LICs have made great strides in strengthening their policy frameworks and robustness to shocks, reducing poverty, and reforming their financial systems. But many remain highly vulnerable to a deep global downturn that so closely follows the 2007/08 food and fuel price shocks. Financial market linkages are generally weak, but second-round effects of the economic slowdown on the financial system could be particularly severe. Without additional aid, the scope for countercyclical policies is limited for most LICs due to binding financing constraints and fragile debt positions. This could both deepen and prolong the crisis in LICs, and set back the fight against poverty.

Against this background, the paper provides policy advice on how best to address the impact of the crisis on LICs and describes the Fund support. The Fund assists countries in designing policies to support growth and mitigate risks to the financial system. The Fund is also deploying its own financing facilities for LICs, while making efforts to sustain and catalyze additional assistance from other institutions and donors.

The paper is structured as follows. Section II discusses the outlook for global economic growth and commodity prices, while Section III provides an overview of the changes in economic projections associated with the crisis. The various financial channels and spillovers from the global downturn are discussed in Section IV. Section V analyzes the fiscal and debt sustainability implications of the crisis. Country vulnerabilities are investigated in Section VI. Policy recommendations to help countries weather the crisis are considered in Section VII, with LICs' potential additional financing needs assessed in Section VIII. Finally, Section IX concludes with a review of ways in which the Fund can assist its LIC membership.

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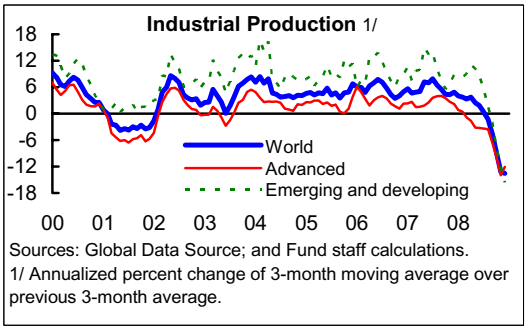
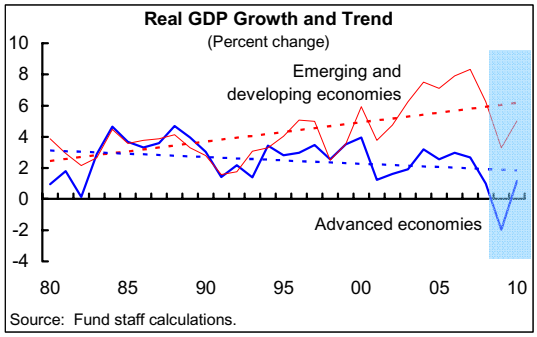
[1]Generally, references to LICs in Fund documents relate to all 78 PRGF-eligible countries. However, because of data limitations, and unless indicated otherwise, data for LICs reported in this paper refer to the more limited set of 71 countries listed in Appendix I.

## II. Outlook for Global Growth and Commodity Prices

*The global economy is in the midst of a deep downturn as an adverse feedback loop between the real and financial sectors is taking its toll both in advanced and in emerging and developing countries. As a result, commodity prices are unlikely to recover in the short run.*




All major advanced economies are in recession, while activity in emerging and developing economies is slowing abruptly. Continued deleveraging by the financial sector and dramatic declines in consumer and business confidence have triggered a sharp deceleration in domestic demand across the globe. World trade and industrial activity are falling sharply, while labor markets are weakening at a rapid pace, particularly in the United States. The decline in commodity prices is providing some support to commodity importers, but is weighing heavily on growth in commodity exporters.




Global growth is set to weaken considerably. Activity is expected to decelerate from 3½ percent in 2008 to ½ percent in 2009 before embarking on a gradual recovery in 2010.[2]

The advanced economies as a group are facing their sharpest post-war contraction. The euro area and Japan have been hard hit by the decline in external demand, while uncertainty about the course of the economy is dampening consumption and business investment in the United States. Activity in these countries is now expected to contract by 2 percent in 2009, followed by a modest rebound in 2010.

Growth in emerging and developing economies is also slowing sharply. Financing constraints, lower commodity prices, weak external demand, and associated spillovers to domestic demand are expected to weigh on activity. As a result, growth is projected at 3¼ percent in 2009—a markdown of 3¼ percentage points compared with the April 2008 WEO and less than half the pace in 2007—before rebounding to around 5 percent in 2010.

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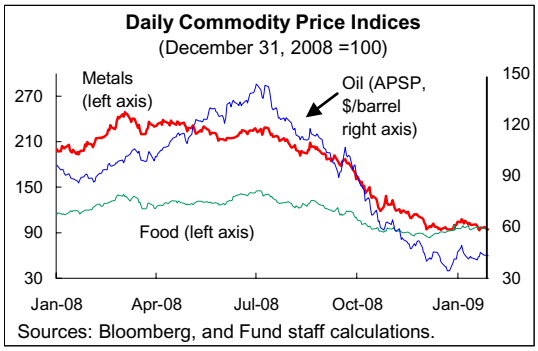
[2]In line with WEO conventions, data reported in this section are country averages weighted by GDP valued at PPPs, and may differ from averages mentioned in other parts of the paper.

- Countries in central and eastern Europe and the Commonwealth of Independent States have been hit particularly hard by capital flow reversals and, in some countries, falling commodity prices. Activity is expected to contract by ½ percent in 2009.




- Commodity exporters, particularly in Latin America, Africa, and the Middle East, face a sharp decline in commodity prices, putting pressure on external accounts and government finances. In Latin America, growth is also constrained by weaker external demand (notably from the United States) and tighter financial conditions, and is expected to slow from 4½ percent in 2008 to 1 percent in 2009.

- For countries in emerging Asia—including China—terms of trade improvements from falling commodity prices and macroeconomic policy easing will not prevent a significant slowdown as export demand weakens and investment is cut back. Overall, growth in this region would decline from 7¾ percent in 2008 to 5½ percent in 2009.

With growth well below trend in emerging and developing economies, commodity prices have collapsed over the past few months. Expectations of resilience in these economics had underpinned commodity prices for much of 2008, but hopes for "decoupling" have since evaporated. Commodity prices tend to be significantly cyclical, as output contraction in commodity-intensive sectors exceeds that in other sectors.

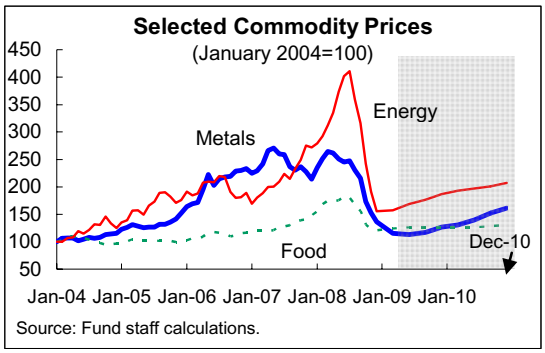
Financial turmoil and U.S. dollar appreciation have exacerbated the downward price momentum. Investors have sought to reduce their holdings of commodity assets, given increasing concerns about counterparty risks (many standard commodity investment instruments such as total return swaps involve such risks), decreasing availability of credit for leveraged commodity market exposure (e.g., by hedge funds), a rising preference for liquidity, and sizable recent appreciation of the U.S. dollar in nominal effective terms.

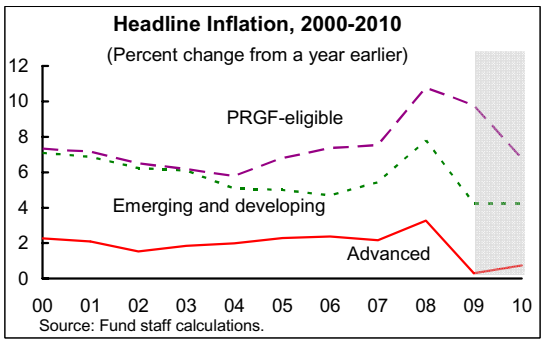
Commodity prices are unlikely to recover while global activity is slowing.

- OPEC production cuts could eventually help to support oil prices if implemented close to target, as scope for increased production elsewhere seems limited. Nevertheless, still softening demand and rising inventories will continue to weigh on the market in the short term.

- Near-term metals price prospects depend on construction and investment demand in key emerging and developing economies.

- Food prices are likely to be less affected by the slowdown since food demand is less income-elastic than other commodities. Lower prices for energy inputs will likely lead to some further easing of prices, although the high fuel and fertilizer prices through mid-2008 may weigh on supply in 2009.




Lower commodity prices and increasing economic slack will help to contain inflation pressures. In the advanced economies, headline inflation should decline to below ¼ percent by the end of 2009, and deflation risks are becoming an increasing concern in some countries. In emerging and developing economies inflation is also expected to moderate.

## III. How Are LICs Affected? An Overview

*The global financial crisis is expected to have a severe impact on growth and external stability in many LICs. At the same time, inflationary pressures are receding in most countries. The crisis follows the commodity price shocks of 2007–08, putting at risk an extended period of improved macroeconomic policies and performance through mid-2007 (See Box 1).*

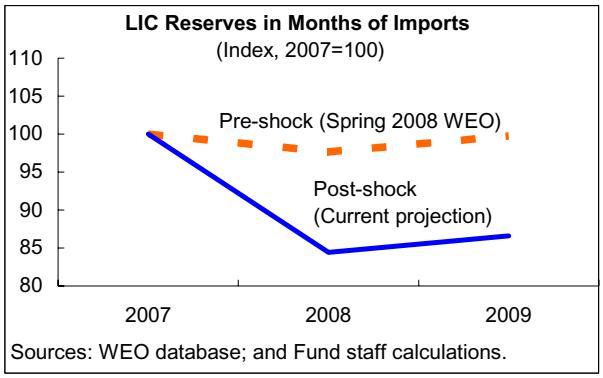
Going into the global financial crisis, the balance of payments of many LICs had already been severely weakened by the 2007–08 spike in global fuel and food prices. Between January 2007 and July 2008, LICs faced a food price shock, which peaked in mid-2008, of almost 1 percent of GDP, and a fuel price shock averaging almost 3½ percent of GDP. As a result, some 33 out of a group of 78 LICs were identified as particularly vulnerable, with reserve cover falling below 3 months of imports.[3]

[3]IMF (2008a).

The current crisis is expected to have serious adverse effects on LICs, albeit with a lag relative to the impact on more advanced economies. To date, many LICs have seemed fairly resilient to financial crisis, reflecting the still limited nature of cross-border linkages in their banking systems. However, the picture is expected to worsen as the lagged effects on real activity around the world feed through to LICs. In this context, the fact that domestic rather than export-driven agriculture accounts for a large share of the economy in many countries (particularly in Africa) might help attenuate somewhat the impact of the crisis.

The emerging macroeconomic pressures are evident from the sharp changes in the economic projections for 2009 (Figure 1, and Appendix II). These revisions—which remain subject to much uncertainty, with risks mainly on the downside—reflect both direct financial effects of the crisis and the repercussions of global economic downturn.

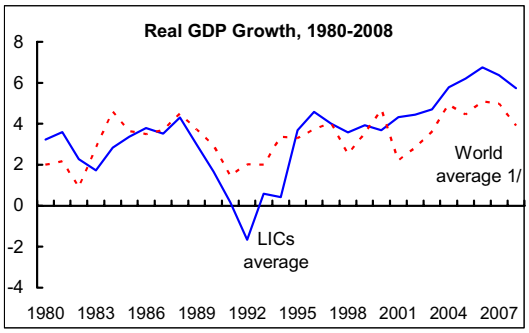
- Growth projections for 2009 have been revised down since the spring of 2008, from 6.4 percent to 4.3 percent, on average.
- Trade balance and current account projections are shaped by the collapse of commodity prices, and the anticipated adverse effects of the crisis on LIC exports and remittance inflows. While the net effect could be benign for some net food and fuel importers, the impact is decidedly negative for commodity exporters.
- Financial inflows are subject to large downside risks. For many LICs, current projections show a clear adverse effect of the crisis on inflows of foreign financial and direct investment, and on aid.
- Reflecting the above, projected reserves accumulation by LICs in 2009 has declined significantly since the April 2008 WEO, with reserves now projected to fall from 4.4 to 4.2 months of imports in 2009, on average, compared with previous projections of an increase of 0.3 month.

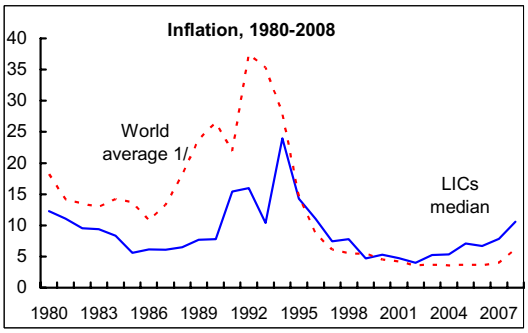



- Inflation is expected to drop sharply in 2009 from the peaks seen in 2008. Following the food and fuel price shocks, inflation spiked upwards in 2008, rising in many LICs to more than 20 percent. With the recent declines in food and fuel prices, these initial pressures are receding. Falling demand in the wake of the global crisis will help lower inflation further. The latest projections show median inflation declining from 11¼ percent in 2008 to 7¾ percent in 2009—which remains above earlier projections.

## Box 1. The Pre-Crisis Recovery

**In many LICs, the years leading up to 2007 witnessed a strong recovery in growth**, while long-standing challenges of high inflation and high debt were also successfully tackled. Fiscal and current account deficits were put on a downward path (except to reflect the spending of stepped up aid), and international reserves were raised to their highest level in decades (Appendix II, Figure 1). All of this was accomplished, in varying degrees, through a combination of better macroeconomic policies, higher aid, debt relief, and the support of more conducive global economic conditions (including better terms of trade).

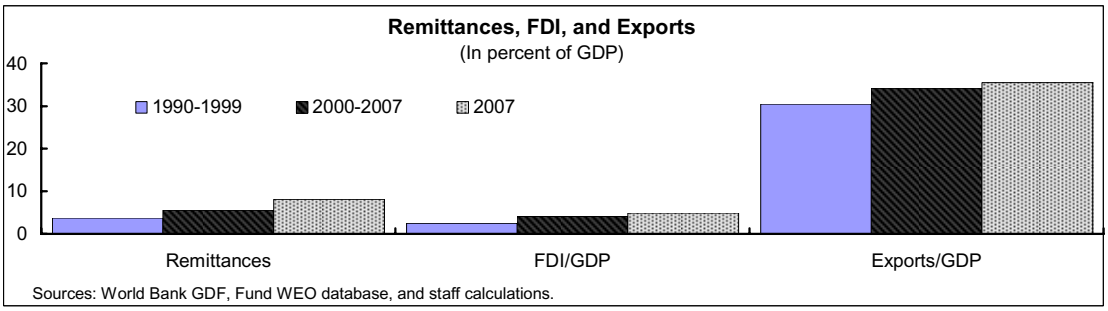



Sources: WEO database, and Fund staff calculations.
1. Emerging and developing countries.

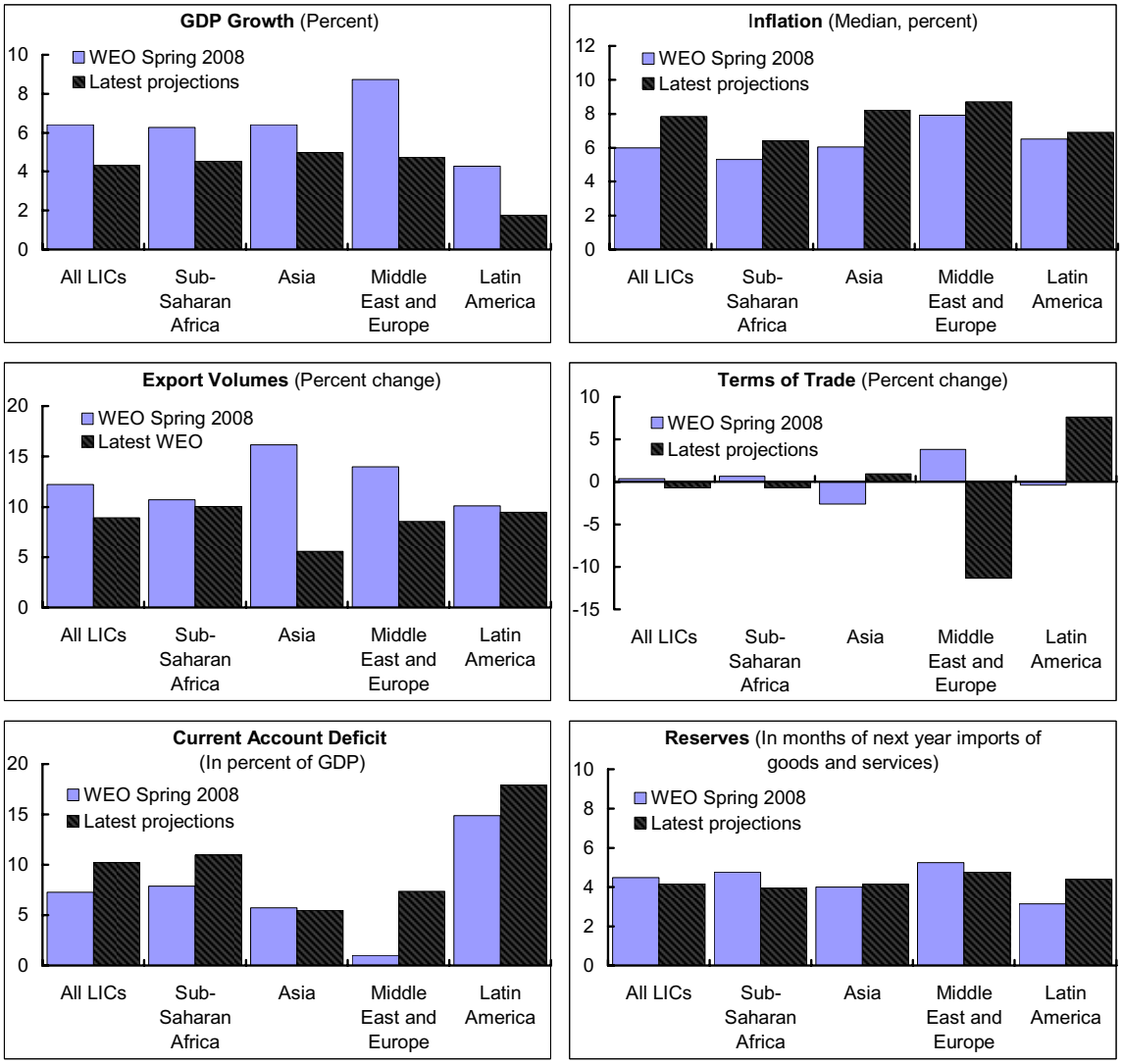
**The improvement in macroeconomic conditions was fairly broad-based**, but particularly strong for African countries, debt relief recipients, and (more recently) net oil exporters. African countries saw their growth rates almost double between the 1990s and the 2000-07 period (Appendix II, Figure 2). In recent years, net oil exporters saw sharp improvements in macroeconomic conditions alongside large terms of trade gains.

**However, the increased openness that has contributed to the improved performance has also increased exposure to external shocks.** The accumulated macroeconomic gains will assist LICs in withstanding economic shocks: higher reserves permit countries to address temporary financing shortfalls, while lower initial deficits and debt create fiscal space for countercyclical policy. At the same time, increased trade and financial links with the outside world also imply greater dependence on external conditions: exports now amount to more than a third of GDP in LICs (from just 10 percent in 1990); FDI is close to 5 percent of GDP, a roughly five-fold increase from 1990; and several LICs have gained access to financing on international markets (see Section IV).



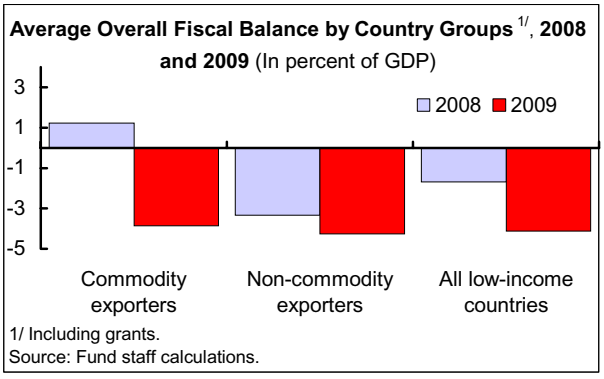

Sources: World Bank GDF, Fund WEO database, and staff calculations.

**Figure 1. The Changed Outlook for 2009**
(Period averages, in percent, unless otherwise indicated)




Sources: WEO database, and Fund staff calculations.

The overall fiscal balances of LICs are projected to deteriorate on average by about 2½ percentage points of GDP in 2009. The outlook varies substantially across countries. Commodity exporters are expected to experience some of the largest negative shifts in fiscal positions—by 5




1/ Including grants.
Source: Fund staff calculations.

percentage points of GDP, on average—due to significant revenue declines.[4] The balances of non-commodity exporters are expected to deteriorate on average by close to 1 percentage point of GDP, mainly due to their maintaining spending in the face of lower growth and revenues.[5]

The global financial crisis could—in principle—lead to large exchange rate adjustments in LICs, but a number of attenuating factors may work to limit prospective depreciations. First, almost two-thirds of LICs have fixed exchange rate regimes (including countries with de facto pegs), shifting the burden of external adjustment onto fiscal and monetary policies. Second, import demand will tend to drop, not only as a result of slower growth but also because some declining inflows (such as FDI) have a heavy import "content." And, third, import bills will shrink as a result of lower food and fuel prices.

## IV. The Impact of the Crisis: The Channels

*The direct impact of the global financial crisis on LICs will be stronger for countries with a higher degree of financial integration. For most, this channel has played a limited role so far, though strains are starting to appear. But, the slowdown in global growth will reduce trade, remittances, foreign direct investment, and, possibly, aid, and these factors will have a major impact on LICs, including second-round effects on the financial sector.*

### Direct Financial Channels

Structures and financial system conditions vary vastly across the LICs. Despite several initiatives for financial sector reform over the past decade, entry of foreign financial institutions, and the emergence of private external creditors and investors, the breadth, diversification, and competitiveness of LICs' financial systems remain shallow and distortionary. Most have small derivatives and interbank markets, low level of reliance on international capital, and regulatory barriers constraining new financial products and market entry by new institutions.

As a consequence, thus far, the direct financial transmission of the global crisis appears to have been relatively limited. However, emerging signs that the crisis is spreading to LICs are evident, in particular, for those that had begun to access international capital markets (for example, Ghana and Sri Lanka), or where direct and indirect foreign financing

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[4]Some oil producers like Angola, Azerbaijan, and the Republic of Congo may suffer less due to rising oil volumes.

[5]This result is similar to the average projected deterioration in the fiscal balance of non-commodity exporters that are faced with below-trend growth, when the elasticities are assumed to be one for revenues and zero for expenditures and automatic stabilizers are allowed to work.

in local markets was on the rise (Kenya, Nigeria, Malawi, Ghana, Uganda, and Zambia). The global downturn and ongoing stress in the international credit markets are curtailing private capital inflows in a number of LICs (e.g. Uganda and Zambia) and the operations of foreign banks in the local markets, creating funding pressures in banking systems.[6] LICs are experiencing outflows of capital, and there are initial pressures on foreign exchange markets and the yield curve. The financial crisis is also sharply reducing private sector credit, in part reflecting banks' need to increase liquidity buffers given expected cuts in external credit lines.

As the negative effects from a slowdown in the real sector gain ground, the pressures on financial systems are likely to rise. These second-round effects could affect the corporate sector, the balance sheets of banks, as well as the sovereign, placing further pressure on LICs' ability to manage the fallout of the crisis. As domestic economic conditions deteriorate, the financial condition of the banks may deteriorate rapidly, as borrowers' capacity to repay is impaired, and banks' funding bases shrink. Also, exchange rate depreciation could expose some bank borrowers to exchange rate risk, or raise their costs of operation, with negative effects on loan recovery performance.

## Impact on Domestic Banks and Non-Bank Financial Institutions

To date, the direct impact on LICs' banking systems remains modest. The existence of capital controls in several countries and structural factors have helped to moderate both the direct and the indirect effects of the financial crisis:

- *Banking systems have little exposure, if any, to complex financial instruments.* This has resulted in fewer exposures and risks of potential losses;
- *Abundant low-cost domestic deposits and liquidity.* This has allowed banks to finance themselves with domestic funds and thereby minimize wholesale leverage on their balance sheet. Many banks are highly liquid and, owing to weak competition, have high profit margins contributing to a buildup in capital buffers.

That said, some erosion can be expected in the quality of banks' asset portfolios as well as in their financial performance. In a number of countries, the financial soundness indicators published in the third quarter of 2008 show some weakening of nonperforming loan (NPL) ratios, reversing past trends. Although, on average, banks' profits remain high, intensifying bank competition to retain deposits is likely to reduce interest spreads (Cambodia, Mongolia, and Pakistan).[7]

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[6]There is also evidence of portfolio inflow reversal and capital flight, even in countries with capital restrictions (e.g., Kenya, Tanzania, and Nigeria).

[7]Fitch Rating Reports (November 2008).

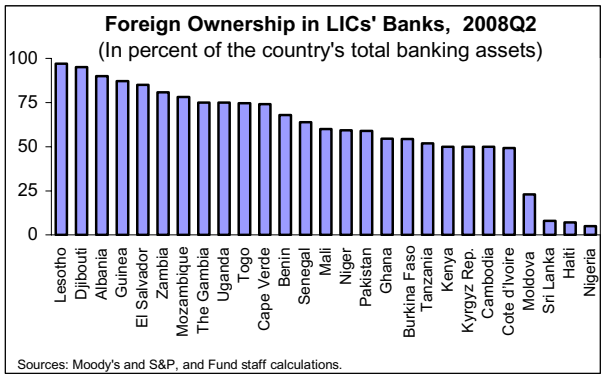
**Table 1. Selected Financial Soundness Indicators in LICs**

| | CAR [1/] | | ROA [2/] | | ROE [3/] | | NPLs ratio [4/] | | Liquidity ratio [5/] | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2006 | 2008Q3 | 2006 | 2008Q3 | 2006 | 2008Q3 | 2006 | 2008Q3 | 2006 | 2008Q3 |
| Armenia | 34.9 | 27.2 | 3.6 | 2.9 | 15.9 | 13.1 | 2.5 | 3.9 | 51.5 | 35.1 |
| Azerbaijan | 18.7 | 17.7 | 1.3 | 2.2 | 9.9 | 18.7 | 6.6 | 2.3 | … | … |
| Cambodia | 26.5 | 25.6 | 2.8 | 3.1 | 14.2 | 15.8 | 9.9 | 2.7 | 41.7 | 38.6 |
| Ghana | 15.8 | 15.4 | 4.8 | 3.6 | 39.6 | 31.5 | 7.9 | 8.7 | 46.3 | 39.1 |
| India | 12.4 | 12.7 | 0.9 | 1.0 | … | … | 3.5 | 2.4 | … | … |
| Kenya | 10.6 | 11.2 | 2.8 | 3.2 | 28.6 | 33.7 | 15.0 | 8.1 | 30.5 | 38.6 |
| Kyrgyz Republic | 28.5 | 30.8 | 3.4 | 3.8 | 23.2 | 20.4 | 6.2 | 4.1 | 77.8 | 81.0 |
| Lesotho | 19.0 | 15.0 | 2.0 | 2.4 | 27.0 | 31.7 | 2.0 | 3.5 | … | … |
| Moldova | 27.9 | 30.8 | 3.4 | 4.1 | 20.5 | 23.3 | 4.4 | 4.6 | 33.5 | 31.4 |
| Nigeria | 22.6 | 22.0 | 1.6 | 2.4 | 10.4 | 13.9 | 8.8 | 6.1 | 32.5 | 31.0 |
| Pakistan | 12.7 | 13.4 | 2.1 | 2.0 | 23.8 | 20.6 | 6.9 | 7.4 | 31.9 | 34.0 |
| Vietnam | 6.6 | 7.4 | 1.5 | 1.5 | … | … | 2.6 | 2.5 | 14.4 | 14.0 |
| Zambia | 20.4 | 17.0 | 5.1 | 5.0 | 30.6 | 36.6 | 11.3 | 6.0 | 41.3 | 32.8 |

Sources: National authorities, and Fund staff calculations.
1/ Regulatory capital to risk - weighted assets.
2/ Return on average assets.
3/ Return on average equity.
4/ Non-performing loans to gross loans.
5/ Ratio of liquid assets to total assets.
Note: Due to differences in national accounting, taxation and supervisory regimes, FSI data are not strictly comparable across countries.

Furthermore, prolonged liquidity pressure in domestic financial markets is beginning to have an impact on several LICs' banking systems. Increasing interlinkages between banks and local capital markets as well as weaknesses in banks' risk management have begun to expose banks to market volatility, particularly in countries where high equity returns had encouraged borrowing for investing in the stock market (Nigeria and Kenya). At the same time, as banks' own share prices have fallen, their cost of capital has gone up, which will constrain their ability to grow.

Given the prevalence of foreign-owned banks, LICs may face difficulties from withdrawal of funds by their parent companies. Countries with licensed subsidiaries of foreign banks, rather than branches, may be better positioned to detect potential risks of capital withdrawal, as their local operators are subject to local supervision.[8]




[8]Among the typical channels through which such withdrawals take place are (i) subsidiaries asked to sell profitable loans in order to increase the capital-asset ratio on a consolidated basis; and (ii) shift in deposits from subsidiaries to headquarters. Where there is sufficient liquidity and foreign exchange availability, foreign banks have reduced their shareholding in foreign subsidiaries by selling to domestic investors.

**Table 2. Deposit Money Banks' Exposure to Foreign Creditors in Selected LICs**

| | 2006 | 2007 | 2008Q3 | 2006 | 2007 | 2008Q3 |
|---|---|---|---|---|---|---|
| | (Millions of U.S. dollars) | | | (Percent of liquid foreign assets) | | |
| Armenia | 183.5 | 475.2 | 687.4 | 234.2 | 311.6 | 357.3 |
| Azerbaijan | 235.5 | 973.3 | 1,978.2 | 16.0 | 5.9 | 10.2 |
| Chad | 100.1 | 120.6 | 205.4 | 75.7 | 162.9 | 198.9 |
| Honduras | 609.4 | 749.9 | 775.5 | … | … | … |
| Lesotho | 10.5 | 10.8 | 5.5 | … | … | … |
| Liberia | 22.2 | 13.3 | 12.7 | 0.9 | 1.0 | … |
| Madagascar | 39.0 | 50.5 | 87.8 | 264.8 | 281.1 | 280.9 |
| Mali | 171.9 | 225.2 | … | … | … | … |
| Niger | 50.3 | 69.0 | 90.6 | 0.1 | 0.1 | 0.1 |
| Sri Lanka | 941.4 | 960.7 | 1,003.9 | … | … | … |

Sources : National authorities, and IMF staff estimates.

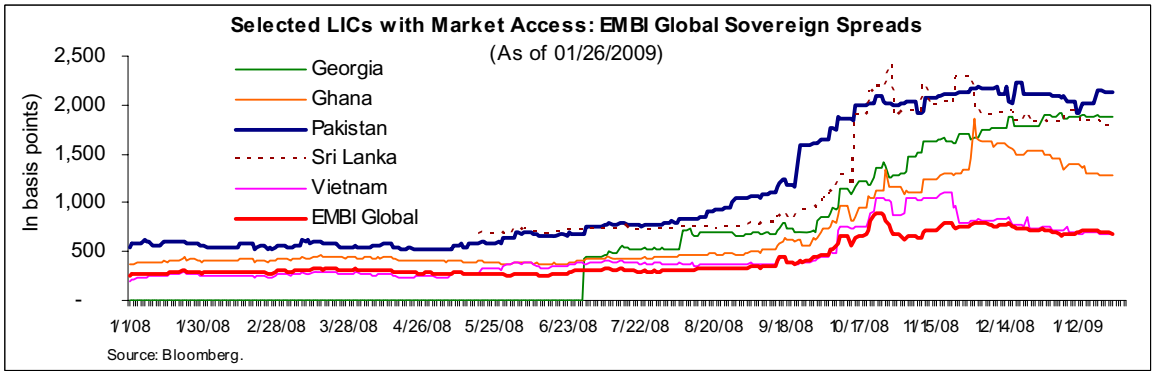
Banks relying on foreign funding sources may also be subject to possible rollover risk. Lower availability of foreign capital due to tighter global liquidity conditions may hamper the ability of some banks to roll over maturing foreign exchange obligations. This situation may be worsened by tighter domestic financing in some LICs. It has also become increasingly difficult for many microfinance institutions to find foreign sources of funds. Some previously available foreign credit lines are now being cancelled.[9]

## Impact on Financial Markets

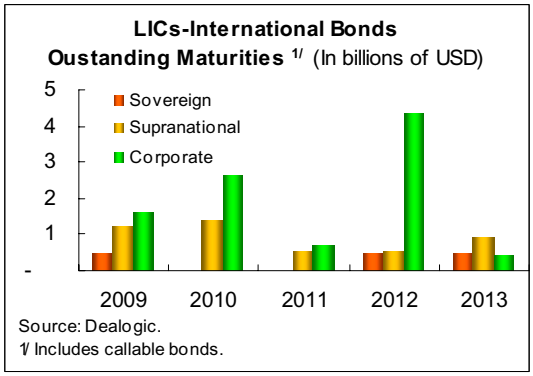
### *Access to International Markets and Costs of Financing*

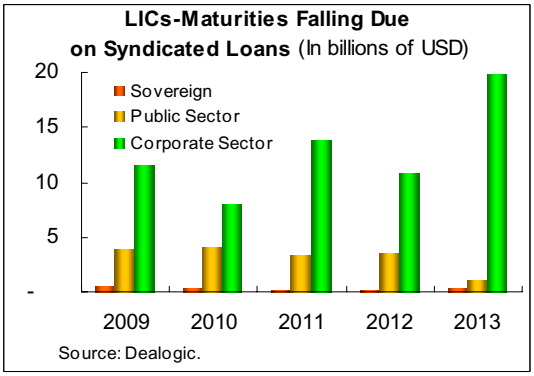
Access to market-based international financing was opening up to LICs with strong fundamentals, but it now appears to be closing. Sovereign spreads have increased dramatically for these countries, reflecting investor liquidity needs and flight to higher quality assets (i.e., U.S. treasury bills) rather than a negative credit outlook—LICs' sovereign credit ratings generally remained stable or even improved during the second half of 2008.

[9]There have been fears that the failure of banks with liquidity/solvency issues at home would require closure of subsidiaries in low-income countries. In most cases, however, guarantees by the parent country governments of foreign banks have allayed these fears. The risk of sudden liquidity withdrawal is also generally attenuated by the low reliance on these markets by parent banks, as from a global point of view the funds involved are small. In some cases, foreign banks may prefer to leave their local interests untouched for strategic reasons, such as long-term prospects of the economy. The presence of exchange or capital controls also tends to limit such withdrawals.

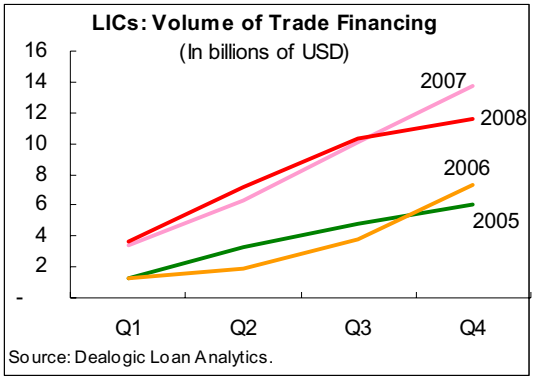



Current market conditions have led several LICs to postpone their issuance plans (Albania, Kenya, Tanzania, Uganda, and Zambia), and roll-over and liquidity risks are rising (See Box 2).[10] This could also lead to an intensifying liquidity squeeze, in particular for the corporate sector which accounts for the bulk of the upcoming maturities. Thus, the potential for rollover risk is high, and LICs' capacity to meet financial obligations may be further affected by reduced domestic resources as the crisis impacts the real sector.




As global liquidity conditions have tightened over the past few months, trade financing has been adversely affected. The financial crisis has constrained access to trade financing (e.g., Lesotho, Pakistan, and Sri Lanka) and put upward pressure on costs. LICs' volume of trade financing dropped by 18 percent in the last quarter of 2008.




[10]For an in-depth review of recent debt management issues in LICs see also joint IMF–World Bank Board paper on "Managing Public Debt: Formulating Strategies and Strengthening Institutional Capacity" March 2009 (forthcoming).

### Box 2. Private Capital Inflows to Local Currency Sovereign Debt Markets in LICs

Market participants indicate that nonresidents' exposure in local LIC markets is built not only through direct position taking, but also through offshore derivative contracts. In particular, nonresidents may engage in total return swaps with residents, which at an agreed future date will deliver the full return on the local LIC debt security to the nonresident in exchange for another income stream (often LIBOR plus a mark up). Given that the balance of payments does not necessarily record a capital flow related with such a transaction at the time of its ratification, policymakers face a large degree of uncertainty as to the magnitude of such exposures.

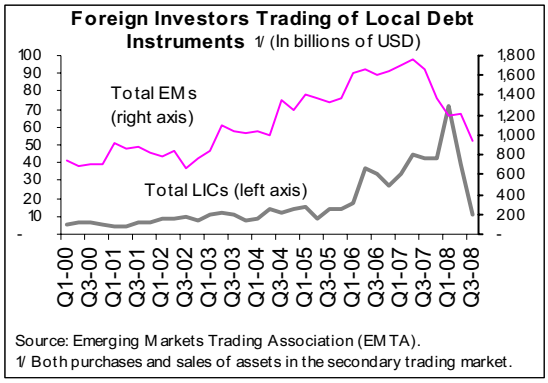
Risks associated with sizable nonresident investments in LIC local debt markets are, however, qualitatively different from those encountered in more developed markets. Several characteristics of LICs and their debt markets render these countries particularly vulnerable when private external creditors suddenly run for the exit, regardless of whether foreign investors reduce their exposure directly or through the unwinding of derivative contracts with domestic institutions: (i) domestic local-currency debt typically involves very short maturities reflecting factors such as a high susceptibility to exogenous shocks, the lack of a strong macroeconomic track record, and the absence of credible mechanisms to index the debt instruments to inflation or GDP growth; (ii) there tends to be a bunching of maturities due to an underdeveloped yield curve and weaknesses in debt management; (iii) investment risk often remains concentrated within the domestic banking sector due to the lack of a broader investor base; and (iv) the monitoring of investor sentiment may be complicated by the fact that the illiquidity of many financial markets delays the transmission of a confidence shock to asset prices.

*Over time, adverse balance sheet effects could affect the sovereign's solvency.* As long as nonresidents remain invested in the country, the net loss of interest income for the central bank stemming from the large gap between interest rates on domestic sterilization bonds and those on its foreign assets would weaken the institution's profitability over time. When investor sentiment drops and nonresidents sell their exposure, a prolonged period of high interest rates combined with the realization of contingent liabilities emanating from the dynamics discussed below could turn a sovereign liquidity crisis into a solvency crisis.

The spread for some trade financing widened in November 2008 to 500 bp over LIBOR from 80 bp a year earlier.[11] In trade transactions, customers are seeking longer repayment periods, while banks are requesting more difficult terms and conditions.

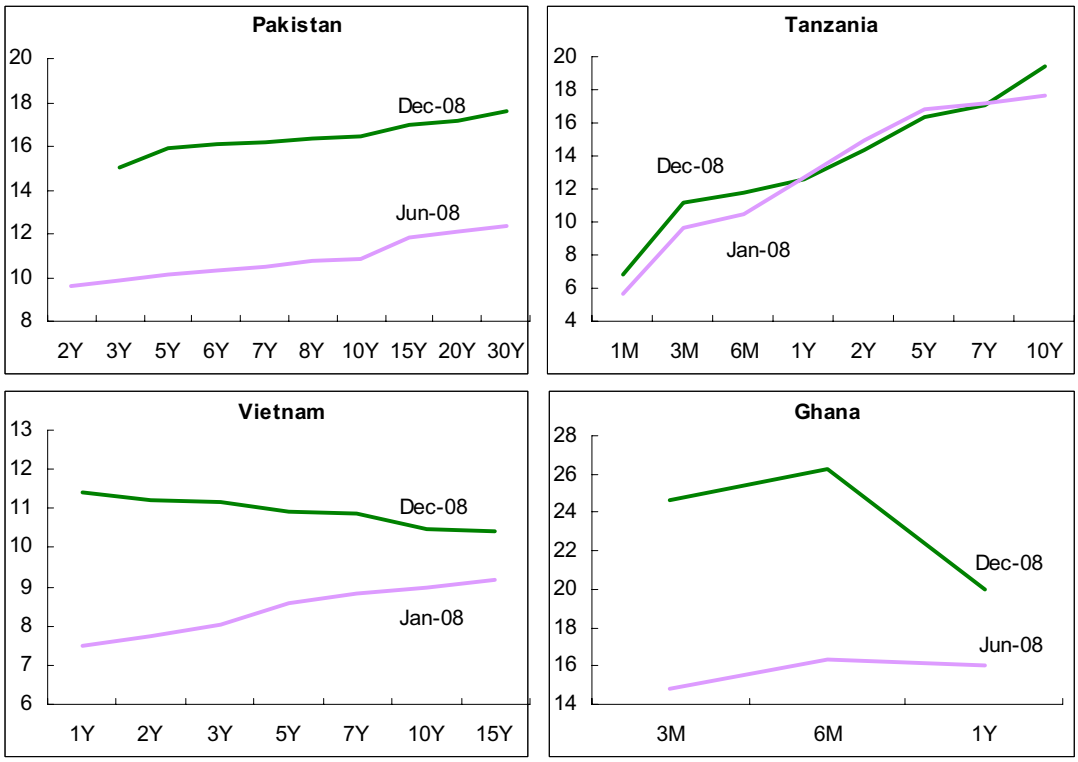
### *Domestic Financial Markets*

Domestic financing conditions are also tightening in some LICs. Domestic interest rates have increased considerably in a number of LICs. The EMTA survey reports that, between Q2 and Q3 of 2008, trades of local debt by foreign investors had dropped 71 percent in LICs, compared to only 22 percent for emerging market debt.



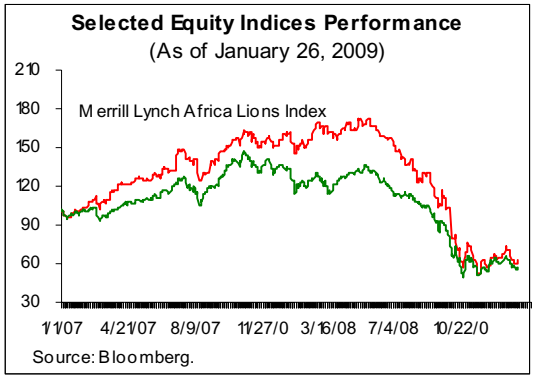

[11]HSBC Global Research (November 2008).

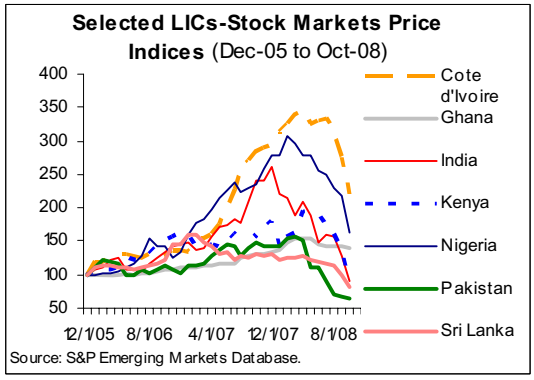
**Selected LICs: Domestic Yield Curves**




Source: Authorities' w ebsites.

Stock markets have similarly been impacted by the crisis. The Merrill Lynch Africa Lions Index, which tracks 15 African countries, declined by almost 70 percent during March–December 2008. Exchanges in other LICs have fallen considerably as well, reflecting a decline in corporate valuations, particularly in sectors that are vulnerable to the retrenchment in global economic conditions.[12]



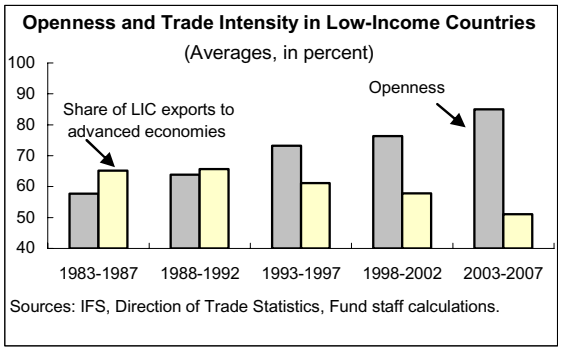

[12]These are typically export sectors. For instance, in the WAEMU region, recent stock market declines have particularly affected textiles, tourism, and agro-industrial sectors.

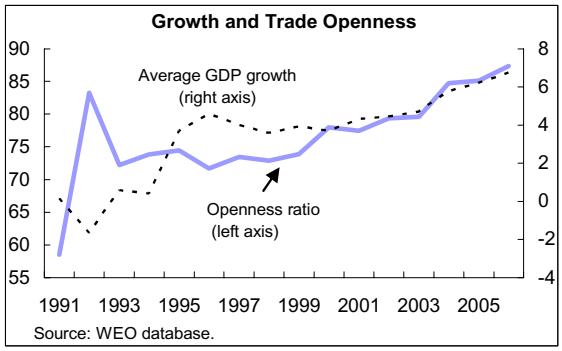
## Spillovers from Global Recession

Reflecting their increased integration in the world economy, the global recession is expected to have a major impact on LICs (Boxes 3 and 4). LICs are heavily dependent on trade, which is shrinking because of lower global demand. Many LICs will also be hit by reduced remittances, and possibly lower aid. For net importers of food and fuel, the negative impact of these factors will be in part mitigated by the recent drop in food and fuel prices.

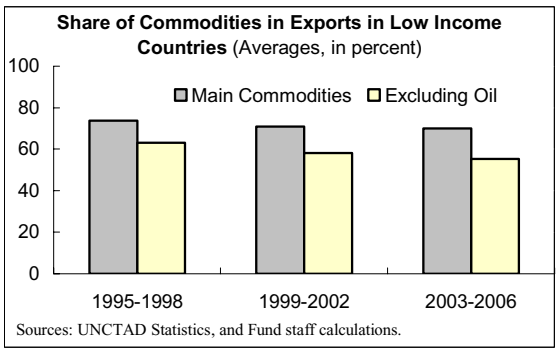
### The Trade Channel

Trade has become a significant source of growth in LICs over the past 20 years. Trade openness, calculated as the ratio of the sum of exports and imports to GDP, has increased substantially since 1991 and has been accompanied by an acceleration of growth. Most LIC exports go to advanced economies, though this share has been declining.




The structure of exports remains highly concentrated on commodities. In the past decade, the mean share of primary commodities in the exports of LICs has been close to 70 percent. The high concentration on commodities may further aggravate the impact of the global growth slowdown on LICs, to the extent that the demand for commodities is highly procyclical, with implications for both volumes and prices (WEO, 2001).




LICs are more exposed than in the past to a downturn in global demand for services. The share of services in total LIC exports has trended upward over the past decade, the main activities being transportation and tourism. For 29 countries in the sample, services

accounted for at least 30 percent of exports in 2007, while 8 countries are heavily dependent on services receipts (ratio of services receipts greater than 70 percent of exports).[13]

The latest projections illustrate the significant negative impact that LICs are likely to face in 2009 via the trade channel (Table 3). On average, projected current account balances for 2009 have deteriorated by about 3 percent of GDP since the April 2008 WEO, with a more pronounced decline in export growth than in import growth. The terms of trade are also projected to deteriorate, reflecting the sharp drop in commodity prices. The impact of declining trade in services, by contrast, appears limited.

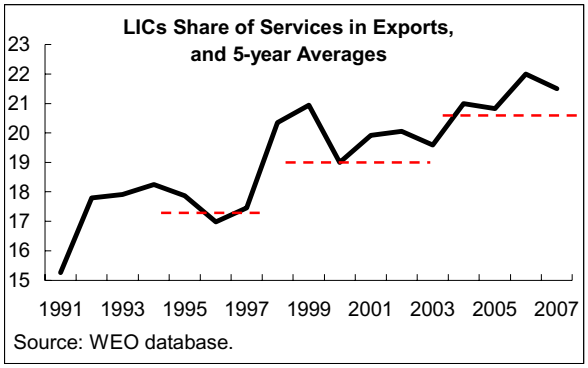



**Table 3. WEO Projections; Selected Indicators**

| | 2007 | 2008 | | 2009 | |
|---|---|---|---|---|---|
| | | Spring WEO | Current Proj. | Spring WEO | Current Proj. |
| Goods | | | | | |
| Exports (Percent of GDP) | 26.6 | 26.8 | 26.5 | 26.6 | 21.8 |
| Imports (Percent of GDP) | 40.1 | 40.6 | 42.5 | 39.7 | 38.6 |
| Services | | | | | |
| Exports (Percent of GDP) | 9.7 | 9.5 | 9.2 | 9.5 | 9.0 |
| Imports (Percent of GDP) | 12.2 | 11.8 | 14.2 | 11.2 | 13.6 |
| Terms of trade (annual change in percent) | 2.2 | -0.4 | -4.7 | 0.4 | -0.7 |

Sources: WEO database, and Fund staff calculations.

## Remittances

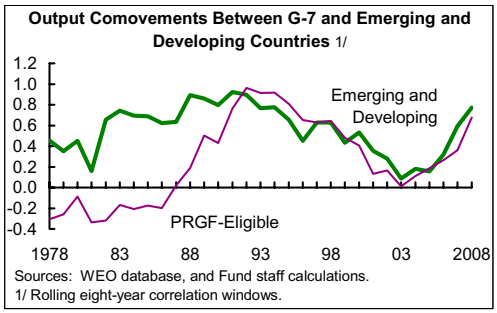
For many LICs, remittances constitute an important source of external financing, providing income to the poor and contributing to growth. At a global level, while data are weak, remittances are estimated to have increased at a double-digit annual rate since the 1990s (World Bank, 2006). In the past, they have been relatively stable compared to other external flows.[14] Remittance flows vary substantially across countries and regions, both from the recipient and country of origin point of view (World Bank, 2008).

[13]These include Cape Verde, Comoros, Djibouti, Dominica, Eritrea, Grenada, Maldives, St. Lucia, and St. Vincent and the Grenadines.

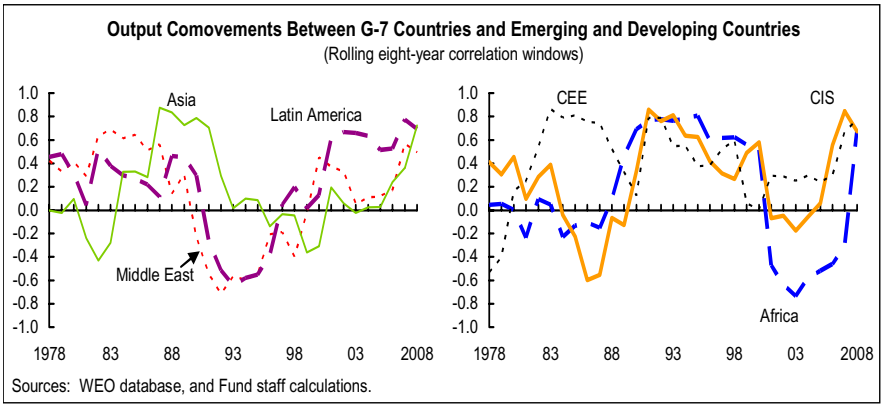
[14]For example, in sub-Saharan Africa, remittances have been less volatile than both official flows and FDI (Gupta, Pattillo, and Wagh, 2009).

## Box 3. Comovements in Output and Financial Markets

Output fluctuations in emerging and developing economies have been fairly synchronized with output fluctuations in the G-7 countries over the past 15 years. These linkages are quite important—a 1 percent change in real GDP growth in the G-7 countries is associated with a 0.4 percent change in growth in emerging and developing countries.[1/] For LICs, correlations have closely tracked those of other emerging and developing countries since the early 1990s.

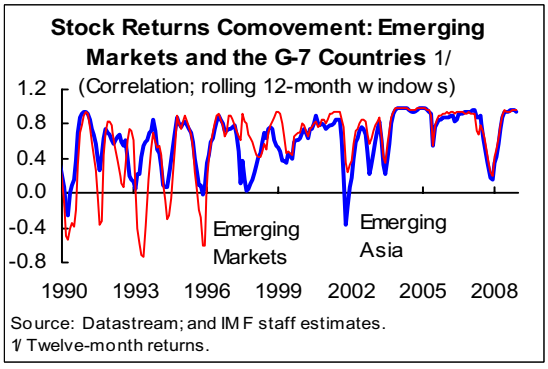



The degree of correlation has varied substantially over time and by region, reflecting idiosyncratic shocks in both emerging and developing countries and the seven major advanced economies. Notably, rolling moving averages of these correlations indicate that the comovement between the G-7 countries and emerging and developing countries in Asia, Latin America, and the Middle East fell markedly in the 1990s. This decrease appears to stem from the diversification of export markets away from the G-7 countries and the series of emerging market crises in Asia and Latin America. However, output synchronization between G-7 countries and economies in these regions has increased steadily since the late 1990s. In Africa, central and eastern Europe, and the Commonwealth of Independent States, comovements increased sharply in the run-up to the current crisis.




Financial channels are also becoming increasingly important as mechanisms through which shocks are transmitted between advanced and emerging economies, including LICs that are "frontier" emerging markets.

In particular, equity markets tend to be highly correlated and the correlation between advanced and emerging market equity prices has been rising over time. With the exception of the bursting of the dotcom bubble and initial divergence of equity markets in the 2007 in the current crisis, the correlation between G-7 and emerging economy equity markets has been near one for much of the past decade. As a result, capital flows—particularly in regions that depend more heavily on portfolio equity flows—are likely to be increasingly procyclical.

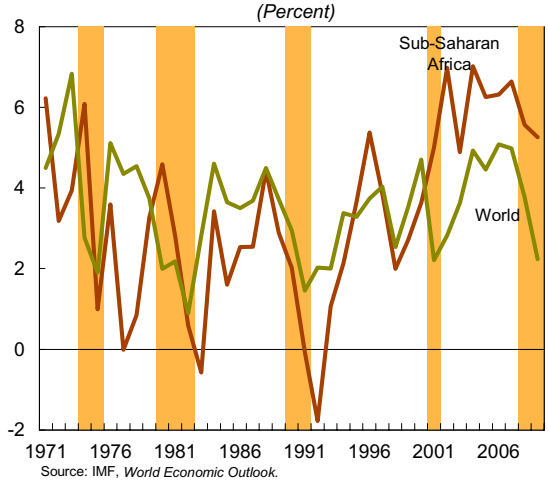



1/See IMF (2001). *World Economic Outlook*, Chapter II.

## Box 4. Spillovers from the Rest of the World into Sub-Saharan Africa (SSA)

Historically, SSA growth has moved quite closely with global real GDP growth. As global growth slows, SSA is affected mainly by lower real external demand for its exports and declines in commodity prices and the terms of trade.

**Sub-Saharan Africa and the World: Real GDP Growth[1]**
*(Percent)*



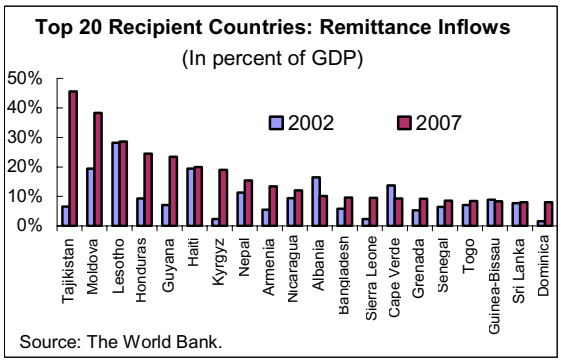

Source: IMF, *World Economic Outlook*.
[1] Periods of U.S. recessions shaded (National Bureau of Economic Research).

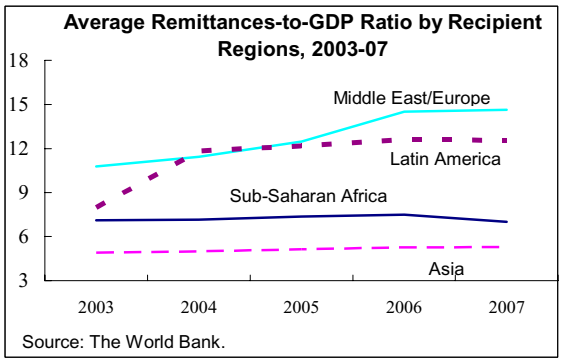
To quantify the impact of a global slowdown on individual African countries, a series of dynamic panel regressions were estimated for countries in the region, relating real growth in domestic output to world growth in trade weighted by partner countries and to several control variables: oil prices, non-oil prices, and country fixed effects. The sample includes data for 40 countries, over the period 1970–2007.

Three key results stand out:

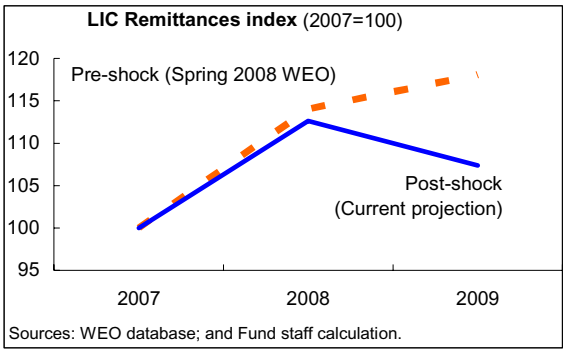
- A 1 percentage point slowdown in the rest of the world has led to an estimated ½ percentage point slowdown in SSA countries. The effect is partly felt contemporaneously (0.2 percentage point) and partly in the following year (0.3 percentage point).
- A nonfuel commodity-price-induced income reduction by 10 percent tends to reduce growth in sub-Saharan African exporters by about 1.5 percentage points after two years.
- An oil price shock tends to be significant only above a certain threshold (5 percent change in prices). A net oil importer in SSA (with oil imports of some 20 percent of GDP), facing a decline in oil prices of say 50 percent, could expect an increase in its growth rate by some 0.3–0.4 percentage point. The impact is linear on price changes above the threshold and on oil intensiveness of the economy. It appears symmetric for price increases and decreases.

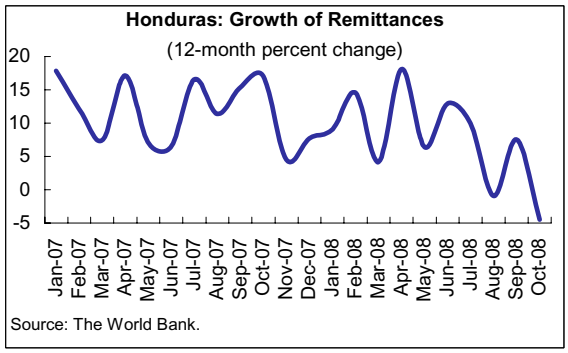
These estimates reflect the average effects for the average country and shock. While robust to different specifications, three important caveats are in order. First, while the cross-country regression estimates seem to be broadly in line with structural cross-country regressions in the literature, they explain only a small part of the growth variation experienced by SSA countries. This is because a broad range of domestic factors may be at play, and may plausibly interact with the shock itself to determine the effects; for example, the level of reserves, the policy response, and the expected persistence. Second, the specification does not control for the financial channel. Third, estimates reflect short-term effects of changes in the external environment on SSA growth.



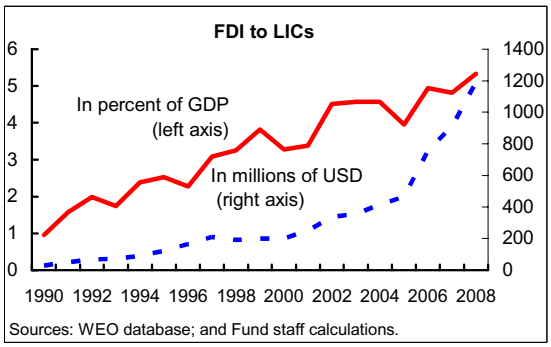

Current projections show remittances stagnating in the second half of 2008, and shrinking in 2009. The largest decline is expected in European, Asian, and Pacific LICs. Most recent evidence suggests that in some countries the decline in remittances can be substantial: in Honduras, for example, remittances declined by 4.5 percent in October 2008 (year-on-year).



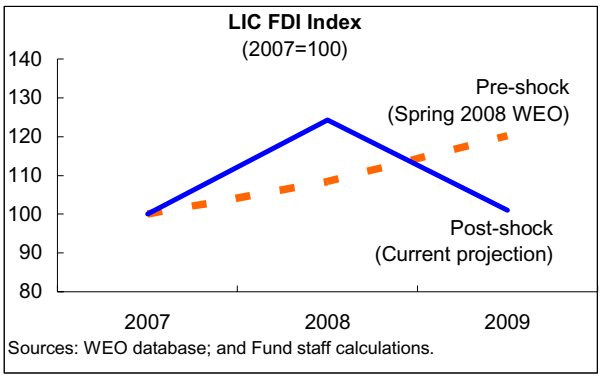

## Foreign Direct Investment

Over the past two decades, the importance of FDI in LICs has grown dramatically. On average, FDI in LICs has quintupled (in percent of GDP) since 1990. The sources of investment have also diversified.[15]




[15]UNCTAD (2006).

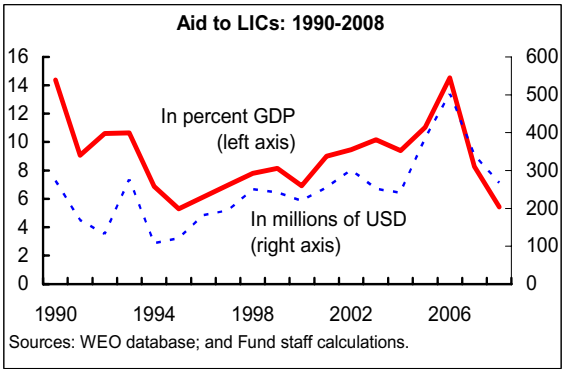
FDI flows to LICs are expected to shrink sharply. Empirical evidence suggests that FDI in LICs is dependent on the health of the origin country's economy.[16] The latest WEO projections show FDI inflows for 2009 falling by almost 20 percent from their 2008 levels, compared to over 10 percent growth that was projected in the April 2008 WEO. Multinationals' reduced profit margins, combined with difficult financing conditions and volatile commodity prices (FDI in LICs is heavily concentrated in natural resource sectors), have already begun to trigger reduced FDI commitments for 2009–10. In Lao PDR and Mozambique, for example, FDI related to expansions of hydroelectric and mining projects has been delayed or suspended.




Overall, reduced FDI in 2009 is expected to have a significant impact in over half of all LICs. Countries in Latin America and Asia are expected to be most affected. In Africa, the impact is expected to be muted, due to FDI concentration in natural resource sectors, where new projects may be delayed but most ongoing projects are likely to be continued. The losses associated with withdrawing from natural resource projects prior to their completion, given the sizable up-front capital investment required for such investments, reduce the likelihood of FDI withdrawal.

## Aid Flows

Poverty-reducing initiatives across the globe have led to sizable aid flows during this decade. Aid peaked in 2006, reflecting debt relief (driven by the HIPC and MDRI initiatives), coupled with increased flows from emerging donors such as Russia, China, and the GCC countries. However, excluding debt relief grants, net official development assistance remained broadly unchanged in real terms in 2006–07 (OECD, 2008a).

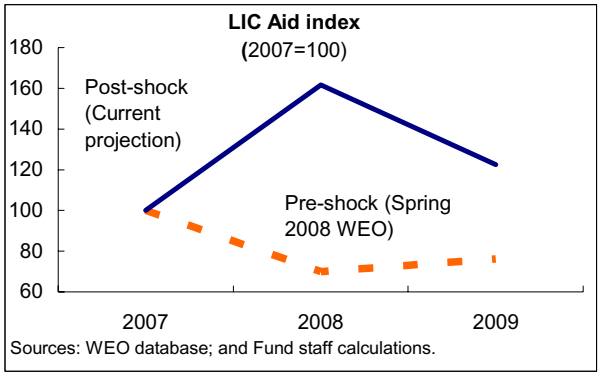



Potential reductions in aid flows are a serious concern. Empirical evidence shows that aid is procyclical with both donor and recipient incomes

[16]World Bank (2004); Nonnemberg and Cardoso de Mendonça (2004); Kalotay and Sulstarova (2008).

(Bulíř and Hamann, 2006). In a sample of 18 donors, Pallage and Robe (2001) show that the comovements of total aid disbursements with donors' output were positive for almost three-fourths of donors during 1969–95. Given the severity of the slowdown in growth in advanced economies, a potential reduction in aid cannot be ruled out.

Projections of aid to LICs already started to decline in 2009. Growth in aid to LICs during 2008 was higher than initially anticipated by the WEO spring projections. This high level of projected aid partially reflected multilateral aid packages approved during late 2008 to help countries cope with food and fuel shocks experienced in early 2008. Notwithstanding international commitments to scale up aid, projections do not suggest such scaling-up is in the pipeline for 2009.



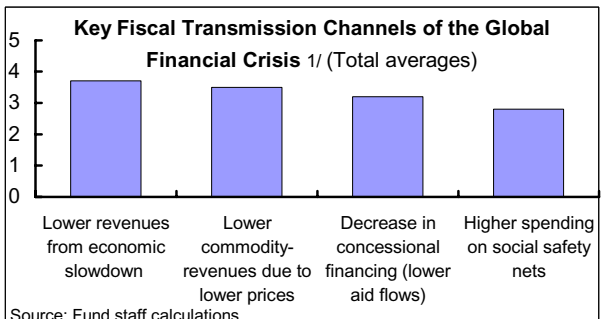
Sources: WEO database; and Fund staff calculations.

## V. The Fiscal and Debt Sustainability Impact of the Crisis

*Fiscal vulnerabilities are emerging as revenues decline, pressures on spending increase, and financing conditions deteriorate. The crisis will aggravate risks of debt distress in vulnerable countries.*

### Fiscal Impact

The financial crisis and global recession will aggravate the fiscal vulnerability of LICs. Budget revenues are expected to suffer as economic activity slows and commodity prices fall, pressures on spending rise, and financing conditions continue to tighten. The text chart shows a ranking of these factors, based on a survey of LIC country teams.

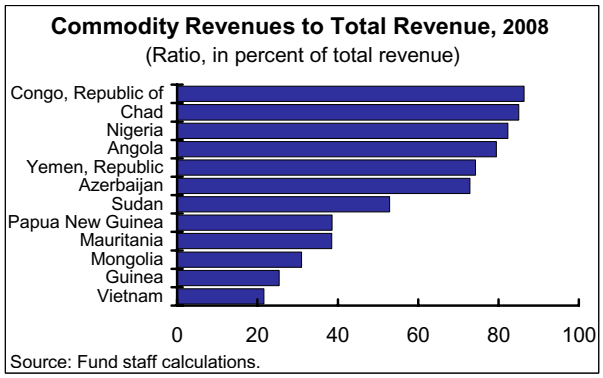


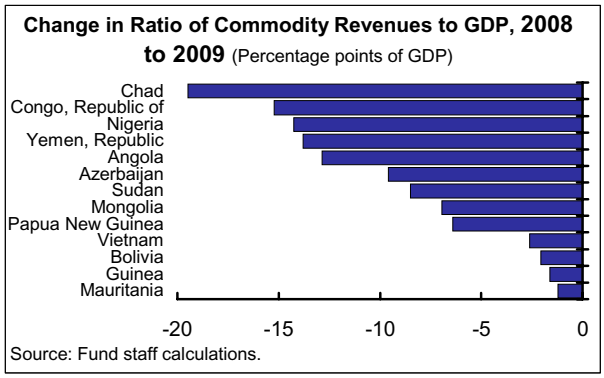
Source: Fund staff calculations.
1/ Rating: 5=Very important, 4=Important, 3=Somewhat important, 2=Unimportant, 1=Not applicable, and 0=no answer.

### Revenue and Financing Prospects

Lower revenue is a key source of fiscal risk. The slowdown in economic activity and trade will affect fiscal revenues directly, given the reliance of many LICs on trade taxes. In addition, falling remittances from abroad can be expected to hit domestic consumption, and

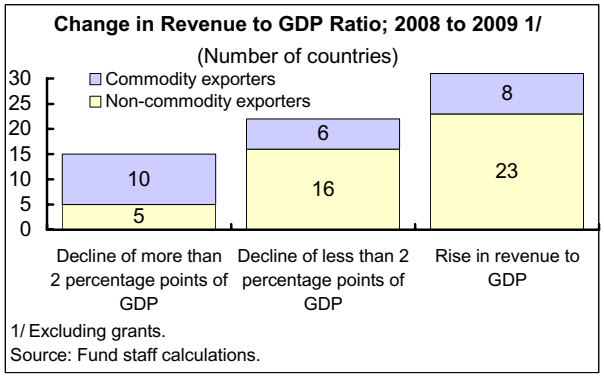
hence revenues from consumption taxes. The tourism industry, an important source of revenue in some LICs, is also likely to contract.



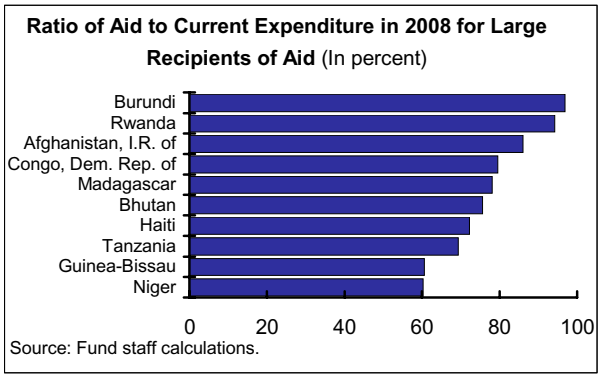

Commodity revenues would be particularly affected—as emphasized by over half of country teams. In several countries, commodity-related revenues constitute more than 20 percent of total revenues. While all commodity exporters are likely to be hit in 2009, the effect is expected to be particularly marked for oil and metal producers, where the recent price declines have been steepest (e.g., Angola, Chad, Republic of Congo, Mongolia, Nigeria, and Yemen). The downturn has exposed some commodity exporters that embarked on ambitious spending plans on the basis of optimistic revenue assumptions. In countries where oil revenues accounted for at least 20 percent of total revenue in 2004, the average non-oil fiscal deficit rose from 22 percent of non-oil GDP in 2004 to 39 percent in 2008 as a result of rapidly rising expenditure.[17] This said, several countries (including Angola, Azerbaijan, the Republic of Congo, and Nigeria) accumulated fiscal cushions during the boom years, which now reduce their vulnerability.

Overall, revenue ratios are projected to decline in more than half of LICs in 2009. In close to a quarter of the countries, the decline is expected to be more than 2 percentage points of GDP. The extent to which revenue declines would contribute to vulnerability depends on the overall fiscal position and availability of financing. It should be noted that revenue losses will take place even if the revenue ratio is constant, due to lower activity. The expected increases in the revenue ratio in a number of countries mainly reflect ongoing efforts to strengthen revenue-raising capacity.




[17]Oil exports increased significantly in some countries, including Angola, Azerbaijan, and Timor-Leste.

Uncertainty about aid flows, potential declines in donor support, and tighter financing conditions are likely to impose further pressures on LICs' budgets. In about half of the countries, the ratio of aid to current spending exceeds 20 percent, and in 14 countries this proportion surpasses 50 percent. In particular, fiscal vulnerabilities are high in LICs where domestic revenue mobilization has not kept pace with rising public spending.[18] These countries have relatively small revenue bases, which limits their ability to increase tax collections in the short run to offset declines in aid flows. Falling aid was rated as very important or important by more than one-third of country teams. Countries such as Afghanistan, Burundi, and Rwanda are particularly vulnerable to declines in aid flows.




## Spending Pressures

Spending pressures may arise from various sources, starting with the sectors more directly affected by the external shock.

- ***Falling export revenues may exert pressure on government expenditures***. Commodity export sectors that are hit by lower demand and falling prices may seek government transfers to offset part of the falling revenues. This will happen if commodity marketing boards or state-owned export enterprises are called upon to subsidize domestic producers by maintaining higher domestic prices than the corresponding export prices.
- ***Poverty may increase with the slowdown in growth and falling commodity prices***. If output declines in capital-intensive industries (such as oil), the impact on employment would be limited, at least in the short run. However, in countries that export agricultural commodities, falling commodity prices would cut into rural employment and incomes, thereby increasing rural poverty. The urban poor, however, may benefit as food and energy prices decrease. Various estimates suggest that on average, when mean growth declines by 1 percentage point, the poverty head count increases by 2 percent.[19]
- ***Countries may need to expand social spending to address rising poverty levels***. Spending pressures to strengthen safety nets were considered important or very

[18]Gupta and Tareq (2008).

[19]The poverty elasticity to growth varies across countries; the estimated elasticity of two is the average obtained from a cross section of developing and transition countries. See Bourguignon (2003) and Ravallion (2004).

important by almost one-third of country teams. Countries that are already planning to expand or introduce new programs include Dominica, The Gambia, Guyana, Madagascar, Niger, and Senegal. On the other hand, countries that are net importers of food and fuel and that increased subsidies on these products during the 2007–08 price hikes should now be able to scale back their subsidies.[20] For example, in Pakistan and Yemen the reduction in international petroleum prices has helped create room for priority spending.

- ***The crisis could affect investment financing schemes.*** Public-private partnerships for public projects and concessions (such as ports and power generation) could come under strain because lower demand for services may trigger calls on revenue guarantees, and private operators may be affected by the credit crunch.

Additional spending pressures may arise from currency depreciation and rising interest rates.

- The share of foreign debt in public debt remains high (see next section), and depreciation would increase debt servicing costs. The cost of imported goods and services would also rise, thus offsetting, at least in part, the effect of lower commodity prices. Conversely, depreciation may boost border taxes (including duties and VAT on imports) and resource-related revenues.
- Countries able to access international capital markets may have to pay higher interest rates. For instance, the average spread of the four LICs included in the EMBI rose by about 1,000 basis points during the past year. And, as noted in the first part of Section IV, domestic funding costs have started to rise in a number of LICs—including Ghana, Mozambique, Pakistan, and Sri Lanka, according to the survey of country teams.

Public finances might also come under pressure if there is a need for government support to domestic financial institutions and depositors. Country teams expect that fiscal support to the financial system may be required in only a few countries (Cambodia, Comoros, Mongolia, and Pakistan), given the generally limited ties of financial systems in LICs to global financial markets. However, fiscal risks and vulnerabilities could emerge from contingent liabilities of the government and quasi-fiscal activities of central banks if it is decided to extend deposit guarantees (as some LICs have already done) or to direct or subsidize bank credit to the private sector.

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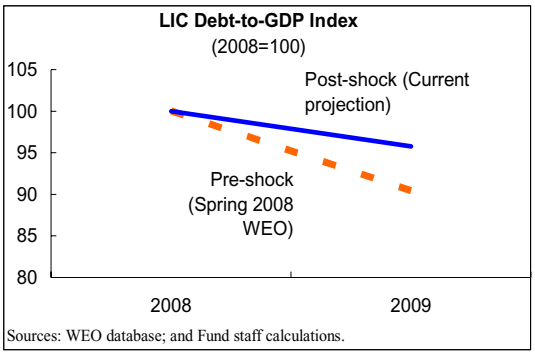
[20]IMF (2008). The median fiscal cost of fiscal policy responses to increasing fuel and food subsidies incurred since 2006 in a sample of 92 countries was estimated at 0.7 percent of GDP in September 2008. Fiscal costs were dominated by increases in fuel subsidies and reductions in fuel taxes. In 24 countries, the combined fiscal cost of fuel and food subsidies in 2008 was expected to exceed 2 percent of GDP.

### The Impact of the Crisis on Debt Sustainability

In recent years, debt indicators in LICs have improved dramatically (Appendix III). Over the past decade, debt relief initiatives have significantly reduced the large external debts with which LICs have often struggled. With assistance from development partners, including the IMF and the World Bank, LICs have been working toward maintaining future debts at sustainable levels. Improved debt sustainability has helped create investor and donor confidence, as is evidenced by sizable FDI and aid flows to LICs over the past two years. A lower debt servicing burden has also freed greater resources for development spending.

However, higher borrowing to help offset the impact of the crisis could pose serious risks, in particular for those LICs that already have a high debt burden. Debt indicators are projected to continue improving in 2009 (see figure), albeit by less than forecast last spring. However, 28 countries already have debt in excess of 60 percent of GDP. Moreover, simulations of additional borrowing to offset the shortfalls in external financing suggest that a handful of countries that are currently on the verge of high risk of debt distress would breach this threshold (see Appendix IV). The simulations assume that reduced investment expenditure financing from aid and FDI is replaced with public external borrowing.[21] If sustained for one year, this adds 4 percent of GDP to the average LIC debt burden.



Sources: WEO database; and Fund staff calculations.

Second-round effects also pose serious risks to debt sustainability. Given that more than half of LICs' public debt remains external, a depreciation in exchange rates will aggravate the ratios of debt to GDP and fiscal revenues. Moreover, contingent liabilities resulting from pressures in the banking sector could further weaken the structural improvements in the sovereign balance sheet. Several governments have extended explicit or implicit guarantees for their banks' deposits in response to public uncertainty about domestic banks. Finally, the decline in reserves poses a risk to LICs' capacity to service or roll over external debt, which remains mostly at short maturities.

## VI. Country Vulnerabilities and Risks of Further External Shocks

*The external outlook varies widely across LICs and is subject to large risks. The baseline projections and illustrative scenarios suggest that 26 LICs could be particularly vulnerable.*

[21] Aid and FDI are each assumed to be reduced by 30 percent of their respective 2008 values.

The growth and balance of payments repercussions of the global slowdown for LICs remain highly uncertain. Accordingly, this section analyzes LICs' short-run vulnerabilities to the global downturn on the basis of both the most recent projections and various simulations of possible further shocks that illustrate the downside risks to the baseline projections.

The baseline projections show large adverse effects of the global crisis for commodity and oil exporters, and countries with entrenched policy weaknesses (see Appendix V, Table 1). While, on average, projected growth in 2009 has been revised down by 2.1 percentage points relative to the April 2008 WEO, this decline amounts to more than 2.5 percent for 24 countries. Hardest hit are LICs in the Middle East and Europe and, to a lesser extent, Latin America and oil-exporting countries. Reserve coverage is projected to decline in 45 countries, by 0.6 month of imports, on average, with a particularly sharp drop among oil exporters.

Simulations of possible further shocks explore the balance of payments effects of lower prices of oil, commodities, and food; lower foreign demand for LIC manufacturing exports; and lower financial inflows. The simulations are simple partial equilibrium exercises to assess the immediate impact on the balance of payments and reserves of the assumed shocks to the trade balance (as a result of lower world market prices and export volumes) and to remittances, FDI, and aid.[22] The methodology is consistent with the one applied to the analysis of the food and fuel price shocks in IMF (2008b). The exercises do not incorporate further effects on growth or demand. For each channel, and for all shocks combined, countries are ranked in three vulnerability categories—high (H), medium (M), or low (L)—depending on the impact of these shocks on reserves.[23]

The simulation results illustrate the wide variation in vulnerabilities across LICs (Appendix V, Tables 2–7). Over 20 percent of the sample countries are highly vulnerable to the specified trade shock (lower world market prices and export volumes). The majority of these countries are in Africa. Of the 15 countries with remittances exceeding 10 percent of GDP in 2008, 10 appeared highly vulnerable to a decline in remittances. Overall, about half of the sample countries appear moderately vulnerable to a sudden decline in FDI. Countries

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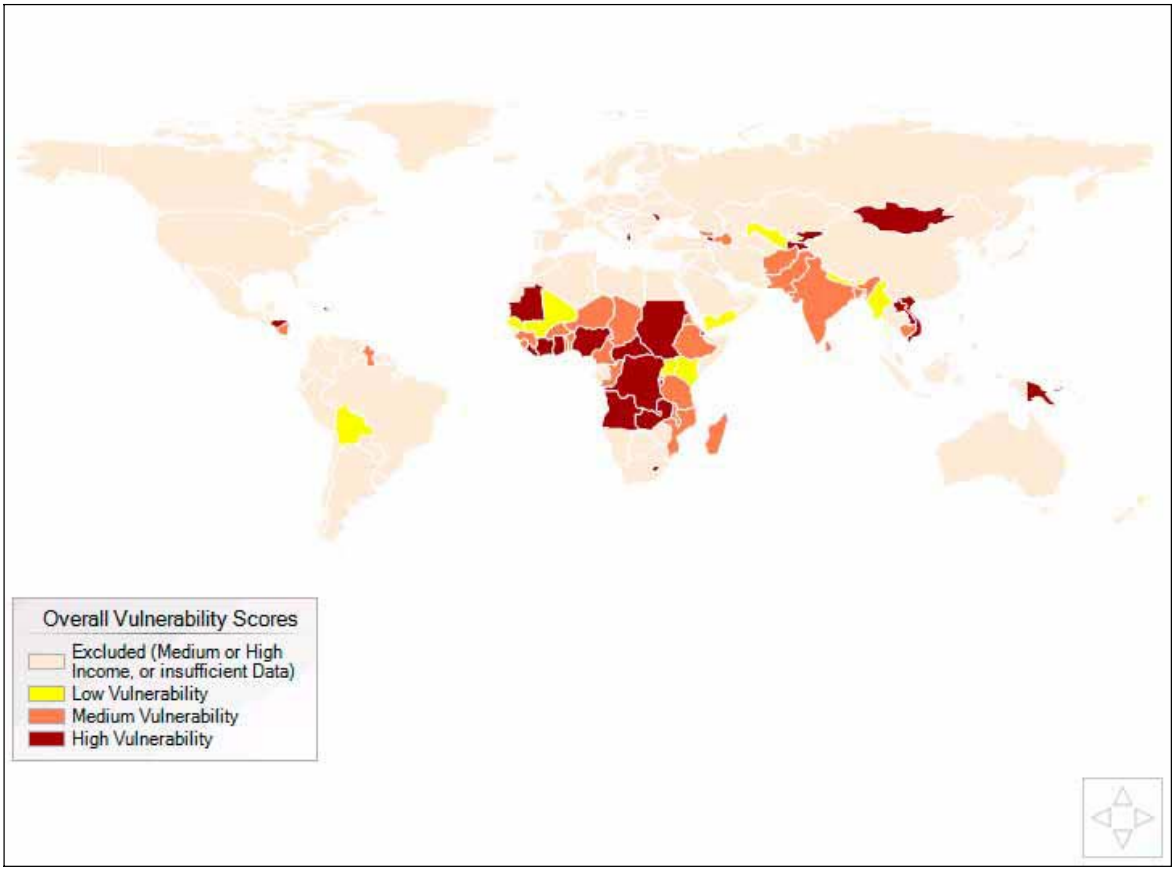
[22]The detailed specification of the shocks is described in Appendix V. In view of the limitations of the partial analysis, the simulation results are illustrative and should not be considered as actual projections at the country level. The final impact of the global slowdown is highly dependent on policy responses and domestic factors, as well as on the interaction of different shocks. In addition, the magnitude of the shocks in the simulations is not based on a projection of likely developments.

[23]The H category encompasses countries that had reserve coverage below the standard benchmark of 3 months of imports in 2008 and that could suffer an additional loss of reserves equivalent to more than 0.5 month in the shock scenario. Countries in the M category either start with more than 3 months of import coverage and lose more than 0.5 in the shock, or start below 3 months of coverage and lose less than 0.5 month with the shock. In the L category, countries start with more than 3 months of import coverage and lose less than 0.5 in the shock scenario.

**Figure 2: Overall Country Vulnerabilities[1]**




[1]See Appendix V, Table 1, for methodology. Country borders or names in this map do not necessarily reflect the IMF's official position.

in Latin America have relatively high FDI inflows, and hence almost all of them appear vulnerable to an FDI shock. Almost 50 percent of countries that received aid in excess of 10 percent of GDP in 2008 appeared highly vulnerable to reduced aid.

Considering both the current baseline projections and the simulations, 26 countries could be considered highly vulnerable to the adverse effects associated with the global recession (Figure 2 and Table 4). The baseline projections and simulations are combined to provide an overall vulnerability assessment. The most vulnerable countries are especially sensitive to trade, aid, and remittances shocks, while FDI appears to be a less important transmission channel.[24]

[24]The results of this overall assessment are sensitive to the weights placed on the baseline projections relative to the simulations. The overall score is a weighted average of individual scores assigned to the change in projected 2009 real GDP growth relative to the April 2008 WEO projection, the projected change in reserves during 2009, and the vulnerability score in a simulation of combined further shocks. In this exercise, a GDP growth reduction

(continued)

**Table 4. Vulnerability Table**

| | Real GDP Growth | Reserves (in Months of Imports) | Vulnerability Score | |
|---|---|---|---|---|
| | 2009 current less Spring WEO proj. 1/ | 2009 less 2008 2/ | Simul. 3/ 4/ | Overall Assessment 4/ |
| Albania | -2.4 | -0.7 | M | H |
| Angola | -8.6 | -1.0 | M | H |
| Armenia | -5.0 | -0.1 | M | H |
| Burundi | -2.0 | -0.6 | M | H |
| Central African Rep. | -2.0 | -0.9 | H | H |
| Congo, Dem. Rep. of | -7.3 | 0.6 | H | H |
| Côte d'Ivoire | -0.7 | 0.0 | H | H |
| Djibouti | -1.5 | 0.2 | H | H |
| Ghana | -3.4 | -1.2 | M | H |
| Haiti | -1.5 | -0.3 | H | H |
| Honduras | -2.6 | -0.7 | M | H |
| Kyrgyz Republic | -4.6 | -0.1 | M | H |
| Lao People's Dem.Rep. | -3.4 | -0.9 | M | H |
| Lesotho | -3.3 | -0.8 | M | H |
| Liberia | 0.7 | 0.0 | H | H |
| Mauritania | -2.8 | -0.3 | H | H |
| Moldova | -4.5 | -0.2 | M | H |
| Mongolia | -3.1 | 0.0 | M | H |
| Nigeria | -5.0 | -3.9 | M | H |
| Papua New Guinea | 0.2 | -0.9 | H | H |
| St. Lucia | -5.4 | -0.1 | M | H |
| St. Vincent & Grens. | -4.7 | -0.2 | M | H |
| Sudan | -6.7 | 0.2 | H | H |
| Tajikistan | -4.0 | 0.0 | H | H |
| Vietnam | -2.5 | -0.9 | M | H |
| Zambia | -2.4 | 0.2 | H | H |

1/ Current projection for 2009 less Spring WEO projection for 2009
2/ Current projection for 2009 less 2008 actual.
3/ Combined Shock: Trade, Remittances, Aid, FDI. See section IV for description of shocks and Appendix V tables for magnitudes of individual shocks.
4/ H = High risk; M=Medium risk; L=Low risk.
Sources: WEO database, and Fund staff calculations.

## VII. Policy Recommendations

*Many LICs have little room for countercyclical policies to address the impact of the global crisis. This highlights the importance of donor support, which will need to be stepped up to enable LICs to attenuate the effects of the crisis on poverty. Important domestic policy responses include targeted spending to protect the poor, exchange rate flexibility to facilitate adjustment, and vigilant financial supervision.*

The ultimate impact of the global financial crisis on LICs is likely to be severe given their unique vulnerabilities and limited scope for offsetting policies. In principle, the choice between financing and adjustment in response to an adverse shock should depend on its expected duration, with temporary shocks calling for financing and permanent shocks requiring adjustment. While the evolving global crisis—and its effects on prices, foreign demand, and financial inflows—remains very uncertain, arguably many of its effects may be

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in excess of 2.5 percentage points, and a reduction in reserves in excess of 0.5 month of imports are considered "large." See Appendix V for details.

considered temporary. In practice, however, initial macroeconomic and debt conditions and available financing are likely to be the major factors determining the scope for fiscal easing.

## Fiscal Policy

Fiscal policy responses to the crisis should take into account important characteristics of LICs and how the global crisis is affecting these countries.

- The fall in demand largely originates abroad and is transmitted to LICs through foreign trade as a reduction in exports—mainly commodities—due to lower prices and volumes. The ability of expansionary fiscal policy to substitute for this decline in external demand may be limited, to the extent that resources cannot quickly be reoriented across sectors. Attempts to maintain domestic demand through countercyclical fiscal policy could spill over into imports, resulting in a net loss of foreign reserves (absent more aid), or inflation.
- Most LICs lack effective social programs to transfer income.
- Governments cannot ease the fiscal stance as readily as in other countries because of liquidity constraints. Access to external financing is typically limited; thin domestic financial markets constrain the ability to finance higher fiscal deficits; and monetizing larger deficits would likely jeopardize macroeconomic stability.
- The significant uncertainty about whether the shock is temporary or long-lasting argues for cautious policy responses, as government revenues in the years ahead may remain weaker than in the recent past.

Against this background, the fiscal policy response should depend on country-specific circumstances.

- Countries without binding public debt sustainability and financing constraints that have achieved macroeconomic stability may have scope to accommodate the (cyclical) fiscal deterioration. This would help address the negative impact of the crisis on economic activity. A few countries may also have scope for discretionary fiscal stimulus aimed at sustaining aggregate demand. In all cases, the space for fiscal easing will depend on the availability of financing from external sources on concessional terms and the scope to raise and use domestic resources in a noninflationary manner, without draining international reserves or crowding out the domestic private sector, as this sector is the main source of long-term growth.[25]
- In formulating spending policies, priority should be given to protecting or expanding social programs or bringing forward approved investments, and, in general, to

[25]For example, financing constraints are an issue in WAEMU, where commercial banks that bought most of the bonds and bills issued by WAEMU governments increasingly face liquidity difficulties.

preserving the momentum toward achieving the MDGs. Most LICs have pressing infrastructure needs, and protecting or increasing spending in MDG-related sectors such as health, education, water and sanitation, and social protection can help cushion the impact of the crisis on vulnerable households. These countries may also want to reorient their spending composition in favor of programs that stimulate domestic economic activity. Spending that is intensive in domestic goods and services is likely to be more effective in supporting domestic activity. Existing infrastructure should be preserved by protecting spending on operations and maintenance. Initiating new infrastructure or social programs should be approached with caution because of the weak implementation capacity in many LICs. At a minimum, new projects considered for implementation should be properly appraised and prioritized.

- Some forms of spending increase would best be avoided. The subsidization of domestic exporters through the maintenance of higher domestic prices above export prices would not be well targeted, as large producers would benefit more. Public sector wage increases would also be a poorly targeted form of support and may not be sustainable.

Commodity exporters that built financial cushions during the boom may be in a better position to maintain spending or adjust gradually. Exporters with no sustainability or financing concerns despite the downturn in commodity prices may be in a position to maintain spending levels. Some countries that need to retrench because of sustainability issues might be able to do so gradually if they had built up financial cushions.[26]

However, many countries will be forced to adjust their fiscal position. Those countries with binding fiscal constraints, including some commodity exporters, will have to address a deteriorating fiscal position.

Those countries can create fiscal space for additional spending or to preserve priority spending, including for MDGs. They can do so through increasing revenue or reprioritizing spending.

- *Countries with low tax-to-GDP ratios should try to mobilize additional domestic revenue*. A tax-to-GDP ratio of 15 percent is considered a reasonable target for most LICs, and many non-resource-rich LICs have tax-to-GDP ratios well below this target. This does not mean that tax rates should be increased. Indeed, in some countries, high rates, particularly on mobile production factors (such as skilled labor and capital), may be hindering economic growth. In many LICs, low revenues are mainly associated with narrow tax bases, rather than low rates. In these countries, a rationalization of tax incentives (by reducing exemptions, tax holidays, and deductions) together with strengthening of revenue administration should allow lower

[26]Barnett and Ossowski (2003).

tax rates while mobilizing additional revenues. However, these reforms—which should be part of a medium-term strategy—take time. This said, countries should carefully review the scope for removing tax exemptions in the context of the next budget, with a view to generate revenue. Resource-rich countries should continue to make efforts to diversify their revenue base, which would reduce fiscal risks.

- *Fiscal space can also be created through expenditure rationalization and increasing spending efficiency*. This is important in light of the difficulty of raising revenues through quality measures in the short run. Reducing unproductive expenditures, particularly those of a recurring nature, while often politically difficult, should be the first option. Examples include generalized subsidies, transfers to loss-making enterprises, excessively large government employment, and "white elephant" projects. Many countries increased subsidies in response to the surge in international fuel prices in recent years. With the fall in these prices, the fiscal cost of the subsidies should decline.[27] Strengthening public financial management systems would contribute to improving expenditure efficiency, by ensuring that resources reach their intended users. It is important to avoid across-the-board spending cuts, which can lead to arrears and inefficiencies, and are often not sustainable.

In all cases, spending plans should preferably be cast in a medium-term framework (MTF). Increases in spending that would not be sustainable in the future should be avoided. While the design and implementation of an MTF is a complex process that should be approached gradually, many LICs could make greater efforts in this area.

Care will have to be taken in strengthening safety net programs. Transfer programs that effectively target the poorest often result in a larger stimulus to aggregate demand, given their higher propensity to consume.[28] The capacity of many LICs to put in place new targeted programs will be limited in the near term.[29] There may be scope, however, to scale up existing spending programs in targeted ways:

- *Countries can implement public works programs and/or provide income supplements through existing programs.* Labor-intensive infrastructure projects can be effective in providing income support to the poor while simultaneously delivering fiscal stimulus. Setting the wage rate relatively low ensures that the schemes are self-targeted to the poor. The going wage for unskilled agricultural labor is often a good benchmark.

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[27]This may also be an opportune time to reform domestic pricing mechanisms (e.g., from ad hoc price adjustment systems to automatic price formulas or price liberalization) where appropriate.

[28]Strengthening such programs would also reinforce automatic stabilizers. In countries with financing constraints, however, the operation of such stabilizers would require flexibility in other spending areas.

[29]Initiatives undertaken in response to the fuel and food price crisis have improved the situation in some countries.

- *Additional resources can be channeled to targeted programs, such as targeted food distribution or school meal programs.* Expanding conditional cash transfer programs that link cash transfers or subsidies to the receipt of health care or education can be an effective method of addressing potential losses in human capital. Examples of such programs include the Primary Education Stipend Program in Bangladesh, *Bolsa Familia* in Brazil, the Education Sector Support Program in Cambodia, *Programa de Asignación Familiar* in Honduras, *Oportunidades* in Mexico, and *Atención a Crisis* and *Red de Protección Social* in Nicaragua.

## Monetary and Exchange Rate Policy

An important policy priority will be to maintain domestic macroeconomic stability amid deteriorating terms of trade. With declining food and fuel prices, inflationary pressures are quickly receding in the large majority of LICs. At the same time, and unlike in some advanced economies, risks of deflation seem limited for LICs. Sharp depreciations in the wake of balance of payments pressures clearly have the potential to feed through to inflation, offsetting the deflationary global environment. Accordingly, while there may be scope for monetary easing in some countries with falling inflation, countries experiencing continued or renewed price pressures may need to tighten monetary policy.

Inflationary challenges remain in some LICs where existing aggregate demand pressures have yet to be effectively tackled. In 18 LICs, inflation still exceeded 15 percent as of end-December 2008 and for 12 of these it is forecast to remain in double digits throughout 2009, as earlier commodity price increases are still feeding through to the economy, and have affected wage demands and inflation expectations. Most of these cases have been associated with relatively loose monetary and/or fiscal policies—including in the form of recent high wage awards (Mongolia), an expansionary deficit (Ghana, Ethiopia), and negative real interest rates (Azerbaijan).

Countries with flexible exchange rates should allow them to function as shock absorbers in response to the negative external shock stemming from the financial crisis. It will generally not be effective to impede needed adjustment in the real exchange rate or dissipate reserves through intervention, which should be limited to responding to temporary instances of disorderly market conditions.

Countries with fixed exchange rates may face different challenges, with pressure on these arrangements owing to lower net exports, together with, potentially, capital flight and a reduction in available external financing. In light of the adverse shocks, exchange rate competitiveness and the adequacy of reserves will need to be carefully assessed. For countries with de facto rather than formal pegs, in particular, introducing some degree of exchange rate flexibility may be advisable (e.g., Armenia, Ethiopia). If the financial crisis is prolonged, the pattern of external adjustment—including the use of exchange rates—would

shift over time. While exchange rate adjustment may be avoided in the short term, extended balance of payments pressures could make adjustment unavoidable.

Protectionist measures should be avoided. Limiting imports through tariffs or quantitative restrictions lowers welfare by distorting incentives, and new barriers can be hard to rescind when the current pressures subside.

## Financial Sector

As mentioned above, potential negative fallout from the crisis on LICs' financial system remains high. In this context, LICs need to focus on immediate crisis prevention measures including by preparing contingency and remediation plans for the financial system.

In the short term, it will be critical to monitor the risks and take actions that focus on reducing uncertainty and engender confidence. Dynamics in domestic debt and financial markets can have serious spillover effects on the domestic banking system and hence on credit availability. Analysis of such linkages should be undertaken at both the institutional and systemic levels.

At the private sector level, financial institutions could initiate balance sheet repair. Where capitalization is weak, fresh equity may need to be raised or medium-term funding sources sought, even if the cost of doing so is high. A critical evaluation should also be undertaken of institutions' overall risk management systems, particularly for liquidity and counterparty risk management. Stress tests should be conducted to identify potential balance sheet vulnerabilities, account for possible longer periods of funding illiquidity, and develop firm-specific contingency plans. These should guide the formulation of appropriate adjustments in risk management.

Similar steps are required for the official sector. The channels through which risks could materialize should be subject to high-frequency monitoring, and countries should review their crisis management frameworks. Prudential rules should be rigorously enforced, and supervision extended to key non-bank institutions and local capital markets. Given the possibility of direct interventions utilizing the government balance sheet, official reserve holdings should be carefully monitored. Likewise, debt management would need to focus increasingly on liquidity risks in addition to the sovereign's solvency, take account of the maturity structure and nonresident holdings of locally issued debt, and optimize the mix between local-currency domestic debt and external borrowing.

Countries could also improve coordination amongst the government, the central bank, and supervisory agencies. This will facilitate anticipation of liquidity and solvency problems. It will also help avoid a "rush to regulate" that may create further illiquid conditions or a credit squeeze, or a culture of non-repayment of bank loans. Central banks must have reliable access to financial information of all regulated financial institutions. The medium-term

agenda of the financial sector reforms process should remain on track, or even be advanced. Deepening money and foreign exchange markets and developing the investor base will help to improve liquidity management. Progress would depend on implementing appropriate monetary policy frameworks, operating procedures, and instruments; improving central bank liquidity forecasting and its coordination with government cash management; and strengthening inter-bank money and foreign exchange markets, the shallowness of which often leads to excessive volatility. Reform of the non-bank financial sector can be a powerful tool to increase the demand for longer maturities and reduce rollover risks.

## VIII. Financing Needs of LICs as a Result of the Crisis

*The additional financing needs of LICs resulting from the crisis could amount to about US$25 billion in 2009, and could rise much further.*

At this stage, any projection of LICs' balance of payments needs in light of the global financial crisis should be considered as highly tentative. Previous sections have highlighted the uncertainties surrounding the many variables that feed into a calculation of financing needs. Nevertheless, in this section we offer some preliminary estimates of the amount of additional external financing that LICs would need in order to withstand the crisis-related shocks without excessive import contraction or depletion of reserves.[30]

Current baseline projections for 2009 suggest an aggregate additional financing need for LICs of about US$25 billion (Table 5). However much larger financing needs would result without import adjustment or if various downside risks were to materialize. The reserve level for end-2009 that was projected in the April 2008 WEO projections serves as the benchmark for calculating the additional financing need.

- Current projections foresee an adverse balance of payments shock for 38 LICs in 2009, amounting to about US$165 billion in total, relative to the April 2008 projections (Table 5 and Appendix VI). However, various downside risks to the baseline could result in a much larger impact, as illustrated in the "bad case" scenario. In this scenario, the shocks described in the simulation of Section VI occur simultaneously, with an overall balance of payments impact of US$216 billion.[31]

[30]The analysis in this section focuses on the availability of foreign exchange reserves at the level of the central bank. In practice, actual import adjustment depends not only on the total financing available to the country, but also on its availability to specific groups—households, firms, and public entities—many of which are liquidity constrained and may have no alternative but to contract their spending in response to adverse shocks.

[31]This simulation differs from the one for a combined shock in Section VI, in that it does not include a downward shock to aid. Otherwise, the estimated financing need—which can be considered the need for aid—would be artificially augmented by an ex ante aid decline.

**Table 5. LIC Balance of Payments Shock and Financing Needs in 2009 1/**

| | Current 2009 proj. | | "Bad case" scenario 2/ | |
|---|---|---|---|---|
| | (in US$, billions) | number of countries | (in US$, billions) | number of countries |
| **Total balance of payments shock 3/** | **165** | 38 | **216** | 60 |
| **Total reserves loss 4/** | **131** | 35 | **216** | 60 |
| **Additional financing need 5/** | **25** | 22 | **138** | 48 |

1/ All changes are relative to the Spring 2008 WEO projection for 2009. See Appendix VI for details.

2/ This corresponds with the simulated combined shocks to exports, remittances, and FDI described in Section VI and Appendix V.

3/ The sum of the shocks to exports, FDI, remittances, and the price effects of food and fuel price changes (but excluding import responses).

4/ The total change in reserves for LICs with reserves losses.

5/ The total change in reserves for LICs with reserves coverage falling below 3 months of imports or by more than 0.5 months to less than 4 months.

Sources: WEO database, and Fund staff calculations.

- Since the projections incorporate some policy adjustment and import compression in response to the crisis, these shocks are projected to result in a loss of reserves in 35 LICs. The total decline in reserves (again, relative to the spring 2008 projection) for these countries amounts to US$131 billion.[32]
- In 22 LICs, reserves are now expected to fall below 3 months of imports.[33] The total reserves loss in these countries amounts to US$25 billion—equivalent to about 80 percent of the annual aid received by LICs over the past five years (based on OECD Development Assistance Committee data). This represents a minimal estimate of the additional financing need. Support on a larger scale would be needed to help countries avoid the procyclical adjustment that is assumed in the projections, including in countries that may not see significant balance of payments needs but face increased budgetary pressures. In addition, if the adverse shocks turn out to be larger than expected, more support would be needed, as shown in the "bad case" scenario.

## IX. Fund Support

*The Fund is working actively with its partner institutions and national authorities to assess the economic and balance of payments impact of the financial crisis on LICs, and assist them through policy advice, financing, and technical assistance.*

The Fund will provide financial support to LICs hit by the crisis in a manner that responds to their economic circumstances, the nature of the balance of payments problem, and their existing program relationship, if any, with the Fund:

[32]As the "bad case" scenario does not incorporate any policy responses, the reserve loss in this scenario equals the total balance of payments impact of the shocks.

[33]Also including cases where reserves fall by more than 0.5 month of imports, to less than 4 months.

- For countries with existing PRGF arrangements, an augmentation of the arrangement is generally the appropriate mechanism. In 2008, 11 such augmentations were granted in response to the food and fuel price shocks.
- For countries without an existing IMF arrangement, the revised Exogenous Shocks Facility (ESF) may be a suitable mechanism for IMF financing to the extent that the shock is of an exogenous nature. In December 2008 and January 2009, 5 countries benefited from support under the ESF.
- For countries with balance of payments needs that might require longer-term program engagement, a new PRGF arrangement may in principle be the most appropriate instrument, owing to its longer horizon and greater structural focus.
- The Fund has also launched a broad review of its financial facilities, including for LICs, to ensure its assistance is best tailored to its members' needs.

The Fund also has an important role to play in providing policy advice to members responding to a more demanding macroeconomic and financial environment. Surveillance may be particularly relevant as a tool for ex ante LIC crisis prevention/mitigation efforts and for those LICs that are not yet in a position to implement Fund-supported programs, and/or lack the capacity to absorb technical assistance.

In several areas, LICs are likely to need enhanced technical support. Most LICs face significant capacity constraints. The Fund, along with its partners, may need to scale up the provision of technical assistance (TA) to help LICs address the crisis and continue moving ahead with broader public and financial sector reforms. Concerning the latter, the Fund could help implement best practices in crisis management, balance sheet risk management, and debt and liquidity risk management. The upcoming FSAPs in the LICs could focus on these areas. Several countries have set up crisis management committees and technical groups, which the Fund can support. TA also plays an important role for members faced with the need to strengthen public expenditure management systems, enhance domestic revenue, and improve debt management.

## Appendix I. Countries Included in the Analysis

The group of LICs analyzed in the paper is formed by the 71 PRGF-eligible countries for which data were available, which include, by region:

### Sub-Saharan Africa

Angola, Benin, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Republic of Congo, Côte d'Ivoire, Djibouti, Eritrea, Ethiopia, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Maldives, Mali, Mauritania, Mozambique, Niger, Nigeria, Rwanda, São Tomé and Príncipe, Senegal, Sierra Leone, Somalia, Tanzania, Togo, Uganda, and Zambia.

### Middle East and Europe

Albania, Armenia, Azerbaijan, Georgia, Kyrgyz Republic, Moldova, Sudan, Tajikistan, Uzbekistan, Republic of Yemen.

### Asia

Afghanistan, Bangladesh, Bhutan, Cambodia, India, Lao People's Democratic Republic, Mongolia, Myanmar, Nepal, Pakistan, Papua New Guinea, Sri Lanka, Vietnam.

### Latin America

Bolivia, Dominica, Grenada, Guyana, Haiti, Honduras, Nicaragua, St. Lucia, St. Vincent and the Grenadines.

# Appendix II. The April 2008 WEO Projections and the Most Recent Updates

Table 1. Selected Economic Indicator Projections, Spring 2008, and Current Projection
(In percent average, unless otherwise indicated)

| | WEO Spring 2008 | | | | | | Current Projections | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | GDP growth | | Reserves (months of imports 1/) | | Current Acc. Balance 2/ in percent of GDP | | GDP growth | | Reserves (months of imports 1/) | | Current Acc.Balance 2/ in percent of GDP | |
| | 2008 | 2009 | 2008 | 2009 | 2008 | 2009 | 2008 | 2009 | 2008 | 2009 | 2008 | 2009 |
| Afghanistan, I.S. of | 8.6 | 8.4 | 3.2 | 3.1 | 0.0 | -1.0 | 3.6 | 7.7 | 3.2 | 3.5 | -2.8 | -2.3 |
| Albania | 6.0 | 6.1 | 3.9 | 3.8 | -8.3 | -5.5 | 6.0 | 3.7 | 4.8 | 4.1 | -10.0 | -7.5 |
| Angola | 16.0 | 13.2 | 6.1 | 7.3 | 12.0 | 11.8 | 12.2 | 4.6 | 4.1 | 3.1 | 5.8 | 1.3 |
| Armenia | 10.0 | 8.0 | 3.7 | 3.7 | -6.8 | -5.0 | 6.8 | 3.0 | 3.6 | 3.5 | -13.7 | -12.9 |
| Azerbaijan | 18.6 | 15.6 | 6.3 | 6.9 | 39.5 | 39.2 | 9.5 | 8.0 | 5.9 | 7.1 | 30.9 | 10.9 |
| Bangladesh | 5.5 | 6.5 | 2.4 | 2.4 | -0.5 | -0.7 | 5.0 | 5.3 | 2.7 | 2.7 | 0.7 | 0.5 |
| Benin | 5.4 | 5.7 | 8.2 | 7.9 | -6.1 | -6.0 | 5.1 | 3.6 | 7.5 | 6.9 | -9.6 | -8.3 |
| Bhutan | 7.8 | 6.7 | 10.7 | 10.8 | 9.5 | 2.3 | 6.6 | 5.7 | 11.9 | 11.7 | 11.7 | 2.8 |
| Bolivia | 4.7 | 5.0 | 9.8 | 10.3 | 12.3 | 8.6 | 5.9 | 4.0 | 14.9 | 14.2 | 11.0 | -4.3 |
| Burkina Faso | 4.0 | 6.3 | 5.4 | 4.9 | -11.5 | -10.7 | 4.5 | 4.0 | 6.0 | 5.4 | -11.3 | -9.5 |
| Burundi | 5.9 | 5.7 | 3.3 | 4.4 | -12.0 | -12.2 | 4.5 | 3.7 | 4.4 | 3.8 | -12.5 | -8.0 |
| Cambodia | 7.2 | 7.0 | 2.3 | 2.2 | -5.4 | -6.2 | 6.5 | 4.8 | 3.3 | 2.9 | -11.9 | -7.1 |
| Cameroon | 4.5 | 4.6 | 5.7 | 6.5 | 0.0 | -0.4 | 3.7 | 3.5 | 6.8 | 6.1 | 0.4 | -5.4 |
| Cape Verde | 7.7 | 7.4 | 3.4 | 3.5 | -11.6 | -12.8 | 6.0 | 5.0 | 3.1 | 3.2 | -13.0 | -12.7 |
| Central African Rep. | 4.9 | 5.0 | 1.6 | 1.7 | -6.4 | -6.7 | 2.8 | 3.0 | 3.4 | 2.5 | -8.7 | -7.2 |
| Chad | 1.8 | 2.5 | 3.8 | 4.4 | -2.2 | -4.0 | -0.4 | 3.6 | 5.6 | 3.5 | -9.5 | -19.6 |
| Comoros | 1.6 | 3.0 | 7.6 | 7.2 | -3.5 | -4.3 | 0.5 | 0.8 | 6.8 | 6.3 | -8.7 | -8.3 |
| Congo, Dem. Rep. of | 8.8 | 11.6 | 0.4 | 0.5 | -10.7 | -24.6 | 8.2 | 4.4 | 0.7 | 1.3 | -12.4 | -19.8 |
| Congo, Republic of | 9.2 | 10.6 | 7.8 | 14.3 | 6.0 | 10.9 | 7.6 | 10.3 | 8.3 | 7.1 | -0.8 | -18.1 |
| Côte d'Ivoire | 2.9 | 5.1 | 2.8 | 2.7 | 0.6 | -0.5 | 2.9 | 4.4 | 2.8 | 2.8 | 0.1 | -2.6 |
| Djibouti | 6.5 | 7.6 | 2.3 | 2.7 | -22.6 | -17.8 | 5.9 | 6.0 | 2.8 | 3.0 | -38.2 | -14.0 |
| Dominica | 3.5 | 3.0 | 3.5 | 3.5 | -26.6 | -23.9 | 2.6 | 1.5 | 6.6 | 6.7 | -30.1 | -24.4 |
| Eritrea | 1.2 | 2.0 | 2.1 | 1.7 | -5.1 | -5.5 | 1.2 | 1.6 | 1.1 | 0.9 | -2.7 | 1.1 |
| Ethiopia | 8.4 | 7.1 | 1.5 | 1.6 | -4.3 | -6.1 | 11.6 | 6.5 | 1.2 | 1.7 | -5.8 | -5.9 |
| Gambia, The | 6.5 | 6.5 | 3.8 | 4.0 | -12.1 | -10.9 | 5.5 | 6.0 | 4.5 | 4.2 | -13.9 | -12.5 |
| Georgia | 9.0 | 9.0 | 1.8 | 1.6 | -16.6 | -13.2 | 2.0 | 2.5 | 2.7 | 3.1 | -21.8 | -17.7 |
| Ghana | 6.9 | 7.5 | 1.7 | 1.5 | -9.8 | -7.9 | 6.5 | 4.0 | 1.8 | 0.6 | -20.2 | -15.9 |
| Grenada | 4.3 | 4.0 | 2.6 | 2.5 | -25.4 | -25.8 | 1.6 | 0.6 | 3.0 | 3.2 | -31.8 | -31.8 |
| Guinea | 4.9 | 5.2 | 1.4 | 2.1 | -10.9 | -9.8 | 4.7 | 4.1 | 1.5 | 2.0 | -4.1 | -2.6 |
| Guinea-Bissau | 3.2 | 3.1 | 7.4 | 8.1 | 7.0 | 2.8 | 3.2 | 3.1 | 6.1 | 6.8 | 0.2 | -11.6 |
| Guyana | 4.6 | 4.5 | 2.3 | 2.1 | -16.6 | -15.8 | 3.2 | 4.6 | 3.1 | 3.0 | -20.8 | -18.1 |
| Haiti | 3.7 | 4.0 | 2.0 | 2.1 | -1.3 | -2.5 | 1.3 | 2.5 | 3.1 | 2.8 | -2.6 | -4.4 |
| Honduras | 4.8 | 4.6 | 2.9 | 3.0 | -9.5 | -9.0 | 4.0 | 2.0 | 3.1 | 2.3 | -13.3 | -8.3 |
| India | 7.9 | 8.0 | 9.2 | 8.8 | -3.1 | -3.4 | 7.3 | 5.1 | 9.7 | 8.8 | -2.5 | -1.8 |
| Kenya | 2.5 | 3.4 | 3.2 | 3.0 | -5.5 | -3.8 | 2.0 | 3.0 | 3.2 | 3.5 | -6.6 | -2.7 |
| Kyrgyz Republic | 7.0 | 6.5 | 3.3 | 3.3 | -8.3 | -7.4 | 7.5 | 1.9 | 3.6 | 3.4 | -6.0 | -6.5 |
| Lao People's Dem.Rep | 7.9 | 8.2 | 2.2 | 2.5 | -21.7 | -15.5 | 6.8 | 4.8 | 3.1 | 2.2 | -15.1 | -11.9 |
| Lesotho | 5.2 | 5.4 | 7.8 | 8.5 | 5.0 | 4.5 | 3.9 | 2.1 | 6.7 | 5.9 | -3.7 | -8.5 |
| Liberia | 9.5 | 10.2 | 0.6 | 0.6 | -42.1 | -36.2 | 7.1 | 10.9 | 0.7 | 0.7 | -31.8 | -42.2 |
| Madagascar | 6.8 | 7.3 | 2.5 | 2.9 | -27.4 | -16.7 | 7.0 | 5.1 | 2.8 | 3.3 | -22.6 | -14.8 |
| Malawi | 7.1 | 6.2 | 1.9 | 2.4 | -2.9 | -4.4 | 8.0 | 6.6 | 0.9 | 1.3 | -8.0 | -4.6 |
| Maldives | 4.5 | 4.0 | 1.4 | 2.3 | -35.7 | -19.2 | 6.5 | 6.5 | 2.7 | 3.5 | -46.0 | -30.1 |
| Mali | 4.3 | 5.1 | 5.4 | 5.6 | -7.5 | -6.7 | 4.9 | 4.4 | 5.1 | 5.2 | -6.1 | -6.2 |
| Mauritania | 6.1 | 6.8 | 3.4 | 3.5 | -8.6 | -12.0 | 4.9 | 3.9 | 1.1 | 0.7 | -6.1 | -8.6 |
| Moldova | 7.0 | 8.0 | 3.2 | 3.6 | -10.3 | -10.6 | 6.5 | 3.5 | 3.3 | 3.1 | -18.9 | -19.2 |
| Mongolia | 8.7 | 8.1 | 4.4 | 4.5 | -17.1 | -17.6 | 9.8 | 5.0 | 2.3 | 2.3 | -9.2 | -7.1 |
| Mozambique | 7.0 | 7.0 | 4.2 | 4.5 | -11.3 | -10.3 | 6.2 | 5.5 | 4.9 | 4.8 | -12.7 | -11.8 |
| Myanmar | 4.0 | 4.0 | 3.8 | 3.8 | 2.9 | 2.0 | 4.5 | 5.0 | 0.7 | 0.7 | 3.3 | 1.3 |
| Nepal | 4.0 | 4.5 | 4.2 | 3.7 | 0.5 | 0.2 | 4.7 | 4.6 | 7.2 | 7.2 | 2.6 | 3.3 |
| Nicaragua | 4.0 | 4.2 | 1.4 | 0.8 | -24.8 | -24.4 | 3.0 | 1.5 | 2.7 | 2.8 | -23.6 | -17.7 |
| Niger | 4.4 | 4.5 | 3.4 | 3.3 | -9.7 | -14.0 | 5.9 | 4.5 | 3.9 | 3.1 | -9.9 | -22.6 |
| Nigeria | 9.1 | 8.3 | 14.8 | 18.7 | 6.5 | 5.7 | 5.3 | 3.3 | 14.2 | 10.3 | 5.0 | -10.7 |
| Pakistan | 6.0 | 6.7 | 3.2 | 3.1 | -6.9 | -6.1 | 5.8 | 2.0 | 2.4 | 2.8 | -8.4 | -4.7 |
| Papua New Guinea | 5.8 | 4.7 | 4.1 | 4.2 | 3.3 | 1.7 | 7.0 | 4.9 | 5.7 | 4.9 | 3.2 | -5.5 |
| Rwanda | 6.0 | 5.6 | 4.9 | 4.8 | -9.5 | -12.7 | 8.5 | 6.0 | 5.5 | 4.8 | -6.9 | -7.6 |
| São Tomé & Príncipe | 6.0 | 6.0 | 6.2 | 6.0 | -36.1 | -32.9 | 5.8 | 5.5 | 4.3 | 3.9 | -34.0 | -43.0 |
| Senegal | 5.4 | 5.9 | 3.7 | 3.8 | -10.3 | -11.1 | 3.9 | 4.5 | 3.5 | 3.6 | -12.4 | -10.4 |
| Sierra Leone | 6.5 | 6.5 | 3.4 | 3.7 | -6.4 | -5.9 | 5.5 | 5.0 | 3.6 | 3.5 | -6.8 | -4.5 |
| Sri Lanka | 6.4 | 5.6 | 2.5 | 2.5 | -5.7 | -4.9 | 6.0 | 3.8 | 1.6 | 1.5 | -7.7 | -5.9 |
| St. Lucia | 4.4 | 4.4 | 2.2 | 2.1 | -18.5 | -17.9 | 1.7 | -1.0 | 2.2 | 2.1 | -29.5 | -23.7 |
| St. Vincent & Grens. | 5.0 | 4.9 | 2.2 | 2.0 | -26.7 | -23.3 | 1.9 | 0.2 | 2.6 | 2.4 | -34.1 | -28.4 |
| Sudan | 7.6 | 12.7 | 1.5 | 2.9 | -9.8 | -5.6 | 8.5 | 6.0 | 1.4 | 1.5 | -7.0 | -10.0 |
| Tajikistan | 4.1 | 7.0 | 0.8 | 1.0 | -8.3 | -7.1 | 7.9 | 3.0 | 0.6 | 0.5 | -8.9 | -8.6 |
| Tanzania | 7.8 | 8.0 | 4.3 | 3.8 | -9.7 | -10.1 | 7.0 | 5.3 | 5.6 | 5.8 | -9.9 | -8.6 |
| Togo | 3.0 | 4.0 | 2.6 | 2.5 | -7.9 | -6.7 | 0.8 | 2.0 | 3.5 | 3.2 | -7.0 | -6.4 |
| Uganda | 7.1 | 7.0 | 6.4 | 6.1 | -7.7 | -9.3 | 9.5 | 6.0 | 7.5 | 6.9 | -6.1 | -7.9 |
| Uzbekistan | 8.0 | 7.5 | 16.1 | 17.6 | 24.6 | 20.8 | 9.1 | 7.0 | 10.5 | 11.3 | 13.5 | 7.3 |
| Vietnam | 7.3 | 7.3 | 2.6 | 2.3 | -13.6 | -11.9 | 6.2 | 4.8 | 4.5 | 3.6 | -10.3 | -8.2 |
| Yemen, Republic of | 4.1 | 8.1 | 10.8 | 10.5 | -1.4 | 0.9 | 3.9 | 7.7 | 13.2 | 11.6 | -2.1 | -2.8 |
| Zambia | 6.3 | 6.3 | 3.0 | 3.5 | -5.5 | -3.9 | 5.8 | 4.0 | 3.2 | 3.3 | -8.9 | -8.3 |

Sources: WEO database, and Fund staff calculations.
1/ Next year imports of goods and services.
2/ Including current transfers.

Table 1 continued. Selected Economic Indicator Projections, Spring 2008, and Current Projection
(In percent average, unless otherwise indicated)

| | WEO Spring 2008 | | | | | | Latest Projections | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | GDP growth | | Reserves (months of imports 1/) | | Current Acc. Bal. 2/ in percent of GDP | | GDP growth | | Reserves (months of imports 1/) | | Current Acc. Bal. 2/ in percent of GDP | |
| | 2008 | 2009 | 2008 | 2009 | 2008 | 2009 | 2008 | 2009 | 2008 | 2009 | 2008 | 2009 |
| All LICs | 6.2 | 6.4 | 4.2 | 4.5 | -7.7 | -7.3 | 5.4 | 4.3 | 4.4 | 4.2 | -9.6 | -10.2 |
| Sub-Saharan Africa | 5.9 | 6.3 | 4.3 | 4.8 | -7.7 | -7.9 | 5.3 | 4.6 | 4.3 | 3.9 | -8.9 | -11.0 |
| Asia | 6.5 | 6.4 | 4.0 | 4.0 | -6.7 | -5.7 | 6.2 | 5.0 | 4.4 | 4.2 | -6.6 | -5.5 |
| Middle East and Europe | 8.0 | 8.7 | 4.9 | 5.2 | -2.6 | -1.0 | 6.7 | 4.8 | 4.8 | 4.8 | -7.5 | -7.4 |
| Latin American countries | 4.3 | 4.3 | 3.2 | 3.1 | -15.2 | -14.9 | 2.8 | 1.8 | 4.6 | 4.4 | -19.4 | -17.9 |
| Net Oil importers | 5.9 | 6.0 | 3.5 | 3.6 | -10.9 | -10.1 | 5.2 | 4.1 | 3.8 | 3.6 | -12.7 | -11.3 |
| Net Oil exporters | 7.3 | 7.9 | 6.5 | 7.5 | 3.4 | 2.3 | 5.9 | 5.1 | 6.7 | 6.0 | 0.8 | -6.5 |
| Countries according to their per capita income | | | | | | | | | | | | |
| top 25% | 7.7 | 7.0 | 4.0 | 4.5 | -9.3 | -7.6 | 5.5 | 3.9 | 4.2 | 4.1 | -13.7 | -13.6 |
| mid 50% | 5.5 | 6.3 | 4.8 | 5.0 | -6.3 | -5.9 | 5.1 | 4.1 | 5.0 | 4.6 | -8.0 | -8.7 |
| bottom 25% | 6.0 | 6.2 | 3.3 | 3.4 | -8.8 | -9.5 | 5.9 | 5.2 | 3.5 | 3.4 | -8.7 | -9.8 |

Sources: WEO database, and Fund staff calculations.

1/ Next year imports of goods and services.

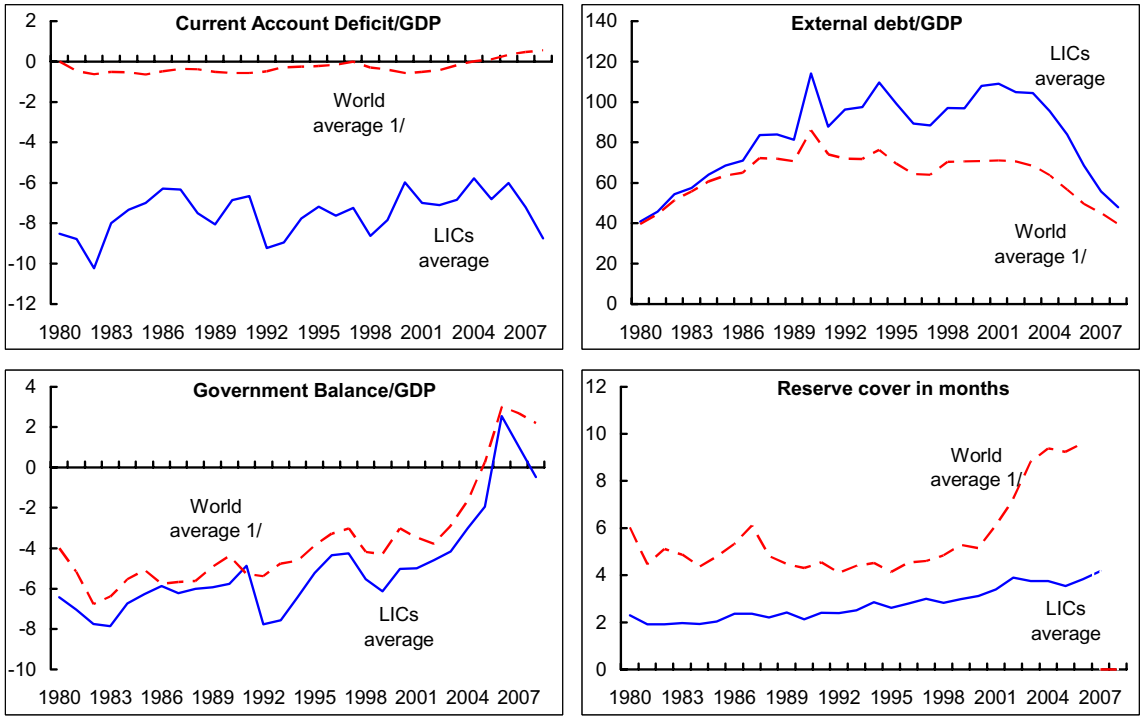
2/ Including current transfers.

Table 2. Inflation Projections, Spring 2008, and Current Projection
(In percent, median)

| | WEO Spring 2008 | | Latest Projections | |
|---|---|---|---|---|
| | 2008 | 2009 | 2008 | 2009 |
| All LICs | 7.1 | 6.0 | 11.2 | 7.8 |
| Sub-Saharan Africa | 6.7 | 5.3 | 10.2 | 6.4 |
| Asia | 8.8 | 6.0 | 13.5 | 8.2 |
| Middle East and Europe | 10.3 | 7.9 | 14.4 | 8.7 |
| Latin American countries | 6.2 | 6.5 | 9.9 | 6.9 |
| Net Oil importers | 7.0 | 6.0 | 10.8 | 6.9 |
| Net Oil exporters | 8.3 | 7.3 | 11.8 | 8.2 |
| Countries according to their per capita income | 0.0 | 0.0 | 0.0 | 0.0 |
| top 25% | 6.0 | 4.5 | 9.0 | 4.5 |
| mid 50% | 8.5 | 6.1 | 12.0 | 7.9 |
| bottom 25% | 8.0 | 6.4 | 11.2 | 9.8 |

Sources: WEO database, and Fund staff calculations.

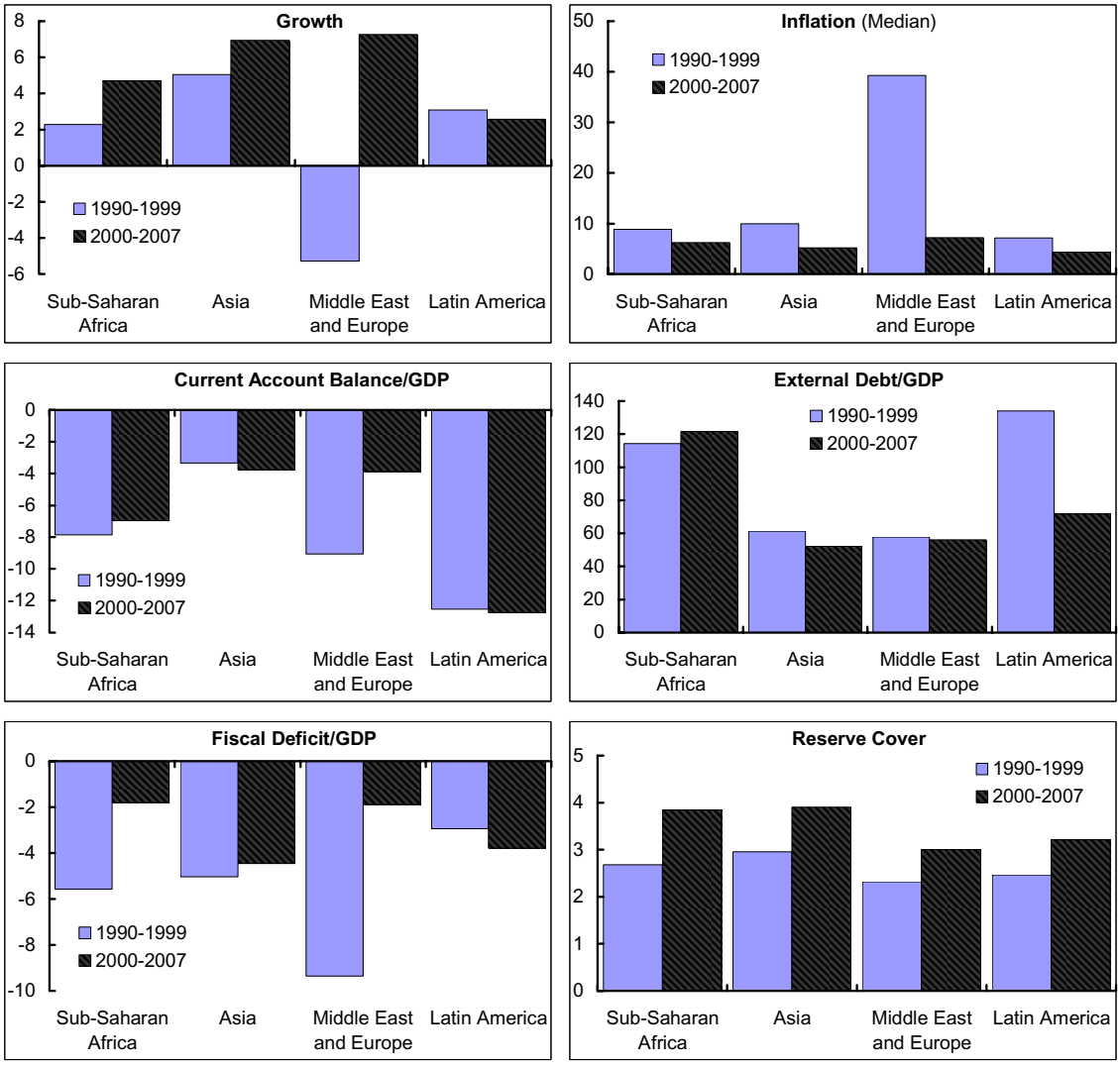
**Figure 1. Selected Indicators; LICs versus the World, 1980-2008;1/ Current Projection**




Sources: WEO, and World Bank WDI databases.

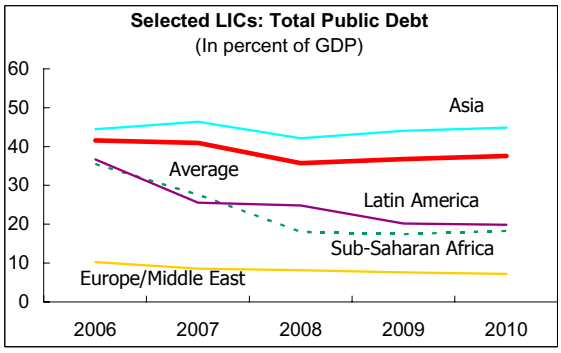
1. Emerging and developing countries.

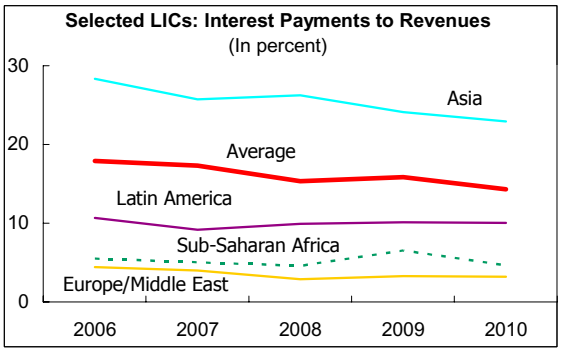
**Figure 2. Selected Indicators; LICs by Regions**
(Period averages, in percent, unless otherwise indicated)

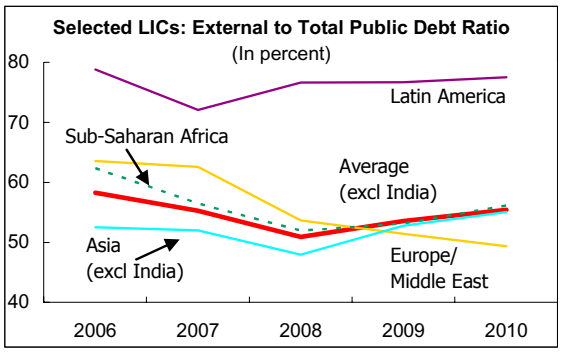



Sources: WEO database, and Fund staff calculations.

# Appendix III. Selected Debt Indicators




Source: WEO database.

## Appendix IV. Debt Simulations

**The global slowdown could have potentially important implications for LIC debt sustainability.** The magnitude of these implications is highly uncertain. Accordingly, this section presents the details on the simulation to analyze LICs' risk of debt distress. The debt simulations for 2009 assume reduced investment expenditure financing from aid, and FDI is replaced with public external borrowing (the reductions in aid and FDI in this simulation are identical to those in the simulations of Appendix V). Debt levels are measured relative to GDP and the corresponding debt service relative to exports. A country is considered at high risk of debt distress if these ratios exceed their corresponding thresholds.[34] In order to provide a broad range of results for each country, the simulations comprise two scenarios — one where new debt is contracted under nonconcessional terms and the other under concessional terms.[35]

**The results of this appendix are for illustrative purposes only and should not be considered as actual debt projections at the country level.** The final impact of the global slowdown is highly dependent on policy responses and domestic factors, as well as on the interaction of different shocks. In addition, the magnitude of the shocks to FDI and aid in the simulations, and consequently any public debt that replaces these financing sources, is not based on a projection of likely developments.

**The risks to debt sustainability posed by the current financial crisis vary depending on initial conditions (Table 1).** The debt simulations for 2009 assume that reduced investment expenditure financing from aid and FDI is replaced with public external borrowing. Relative to GDP, the simulated increase in public external borrowing during one year adds 4 percent of GDP to the average LIC debt burden. For countries with already high debt levels, this further raises risks of debt distress. Moreover for some of the poorest LICs, aid represents a large portion of GDP. Consequently, replacing public debt for a portion of that aid significantly increases their already high debt burden. A handful of countries that were previously on the verge of high risk of debt distress become so as a result of the simulation. At the same time, with few exceptions, LICs with sustainable debt prior to the crisis would continue to avoid high risk of debt distress.

**The results also illustrate the importance of new borrowing being on concessional terms.** The distinction between concessional and nonconcessional debt has an important impact on the debt service burden.

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[34]The thresholds are commensurate with those applied in World Bank/IMF debt sustainability analysis for LICs and are designed to correspond to the World Bank's Country Performance and Institutional Assessment ratings.

[35]Commercial interest rates are assumed to be 8 percent, consistent with the World Bank/IMF debt sustainability analysis assumptions, and concessional rates are assumed to be on IDA terms.

**Appendix IV. Table 1. Debt Implications 1/**

| | Debt in percent of GDP | | | | Debt Service in percent of Exports of Goods and Services | | | | High Risk of Debt Distress Measured by Debt/GDP | | | High Risk of Debt Distress Measured by Debt Service/Exports | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2008 proj. | 2009 proj. | 2009 simul. | | 2008 proj. | 2009 proj. | 2009 simul. | | 2008 proj. | 2009 simul. | | 2008 proj. | 2009 simul. | |
| | | | Conc. 2/ | Non-Conc. 2/ | | | Conc. 2/ | Non-Conc. 2/ | | Conc. 2/ | Non-Conc. 2/ | | Conc. 2/ | Non-Conc. 2/ |
| Afghanistan, I.R. of | . | . | . | . | . | . | . | . | | | | | | |
| Albania | 17 | 18 | 19 | 19 | 8 | 9 | 9 | 10 | | | | | | |
| Angola | 10 | 15 | 13 | 13 | 3 | 6 | 6 | 7 | | | | | | |
| Armenia | 14 | 16 | 16 | 16 | 2 | 3 | 3 | 4 | | | | | | |
| Azerbaijan | 6 | 10 | 6 | 6 | 1 | 2 | 2 | 2 | | | | | | |
| Bangladesh | 24 | 24 | 25 | 25 | 5 | 5 | 5 | 5 | | | | | | |
| Benin | 12 | 14 | 16 | 16 | 5 | 5 | 5 | 7 | | | | | | |
| Bhutan | 65 | 64 | 69 | 69 | 15 | 15 | 15 | 16 | 1 | 1 | 1 | | | |
| Bolivia | 19 | 21 | 20 | 20 | 6 | 9 | 9 | 10 | | | | | | |
| Burkina Faso | 19 | 22 | 22 | 22 | 6 | 5 | 5 | 8 | | | | | | |
| Burundi | 127 | 27 | 132 | 132 | 3 | 2 | 2 | 7 | 1 | 1 | 1 | | | |
| Cambodia | 26 | 26 | 31 | 31 | 0 | 1 | 1 | 1 | | 1 | 1 | | | |
| Cameroon | 6 | 8 | 7 | 7 | 8 | 10 | 10 | 10 | | | | | | |
| Cape Verde | 55 | 56 | 61 | 61 | 8 | 7 | 7 | 8 | 1 | 1 | 1 | | | |
| Central African Rep. | 50 | 50 | 52 | 52 | 9 | 11 | 11 | 12 | 1 | 1 | 1 | | | |
| Chad | 19 | 24 | 23 | 23 | 3 | 4 | 4 | 5 | | | | | | |
| Comoros | 47 | 48 | 50 | 50 | 13 | 10 | 11 | 12 | 1 | 1 | 1 | | | |
| Congo, Dem. Rep. of | 87 | 23 | 93 | 93 | 4 | 7 | 7 | 9 | 1 | 1 | 1 | | | |
| Congo, Republic of | 50 | 68 | 57 | 57 | 5 | 6 | 6 | 7 | 1 | 1 | 1 | | | |
| Côte d'Ivoire | 83 | 80 | 84 | 84 | 9 | 12 | 12 | 12 | 1 | 1 | 1 | | | |
| Djibouti | 64 | 65 | 76 | 76 | 7 | 13 | 13 | 15 | 1 | 1 | 1 | | | |
| Dominica | 59 | 56 | 68 | 68 | -26 | -24 | -24 | -22 | 1 | 1 | 1 | | | |
| Eritrea | 59 | 57 | 61 | 61 | 25 | 24 | 24 | 25 | 1 | 1 | 1 | 1 | 1 | 1 |
| Ethiopia | 11 | 14 | 14 | 14 | 1 | 3 | 3 | 5 | | | | | | |
| Gambia, The | 44 | 46 | 47 | 47 | 24 | 24 | 24 | 25 | 1 | 1 | 1 | 1 | 1 | 1 |
| Georgia | 34 | 39 | 39 | 39 | 15 | 24 | 24 | 25 | | | | | | 1 |
| Ghana | 37 | 42 | 41 | 41 | 3 | 3 | 3 | 4 | | | | | | |
| Grenada | 78 | 77 | 86 | 86 | 15 | 18 | 18 | 20 | 1 | 1 | 1 | | | |
| Guinea | 67 | 21 | 69 | 69 | 20 | 10 | 10 | 11 | 1 | 1 | 1 | 1 | | |
| Guinea-Bissau | 235 | 224 | 243 | 243 | 11 | 427 | 427 | 429 | 1 | 1 | 1 | | 1 | 1 |
| Guyana | 80 | 89 | 89 | 89 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Haiti | 23 | 26 | 27 | 27 | 6 | 9 | 9 | 11 | | | | | | |
| Honduras | 17 | 16 | 20 | 20 | 2 | 2 | 2 | 2 | | | | | | |
| India | 19 | 19 | 19 | 19 | 7 | 7 | 7 | 7 | | | | | | |
| Kenya | 19 | 19 | 20 | 20 | 5 | 4 | 4 | 4 | | | | | | |
| Kyrgyz Republic | 52 | 49 | 55 | 55 | 3 | 4 | 4 | 5 | 1 | 1 | 1 | | | |
| Lao People's Dem. Rep. | 98 | 104 | 105 | 105 | 14 | 16 | 17 | 18 | 1 | 1 | 1 | | 1 | 1 |
| Lesotho | 39 | 38 | 52 | 52 | 3 | 5 | 5 | 7 | | 1 | 1 | | | |
| Liberia | 475 | 468 | 490 | 490 | 0 | 0 | 0 | 4 | | | | | | |
| Madagascar | 25 | 29 | 30 | 30 | 2 | 4 | 4 | 5 | | | | | | |
| Malawi | 17 | 18 | 22 | 22 | 4 | 4 | 4 | 5 | | | | | | |
| Maldives | 83 | 92 | 90 | 90 | 9 | 10 | 10 | 10 | 1 | 1 | 1 | | | |
| Mali | 22 | 25 | 23 | 23 | 3 | 4 | 4 | 4 | | | | | | |
| Mauritania | 57 | 60 | 60 | 60 | . | . | . | . | 1 | 1 | 1 | | | |
| Moldova | 44 | 49 | 48 | 48 | 14 | 15 | 15 | 15 | 1 | 1 | 1 | | | |
| Mongolia | 35 | 47 | 40 | 40 | 3 | 4 | 4 | 5 | | | | | | |
| Mozambique | 52 | 52 | 66 | 66 | 19 | 28 | 29 | 33 | 1 | 1 | 1 | | 1 | 1 |
| Myanmar | 28 | 27 | 28 | 28 | 3 | 4 | 4 | 4 | | | | | | |
| Nepal | 28 | 29 | 29 | 29 | 9 | 9 | 9 | 10 | | | | | | |
| Nicaragua | 69 | 54 | 75 | 75 | 10 | 9 | 9 | 10 | 1 | 1 | 1 | | | |
| Niger | 14 | 17 | 19 | 19 | 12 | 11 | 11 | 13 | | | | | | |
| Nigeria | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 4 | | | | | | |
| Pakistan | 27 | 32 | 28 | 28 | 14 | 12 | 13 | 13 | | | | | | |
| Papua New Guinea | 20 | 18 | 21 | 21 | 6 | 8 | 8 | 8 | | | | | | |
| Rwanda | 15 | 15 | 21 | 21 | 3 | 2 | 3 | 7 | | | | | | |
| São Tomé & Príncipe | 70 | 50 | 88 | 88 | . | . | . | . | 1 | 1 | 1 | | | |
| Senegal | 38 | 44 | 41 | 41 | 5 | 8 | 8 | 9 | | 1 | 1 | | | |
| Sierra Leone | 17 | 16 | 20 | 20 | 1 | 2 | 2 | 3 | | | | | | |
| Somalia | . | . | . | . | . | . | . | . | | | | | | |
| Sri Lanka | 43 | 42 | 44 | 44 | . | . | . | . | 1 | 1 | 1 | | | |
| St. Lucia | 44 | 46 | 49 | 49 | 8 | 8 | 8 | 9 | | | | | | |
| St. Vincent & Grens. | 0 | . | 7 | 7 | 16 | 18 | 18 | 20 | | | | | | |
| Sudan | 58 | 65 | 61 | 61 | 4 | 11 | 11 | 13 | 1 | 1 | 1 | | | |
| Tajikistan | 45 | 46 | 46 | 46 | 86 | 32 | 32 | 33 | 1 | 1 | 1 | 1 | 1 | 1 |
| Tanzania | 34 | 34 | 38 | 38 | 1 | 1 | 2 | 3 | | | | | | |
| Togo | 64 | 62 | 66 | 66 | 2 | 4 | 4 | 4 | 1 | 1 | 1 | | | |
| Uganda | 13 | 15 | 16 | 16 | 3 | 3 | 3 | 4 | | | | | | |
| Uzbekistan | 14 | 13 | 14 | 14 | 6 | 7 | 7 | 7 | | | | | | |
| Vietnam | 30 | 33 | 37 | 37 | 3 | 5 | 5 | 6 | | | | | | |
| Yemen, Republic of | 22 | 22 | 23 | 23 | 2 | 3 | 3 | 4 | | | | | | |
| Zambia | 6 | 7 | 8 | 8 | 1 | 2 | 2 | 3 | | | | | | |
| All LICs | 48 | 46 | 52 | 52 | 8 | 14 | 14 | 15 | 28 | 31 | 31 | 4 | 6 | 7 |
| SSA | 55 | 50 | 60 | 60 | 6 | 18 | 18 | 20 | 15 | 17 | 17 | 3 | 4 | 4 |
| Asia | 37 | 40 | 40 | 40 | 6 | 7 | 7 | 7 | 4 | 5 | 5 | 0 | 1 | 1 |
| Middle East/Europe | 31 | 33 | 34 | 34 | 12 | 10 | 10 | 11 | 5 | 5 | 5 | 1 | 1 | 2 |
| Latin America | 43 | 43 | 49 | 49 | 4 | 5 | 5 | 7 | 4 | 4 | 4 | 0 | 0 | 0 |
| Net oil importers | 52 | 51 | 57 | 57 | 8 | 16 | 16 | 18 | 22 | 25 | 25 | 4 | 6 | 7 |
| Net oil exporters | 33 | 32 | 36 | 36 | 5 | 7 | 7 | 8 | 6 | 6 | 6 | 0 | 0 | 0 |
| Countries with top 25% per capita income | 41 | 47 | 45 | 45 | 5 | 7 | 7 | 8 | 8 | 8 | 8 | 0 | 0 | 1 |
| Countries with mid 50% per capita income | 37 | 36 | 40 | 40 | 9 | 8 | 8 | 9 | 13 | 16 | 16 | 2 | 2 | 2 |
| Countries with bottom 25% per capita income | 77 | 67 | 82 | 82 | 7 | 33 | 33 | 35 | 7 | 7 | 7 | 2 | 4 | 4 |

1/ Reduced FDI and aid, relative to 2008, are assumed to be fully replaced by external debt (private and public) value to obtain 2009 simulations.
FDI and aid are each reduced by 30 percent of their 2008 value to obtain 2009 simulations.
2/ Conc. (non-conc) indicates the scenario with concessional (non-concessional) borrowing in 2009.
Sources: WEO database, and Fund staff calculations.

## Appendix V. Simulation Results

**While the global slowdown is spreading worldwide, LICs are expected to witness serious macroeconomic effects, with important balance of payments repercussions**. The magnitude of these repercussions is highly uncertain. Accordingly, this section presents an overall assessment of the LICs' short-run vulnerabilities to the global downturn, incorporating in part LIC vulnerabilities resulting from a combination of simulated shocks. The details of various simulation channels to analyze LICs' short-run balance of payments vulnerabilities to the global downturn are also presented. The balance of payments simulations relate to the channels highlighted in the second part of Section IV. The simulation exercises of possible shocks to trade, remittances, FDI, and aid presented here are consistent with the methodology applied to the analysis of the food and fuel price shocks in IMF (2008b).

**The overall vulnerability assessment for LICs analyzes LICs' short-run vulnerabilities to the global downturn on the basis of both its effects in the current baseline projections and the simulation exercise.** The current baseline projections used in this exercise are for real GDP growth and reserves in months of imports.[36] The simulation is a simple partial equilibrium exercise to assess the immediate impact on the balance of payments and reserves of the assumed shocks: the trade balance (as a result of lower world market prices and export volumes), remittances, FDI, and aid. The exercises do not incorporate further effects on growth or demand. The overall vulnerability assessment ranks countries in three vulnerability categories—high (H), medium (M), or low (L). A country is considered to have high overall vulnerability when the current baseline projects a sizable decline in real GDP growth and reserves in conjunction with significant vulnerability in the shock simulation.[37] For the shock simulation and each of its individual channels, countries are also ranked in three vulnerability categories—high (H), medium (M), or low (L)—depending on the impact of these shocks expressed in terms of the import coverage of reserves. The H category encompasses countries that had a reserve coverage of less than three months of imports in 2008 and could lose more than an extra 0.5 month in the shock scenario.[38] While three months of import coverage is a standard benchmark, actual vulnerabilities depend on a range of factors, in particular the

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[36]In these exercises, reserve coverage is measured in terms of current year imports rather than the following year imports (the regular measure), as the latter would have required assumptions on import in 2010, and thus on the permanency and growth effects of the shocks, which goes beyond the scope of this paper.

[37]A reduction in excess of 2.5 percent of GDP is considered a large reduction in projected real GDP. A moderate decline in real GDP could correspond to a 0.5 percent drop. A large reduction in reserves in months of imports is a decline in excess of 0.5 month of imports. Any reduction below this would be considered moderate.

[38]Countries in the M category either start with more than 3 months of export coverage and lose more than 0.5 in the shock, or start below 3 months of coverage and lose less than 0.5 month with the shock. In the L bracket, countries start with more than 3 months of import coverage and lose less than 0.5 in the shock scenario. For members of the CFA zone, the weight of reserves adequacy was reduced.

exchange rate regime. Accordingly, the simple methodology presented here offers only a crude approximation of the country-specific vulnerabilities.

**Stressing the limitations of the partial analysis conducted here, the results of this appendix should not be considered as actual projections at the country level.** The final impact of the global slowdown is highly dependent on policy responses and domestic factors, as well as on the interaction of different shocks. In addition, the magnitude of the shocks in the simulations is not based on a projection of likely developments. Therefore, the results presented in this appendix should be considered only for illustrative purposes.

## Overall Vulnerability

**About 30 percent of LICs could be considered highly vulnerable to the consequences of global financial crisis (Table 1).** About 50 percent of these highly vulnerable countries are in sub-Saharan Africa (SSA). The majority of the highly vulnerable countries face sizable declines in projected GDP, some in excess of 5 percent. About 60 percent of the countries are also found to be highly vulnerable to the simulated shock. More than half of the countries with high vulnerabilities resulting from the simulated shock are also in SSA (Table 2). Details on the individual channels that comprise the shock to the balance of payments are provided in the remainder of this appendix.

## Trade

**The analysis of the potential impact of the trade channel is summarized in one shock combining several commodities' shock simulations together and in an alternative trade shock resulting from increased oil prices.** In the combined shock, the commodities are oil, other commodities, food, other exports, and services exports. The shock simulations are a partial equilibrium exercise and the impact of all shocks affects exports through prices or volumes. The oil, other commodities, and food shocks are channeled through a decrease in international prices. The shock simulates a return of the prices from their average 2008 levels to their 1995–2007 averages. For manufactured exports and services, the impact of the crisis is expected to be channeled through a decrease in volumes. LICs are assumed to be price takers and the estimated drop in value as a result of the shock can be attributed entirely to the drop in the volume of exports resulting from lower global demand. The shocks are simulated as a 10 percent drop in the value of exports in line with an assumed drop in demand in trading partners. In LICs exports of services largely fall into two categories: transportation (e.g., for countries with an active port that act as regional hubs) and tourism. Tourism receipts are expected to be significant only in a handful of LICs, while the majority of services receipts are in the transport sector, i.e., trade-related.

**The combined trade shock (Table 3) points to the vulnerability of LICs in our sample to the trade channel, where about a fifth of all countries were found to be highly vulnerable.** The overall vulnerability seems to reflect regional concentration in Africa,

where over 40 percent of the countries fall in the highly vulnerable group, and the country's per capita income. Operating a fixed exchange rate regime seems to contribute to a country's vulnerability, where a larger portion of LICs in that category (39 percent) appear to be highly vulnerable compared with the floaters (29 percent).

**The simulation of an increase in oil prices (Table 4) shifts most of the countries in our sample from the low-vulnerability category into that of high vulnerability, where about 60 percent of LICs would fall.** In this scenario, LICs in all regions are highly vulnerable, particularly oil importers. Contrary to the scenario where oil prices drop to historical average, the exchange rate arrangement does not appear to insulate the country from the impact of an increase in oil prices, where fixers and floaters appear equally vulnerable. The lowest per capita income category would be the hardest hit as over 70 percent of them become highly vulnerable.

## Technical Summary

### *Combined Trade Shock*

This combined trade shock adds all the below-mentioned shocks, including a decrease in international oil prices.

- Oil Price Decrease: The shock simulates a return of the prices from their average 2008 levels (US$97 per barrel) to their 1995–2007 average (US$32.5 per barrel).
- Food Price Shock: The shock simulates a drop in food commodity prices from their 2008 level to their 1995–2007 average level, about 35 percent on average. Consistent estimates of food imports/exports for all LICs are not directly available. Therefore, values of individual food commodity imports/exports for 2002–04[39] are extrapolated using the change in each individual commodity price and real GDP growth to estimate food imports/exports in 2008. This methodology suffers shortcomings because it assumes commodity volumes are a linear function of GDP growth. However, it ensures a consistent definition of food imports across countries.[40]
- Non-oil, Non-food Commodities Shock[41]: The shock simulates a drop in commodity prices from their 2008 level to their 1995–2007 average level, about 52 percent lower

[39]Computed by the IMF's Research Department based on WITS and desk data for the terms of trade exercise.

[40]Note that food imports can be defined in many ways. This paper looks at food commodity imports and excludes processed or industrial food since the consumption of such products is likely to be small in LICs. The following commodities are included in our food definition: bananas, barley, beef, fish, fishmeal, groundnuts, lamb, maize, olive oil, oranges, palm oil, poultry, rapeseed oil, rice, shrimp, soy meal, soy oil, soybeans, sugar, sunflower/safflower oil, pork, and wheat.

[41]Other commodities comprises coffee, cocoa, tea, hardwood log, hardwood sawn, softwood log, softwood sawn, cotton, wool, natural rubber, hides, aluminum, copper, lead, tin, zinc, iron, nickel, uranium, gold, natural gas, and coal.

on average. As for food imports/exports, we estimate non-oil commodity exports by extrapolating their 2002–04 values by the change in each individual commodity price and real GDP growth.

- Drop in Other Exports: Other exports (non-food, non-commodity exports) include manufactured products. The shock simulates a 10 percent drop in value.
- Services Shock: The shock simulates a 10 percent drop in value.
- Total Trade Shock. The total trade shock adds all the above-mentioned shocks, including a *decrease* in international oil prices.

#### *Oil Price Increase*

The shock simulates a 25 percent increase in oil prices from their average 2008 level (US$97 per barrel), to about US$125 per barrel.

### Remittances

**The shock of a sudden reduction in remittances is calibrated for each region, and takes into account both direct and indirect effects on the balance of payments.** For each region, the shock was calibrated as half of the decline that is necessary to reduce 2009 remittances to the average remittances during 2000–05. Then, within regions, the shock was applied uniformly to all countries. This implied a reduction of 36 percent for African LICs, 25 percent for Asian LICs, 24 percent for European LICs, 28 percent for Middle East/Europe LICs, and 30 percent for Latin America LICs. By considering only half of the decline, instead of the total decline, the proposed methodology acknowledges that a reduction in remittances will not only lead to a direct worsening of the balance of payments and hence reserves, but also to an indirect improvement as remittances-related imports might decline.

**The simulations reveal that around 50 percent of LICs could face a vulnerable balance of payments situation as a result of a sudden decline in remittances (Table 5).** Across regions, Latin America would be most severely impacted, where almost 90 percent of LICs would have reserves under 3 months of imports. In the rest of the regions, except for Africa, 20 percent of the countries would have reserves under 3 months of imports. In Africa, almost 50 percent of the countries could be vulnerable under this metric. Out of all LICs in our sample, just 20 percent of them would lose reserves in excess of half a month worth of imports.

### FDI

**A sudden reduction in FDI is assumed to have both direct and indirect effects on the balance of payments.** The FDI simulations entail a shock reducing 2009 FDI to the average FDI during 2000–05, equivalent to a 30 percent reduction in 2008 FDI. The shock was

applied uniformly to all LICs in our sample. Given that a significant portion of FDI is often spent on imports, imports were also assumed to decline.[42] Consequently, the balance of payments, and hence reserves, were worsened by the nominal amount of the FDI reduction and improved by the FDI-related import reduction.

**Over 50 percent of LICs could face a vulnerable balance of payments situation resulting from suddenly reduced FDI—a consequence of global financial crisis (Table 6).** LICs in Latin America would be most severely impacted, where almost 90 percent of them would have reserves under 3 months of imports. In the rest of the world, 60 percent of LICs would face reserves under 3 months of imports. About 10 percent of Asia's LICs would face a decline of over 0.5 month of imports.

## Aid

**A substantial decline in aid could result in a vulnerable balance of payments situation in over 50 percent of LICs (Table 7).** The aid simulations for 2009 assume aid will be reduced by 30 percent relative to its 2008 value. This is equivalent to the average aid reduction for the three countries currently projecting the largest aid reductions for 2009. When aid is reduced by 30 percent, almost 90 percent of LICs in Latin America would have reserves under 3 months of imports. Meanwhile, 60 percent of LICs in the rest of the world would have reserves under 3 months of imports. Out of all LICs in our sample, over 40 percent of them would lose reserves in excess of half a month of imports.

[42]The marginal propensity of FDI-related imported expenditure is assumed to be 0.5. Consequently FDI-related imports are expected to decline relative to FDI-imports of 2008. No such offset is included for the other shocks.

**Appendix V. Table 1. Vulnerability Table**

| | Real GDP Growth | Reserves (in Months of Imports) | Vulnerability Score | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2009 current less Spring WEO proj. 1/ | 2009 less 2008 2/ | Simul. 3/ 4/ | | | Overall Assessment 4/ | | |
| Afghanistan, I.R. of | -0.7 | 0.3 | H | | | M | | |
| Albania | -2.4 | -0.7 | M | | | H | | |
| Angola | -8.6 | -1.0 | M | | | H | | |
| Armenia | -5.0 | -0.1 | M | | | H | | |
| Azerbaijan | -7.6 | 1.2 | M | | | M | | |
| Bangladesh | -1.2 | 0.0 | M | | | M | | |
| Benin | -2.0 | -0.6 | L | | | M | | |
| Bhutan | -1.0 | -0.2 | L | | | L | | |
| Bolivia | -1.0 | -0.7 | L | | | L | | |
| Burkina Faso | -2.3 | -0.6 | M | | | M | | |
| Burundi | -2.0 | -0.6 | M | | | H | | |
| Cambodia | -2.2 | -0.4 | M | | | M | | |
| Cameroon | -1.1 | -0.7 | M | | | M | | |
| Cape Verde | -2.4 | 0.1 | M | | | M | | |
| Central African Rep. | -2.0 | -0.9 | H | | | H | | |
| Chad | 1.1 | -2.1 | M | | | M | | |
| Comoros | -2.2 | -0.5 | M | | | M | | |
| Congo, Dem. Rep. of | -7.3 | 0.6 | H | | | H | | |
| Congo, Republic of | -0.3 | -1.2 | M | | | M | | |
| Côte d'Ivoire | -0.7 | 0.0 | H | | | H | | |
| Djibouti | -1.5 | 0.2 | H | | | H | | |
| Dominica | -1.5 | 0.1 | M | | | M | | |
| Eritrea | -0.4 | -0.1 | M | | | M | | |
| Ethiopia | -0.6 | 0.6 | H | | | M | | |
| Gambia, The | -0.5 | -0.3 | L | | | L | | |
| Georgia | -6.5 | 0.5 | M | | | M | | |
| Ghana | -3.4 | -1.2 | M | | | H | | |
| Grenada | -3.4 | 0.2 | M | | | M | | |
| Guinea | -1.1 | 0.5 | H | | | M | | |
| Guinea-Bissau | 0.0 | 0.7 | M | | | L | | |
| Guyana | 0.1 | 0.0 | M | | | M | | |
| Haiti | -1.5 | -0.3 | H | | | H | | |
| Honduras | -2.6 | -0.7 | M | | | H | | |
| India | -2.8 | -1.0 | L | | | M | | |
| Kenya | -0.4 | 0.4 | M | | | L | | |
| Kyrgyz Republic | -4.6 | -0.1 | M | | | H | | |
| Lao People's Dem. Rep. | -3.4 | -0.9 | M | | | H | | |
| Lesotho | -3.3 | -0.8 | M | | | H | | |
| Liberia | 0.7 | 0.0 | H | | | H | | |
| Madagascar | -2.2 | 0.5 | M | | | M | | |
| Malawi | 0.5 | 0.5 | H | | | M | | |
| Maldives | 2.5 | 0.8 | M | | | L | | |
| Mali | -0.7 | 0.1 | M | | | L | | |
| Mauritania | -2.8 | -0.3 | H | | | H | | |
| Moldova | -4.5 | -0.2 | M | | | H | | |
| Mongolia | -3.1 | 0.0 | M | | | H | | |
| Mozambique | -1.5 | -0.1 | M | | | M | | |
| Myanmar | 1.0 | 0.7 | M | | | L | | |
| Nepal | 0.1 | 0.0 | M | | | L | | |
| Nicaragua | -2.7 | 0.1 | M | | | M | | |
| Niger | 0.0 | -0.8 | M | | | M | | |
| Nigeria | -5.0 | -3.9 | M | | | H | | |
| Pakistan | -4.7 | 0.4 | M | | | M | | |
| Papua New Guinea | 0.2 | -0.9 | H | | | H | | |
| Rwanda | 0.4 | -0.7 | M | | | M | | |
| São Tomé & Príncipe | -0.5 | -0.4 | M | | | M | | |
| Senegal | -1.4 | 0.1 | M | | | L | | |
| Sierra Leone | -1.5 | -0.1 | M | | | M | | |
| Somalia | . | . | . | | | . | | |
| Sri Lanka | -1.8 | -0.2 | M | | | M | | |
| St. Lucia | -5.4 | -0.1 | M | | | H | | |
| St. Vincent & Grens. | -4.7 | -0.2 | M | | | H | | |
| Sudan | -6.7 | 0.2 | H | | | H | | |
| Tajikistan | -4.0 | 0.0 | H | | | H | | |
| Tanzania | -2.7 | 0.1 | M | | | M | | |
| Togo | -2.0 | -0.3 | M | | | M | | |
| Uganda | -1.0 | -0.6 | L | | | L | | |
| Uzbekistan | -0.5 | 0.8 | L | | | L | | |
| Vietnam | -2.5 | -0.9 | M | | | H | | |
| Yemen, Republic of | -0.5 | -1.6 | L | | | L | | |
| Zambia | -2.4 | 0.2 | H | | | H | | |
| | | | | | | | | |
| All LICs | -2.1 | -0.3 | 15 H | 47 M | 8 L | 26 H | 31 M | 13 L |
| SSA | -1.8 | -0.2 | 9 H | 24 M | 3 L | 11 H | 19 M | 6 L |
| Asia | -1.4 | -0.2 | 2 H | 10 M | 2 L | 4 H | 6 M | 4 L |
| Middle East/Europe | -3.6 | 0.0 | 3 H | 6 M | 2 L | 7 H | 2 M | 2 L |
| Latin America | -2.5 | -0.2 | 1 H | 7 M | 1 L | 4 H | 4 M | 1 L |
| Net oil importers | -1.9 | -0.1 | 10 H | 39 M | 5 L | 18 H | 26 M | 10 L |
| Net oil exporters | -2.8 | -0.7 | 5 H | 8 M | 3 L | 8 H | 5 M | 3 L |
| Countries with top 25% per capita income | -3.2 | -0.1 | 0 H | 16 M | 1 L | 7 H | 8 M | 2 L |
| Countries with mid 50% per capita income | -2.2 | -0.5 | 10 H | 20 M | 5 L | 16 H | 13 M | 6 L |
| Countries with bottom 25% per capita income | -0.9 | 0.0 | 5 H | 11 M | 2 L | 3 H | 10 M | 5 L |

1/ Current projection for 2009 less Spring WEO projection for 2009
2/ Current projection for 2009 less 2008 actual.
3/ Combined Shock: Trade, Remittances, Aid, FDI. See section IV for description of shocks and Appendix V tables for magnitudes of individual shocks.
4/ H = High risk; M=Medium risk; L=Low risk.
Sources: WEO database, and Fund staff calculations.

**Appendix V. Table 2. Simulations' Vulnerability Table 1/**

| | Shocks: Vulnerability Ratings | | | | Total Vulnerability Score 2/ | | |
|---|---|---|---|---|---|---|---|
| | Trade | FDI | Aid | Remittances | | | |
| Afghanistan, I.R. of | M | L | H | H | H | | |
| Albania | L | L | L | M | M | | |
| Angola | H | L | L | L | M | | |
| Armenia | L | L | L | H | M | | |
| Azerbaijan | H | L | L | L | M | | |
| Bangladesh | L | M | M | H | M | | |
| Benin | L | L | L | L | L | | |
| Bhutan | L | L | L | L | L | | |
| Bolivia | L | L | L | L | L | | |
| Burkina Faso | L | L | M | L | M | | |
| Burundi | L | L | H | L | M | | |
| Cambodia | L | M | M | M | M | | |
| Cameroon | H | L | L | L | M | | |
| Cape Verde | L | M | H | M | M | | |
| Central African Rep. | H | M | M | M | H | | |
| Chad | H | L | L | L | M | | |
| Comoros | L | L | M | M | M | | |
| Congo, Dem. Rep. of | H | M | M | M | H | | |
| Congo, Republic of | H | L | L | L | M | | |
| Côte d'Ivoire | H | M | M | M | H | | |
| Djibouti | M | H | M | M | H | | |
| Dominica | L | M | H | M | M | | |
| Eritrea | L | M | M | H | M | | |
| Ethiopia | M | M | H | M | H | | |
| Gambia, The | L | L | L | L | L | | |
| Georgia | M | M | M | M | M | | |
| Ghana | M | M | M | M | M | | |
| Grenada | L | M | M | M | M | | |
| Guinea | H | M | M | H | H | | |
| Guinea-Bissau | L | L | M | M | M | | |
| Guyana | L | M | M | H | M | | |
| Haiti | L | L | H | H | H | | |
| Honduras | L | M | M | H | M | | |
| India | L | L | L | L | L | | |
| Kenya | L | M | M | M | M | | |
| Kyrgyz Republic | L | L | L | H | M | | |
| Lao People's Dem. Rep. | L | H | M | M | M | | |
| Lesotho | L | L | M | L | M | | |
| Liberia | H | M | M | H | H | | |
| Madagascar | L | M | H | M | M | | |
| Malawi | M | M | H | M | H | | |
| Maldives | L | M | M | M | M | | |
| Mali | M | L | L | L | M | | |
| Mauritania | H | M | M | M | H | | |
| Moldova | L | L | L | H | M | | |
| Mongolia | M | M | M | M | M | | |
| Mozambique | L | L | H | L | M | | |
| Myanmar | M | L | L | L | M | | |
| Nepal | L | L | L | M | M | | |
| Nicaragua | L | M | M | H | M | | |
| Niger | M | L | M | L | M | | |
| Nigeria | M | L | L | L | M | | |
| Pakistan | L | M | M | M | M | | |
| Papua New Guinea | H | L | L | L | H | | |
| Rwanda | L | L | M | L | M | | |
| São Tomé & Príncipe | L | L | M | L | M | | |
| Senegal | L | M | M | H | M | | |
| Sierra Leone | L | L | H | L | M | | |
| Somalia | . | . | . | . | . | | |
| Sri Lanka | M | M | M | M | M | | |
| St. Lucia | M | M | M | M | M | | |
| St. Vincent & Grens. | M | M | M | M | M | | |
| Sudan | H | M | H | H | H | | |
| Tajikistan | M | M | M | H | H | | |
| Tanzania | L | L | M | L | M | | |
| Togo | L | L | M | H | M | | |
| Uganda | L | L | L | L | L | | |
| Uzbekistan | L | L | L | L | L | | |
| Vietnam | H | L | M | L | M | | |
| Yemen, Republic of | L | L | L | L | L | | |
| Zambia | H | M | M | M | H | | |
| | | | | | | | |
| All LICs | M | M | M | M | 15 H | 47 M | 8 L |
| SSA | M | L | M | M | 9 H | 24 M | 3 L |
| Asia | M | M | M | M | 2 H | 10 M | 2 L |
| Middle East/Europe | M | L | L | M | 3 H | 6 M | 2 L |
| Latin America | L | M | M | M | 1 H | 7 M | 1 L |
| Net oil importers | L | M | M | M | 10 H | 39 M | 5 L |
| Net oil exporters | M | L | L | L | 5 H | 8 M | 3 L |
| Fixed XR | M | L | M | M | 5 H | 29 M | 5 L |
| Flexible XR | M | M | M | M | 9 H | 18 M | 3 L |
| Countries with top 25% per capita income | M | M | M | M | 0 H | 16 M | 1 L |
| Countries with mid 50% per capita income | M | M | M | M | 10 H | 20 M | 5 L |
| Countries with bottom 25% per capita income | M | L | M | M | 5 H | 11 M | 2 L |

1/ H = High risk; M=Medium risk; L=Low risk.
2/ The total vulnerability score combines the ratings for each of the four simulated shocks, placing equal weight on each shock.
Sources: WEO database, and Fund staff calculations.

**Appendix V. Table 3: Combined Trade Shock 1/**

| | Current Account in percent of GDP | | | Int. Reserves in Months of Imports of G&S | | Vulnerable (IR<3) | Vulnerable (IR drop >0.5) | Vulnerability | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2008 proj. | 2009 proj. | 2009 simul. | 2008 proj. | 2009 simul. | 2009 simul. | 2009 simul. | 2009 simul. | | |
| Afghanistan, I.S. of | -2.8 | -2.3 | -4.6 | 3.2 | 2.9 | 1 | | M | | |
| Albania | -10.0 | -7.5 | -8.5 | 4.2 | 4.9 | | | L | | |
| Angola | 5.8 | 1.3 | -71.0 | 4.1 | -10.2 | 1 | 1 | H | | |
| Armenia | -13.7 | -12.9 | -14.8 | 3.3 | 3.1 | | | L | | |
| Azerbaijan | 30.9 | 10.9 | -15.1 | 6.4 | -12.5 | 1 | 1 | H | | |
| Bangladesh | 0.7 | 0.5 | 1.6 | 3.0 | 3.7 | | | L | | |
| Benin | -9.6 | -8.3 | -6.7 | 7.3 | 10.0 | | | L | | |
| Bhutan | 11.7 | 2.8 | 9.2 | 13.3 | 13.4 | | | L | | |
| Bolivia | 11.0 | -4.3 | 5.6 | 15.7 | 13.9 | | 1 | L | | |
| Burkina Faso | -11.3 | -9.5 | -8.3 | 5.5 | 7.9 | | | L | | |
| Burundi | -12.5 | -8.0 | -10.7 | 3.7 | 4.7 | | | L | | |
| Cambodia | -11.9 | -7.1 | -5.4 | 3.0 | 4.7 | | | L | | |
| Cameroon | 0.4 | -5.4 | -10.0 | 6.5 | 2.7 | 1 | 1 | H | | |
| Cape Verde | -13.0 | -12.7 | -12.6 | 3.0 | 3.3 | | | L | | |
| Central African Rep. | -8.7 | -7.2 | -13.7 | 2.9 | 0.6 | 1 | 1 | H | | |
| Chad | -9.5 | -19.6 | -56.5 | 4.6 | -2.8 | 1 | 1 | H | | |
| Comoros | -8.7 | -8.3 | -2.5 | 6.0 | 9.6 | | | L | | |
| Congo, Dem. Rep. of | -12.4 | -19.8 | -18.6 | 0.5 | -0.3 | 1 | 1 | H | | |
| Congo, Republic of | -0.8 | -18.1 | -69.8 | 7.2 | 0.3 | 1 | 1 | H | | |
| Côte d'Ivoire | 0.1 | -2.6 | -11.6 | 2.5 | -0.2 | 1 | 1 | H | | |
| Djibouti | -38.2 | -14.0 | -35.2 | 2.2 | 2.7 | 1 | | M | | |
| Dominica | -30.1 | -24.4 | -27.7 | 2.9 | 3.6 | | | L | | |
| Eritrea | -2.7 | 1.1 | 4.2 | 0.9 | 4.9 | | | L | | |
| Ethiopia | -5.8 | -5.9 | -3.4 | 1.3 | 2.5 | 1 | | M | | |
| Gambia, The | -13.9 | -12.5 | -13.7 | 4.8 | 5.2 | | | L | | |
| Georgia | -21.8 | -17.7 | -21.1 | 2.2 | 2.5 | 1 | | M | | |
| Ghana | -20.2 | -15.9 | -19.2 | 1.6 | 2.0 | 1 | | M | | |
| Grenada | -31.8 | -31.8 | -27.7 | 3.0 | 4.0 | | | L | | |
| Guinea | -4.1 | -2.6 | -9.3 | 1.3 | -0.2 | 1 | 1 | H | | |
| Guinea-Bissau | 0.2 | -11.6 | 7.3 | 6.0 | 9.7 | | | L | | |
| Guyana | -20.8 | -18.1 | -23.9 | 2.8 | 3.1 | | | L | | |
| Haiti | -2.6 | -4.4 | 2.7 | 3.2 | 5.9 | | | L | | |
| Honduras | -13.3 | -8.3 | -11.1 | 2.7 | 3.3 | | | L | | |
| India | -2.5 | -1.8 | -2.2 | 9.4 | 10.7 | | | L | | |
| Kenya | -6.6 | -2.7 | -2.4 | 2.9 | 5.0 | | | L | | |
| Kyrgyz Republic | -6.0 | -6.5 | -7.0 | 3.2 | 3.6 | | | L | | |
| Lao People's Dem. Re | -15.1 | -11.9 | -15.2 | 3.0 | 3.3 | | | L | | |
| Lesotho | -3.7 | -8.5 | -1.4 | 6.3 | 7.1 | | | L | | |
| Liberia | -31.8 | -42.2 | -50.8 | 0.7 | 0.2 | 1 | 1 | H | | |
| Madagascar | -22.6 | -14.8 | -20.0 | 2.3 | 3.1 | | | L | | |
| Malawi | -8.0 | -4.6 | -5.6 | 0.9 | 1.6 | 1 | | M | | |
| Maldives | -46.0 | -30.1 | -33.1 | 2.7 | 4.4 | | | L | | |
| Mali | -6.1 | -6.2 | -10.1 | 4.6 | 4.0 | | 1 | M | | |
| Mauritania | -6.1 | -8.6 | -77.8 | 0.9 | -6.2 | 1 | 1 | H | | |
| Moldova | -18.9 | -19.2 | -17.1 | 3.3 | 3.8 | | | L | | |
| Mongolia | -9.2 | -7.1 | -10.5 | 1.9 | 2.1 | 1 | | M | | |
| Mozambique | -12.7 | -11.8 | -13.0 | 4.8 | 5.4 | | | L | | |
| Myanmar | 3.3 | 1.3 | 0.0 | 6.3 | 4.7 | | 1 | M | | |
| Nepal | 2.6 | 3.3 | 4.4 | 7.4 | 9.1 | | | L | | |
| Nicaragua | -23.6 | -17.7 | -18.9 | 2.5 | 3.4 | | | L | | |
| Niger | -9.9 | -22.6 | -14.8 | 5.6 | 4.7 | | 1 | M | | |
| Nigeria | 5.0 | -10.7 | -16.1 | 12.8 | 5.2 | | 1 | M | | |
| Pakistan | -8.4 | -4.7 | -6.2 | 2.2 | 3.5 | | | L | | |
| Papua New Guinea | 3.2 | -5.5 | -46.2 | 5.1 | -1.5 | 1 | 1 | H | | |
| Rwanda | -6.9 | -7.6 | -5.3 | 5.9 | 7.3 | | | L | | |
| São Tomé & Príncipe | -34.0 | -43.0 | -24.0 | 5.5 | 7.9 | | | L | | |
| Senegal | -12.4 | -10.4 | -9.5 | 3.1 | 4.2 | | | L | | |
| Sierra Leone | -6.8 | -4.5 | -1.6 | 3.5 | 7.9 | | | L | | |
| Somalia | . | . | . | . | . | | | . | | |
| Sri Lanka | -7.7 | -5.9 | -5.1 | 1.2 | 2.1 | 1 | | M | | |
| St. Lucia | -29.5 | -23.7 | -29.6 | 2.2 | 2.3 | 1 | | M | | |
| St. Vincent & Grens. | -34.1 | -28.4 | -34.1 | 2.4 | 2.6 | 1 | | M | | |
| Sudan | -7.0 | -10.0 | -23.9 | 1.2 | -6.6 | 1 | 1 | H | | |
| Tajikistan | -8.9 | -8.6 | -7.4 | 0.6 | 0.8 | 1 | | M | | |
| Tanzania | -9.9 | -8.6 | -8.3 | 5.6 | 7.4 | | | L | | |
| Togo | -7.0 | -6.4 | 4.6 | 3.1 | 7.2 | | | L | | |
| Uganda | -6.1 | -7.9 | -6.1 | 8.1 | 8.7 | | | L | | |
| Uzbekistan | 13.5 | 7.3 | 5.3 | 10.6 | 7.7 | | 1 | L | | |
| Vietnam | -10.3 | -8.2 | -20.3 | 3.6 | 2.5 | 1 | 1 | H | | |
| Yemen, Republic of | -2.1 | -2.8 | -16.8 | 10.2 | 6.3 | | 1 | L | | |
| Zambia | -8.9 | -8.3 | -15.6 | 2.6 | 0.7 | 1 | 1 | H | | |
| All LICs | -9.6 | -10.2 | -15.2 | 4.3 | 3.6 | 26 | 22 | 15 H | 15 M | 40 L |
| SSA | -8.9 | -11.0 | -16.8 | 4.1 | 3.6 | 14 | 14 | 11 H | 6 M | 19 L |
| Asia | -6.6 | -5.5 | -9.5 | 4.7 | 4.7 | 5 | 3 | 2 H | 4 M | 8 L |
| Middle East/Europe | -6.4 | -6.3 | -13.6 | 4.5 | 1.8 | 5 | 4 | 2 H | 3 M | 6 L |
| Latin America | -19.4 | -17.9 | -18.3 | 4.1 | 4.7 | 2 | 1 | 0 H | 2 M | 7 L |
| Net oil importers | -12.7 | -11.3 | -11.5 | 3.7 | 4.6 | 15 | 7 | 4 H | 14 M | 36 L |
| Net oil exporters | 0.8 | -6.5 | -27.8 | 6.1 | 0.5 | 11 | 15 | 11 H | 1 M | 4 L |
| Countries with top 25% per capita income | -13.7 | -13.6 | -23.9 | 3.8 | 1.9 | 8 | 3 | 3 H | 5 M | 9 L |
| Countries with mid 50% per capita income | -8.0 | -8.7 | -14.6 | 4.7 | 3.8 | 13 | 15 | 10 H | 5 M | 20 L |
| Countries with bottom 25% per capita income | -8.7 | -9.8 | -8.2 | 3.8 | 5.0 | 5.0 | 4 | 2 H | 5 M | 11 L |

1/ The combined trade shock simulates for 2009 a return of commodities prices from their end-2008 levels to their 1995-2007 averages, and a 10 percent decline in the 2008 value of other exports and services.
Sources: WEO database, and Fund staff calculations.

**Appendix V. Table 4: Combined Trade Shock, with a 25 percent Increase in Oil Prices 1/**

| | Current Account in percent of GDP | | | Int. Reserves in Months of Imports of G&S | | Vulnerable (IR<3) | Vulnerable (IR drop >0.5) | Vulnerability | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2008 proj. | 2009 proj. | 2009 simul. | 2008 proj. | 2009 simul. | 2009 simul. | 2009 simul. | | | |
| Afghanistan, I.R. of | -2.8 | -2.3 | -4.6 | 3.2 | 2.9 | 1 | | M | | |
| Albania | -10.0 | -7.5 | -14.0 | 4.2 | 3.2 | | 1 | M | | |
| Angola | 5.8 | 1.3 | 41.4 | 4.1 | 9.6 | | | L | | |
| Armenia | -13.7 | -12.9 | -16.2 | 3.3 | 2.6 | 1 | 1 | H | | |
| Azerbaijan | 30.9 | 10.9 | 75.3 | 6.4 | 13.3 | | | L | | |
| Bangladesh | 0.7 | 0.5 | -0.8 | 3.0 | 2.4 | 1 | 1 | H | | |
| Benin | -9.6 | -8.3 | -11.5 | 7.3 | 6.1 | | 1 | L | | |
| Bhutan | 11.7 | 2.8 | 4.9 | 13.3 | 11.4 | | 1 | L | | |
| Bolivia | 11.0 | -4.3 | 4.6 | 15.7 | 13.2 | | 1 | L | | |
| Burkina Faso | -11.3 | -9.5 | -13.0 | 5.5 | 4.4 | | 1 | M | | |
| Burundi | -12.5 | -8.0 | -18.8 | 3.7 | 1.8 | 1 | 1 | H | | |
| Cambodia | -11.9 | -7.1 | -21.5 | 3.0 | 1.2 | 1 | 1 | H | | |
| Cameroon | 0.4 | -5.4 | 1.4 | 6.5 | 7.1 | | | L | | |
| Cape Verde | -13.0 | -12.7 | -18.6 | 3.0 | 2.0 | 1 | 1 | H | | |
| Central African Rep. | -8.7 | -7.2 | -8.8 | 2.9 | 3.1 | | | L | | |
| Chad | -9.5 | -19.6 | 1.2 | 4.6 | 7.2 | | | L | | |
| Comoros | -8.7 | -8.3 | -7.5 | 6.0 | 6.8 | | | L | | |
| Congo, Dem. Rep. of | -12.4 | -19.8 | -18.5 | 0.5 | -0.3 | 1 | 1 | H | | |
| Congo, Republic of | -0.8 | -18.1 | 23.3 | 7.2 | 9.9 | | | L | | |
| Côte d'Ivoire | 0.1 | -2.6 | -6.5 | 2.5 | 1.1 | 1 | 1 | H | | |
| Djibouti | -38.2 | -14.0 | -44.4 | 2.2 | 1.2 | 1 | 1 | H | | |
| Dominica | -30.1 | -24.4 | -36.6 | 2.9 | 1.6 | 1 | 1 | H | | |
| Eritrea | -2.7 | 1.1 | -5.8 | 0.9 | -0.4 | 1 | 1 | H | | |
| Ethiopia | -5.8 | -5.9 | -9.0 | 1.3 | 0.0 | 1 | 1 | H | | |
| Gambia, The | -13.9 | -12.5 | -18.2 | 4.8 | 3.7 | | 1 | M | | |
| Georgia | -21.8 | -17.7 | -26.4 | 2.2 | 1.2 | 1 | 1 | H | | |
| Ghana | -20.2 | -15.9 | -31.0 | 1.6 | -0.2 | 1 | 1 | H | | |
| Grenada | -31.8 | -31.8 | -37.0 | 3.0 | 1.8 | 1 | 1 | H | | |
| Guinea | -4.1 | -2.6 | -17.1 | 1.3 | -2.4 | 1 | 1 | H | | |
| Guinea-Bissau | 0.2 | -11.6 | -1.2 | 6.0 | 5.9 | | | L | | |
| Guyana | -20.8 | -18.1 | -56.0 | 2.8 | -0.3 | 1 | 1 | H | | |
| Haiti | -2.6 | -4.4 | -4.7 | 3.2 | 2.5 | 1 | 1 | H | | |
| Honduras | -13.3 | -8.3 | -22.2 | 2.7 | 1.3 | 1 | 1 | H | | |
| India | -2.5 | -1.8 | -6.2 | 9.4 | 7.6 | | 1 | L | | |
| Kenya | -6.6 | -2.7 | -11.3 | 2.9 | 1.3 | 1 | 1 | H | | |
| Kyrgyz Republic | -6.0 | -6.5 | -23.4 | 3.2 | 1.1 | 1 | 1 | H | | |
| Lao People's Dem. Rep. | -15.1 | -11.9 | -22.5 | 3.0 | 1.1 | 1 | 1 | H | | |
| Lesotho | -3.7 | -8.5 | -7.9 | 6.3 | 5.9 | | | L | | |
| Liberia | -31.8 | -42.2 | -67.4 | 0.7 | -0.5 | 1 | 1 | H | | |
| Madagascar | -22.6 | -14.8 | -25.3 | 2.3 | 1.6 | 1 | 1 | H | | |
| Malawi | -8.0 | -4.6 | -11.7 | 0.9 | -0.2 | 1 | 1 | H | | |
| Maldives | -46.0 | -30.1 | -55.9 | 2.7 | 1.1 | 1 | 1 | H | | |
| Mali | -6.1 | -6.2 | -17.6 | 4.6 | 0.7 | 1 | 1 | H | | |
| Mauritania | -6.1 | -8.6 | -38.1 | 0.9 | -2.0 | 1 | 1 | H | | |
| Moldova | -18.9 | -19.2 | -26.2 | 3.3 | 2.3 | 1 | 1 | H | | |
| Mongolia | -9.2 | -7.1 | -29.4 | 1.9 | -1.0 | 1 | 1 | H | | |
| Mozambique | -12.7 | -11.8 | -18.2 | 4.8 | 3.2 | | 1 | M | | |
| Myanmar | 3.3 | 1.3 | 0.0 | 6.3 | 4.7 | | 1 | M | | |
| Nepal | 2.6 | 3.3 | 0.3 | 7.4 | 6.4 | | 1 | L | | |
| Nicaragua | -23.6 | -17.7 | -32.7 | 2.5 | 1.0 | 1 | 1 | H | | |
| Niger | -9.9 | -22.6 | -18.9 | 5.6 | 2.6 | 1 | 1 | H | | |
| Nigeria | 5.0 | -10.7 | 14.9 | 12.8 | 16.6 | | | L | | |
| Pakistan | -8.4 | -4.7 | -10.9 | 2.2 | 0.9 | 1 | 1 | H | | |
| Papua New Guinea | 3.2 | -5.5 | -26.4 | 5.1 | 1.1 | 1 | 1 | H | | |
| Rwanda | -6.9 | -7.6 | -9.0 | 5.9 | 4.9 | | 1 | M | | |
| São Tomé & Príncipe | -34.0 | -43.0 | -37.4 | 5.5 | 4.3 | | 1 | M | | |
| Senegal | -12.4 | -10.4 | -14.1 | 3.1 | 2.5 | 1 | 1 | H | | |
| Sierra Leone | -6.8 | -4.5 | -10.9 | 3.5 | 1.5 | 1 | 1 | H | | |
| Somalia | . | . | . | . | . | | | . | | |
| Sri Lanka | -7.7 | -5.9 | -12.0 | 1.2 | -0.1 | 1 | 1 | H | | |
| St. Lucia | -29.5 | -23.7 | -37.3 | 2.2 | 1.0 | 1 | 1 | H | | |
| St. Vincent & Grens. | -34.1 | -28.4 | -41.9 | 2.4 | 1.0 | 1 | 1 | H | | |
| Sudan | -7.0 | -10.0 | -2.2 | 1.2 | 4.2 | | | L | | |
| Tajikistan | -8.9 | -8.6 | -14.4 | 0.6 | -0.3 | 1 | 1 | H | | |
| Tanzania | -9.9 | -8.6 | -15.7 | 5.6 | 3.4 | | 1 | M | | |
| Togo | -7.0 | -6.4 | -15.2 | 3.1 | 1.1 | 1 | 1 | H | | |
| Uganda | -6.1 | -7.9 | -9.6 | 8.1 | 6.6 | | 1 | L | | |
| Uzbekistan | 13.5 | 7.3 | 5.3 | 10.6 | 7.7 | | 1 | L | | |
| Vietnam | -10.3 | -8.2 | -20.0 | 3.6 | 2.6 | 1 | 1 | H | | |
| Yemen, Republic of | -2.1 | -2.8 | 4.5 | 10.2 | 13.0 | | | L | | |
| Zambia | -8.9 | -8.3 | -20.5 | 2.6 | -0.8 | 1 | 1 | H | | |
| All LICs | -9.6 | -10.2 | -14.3 | 4.3 | 3.3 | 43 | 57 | 42 H | 9 M | 19 L |
| SSA | -8.9 | -11.0 | -12.6 | 4.1 | 3.3 | 19 | 27 | 19 H | 6 M | 11 L |
| Asia | -6.6 | -5.5 | -14.6 | 4.7 | 3.0 | 10 | 13 | 9 H | 2 M | 3 L |
| Middle East/Europe | -6.4 | -6.3 | -5.9 | 4.5 | 4.7 | 6 | 8 | 6 H | 1 M | 4 L |
| Latin America | -19.4 | -17.9 | -29.3 | 4.1 | 2.6 | 8 | 9 | 8 H | 0 M | 1 L |
| Net oil importers | -12.7 | -11.3 | -19.6 | 3.7 | 2.3 | 38 | 50 | 37 H | 9 M | 8 L |
| Net oil exporters | 0.8 | -6.5 | 3.3 | 6.1 | 6.9 | 5 | 7 | 5 H | 0 M | 11 L |
| Countries with top 25% per capita income | -13.7 | -13.6 | -15.2 | 3.8 | 3.5 | 1 | 14 | 12 H | 1 M | 4 L |
| Countries with mid 50% per capita income | -8.0 | -8.7 | -13.8 | 4.7 | 3.6 | 1 | 27 | 20 H | 3 M | 12 L |
| Countries with bottom 25% per capita income | -8.7 | -9.8 | -14.6 | 3.8 | 2.5 | 1 | 16 | 10 H | 5 M | 3 L |

1/ The combined trade shock simulates for 2009 a 25 percent increase in oil prices, a return of commodities prices from their end-2008 levels to their 1995-2007 averages, and a 10 percent decline in the 2008 value of other exports and services.
Sources: WEO database, and Fund staff calculations.

**Appendix V. Table 5. Reduced remittances 1/**

| | Remittances in percent of GDP | | | Int. Reserves in Months of Imports of G&S | | Vulnerable (IR<3) | Vulnerable (IR drop >0.5) | Vulnerability Rating | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2008 proj. | 2009 proj. | 2009 simul. | 2009 proj. | 2009 simul. | 2009 simul. | 2009 simul. | 2009 simul. | | |
| Afghanistan, I.R. of 3/ | 56.8 | 45.4 | 48.6 | 3.5 | 0.7 | 1 | 1 | H | | |
| Albania | 11.5 | 9.1 | 9.0 | 4.4 | 3.6 | | 1 | M | | |
| Angola | 0.3 | 0.3 | 0.2 | 3.6 | 4.0 | | | L | | |
| Armenia 2/ | 11.0 | . | 8.1 | 3.8 | 2.4 | 1 | 1 | H | | |
| Azerbaijan | 2.6 | 2.9 | 1.9 | 8.0 | 6.1 | | | L | | |
| Bangladesh | 9.7 | 10.7 | 7.5 | 3.1 | 2.0 | 1 | 1 | H | | |
| Benin | 3.1 | 3.0 | 2.0 | 7.2 | 6.8 | | 1 | L | | |
| Bhutan 3/ | -6.8 | . | -6.8 | 13.9 | 13.3 | | | L | | |
| Bolivia | 5.1 | 4.7 | 3.6 | 14.6 | 15.1 | | 1 | L | | |
| Burkina Faso | 0.8 | 0.9 | 0.5 | 6.1 | 5.4 | | | L | | |
| Burundi 3/ | 3.2 | . | 2.1 | 4.0 | 3.3 | | | L | | |
| Cambodia 2/ | 3.3 | . | 2.5 | 3.1 | 2.8 | 1 | | M | | |
| Cameroon 2/ | 0.7 | . | 0.5 | 6.2 | 6.4 | | | L | | |
| Cape Verde | 6.9 | 6.1 | 4.5 | 3.4 | 2.6 | 1 | | M | | |
| Central African Rep. | -0.3 | -0.3 | -0.3 | 2.9 | 2.9 | 1 | | M | | |
| Chad | 2.6 | 3.1 | 1.7 | 3.6 | 4.4 | | | L | | |
| Comoros | 21.2 | 20.8 | 14.6 | 6.8 | 3.9 | | 1 | M | | |
| Congo, Dem. Rep. of | 1.8 | . | 1.2 | 1.4 | 0.4 | 1 | | M | | |
| Congo, Republic of | 0.0 | 0.0 | 0.0 | 8.6 | 7.2 | | | L | | |
| Côte d'Ivoire | -2.6 | -2.9 | -2.6 | 3.1 | 2.5 | 1 | | M | | |
| Djibouti | -4.0 | -3.7 | -4.0 | 3.8 | 2.2 | 1 | | M | | |
| Dominica | 8.0 | 8.0 | 5.7 | 3.1 | 2.5 | 1 | | M | | |
| Eritrea 3/ | 20.7 | . | 14.3 | 1.1 | -1.9 | 1 | 1 | H | | |
| Ethiopia 2/ | 1.4 | . | 0.9 | 1.8 | 1.1 | 1 | | M | | |
| Gambia, The | 1.1 | 1.1 | 0.7 | 4.5 | 4.7 | | | L | | |
| Georgia | 5.7 | 5.7 | 4.2 | 3.4 | 1.9 | 1 | | M | | |
| Ghana 2/ | 0.7 | . | 0.5 | 0.6 | 1.5 | 1 | | M | | |
| Grenada | 4.1 | 3.2 | 2.9 | 3.3 | 2.8 | 1 | | M | | |
| Guinea | 7.0 | 6.6 | 4.6 | 2.2 | 0.5 | 1 | 1 | H | | |
| Guinea-Bissau | 7.5 | 6.0 | 4.9 | 7.1 | 5.4 | | 1 | M | | |
| Guyana | 26.8 | 21.1 | 20.4 | 3.2 | 2.0 | 1 | 1 | H | | |
| Haiti | 19.3 | 16.0 | 14.3 | 2.9 | 1.5 | 1 | 1 | H | | |
| Honduras | 19.4 | 15.9 | 14.3 | 2.5 | 1.8 | 1 | 1 | H | | |
| India 2/ | 2.5 | . | 1.9 | 9.4 | 9.2 | | | L | | |
| Kenya | 3.3 | 3.2 | 2.1 | 4.0 | 2.5 | 1 | | M | | |
| Kyrgyz Republic | 27.9 | 21.0 | 21.8 | 3.8 | 2.3 | 1 | 1 | H | | |
| Lao People's Dem. Rep. 2/ | 0.0 | . | 0.0 | 2.6 | 3.0 | 1 | | M | | |
| Lesotho | 0.0 | 0.0 | 0.0 | 6.0 | 6.3 | | | L | | |
| Liberia 2/ | 86.5 | . | 80.4 | 0.7 | -0.7 | 1 | 1 | H | | |
| Madagascar | 0.3 | 0.2 | 0.2 | 3.2 | 2.3 | 1 | | M | | |
| Malawi 2/ | 0.0 | . | 0.0 | 1.4 | 0.9 | 1 | | M | | |
| Maldives 2/ | 0.2 | . | 0.2 | 3.6 | 2.7 | 1 | | M | | |
| Mali 2/ | 2.5 | . | 1.6 | 5.3 | 4.2 | | | L | | |
| Mauritania | 2.1 | 2.3 | 1.5 | 0.9 | 0.8 | 1 | | M | | |
| Moldova | 17.1 | 14.4 | 13.6 | 3.3 | 2.8 | 1 | 1 | H | | |
| Mongolia | 1.7 | 1.3 | 1.3 | 2.6 | 1.8 | 1 | | M | | |
| Mozambique 2/ | 1.0 | . | 0.7 | 4.9 | 4.7 | | | L | | |
| Myanmar 2/ | 0.6 | . | 0.4 | 6.9 | 6.2 | | | L | | |
| Nepal | 16.4 | 16.9 | 12.9 | 7.7 | 5.9 | | 1 | M | | |
| Nicaragua | 12.9 | 11.8 | 9.4 | 3.0 | 1.9 | 1 | 1 | H | | |
| Niger 2/ | 1.5 | . | 1.0 | 3.7 | 5.4 | | | L | | |
| Nigeria | 1.6 | 2.1 | 1.0 | 11.1 | 12.6 | | | L | | |
| Pakistan | 4.0 | 4.4 | 2.9 | 2.8 | 1.7 | 1 | | M | | |
| Papua New Guinea | 0.5 | 0.1 | 0.4 | 5.2 | 5.1 | | | L | | |
| Rwanda | 0.9 | 0.9 | 0.6 | 5.1 | 5.8 | | | L | | |
| São Tomé & Príncipe | 1.7 | 1.9 | 1.1 | 3.8 | 5.4 | | | L | | |
| Senegal | 8.2 | 6.8 | 5.4 | 4.0 | 2.3 | 1 | 1 | H | | |
| Sierra Leone | 0.7 | 0.7 | 0.4 | 4.0 | 3.4 | | | L | | |
| Somalia | . | . | . | . | . | | | . | | |
| Sri Lanka | 7.4 | 7.0 | 5.7 | 1.3 | 0.7 | 1 | | M | | |
| St. Lucia 2/ | 3.0 | . | 2.1 | 2.1 | 2.0 | 1 | | M | | |
| St. Vincent & Grens. | 2.8 | 2.7 | 2.0 | 2.6 | 2.2 | 1 | | M | | |
| Sudan 2/ | 3.1 | . | 2.3 | 1.7 | 0.7 | 1 | 1 | H | | |
| Tajikistan | 45.1 | 38.6 | 37.1 | 0.5 | -1.3 | 1 | 1 | H | | |
| Tanzania 2/ | 0.1 | . | 0.0 | 5.8 | 5.6 | | | L | | |
| Togo | 16.2 | 13.5 | 11.0 | 3.5 | 2.0 | 1 | 1 | H | | |
| Uganda 2/ | 6.0 | . | 3.9 | 7.2 | 7.2 | | 1 | L | | |
| Uzbekistan 3/ | 7.6 | 3.8 | 5.6 | 13.0 | 9.9 | | 1 | L | | |
| Vietnam 2/ | 6.1 | . | 4.7 | 4.1 | 3.4 | | | L | | |
| Yemen, Republic of | 5.2 | 3.8 | 3.8 | 12.8 | 9.7 | | 1 | L | | |
| Zambia 2/ | 0.4 | . | 0.3 | 3.4 | 2.6 | 1 | | M | | |
| All LICs | 7.8 | 7.4 | 6.0 | 4.5 | 3.8 | 39 | 25 | 16 H | 27 M | 27 L |
| SSA | 5.8 | 2.1 | 4.5 | 4.2 | 3.7 | 15 | 9 | 5 H | 12 M | 18 L |
| Asia | 7.3 | 6.1 | 5.9 | 5.0 | 4.2 | 6 | 2 | 1 H | 6 M | 5 L |
| Middle East/Europe | 11.1 | 8.0 | 8.6 | 4.9 | 3.4 | 9 | 7 | 5 H | 4 M | 3 L |
| Latin America | 11.3 | 9.3 | 8.3 | 4.1 | 3.5 | 8 | 5 | 4 H | 4 M | 1 L |
| Net oil importers | 9.0 | 8.8 | 7.1 | 4.0 | 3.2 | 35 | 20 | 15 H | 23 M | 16 L |
| Net oil exporters | 3.6 | 3.4 | 2.5 | 6.5 | 5.8 | 4 | 5 | 1 H | 4 M | 11 L |
| Countries with top 25% per capita income | 6.2 | 6.4 | 4.4 | 4.3 | 3.5 | 12.0 | 4.0 | 3 H | 10 M | 4 L |
| Countries with mid 50% per capita income | 6.2 | 6.9 | 4.6 | 4.9 | 4.2 | 19.0 | 14.0 | 9 H | 11 M | 15 L |
| Countries with bottom 25% per capita income | 12.4 | 10.6 | 10.2 | 4.0 | 3.2 | 8.0 | 7.0 | 4 H | 6 M | 8 M |

1/ Remittances are reduced by regionally calibrated amounts, averaging 34 percent, to obtain 2009 simulations.
2/ The projection of remittances for 2008 is from the World Bank (2008), since it was not available from Fund staff.
3/ As remittances data are not available, the projection for 2008 corresponds to private current transfers from World Economic Outlook.
Sources: WEO database, Fund staff calculations, and World Bank.

**Appendix V. Table 6. Reduced FDI 1/**

| | FDI in percent of GDP | | | Int. Reserves in Months of Imports of G&S | | Vulnerable (IR<3) | Vulnerable (IR drop >0.5) | Vulnerability Rating | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2008 proj. | 2009 proj. | 2009 simul. | 2008 proj. | 2009 simul. | 2009 simul. | 2009 simul. | 2009 simul. | | |
| Afghanistan, I.R. of | 2.4 | 3.2 | 1.7 | 3.2 | 3.1 | | | L | | |
| Albania | 4.9 | 4.6 | 3.5 | 4.2 | 4.1 | | | L | | |
| Angola | 9.5 | . | 6.8 | 4.1 | 3.7 | | | L | | |
| Armenia | 6.6 | 6.2 | 4.7 | 3.3 | 3.1 | | | L | | |
| Azerbaijan | -4.1 | -1.8 | -4.1 | 6.4 | 6.4 | | | L | | |
| Bangladesh | 0.8 | 0.8 | 0.6 | 3.0 | 3.0 | 1 | | M | | |
| Benin | 3.1 | 2.0 | 2.2 | 7.3 | 7.2 | | | L | | |
| Bhutan | 0.9 | 0.9 | 0.7 | 13.3 | 13.3 | | | L | | |
| Bolivia | 2.4 | 3.0 | 1.7 | 15.7 | 15.7 | | | L | | |
| Burkina Faso | 2.2 | 1.0 | 1.5 | 5.5 | 5.4 | | | L | | |
| Burundi | 0.0 | 0.0 | 0.0 | 3.7 | 3.7 | | | L | | |
| Cambodia | 7.4 | 4.1 | 5.2 | 3.0 | 2.8 | 1 | | M | | |
| Cameroon | 1.7 | 2.8 | 1.2 | 6.5 | 6.4 | | | L | | |
| Cape Verde | 9.8 | 7.8 | 7.0 | 3.0 | 2.8 | 1 | | M | | |
| Central African Rep. | 5.1 | 5.1 | 3.6 | 2.9 | 2.6 | 1 | | M | | |
| Chad | 14.3 | 9.9 | 10.2 | 4.6 | 4.3 | | | L | | |
| Comoros | 1.6 | 1.5 | 1.1 | 6.0 | 6.0 | | | L | | |
| Congo, Dem. Rep. of | 14.5 | 5.6 | 10.4 | 0.5 | 0.2 | 1 | | M | | |
| Congo, Republic of | 23.3 | 21.5 | 16.9 | 7.2 | 6.9 | | | L | | |
| Côte d'Ivoire | 2.2 | 2.6 | 1.5 | 2.5 | 2.4 | 1 | | M | | |
| Djibouti | 31.4 | 9.8 | 23.0 | 2.2 | 1.6 | 1 | 1 | H | | |
| Dominica | 14.3 | 12.1 | 10.2 | 2.9 | 2.6 | 1 | | M | | |
| Eritrea | 2.4 | 3.6 | 1.7 | 0.9 | 0.8 | 1 | | M | | |
| Ethiopia | 3.2 | 1.9 | 2.2 | 1.3 | 1.2 | 1 | | M | | |
| Gambia, The | 9.0 | 8.0 | 6.4 | 4.8 | 4.6 | | | L | | |
| Georgia | 9.7 | 7.7 | 6.9 | 2.2 | 1.9 | 1 | | M | | |
| Ghana | 6.0 | 5.0 | 4.2 | 1.6 | 1.5 | 1 | | M | | |
| Grenada | 19.2 | 21.8 | 13.8 | 3.0 | 2.6 | 1 | | M | | |
| Guinea | 2.5 | 2.2 | 1.7 | 1.3 | 1.2 | 1 | | M | | |
| Guinea-Bissau | 2.9 | 2.8 | 2.0 | 6.0 | 6.0 | | | L | | |
| Guyana | 13.4 | 11.4 | 9.6 | 2.8 | 2.6 | 1 | | M | | |
| Haiti | 0.4 | 0.3 | 0.3 | 3.2 | 3.2 | | | L | | |
| Honduras | 7.4 | 4.0 | 5.2 | 2.7 | 2.6 | 1 | | M | | |
| India | 1.6 | 1.2 | 1.1 | 9.4 | 9.4 | | | L | | |
| Kenya | 2.7 | 3.3 | 1.9 | 2.9 | 2.8 | 1 | | M | | |
| Kyrgyz Republic | 6.1 | 4.2 | 4.3 | 3.2 | 3.1 | | | L | | |
| Lao People's Dem. Rep. | 18.5 | 16.5 | 13.3 | 3.0 | 2.4 | 1 | 1 | H | | |
| Lesotho | 5.4 | 3.9 | 3.8 | 6.3 | 6.3 | | | L | | |
| Liberia | 23.5 | 42.8 | 17.1 | 0.7 | 0.6 | 1 | | M | | |
| Madagascar | 7.6 | 2.7 | 5.4 | 2.3 | 2.1 | 1 | | M | | |
| Malawi | 5.2 | 2.9 | 3.7 | 0.9 | 0.7 | 1 | | M | | |
| Maldives | 20.5 | 18.5 | 14.8 | 2.7 | 2.5 | 1 | | M | | |
| Mali | 1.4 | 1.1 | 1.0 | 4.6 | 4.5 | | | L | | |
| Mauritania | 2.0 | 4.1 | 1.4 | 0.9 | 0.9 | 1 | | M | | |
| Moldova | 11.1 | 9.5 | 7.9 | 3.3 | 3.2 | | | L | | |
| Mongolia | 12.6 | 7.0 | 9.0 | 1.9 | 1.7 | 1 | | M | | |
| Mozambique | 4.7 | 4.7 | 3.3 | 4.8 | 4.6 | | | L | | |
| Myanmar | 0.9 | 0.9 | 0.6 | 6.3 | 6.3 | | | L | | |
| Nepal | 0.0 | 0.2 | 0.0 | 7.4 | 7.4 | | | L | | |
| Nicaragua | 7.1 | 6.1 | 5.0 | 2.5 | 2.3 | 1 | | M | | |
| Niger | 8.1 | 13.4 | 5.7 | 5.6 | 5.4 | | | L | | |
| Nigeria | 2.2 | 3.9 | 1.6 | 12.8 | 12.8 | | | L | | |
| Pakistan | 3.0 | 2.1 | 2.1 | 2.2 | 2.0 | 1 | | M | | |
| Papua New Guinea | 1.4 | 1.3 | 0.9 | 5.1 | 5.1 | | | L | | |
| Rwanda | 2.4 | 1.7 | 1.7 | 5.9 | 5.8 | | | L | | |
| São Tomé & Príncipe | 33.5 | 11.4 | 24.7 | 5.5 | 5.0 | | | L | | |
| Senegal | 4.5 | 3.8 | 3.2 | 3.1 | 3.0 | 1 | | M | | |
| Sierra Leone | 2.5 | 1.1 | 1.8 | 3.5 | 3.4 | | | L | | |
| Somalia | . | . | . | . | . | | | . | | |
| Sri Lanka | 1.5 | 0.6 | 1.0 | 1.2 | 1.1 | 1 | | M | | |
| St. Lucia | 17.5 | 20.3 | 12.6 | 2.2 | 1.8 | 1 | | M | | |
| St. Vincent & Grens. | 16.6 | 14.7 | 11.9 | 2.4 | 2.0 | 1 | | M | | |
| Sudan | 3.8 | 5.0 | 2.7 | 1.2 | 0.9 | 1 | | M | | |
| Tajikistan | 3.7 | 1.9 | 2.6 | 0.6 | 0.5 | 1 | | M | | |
| Tanzania | 3.5 | 3.9 | 2.5 | 5.6 | 5.5 | | | L | | |
| Togo | 3.0 | 4.1 | 2.1 | 3.1 | 3.0 | | | L | | |
| Uganda | 6.5 | 5.4 | 4.6 | 8.1 | 7.9 | | | L | | |
| Uzbekistan | 2.7 | 2.9 | 1.9 | 10.6 | 10.6 | | | L | | |
| Vietnam | 8.7 | 4.5 | 6.1 | 3.6 | 3.5 | | | L | | |
| Yemen, Republic of | 1.8 | 0.8 | 1.2 | 10.2 | 10.2 | | | L | | |
| Zambia | 4.4 | 1.9 | 3.1 | 2.6 | 2.4 | 1 | | M | | |
| All LICs | 7.0 | 5.9 | 5.0 | 4.3 | 4.1 | 33 | 2 | 2 H | 31 M | 37 L |
| SSA | 6.6 | 5.5 | 4.7 | 4.1 | 4.0 | 14 | 0 | 0 H | 15 M | 21 L |
| Asia | 5.7 | 4.4 | 4.1 | 4.7 | 4.5 | 6 | 1 | 1 H | 6 M | 7 L |
| Middle East/Europe | 6.5 | 4.2 | 4.6 | 4.0 | 3.8 | 6 | 1 | 1 H | 3 M | 7 L |
| Latin America | 10.9 | 10.4 | 7.8 | 4.1 | 3.9 | 7 | 0 | 0 H | 7 M | 2 L |
| Net oil importers | 7.5 | 6.3 | 5.4 | 3.7 | 3.6 | 29 | 2 | 2 H | 27 M | 25 L |
| Net oil exporters | 5.5 | 4.5 | 3.8 | 6.1 | 6.0 | 4 | 0 | 0 H | 4 M | 12 L |
| Countries with top 25% per capita income | 10.8 | 9.8 | 7.7 | 3.8 | 3.6 | 11.0 | 0.0 | 0 H | 11 M | 6 L |
| Countries with mid 50% per capita income | 6.0 | 4.1 | 4.3 | 4.7 | 4.6 | 16.0 | 2.0 | 2 H | 14 M | 19 L |
| Countries with bottom 25% per capita income | 5.5 | 5.8 | 3.9 | 3.8 | 3.7 | 6.0 | 0.0 | 0 H | 6 M | 12 L |

1/ FDI is reduced by 30 percent of its 2008 value to obtain 2009 simulations.
Sources: WEO database, and Fund staff calculations.

**Appendix V. Table 7. Reduced Aid 1/**

| | Aid in percent of GDP | | | Int. Reserves in Months of Imports of G&S | | Vulnerable (IR<3) | Vulnerable (IR drop >0.5) | Vulnerability Rating | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2008 proj. | 2009 proj. | 2009 simul. | 2008 proj. | 2009 simul. | 2009 simul. | 2009 simul. | 2009 simul. | | |
| Afghanistan, I.R. of 2/ | 24.5 | . | 18.5 | 3.2 | 2.0 | 1 | 1 | H | | |
| Albania | 2.7 | 2.2 | 1.9 | 4.2 | 4.0 | | | L | | |
| Angola 2/ | 0.1 | . | 0.1 | 4.1 | 4.0 | | | L | | |
| Armenia | 0.5 | . | 0.4 | 3.3 | 3.2 | | | L | | |
| Azerbaijan | 0.8 | 2.4 | 0.5 | 6.4 | 6.3 | | | L | | |
| Bangladesh | 1.2 | 1.7 | 0.9 | 3.0 | 2.9 | 1 | | M | | |
| Benin | 8.3 | 7.4 | 6.0 | 7.3 | 6.2 | | 1 | L | | |
| Bhutan | 11.0 | . | 8.0 | 13.3 | 12.5 | | 1 | L | | |
| Bolivia | 1.2 | 1.1 | 0.9 | 15.7 | 15.5 | | | L | | |
| Burkina Faso | 7.9 | . | 5.7 | 5.5 | 4.4 | | 1 | M | | |
| Burundi | 17.8 | . | 13.2 | 3.7 | 2.3 | 1 | 1 | H | | |
| Cambodia | 6.4 | 6.4 | 4.6 | 3.0 | 2.7 | 1 | | M | | |
| Cameroon | 0.1 | 0.9 | 0.0 | 6.5 | 6.5 | | | L | | |
| Cape Verde | 10.3 | 14.3 | 7.4 | 3.0 | 2.5 | 1 | 1 | H | | |
| Central African Rep. | 2.2 | 1.9 | 1.6 | 2.9 | 2.6 | 1 | | M | | |
| Chad | 0.4 | 1.4 | 0.3 | 4.6 | 4.6 | | | L | | |
| Comoros | 9.1 | 6.1 | 6.6 | 6.0 | 5.3 | | 1 | M | | |
| Congo, Dem. Rep. of | 6.4 | . | 4.6 | 0.5 | 0.2 | 1 | | M | | |
| Congo, Republic of 2/ | 0.4 | . | 0.3 | 7.2 | 7.1 | | | L | | |
| Côte d'Ivoire | 0.6 | 0.4 | 0.4 | 2.5 | 2.4 | 1 | | M | | |
| Djibouti | 10.0 | 10.2 | 7.2 | 2.2 | 1.8 | 1 | | M | | |
| Dominica | 14.0 | 13.1 | 10.3 | 2.9 | 2.2 | 1 | 1 | H | | |
| Eritrea | 1.8 | . | 1.3 | 0.9 | 0.7 | 1 | | M | | |
| Ethiopia | 5.2 | . | 3.7 | 1.3 | 0.7 | 1 | 1 | H | | |
| Gambia, The | 1.3 | 7.5 | 0.9 | 4.8 | 4.7 | | | L | | |
| Georgia | 6.3 | 9.5 | 4.5 | 2.2 | 1.8 | 1 | | M | | |
| Ghana | 7.5 | . | 5.4 | 1.6 | 1.2 | 1 | | M | | |
| Grenada | 6.8 | 5.5 | 4.8 | 3.0 | 2.6 | 1 | | M | | |
| Guinea | 3.3 | 2.2 | 2.3 | 1.3 | 1.0 | 1 | | M | | |
| Guinea-Bissau | 21.4 | 20.8 | 16.0 | 6.0 | 4.6 | | 1 | M | | |
| Guyana | 17.6 | 18.2 | 13.0 | 2.8 | 2.3 | 1 | | M | | |
| Haiti | 10.5 | 8.0 | 7.6 | 3.2 | 2.3 | 1 | 1 | H | | |
| Honduras | 3.2 | 2.2 | 2.3 | 2.7 | 2.5 | 1 | | M | | |
| India | 0.0 | . | 0.0 | 9.4 | 9.4 | | | L | | |
| Kenya | 0.8 | . | 0.6 | 2.9 | 2.8 | 1 | | M | | |
| Kyrgyz Republic | 3.6 | 4.7 | 2.6 | 3.2 | 3.1 | | | L | | |
| Lao People's Dem. Rep. | 4.5 | . | 3.2 | 3.0 | 2.7 | 1 | | M | | |
| Lesotho | 38.2 | . | 30.2 | 6.3 | 5.1 | | 1 | M | | |
| Liberia 2/ | 26.6 | . | 20.3 | 0.7 | 0.4 | 1 | | M | | |
| Madagascar | 9.9 | 9.1 | 7.1 | 2.3 | 1.7 | 1 | 1 | H | | |
| Malawi | 11.6 | 16.6 | 8.4 | 0.9 | -0.1 | 1 | 1 | H | | |
| Maldives | 2.7 | . | 1.9 | 2.7 | 2.6 | 1 | | M | | |
| Mali | 3.3 | . | 2.3 | 4.6 | 4.2 | | | L | | |
| Mauritania | 8.5 | 9.3 | 6.1 | 0.9 | 0.5 | 1 | | M | | |
| Moldova | 1.5 | 2.4 | 1.0 | 3.3 | 3.3 | | | L | | |
| Mongolia | 4.6 | . | 3.2 | 1.9 | 1.7 | 1 | | M | | |
| Mozambique | 42.8 | . | 34.3 | 4.8 | 1.1 | 1 | 1 | H | | |
| Myanmar | 0.1 | . | 0.1 | 6.3 | 6.3 | | | L | | |
| Nepal | 2.1 | 3.5 | 1.5 | 7.4 | 7.2 | | | L | | |
| Nicaragua | 11.5 | 11.1 | 8.4 | 2.5 | 2.0 | 1 | | M | | |
| Niger | 7.4 | 12.0 | 5.3 | 5.6 | 4.8 | | 1 | M | | |
| Nigeria 2/ | 0.7 | . | 0.5 | 12.8 | 12.7 | | | L | | |
| Pakistan | 0.6 | . | 0.4 | 2.2 | 2.1 | 1 | | M | | |
| Papua New Guinea | 1.7 | 3.9 | 1.2 | 5.1 | 5.0 | | | L | | |
| Rwanda | 17.6 | 16.0 | 13.0 | 5.9 | 3.8 | | 1 | M | | |
| São Tomé & Príncipe | 26.5 | 41.5 | 20.1 | 5.5 | 4.2 | | 1 | M | | |
| Senegal | 5.4 | 5.0 | 3.8 | 3.1 | 2.7 | 1 | | M | | |
| Sierra Leone | 6.3 | 6.3 | 4.5 | 3.5 | 2.7 | 1 | 1 | H | | |
| Somalia | . | . | . | . | . | | | . | | |
| Sri Lanka | 3.6 | . | 2.6 | 1.2 | 0.9 | 1 | | M | | |
| St. Lucia | 0.3 | . | 0.2 | 2.2 | 2.2 | 1 | | M | | |
| St. Vincent & Grens. | 5.3 | 6.0 | 3.8 | 2.4 | 2.1 | 1 | | M | | |
| Sudan | 4.8 | . | 3.4 | 1.2 | 0.4 | 1 | 1 | H | | |
| Tajikistan | 1.8 | . | 1.3 | 0.6 | 0.5 | 1 | | M | | |
| Tanzania | 10.7 | . | 7.8 | 5.6 | 4.5 | | 1 | M | | |
| Togo | 2.1 | 3.5 | 1.5 | 3.1 | 3.0 | 1 | | M | | |
| Uganda | 4.9 | . | 3.5 | 8.1 | 7.5 | | 1 | L | | |
| Uzbekistan | 0.4 | . | 0.3 | 10.6 | 10.6 | | | L | | |
| Vietnam 2/ | 15.6 | . | 11.5 | 3.6 | 3.0 | | 1 | M | | |
| Yemen, Republic of | 1.1 | 2.0 | 0.7 | 10.2 | 10.1 | | | L | | |
| Zambia | 4.5 | 6.0 | 3.2 | 2.6 | 2.2 | 1 | | M | | |
| All LICs | 7.3 | 7.7 | 5.4 | 4.3 | 3.8 | 39 | 23 | 11 H | 37 M | 22 L |
| SSA | 9.2 | 5.2 | 6.9 | 4.1 | 3.5 | 18 | 17 | 7 H | 20 M | 9 L |
| Asia | 5.6 | 1.1 | 4.1 | 4.7 | 4.4 | 6 | 2 | 1 H | 8 M | 5 L |
| Middle East/Europe | 2.8 | 2.8 | 2.0 | 4.0 | 3.8 | 7 | 2 | 1 H | 3 M | 7 L |
| Latin America | 7.8 | 7.2 | 5.7 | 4.1 | 3.7 | 8 | 2 | 2 H | 6 M | 1 L |
| Net oil importers | 8.6 | 9.2 | 6.4 | 3.7 | 3.2 | 35 | 20 | 10 H | 32 M | 12 L |
| Net oil exporters | 3.2 | 3.1 | 2.3 | 6.1 | 5.9 | 4 | 3 | 1 H | 5 M | 10 L |
| Countries with top 25% per capita income | 5.3 | 8.2 | 3.8 | 3.8 | 3.6 | 11.0 | 3.0 | 2 H | 9 M | 6 L |
| Countries with mid 50% per capita income | 6.1 | 6.4 | 4.5 | 4.7 | 4.3 | 17.0 | 9.0 | 2 H | 21 M | 12 L |
| Countries with bottom 25% per capita income | 11.7 | 10.6 | 8.8 | 3.8 | 3.0 | 11.0 | 11.0 | 7 H | 7 M | 4 L |

1/ Aid is reduced by 30 percent of its 2008 value to obtain 2009 simulations.
2/ Aid data for 2008 is estimated from the OECD Development Assistance Committee aid database.
Sources: WEO database, and Fund staff calculations.

## Appendix VI. Scenarios for Financing Needs

This appendix shows various measures of LICs' financing needs due to the global crisis. The measures of the external shock and of the financing need focus on the change in balance of payments flows and reserves since the April 2008 WEO, in the most recent projections, and in a simulation of possible further shocks (see Appendix IV for details on the simulation, although here the combined shock does not include a shock to aid). For each case, and for all 70 LICs in the sample, the table shows reserves in U.S. dollars and in months of (current year's) imports of goods and services. The total magnitude of the shock or the financing need for all countries that are adversely affected is presented in the bottom part of the table.

The setup of the appendix table differs from that of the summary table in the main text. For both the most recent projections, and in a simulation of possible larger shocks, the table shows three results: The first column of the appendix table focuses on the total reserve loss and the resulting additional financing need. The second column focuses on the magnitude of the balance of payments shock before adjustment or import compression.

The first two columns of the appendix table show the change in 2009 reserves since the April 2008 WEO in U.S. dollars.

- As indicated at the bottom of the first column, the most recent projections show reduced projected reserves (in dollar terms) for 35 LICs (half of the sample). However, the very large overall revision, by US$131 billion, is largely explained by just two countries: Nigeria and India. 62 percent of the decline concerns the 16 oil producers in the sample. For 22 LICs, reserves are projected to fall below 3 months of imports at end-2009—a standard, but crude, measure of reserve adequacy.[43] This would imply a financing need of US$25 billion.
- The second column shows the change in reserves in the combined simulation of the effects of a larger global downturn on exports, FDI, remittances, and food and oil prices.

The third and fourth columns show the corresponding changes in reserves expressed in months of imports of goods and services.

The fifth and sixth columns assess the total balance of payments shock (i.e., before adjustment or import compression). This is computed by adding up the declines in several components of the balance of payments that may be considered exogenous in the short run: exports, FDI, remittances (measured here by current private transfers), donor grants, and the price effects on imports of the change in food and fuel prices. The fifth column shows the magnitude of these changes in the current baseline projections. The sixth column shows the corresponding results in the simulation. Given the assumed absence of policy adjustment in the simulation, the total shock equals the total reserves loss shown in the second column.

[43]Also including cases where reserves fall by more than 0.5 month of imports, to less than 4 months.

**Appendix VI. Balance of Payments Financing Needs /1**

| | Reserves Change in millions of U.S. Dollars | | Reserves Change in Months of Imports of Goods and Services | | Total Shock in millions of U.S. Dollars | | Reserves Change in percent Fund quota |
|---|---|---|---|---|---|---|---|
| | Current 2009 proj. | 2009 Simul. 2/ | Current 2009 proj. | 2009 Simul. 2/ | Current 2009 proj. | 2009 Simul. 2/ | 2009 Simul. 2/ |
| Afghanistan, I.R. of | . | . | . | . | . | . | . |
| Albania | 5 | -349 | 0.3 | -0.5 | 834 | -349 | -465 |
| Angola | -13,754 | -45,258 | -4.7 | -16.2 | -45,416 | -45,258 | -10,249 |
| Armenia | -49 | -547 | -0.2 | -1.5 | 129 | -547 | -386 |
| Azerbaijan | -1,581 | -31,789 | -0.8 | -27.3 | -24,626 | -31,789 | -12,810 |
| Bangladesh | 432 | -4,589 | 0.3 | -1.9 | 3,122 | -4,589 | -558 |
| Benin | 39 | 67 | -1.3 | 1.5 | -145 | 67 | 70 |
| Bhutan | 30 | -135 | 1.3 | -1.5 | -548 | -135 | -1,391 |
| Bolivia | 2,488 | -468 | 3.2 | -0.7 | -897 | -468 | -177 |
| Burkina Faso | -1 | -84 | 0.8 | 0.1 | 50 | -84 | -91 |
| Burundi | -69 | -67 | -0.7 | -1.1 | -15 | -67 | -56 |
| Cambodia | 278 | -794 | 0.7 | -1.0 | -221 | -794 | -588 |
| Cameroon | -633 | -2,196 | -0.7 | -3.7 | -1,188 | -2,196 | -767 |
| Cape Verde | -181 | -410 | -0.6 | -3.2 | -519 | -410 | -2,769 |
| Central African Rep. | 18 | -144 | 1.0 | -3.7 | -7,745 | -144 | -168 |
| Chad | -393 | -1,789 | -0.9 | -5.8 | -1,937 | -1,789 | -2,071 |
| Comoros | 7 | 8 | -1.1 | 1.7 | -31 | 8 | 56 |
| Congo, Dem. Rep. of | 452 | -882 | 0.9 | -1.1 | -3,693 | -882 | -107 |
| Congo, Republic of | -2,267 | -6,178 | -5.3 | -12.0 | -2,973 | -6,178 | -4,735 |
| Côte d'Ivoire | -68 | -1,074 | 0.2 | -1.0 | -88 | -1,074 | -214 |
| Djibouti | 20 | -27 | 0.9 | -0.2 | -73 | -27 | -109 |
| Dominica | -8 | -14 | -0.5 | -0.5 | -23 | -14 | -112 |
| Eritrea | 125 | -73 | 3.1 | -2.2 | -11 | -73 | -299 |
| Ethiopia | 73 | -1,131 | 0.0 | -1.5 | 1,182 | -1,131 | -548 |
| Gambia, The | 19 | 15 | 0.5 | 0.6 | 55 | 15 | 31 |
| Georgia | 540 | -1,974 | 1.6 | -2.9 | -1,675 | -1,974 | -852 |
| Ghana | -1,002 | -1,394 | -1.0 | -1.4 | 1,187 | -1,394 | -245 |
| Grenada | 22 | -14 | 0.7 | -0.2 | -86 | -14 | -77 |
| Guinea | -88 | -262 | 0.0 | -1.5 | 177 | -262 | -159 |
| Guinea-Bissau | 18 | -2 | -1.5 | 0.8 | 41 | -2 | -7 |
| Guyana | 121 | -170 | 1.0 | -1.4 | -34 | -170 | -121 |
| Haiti | 172 | -498 | 0.6 | -2.1 | -308 | -498 | -395 |
| Honduras | -965 | -1,683 | -0.7 | -1.7 | -3,255 | -1,683 | -842 |
| India | -40,878 | -15,610 | -0.2 | 0.8 | 33,689 | -15,610 | -243 |
| Kenya | 283 | -548 | 0.6 | -0.2 | 1,896 | -548 | -131 |
| Kyrgyz Republic | 49 | -153 | 0.3 | -0.1 | 843 | -153 | -112 |
| Lao People's Dem. Rep. | 15 | -235 | 0.1 | -1.1 | 441 | -235 | -288 |
| Lesotho | -583 | -385 | -3.1 | -2.3 | -576 | -385 | -715 |
| Liberia | 67 | -437 | -0.1 | -5.6 | -23 | -437 | -398 |
| Madagascar | -34 | -451 | 0.3 | -1.1 | -167 | -451 | -239 |
| Malawi | -158 | 174 | -1.1 | 1.5 | 342 | 174 | 162 |
| Maldives | 654 | 130 | 5.8 | 1.4 | 415 | 130 | 1,031 |
| Mali | -115 | -402 | -0.6 | -1.4 | 662 | -402 | -280 |
| Mauritania | -545 | -646 | -3.0 | -3.6 | -1,032 | -646 | -651 |
| Moldova | -614 | -1,347 | -0.7 | -2.4 | -145 | -1,347 | -709 |
| Mongolia | -539 | -68 | -1.8 | 0.3 | -24 | -68 | -86 |
| Mozambique | -92 | -933 | 0.2 | -2.4 | -891 | -933 | -532 |
| Myanmar | 2,090 | -99 | 2.8 | -0.1 | 585 | -99 | -25 |
| Nepal | 1,347 | 415 | 3.7 | 1.8 | 989 | 415 | 377 |
| Nicaragua | 811 | -745 | 2.1 | -1.5 | -1,797 | -745 | -372 |
| Niger | 177 | -396 | 0.0 | -2.4 | 509 | -396 | -391 |
| Nigeria | -55,970 | -55,188 | -8.8 | -9.4 | -44,225 | -55,188 | -2,041 |
| Pakistan | -2,437 | -2,947 | -0.5 | -0.4 | 7,490 | -2,947 | -185 |
| Papua New Guinea | 210 | -2,451 | 0.9 | -6.0 | -820 | -2,451 | -1,208 |
| Rwanda | 32 | -15 | 0.1 | 0.4 | 174 | -15 | -12 |
| São Tomé & Príncipe | -9 | 6 | -2.7 | 1.2 | 13 | 6 | 53 |
| Senegal | -197 | -287 | -0.1 | -0.3 | 508 | -287 | -115 |
| Sierra Leone | -34 | -74 | 0.0 | -0.9 | 41 | -74 | -46 |
| Somalia | . | . | . | . | . | . | . |
| Sri Lanka | -1,789 | -2,139 | -1.4 | -1.5 | -1,511 | -2,139 | -335 |
| St. Lucia | -2 | -97 | -0.2 | -1.5 | 149 | -97 | -412 |
| St. Vincent & Grens. | 7 | -99 | 0.3 | -2.9 | 8 | -99 | -772 |
| Sudan | -2,076 | -10,397 | -1.4 | -9.1 | -6,627 | -10,397 | -3,973 |
| Tajikistan | -29 | 122 | -0.4 | 0.7 | 1,260 | 122 | 91 |
| Tanzania | 624 | -961 | 1.5 | -1.1 | 783 | -961 | -313 |
| Togo | 15 | -111 | 0.8 | -0.2 | 135 | -111 | -98 |
| Uganda | 293 | 45 | 0.7 | 0.5 | 1,063 | 45 | 16 |
| Uzbekistan | -3,369 | -3,520 | -8.2 | -5.2 | 259 | -3,520 | -828 |
| Vietnam | 3,637 | -7,752 | 1.5 | -1.0 | -10,052 | -7,752 | -1,527 |
| Yemen, Republic of | -142 | -1,986 | 2.1 | -0.6 | -317 | -1,986 | -529 |
| Zambia | -151 | -1,058 | -0.1 | -2.6 | -1,217 | -1,058 | -140 |
| **Total balance of payment shock (billions) 3/** | | | | | | | |
| Total number | | | | | 38 | 60 | |
| Total value | | | | | **-165** | **-216** | |
| **Total Reserve loss (billions) 4/** | | | | | | | |
| Total number | 35 | 60 | | | | | |
| Total value | **-131** | **-216** | | | | | |
| **Additional financing need (billions) 5/** | | | | | | | |
| Total number | 22 | 48 | | | | | |
| Total value | **-25** | **-138** | | | | | |

1/ All changes are relative to the Spring 2008 WEO projection for 2009. See Appendix VI for details.

2/ This corresponds with the simulated combined shocks to exports, remittances, and FDI described in Section VI and Appendix V.

3/ The sum of the shocks to exports, FDI, remittances, and the price effects of food and fuel price changes (but excluding import responses).

4/ The total change in reserves for LICs with reserves losses.

5/ The total change in reserves for LICs with reserves coverage falling below 3 months of imports or reserves falling by more than 0.5 months to less than 4 months.

Sources: WEO database, and Fund staff calculations

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