INTERNATIONAL MONETARY FUND

2013 LOW-INCOME COUNTRIES GLOBAL RISKS AND VULNERABILITIES REPORT

September 2013

IMF staff regularly produces papers proposing new IMF policies, exploring options for reform, or reviewing existing IMF policies and operations. The following documents have been released and are included in this package:

- The **Staff Report** on 2013 Low-Income Countries Global Risks and Vulnerabilities Report, prepared by IMF staff and completed on September 6, 2013 for the Executive Board's consideration on September 24, 2013.
- A **Press Release** summarizing the views of the Executive Board as expressed during its September 24, 2013 consideration of the staff report.

The policy of publication of staff reports and other documents allows for the deletion of market-sensitive information.

International Monetary Fund
Washington, D.C.

INTERNATIONAL MONETARY FUND

2013 LOW-INCOME COUNTRIES GLOBAL RISKS AND VULNERABILITIES REPORT

September 6, 2013

EXECUTIVE SUMMARY

Staff has conducted an assessment of the current vulnerability of Low-Income Countries (LICs) to adverse external shocks. The key conclusions are:

- Most LICs have shown impressive resilience in terms of sustaining strong growth rates over the course of the global crisis and the ensuing sluggish recovery. However, there is little room for complacency as there has been uneven progress in rebuilding both fiscal and external buffers. Most core LICs are in a better position to deal with adverse shocks, but significant fiscal vulnerabilities persist in many oil exporters, as well as small and fragile LICs.
- There are also significant regional differences in vulnerabilities with approximately half of the LICs in Latin America and the Caribbean and in Asia assessed as highly vulnerable to a growth decline, which is higher than the levels recorded during the peak of the crisis. By contrast, only about 15 percent of LICs in sub-Saharan Africa and a quarter of LICs in the Middle East and Europe are assessed as highly vulnerable. Sub-Saharan Africa stands out as the one region where progress in rebuilding policy buffers has lowered the number of countries expected to be highly vulnerable in 2013, approaching pre-crisis levels.
- In managing a response to potential global shocks, rebuilding buffers should go hand in hand with the utilization of other available policy levers. LICs with monetary autonomy and a flexible exchange rate have additional policy tools to handle external shocks. Structural reforms can also play a role in limiting vulnerabilities in LICs.
- Two distinct global shock scenarios are examined, one entailing a short but sharp drop in demand in major emerging markets, the second a protracted slowing in the pace of economic growth in the euro area:
  - The emerging market scenario would lead to significant challenges, notably a drop in growth in the median LIC of 1¼ percent of GDP in the first year, due to weakening global demand and lower commodity prices. Absent a domestic policy response, there would be a sizeable increase in the number of LICs with inadequate fiscal and/or external buffers; the additional external financing need for 2013–17 would be around US$25 billion.
  - The protracted euro area slowdown yields a drop in the median LIC growth rate in the order of ¼ of a percentage point each year, reflecting in part the more modest, albeit sustained, declines in global growth and commodity prices relative to the

emerging market scenario. Vulnerability of LICs again increases, with the cumulative additional financing need through 2017 for all LICs estimated at some $10 billion.

- The scenarios examined here involve more modest adverse effects on LICs than those reported in the 2012 edition of this report. The change in approach is in part motivated by a desire to link the vulnerability analysis to global scenarios fleshed out in the Fund's flagship publications, and in part by a decision to explore higher probability/less extreme shocks than in previous years.
- Meeting the additional external financing needs identified above would require some mix of domestic policy adjustment and the provision of additional external financing. The International Financial Institutions (IFIs), including the Fund, are well positioned to provide external assistance in support of sound policy packages. But under most scenarios, there would be need for additional support from bilateral donors.
- Absent domestic policy adjustment, the potential average annual need for additional donor assistance under the emerging markets shock scenario over 2013–17 would represent about 3½ percent of net Official Development Assistance (ODA) provided in 2011, and a much larger share of ODA in LICs.
- Fiscal adjustment in LICs in response to the adverse shocks would reduce the scale of financing needed to handle shocks, but at the cost of lower growth. Simulations using a fiscal rule that seeks to restore fiscal buffers in all LICs in the long term would produce improved fiscal and external positions by 2017, reducing the additional external financing need of all LICs from $25 billion to around $18 billion in the emerging markets scenario, but at a cost to growth in the order of ⅓ percent per annum (depending on multiplier size). Requiring fiscal adjustment only in those cases where countries already have elevated public debt levels (i.e., close to thresholds in the Bank-Fund debt sustainability framework (DSF)) would push the external financing need back to some $23 billion.
- Possible capital flow reversals in LICs due a faster-than-expected rise in US interest rates could have negative repercussions on several LICs that have close links to global financial markets. The paper examines the impact of capital flow reversals and the ensuing impact on the funding costs and budgetary positions of a sub-group of frontier market LICs. This would have a significant fiscal impact only if sustained over a number of years, but a more immediate, if potentially shorter-lived, impact on domestic interest rates and/or the exchange rate.
- The appropriate balance (and timing) of policy adjustment versus higher external financing depends on both country circumstances and the availability of such financing. The international financial institutions are positioned to provide additional financing, but increased bilateral official aid would also be needed. Of particular importance will be the need to provide assistance to countries that are highly vulnerable and have limited alternative financing options, particularly small and fragile states.

Approved By
Siddharth Tiwari and Carlo Cottarelli

Prepared by the Strategy, Policy, and Review Department and the Fiscal Affairs Department

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GLOSSARY

CPIA	Country Policy and Institutional Assessment
DSA	Debt Sustainability Analysis
DSF	Debt Sustainability Framework
ESR	External Stability Report
FDI	Foreign Direct Investment
GDVI	Growth Decline Vulnerability Index
GFSR	Global Financial Stability Report
HIPC	Highly Indebted Poor Country
IDA	International Development Association
IFI	International Financial Institutions
IMF	International Monetary Fund
LIC	Low-Income Country
MDGs	Millennium Development Goals
MDRI	Multilateral Debt Relief Initiative
ODA	Official Development Assistance
SSA	Sub-Saharan Africa
TA	Technical Assistance
VE-LIC	Vulnerability Exercise for LICs
WEO	World Economic Outlook

BACKGROUND AND INTRODUCTION[1]

1. The Executive Board last discussed a report on the vulnerability of low-income countries (LICs) to external shocks on November 2, 2012.[2]

2. An assessment of vulnerabilities and risks in LICs remains important both for LICs themselves and for the international community. There are currently 74 LICs, eligible for concessional financing from the Fund. This group of countries has a total population of about 1.3 billion, with an average per capita income of around $850. They typically face the steepest challenges in meeting the Millennium Development Goals (MDGs) and are increasingly the focus of global development assistance to assist them in this endeavor.

3. This report serves several purposes. It provides a cross-cutting analysis of the economic vulnerabilities of LICs, yielding some general policy conclusions and messages aimed at strengthening their resilience to external shocks. It delivers a richer coverage of developments in LICs than is typically contained in the major IMF multilateral surveillance reports, where analysis is focused primarily on developments in the advanced and emerging market economies. The report serves as an effective outreach tool to country authorities and the wider public. Finally, it provides useful information to other international financial institutions (IFIs) and donors that provide financial resources to LICs on the potential financing needs of these countries under varying global scenarios.

4. The 2012 report concluded that: (i) with limited fiscal and external buffers in many LICs, vulnerabilities that had started to recede in 2010–11, had once again begun to reemerge; (ii) a euro-centered growth shock would have led to a significant loss in output, worsening fiscal balances, a decline in reserve coverage and higher external financing needs; (iii) a protracted global growth slowdown would have called for significant adjustment in nearly all LICs to prevent financing needs from mushrooming; (iv) a spike in global food prices would have a significant effect on inflation and poverty; and (v) higher global oil prices would have increased financing needs and deficits would have risen substantially.

5. The 2013 exercise addresses key issues raised by the Executive Board in 2012. First, it enhances granularity in the presentation of results by focusing on four sub-groups of countries: oil

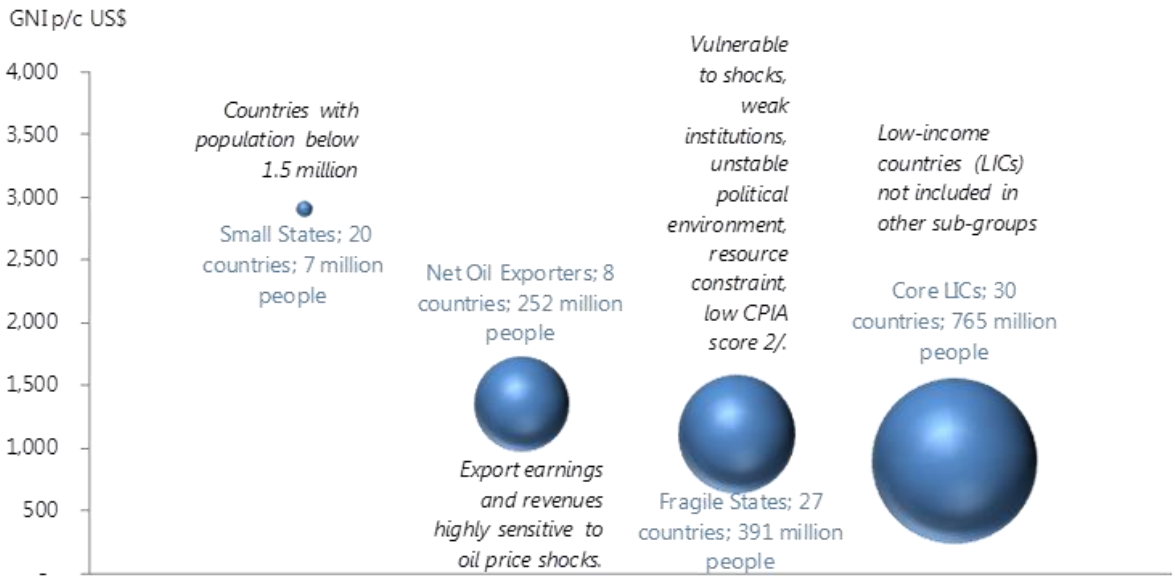
[1] This paper was prepared under the guidance of Hugh Bredenkamp, Sean Nolan (both SPR) and Sanjeev Gupta (FAD). Contributors: Olumuyiwa Adedeji, Calixte Ahokpossi, Marco Arena, Benedicte Baduel, Serpil Bouza, Gilda Fernandez, Arshia Karki, Vera Kehayova, Svitlana Maslova, Bhaswar Mukhodpadhyay (all SPR), Todd Mattina and Aiko Mineshima (both FAD).

[2] See *Managing Volatility: A Vulnerability Exercise for Low-Income Countries,* IMF Policy Paper 2011 for a description of the framework, *Managing Global Growth Risks and Commodity Price Shocks—Vulnerabilities and Policy Challenges for Low-Income Countries,* IMF Policy Paper 2011 for the first application of the framework, and *Global Risks, Vulnerabilities, and Policy Challenges Facing Low-Income Countries,* IMF Policy Paper 2012 for the second application of the framework.

exporters, fragile states, small states, and other (core) LICs (Figure 1 and Appendix I), as well as additional analysis of frontier LICs, that are rapidly integrating into global financial markets.[3] Second, it modifies the methodology by taking into account possible policy responses to external shocks that would contain LICs' external financing needs, albeit with an adverse impact on growth.

6. Structure of the 2013 report. The next section considers macroeconomic developments in LICs since the global crisis and the near-term economic outlook. The following section presents results of the vulnerability analysis, including an assessment of the vulnerability of LICs to a recession, and of the impact on LICs of selected external shock scenarios. The last section concludes the paper and discusses policy implications for LICs and for the four sub-groups.

Figure 1. Low-Income Country Sub-Groups by Gross National Income per Capita and Population, 2012 1/



1/ Atlas method. Country population-weighted group average. 2/ Country Policy and Institutional Assessment.

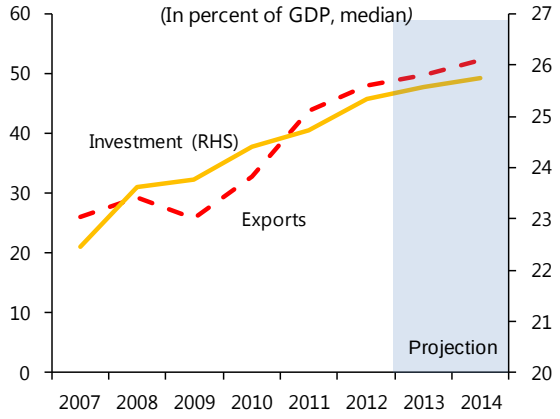
[3] Core LICs refers to a large and diverse group of LICs that do not share a specific characteristic of vulnerability related to small size, fragility, or fuel export dependency. It is not intended to denote a core-periphery relationship to the other LIC sub-groups.

GLOBAL DEVELOPMENTS AND LICS: RECENT DEVELOPMENTS AND OUTLOOK

LICs have shown resilience during the global crisis, particularly those we refer to here as the "core" LICs, reflecting relatively stronger macroeconomic fundamentals. While there has been limited progress in rebuilding fiscal buffers, external buffers have stabilized. LICs are expected to remain resilient in the near to medium term.

7. LICs have demonstrated significant resilience over the course of the global crisis (Figure 2). GDP growth in the median LIC slowed in 2009, when global output contracted, but remained solidly positive in that year, re-bounding to near pre-crisis levels from 2010 onward. Key to this robust performance was the strength of domestic demand, including public investment, that was aided by countries allowing their fiscal balances to deteriorate and, in many cases, by undertaking fiscal stimulus measures—a response facilitated by increases in external financial support.[4]

Exports and investments have supported growth in LICs

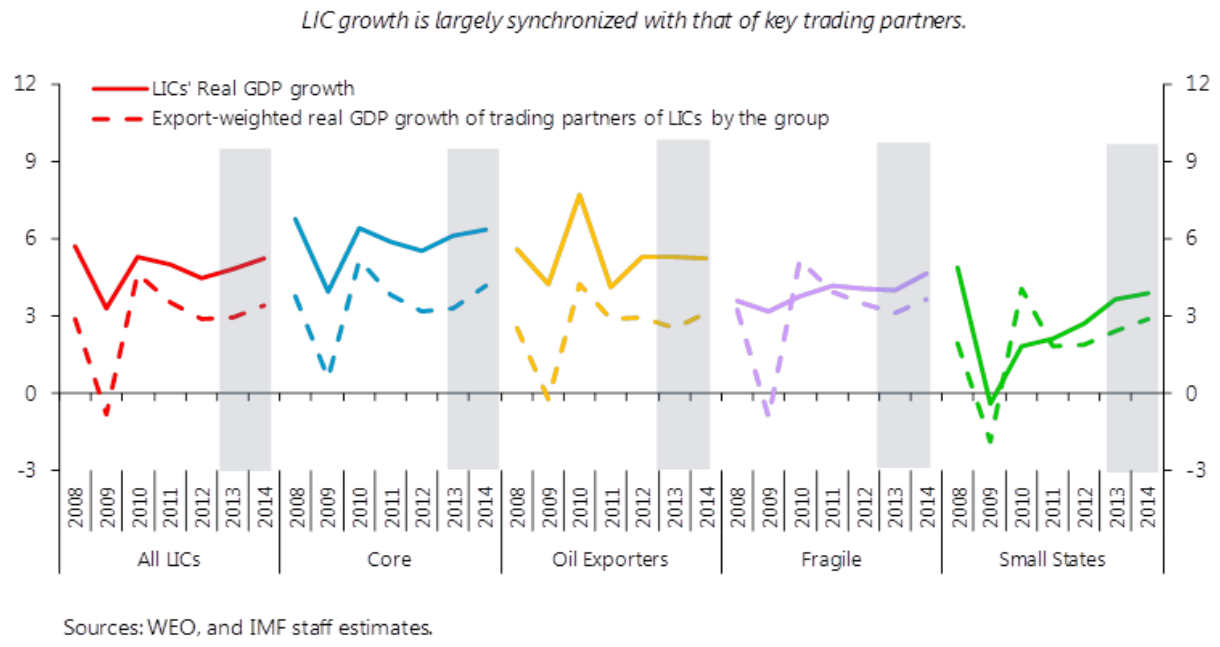


Sources: WEO, and IMF staff estimates.

8. Growth performance was strongest among core LICs and oil exporters and weakest in small states, where the median growth rate fell very sharply in 2009 and then recovered at a gradual pace in 2010–12. In fragile states, while growth remained relatively strong, it did not closely track global developments, since these countries have weaker external trade linkages than other LICs and growth is more influenced by domestic political developments and supply conditions, notably in agriculture.

[4] Other factors that may have contributed to strong domestic demand include the buoyant demand for commodities, as well as the continued inflow of remittances.

Figure 2. Real GDP Growth in LICs and Their Trading Partners
(Median, in percent)



Sources: WEO, and IMF staff estimates.

9. Solid pre-crisis fundamentals contributed to the resilience of most LICs. For all LIC sub-groups, in the period until 2008 inflation was under control, fiscal deficits were relatively small and stable, and government debt levels, except for small states, were stable or declining. Prior to 2008, key macroeconomic indicators in small states—current account deficits, fiscal deficits, government debt, and reserve coverage—were less favorable than in most of the other sub-groups. This stands in marked contrast to fragile states, where government debt levels have declined sharply through 2010 with about half of this group receiving comprehensive debt relief.

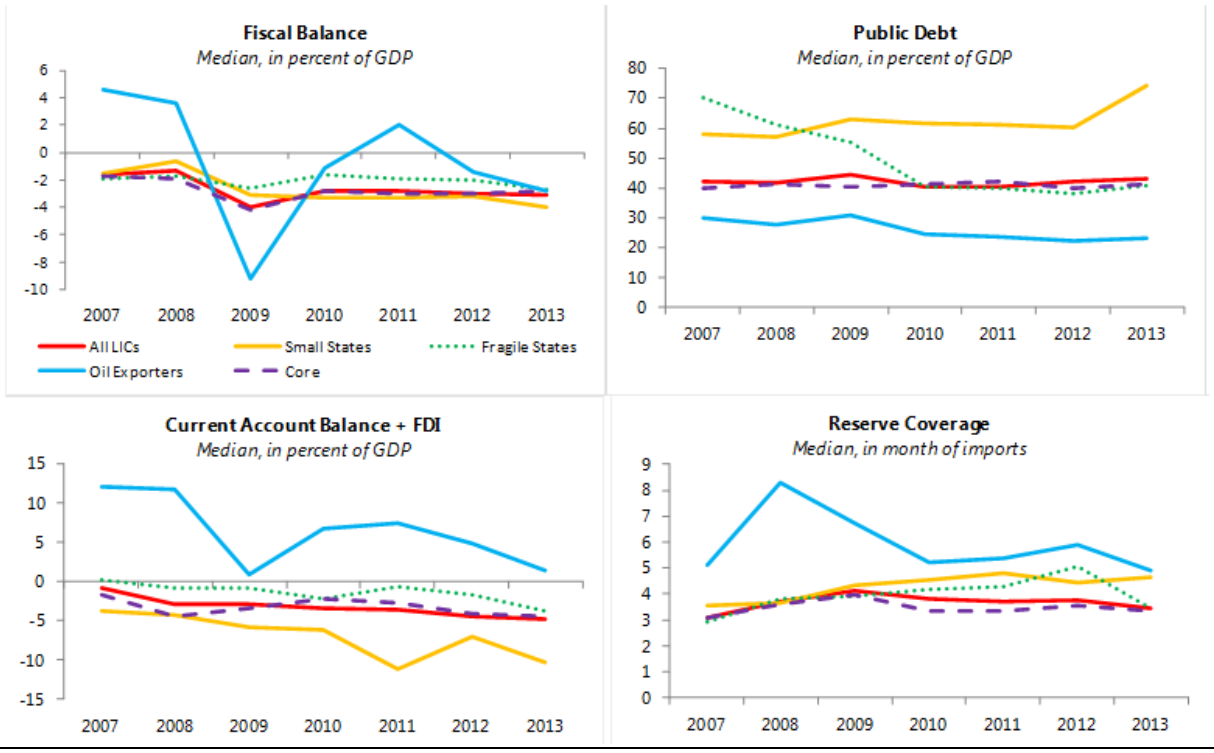
10. Since the crisis, diminished room for fiscal maneuver has increased LICs' exposure to global shocks, particularly for oil exporters and small states while core LICs maintained some room for maneuver (Figure 3).

- Erosion of the fiscal position has been most marked in the case of oil exporters with the median primary balance having declined significantly since 2007, and moving to deficit in 2012–13, while non-oil primary deficits have also widened since 2011.

- Public debt levels are at nearly 40 percent of GDP in core LICs and fragile states, but are significantly higher in small states. Debt levels in most small states are high and rising, which warrant careful monitoring.

- Current account balances (net of foreign direct investment (FDI)), while somewhat below their pre-crisis peaks, have broadly stabilized in recent years.
- Reserve cover is at or above three months of imports in the median country in all LIC sub-groups, but there is considerable spread around the median in each group. A total of 22 countries are projected to fall below the three-month threshold by end-2013.

Figure 3. Key Macroeconomic Indicators in LICs

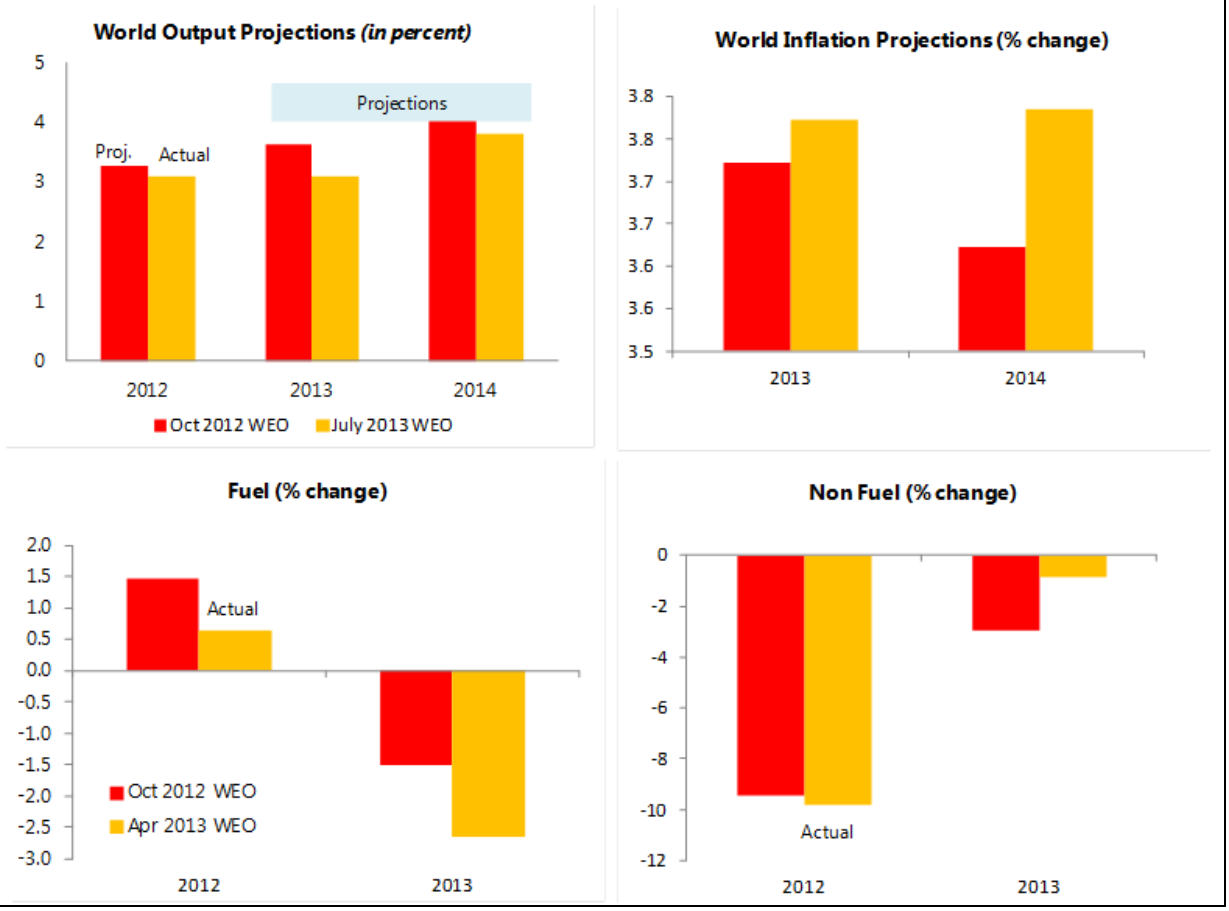


11. While the risk of an acute crisis is lower, the global macroeconomic environment facing LICs is not expected to improve significantly in the near-term (Figure 4).[5] Compared to the global outlook in October 2012, the perceived risk of an acute euro area crisis has diminished and concerns from the U.S. fiscal cliff have been alleviated. However, driven mainly by slower growth in several emerging market economies, and a tepid recovery in the euro area, world output growth in 2013 is expected to remain relatively subdued at 3 percent, the same level as in 2012 and nearly ½ a percentage point below the level projected in October 2012. World inflation is projected to be modest at about 3¾ percent in the medium term, a little higher than expected in October 2012, but

[5] Based on projections in the October 2012 WEO and the WEO update of July 2013.

fuel prices are projected to be weaker.[6] Looking ahead to 2014, the macroeconomic environment is projected to be more favorable, with global growth expected to pick up and inflation to remain broadly unchanged at its 2013 level. Factors affecting the near-term outlook for LICs include slower than expected growth in emerging markets, spillovers from weak growth in Europe and rising political tensions in the Middle East.

Figure 4. World Output and Commodity Prices Projections



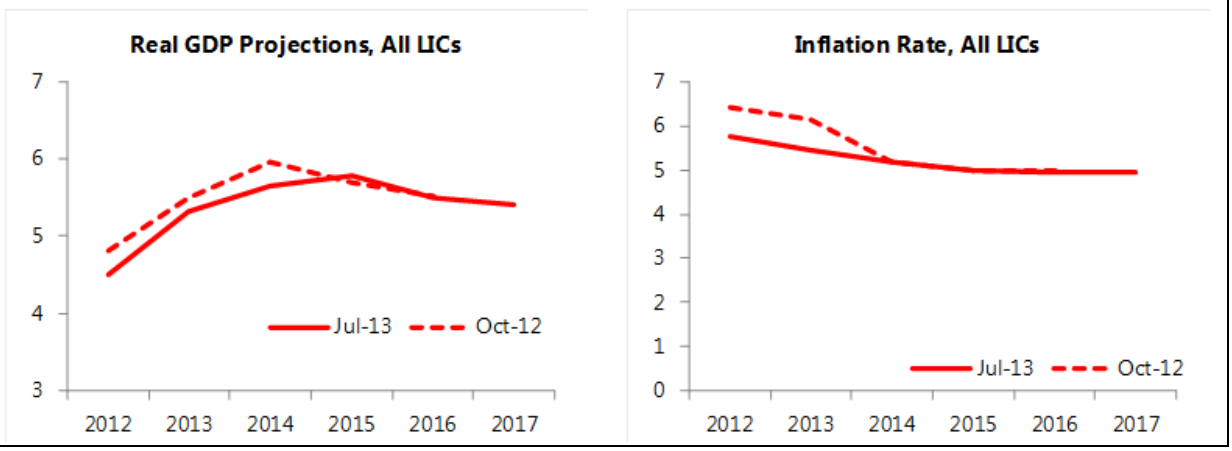
12. Consistent with recent performance, LICs growth is expected to remain resilient in the near to medium term (Figure 5). The median growth rate in LICs is projected to increase to 5.1 percent in 2013 from 4.7 percent in 2012, helped by higher external demand. Inflation in the median LIC declined in 2012 and is projected to decline further in 2013 and in the medium term, reflecting easing fuel prices and a sizeable decline in non-fuel prices.[7] LICs' external and domestic imbalances are expected to gradually decline over the medium term in line with the projected

[6] These projections do factor into account the potential impact of recent geo-political developments.

[7] It should, however, be noted that such projections should be viewed with caution since inflation in LICs is very volatile on account of the large share of food prices.

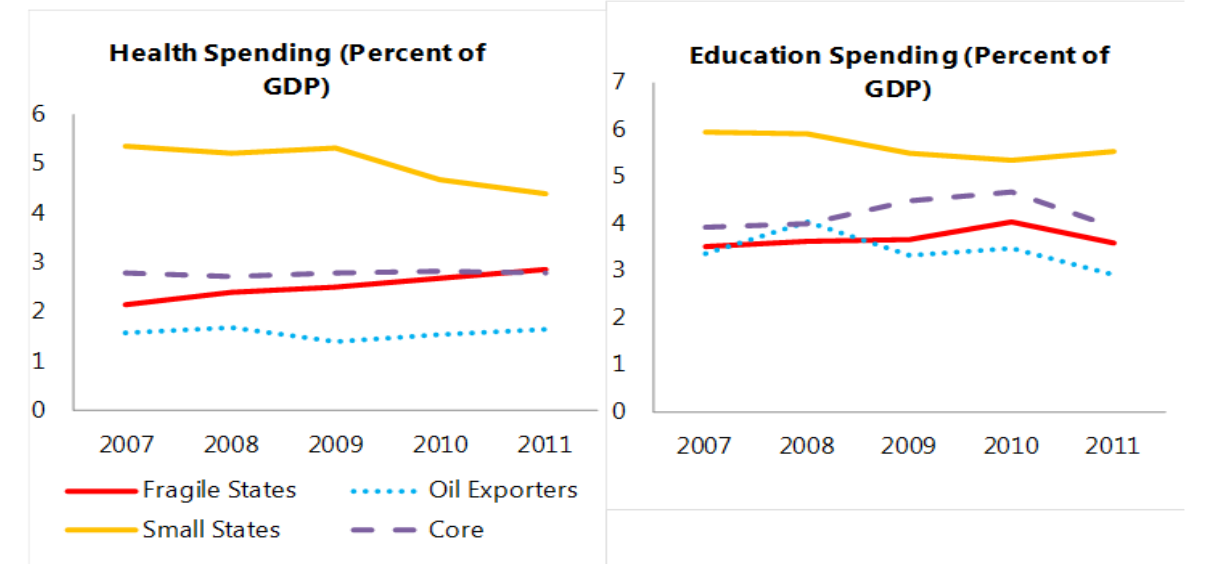
improvement in world output growth. Near-term and medium-term current account projections, however, vary across LIC sub-groups, with improvements expected for fragile states and core LICs, while balances for oil exporters and small states are expected to widen.

Figure 5. Real GDP and Inflation Projections in LICs



13. The composition of public spending has been broadly supportive of inclusive growth since the global crisis (Figure 6). Health spending, expressed as a share of GDP, has increased or remained stable in most LIC country groups. Fragile states in particular, having benefitted from sizeable debt relief, have increased health spending substantially. By contrast, health spending in small states is on a downward trend. Trends in the pattern of education spending vary across country groups, with a downward drift in oil exporters and small states. Data limitations preclude an assessment of recent trends in poverty levels and unemployment rates.

Figure 6. Trends in Social Spending



VULNERABILITY ANALYSIS

A. Framework

14. The analysis of vulnerabilities in LICs involves two main elements (see Box 1): a) an examination of statistically-estimated vulnerability indices for LICs and b) model-based scenario analysis that explores the impact of selected external shocks on LICs. A number of economic variables that provide additional information on macroeconomic and financial sector vulnerabilities are also considered.[8]

15. The analytical apparatus employed here contains a number of innovations on the approach taken in the 2012 report. Most significantly, the scenario analysis now allows for an explicit fiscal policy response to adverse shocks, either counter-cyclical or consolidation-focused, depending on the extent of fiscal space available to policy-makers (see Box 2).[9] The fiscal policy response is allowed to feedback to real GDP growth through the use of a fiscal multiplier.[10]

[8] See Box 1 and Appendices I, II, and III for more detail on the methodologies employed.

[9] This innovation was called for by Executive Directors during Board discussion of the 2012 report.

[10] Results of simulations using a multiplier of 0.5 are discussed in the paper in some detail; the results of stress tests with alternative multiplier values—0.1 and 0.9—are also examined.

Box 1. Assessing Vulnerabilities in LICs: Concepts and Approaches

Macroeconomic policy buffers provide a country with the policy room to react to adverse external shocks. Key buffers include the stock of foreign reserves, a robust balance of payments position, a comfortably financed budget deficit, modest levels of public debt, and government domestic and external borrowing capacity. A low inflation rate also provides policy room in countries with an independent monetary policy.

A **growth decline vulnerability index (GDVI)** is used to measure a country's underlying vulnerability to sudden growth declines. The latter are characterized by negative real per capita GDP growth in the event of exogenous shocks and a protracted period of growth below the pre-shock trend. The methodology takes into account historical relations between growth decline and economic, fiscal, and external indicators (see Appendix I).

Scenario analysis is a tool for evaluating the macroeconomic impact of global shocks on LICs. This, in turn, allows for an assessment of the adequacy of external and fiscal buffers across countries. A summary description is presented in Appendix III of this paper.

Fiscal space is a broad concept that summarizes the extent to which government expenditure can be increased (or taxes cut) without jeopardizing long-run debt sustainability or producing a sharp increase in government borrowing rates. In this paper, fiscal space is defined by reference to long-run debt sustainability considerations: specifically, fiscal space is calculated as the difference between the *observed primary balance* and *the primary balance that, if maintained at the same level every year, would enable the country to achieve a specified public debt target by 2030* (henceforth, the "constant primary balance"). A country is said to have fiscal space/a fiscal buffer, when the observed primary balance exceeds the constant primary balance. The 2030 public debt target is set as the minimum of a) the end-2012 public debt-to-GDP ratio (i.e., the pre-shock level of debt) and b) the applicable public debt threshold used in the joint IMF-World Bank Debt Sustainability Framework (IMF, 2012a).1/

The one **external buffer** that features in the analysis here is the stock of international reserves, measured in terms of the months of next year's imports that these reserves could purchase. A reserve coverage ratio of three months is considered to be a minimum adequate level; the external buffer is considered to be insufficient/too weak if the import coverage ratio is less than three months.

In the scenario analysis, a country is assessed to have an **additional external financing need** if the post-shock reserve coverage ratio is less than the minimum adequate level of three months. For countries whose pre-shock reserve coverage exceeded three months of imports, the additional external financing need is the amount of financing needed to bring the reserve coverage ratio back to three months. For countries where pre-shock reserve levels were less than three months of imports, the additional external financing need is the amount of financing needed to restore the stock of reserves (as distinct from the reserve coverage ratio) to its pre-shock level. The additional financing need is set at zero for countries where reserves remain above three months of imports after the shock or where reserves increase as a result of the shock.

1/ The public debt-GDP ratio is only one indicator of debt vulnerabilities in the LIC Debt Sustainability Framework (DSF). Countries with public debt-GDP ratios below their indicative thresholds may still be vulnerable if other indicators, such as the public debt-exports ratio, breach their indicative thresholds.

Box 2. The Fiscal Feedback Rule in the VE-LIC

The design of the rule seeks to balance the need for flexibility with respect to country circumstances, such as cyclical conditions and available fiscal space, while still remaining operationally simple to implement. The main components are detailed below. A schematic presentation of the rule is contained in Appendix III.

Long-term debt sustainability anchor. The need to maintain longer-term debt sustainability is one of the anchors of the fiscal feedback rule. Thus, the rule defines fiscal space as the difference between the actual primary balance and the constant primary balance needed to achieve the debt target. However, as elaborated in Box 1, this notion of fiscal space should not be viewed as a rigid prescription for adjustment at each point in time, but rather as being illustrative of the need for policy action over the medium term in order to prevent macroeconomic circumstances from deteriorating.

Gradual adjustment. Where adjustment is warranted, the rule specifies that the adjustment to the constant primary balance be achieved over three years, i.e., in any given year only a third of the required adjustment needs to be implemented; the fiscal adjustment is assumed to start from 2014.

Flexibility. The rule also builds in additional flexibility to recognize country circumstances. Specifically, it allows countries with suitably strong fiscal positions to undertake a countercyclical policy response as follows:

—Countries with post shock primary balances that exceed the constant primary balance by at least 1 percentage point of GDP during the year of the shock (i.e., 2013), are allowed, starting the following year, to increase expenditures by a third of the difference between the actual and constant primary balances.1/

—As a variant on the fiscal adjustment rule, financing needs are computed for the case where countries with moderate debt levels postpone fiscal adjustment. Specifically, countries whose post-shock primary balances are worse than the constant primary balance in 2013 postpone fiscal adjustment if their post-shock public debt level is at least 10 percentage points of GDP below the LIC DSF's indicative threshold.

1/ When a country's post-shock primary balance exceeds the constant primary balance by less than one percent of GDP, their spending is assumed to remain at the same level as under the baseline.

B. How Vulnerable are LICs to a Recession?

The near-term risk of a shock-induced recession across LICs as a group remains elevated, though moderately lower than end-2012. Vulnerabilities are concentrated in small and/or fragile states and oil exporters; the number of "core" LICs with significant vulnerabilities has steadily declined.

16. We explore the question of vulnerability to a near-term downturn by means of a growth decline vulnerability index (GDVI), constructed from three sub-indices that quantify vulnerabilities to an economic downturn stemming from a country's fiscal position, its external sector position, and selected macroeconomic and institutional features.[11]

[11] See Appendix III for a discussion of the methodology employed in constructing the GDVI.

17. In 2013, the number of LICs at high risk of experiencing a shock-induced recession in the near-term remains elevated, though slightly down from 2012 (Figure 7). About one quarter of LICs are assessed to be at high vulnerability to a growth decline, reflecting mainly limited progress in reconstituting fiscal buffers. The moderate improvement projected for 2013 reflects developments in core LICs, where the growth momentum is projected to be sustained while external and fiscal sectors strengthen such that no country in this group is now assessed to be highly vulnerable. This offsets developments in net oil exporters where an increased number of countries are at high vulnerability, both relative to 2012 and prior to the crisis, reflecting their weaker fiscal positions.

18. The GDVI points to striking differences in the levels of vulnerability recorded across the four country sub-groups. For the first time since the global crisis, none of the LICs in the core group is assessed to have high vulnerability. By contrast, nearly half of all fragile and small states remain highly vulnerable to a shock-induced recession, broadly unchanged from the situation in 2012, while 60 percent of net oil exporters are also highly vulnerable. Each of these sub-groups contains a large share of countries with high fiscal vulnerabilities (Figure 8).

19. There are also significant differences in the levels of vulnerability across regions. In Latin America and the Caribbean and in Asia, about 55 percent and 45 percent of LICs, respectively, are assessed to be at high vulnerability to a growth decline, higher than recorded during the peak of the crisis (Figure 9). This is on account of high fiscal and external vulnerabilities, particularly in small states in these regions. By contrast, only about 15 percent of LICs in sub-Saharan Africa (SSA) and 25 percent of LICs in the Middle East and Europe are assessed to have high vulnerability. In 2013, SSA stands out as the one region where the number of countries assessed as being highly vulnerable declined noticeably, approaching pre-crisis levels.

20. Complementary vulnerability indicators focused on debt sustainability assessments (DSAs), exchange rate alignment, and financial sector indicators confirm the divergent developments in vulnerability across LIC country groupings (Appendix IV). Notably, indicators for real exchange rate alignment and high debt have deteriorated in small states over the past year, while both fragile states and oil exporters have an increased share of countries assessed by Fund staff as having over-valued real exchange rates as well as rapidly expanding domestic credit.

Figure 7. Overall Growth Decline Vulnerability Index
(Shares of LICs by risk category and LIC sub-group)

Figure 8. Sectoral Growth Decline Vulnerability Index
(Shares of LICs with high vulnerability by LIC sub-group)

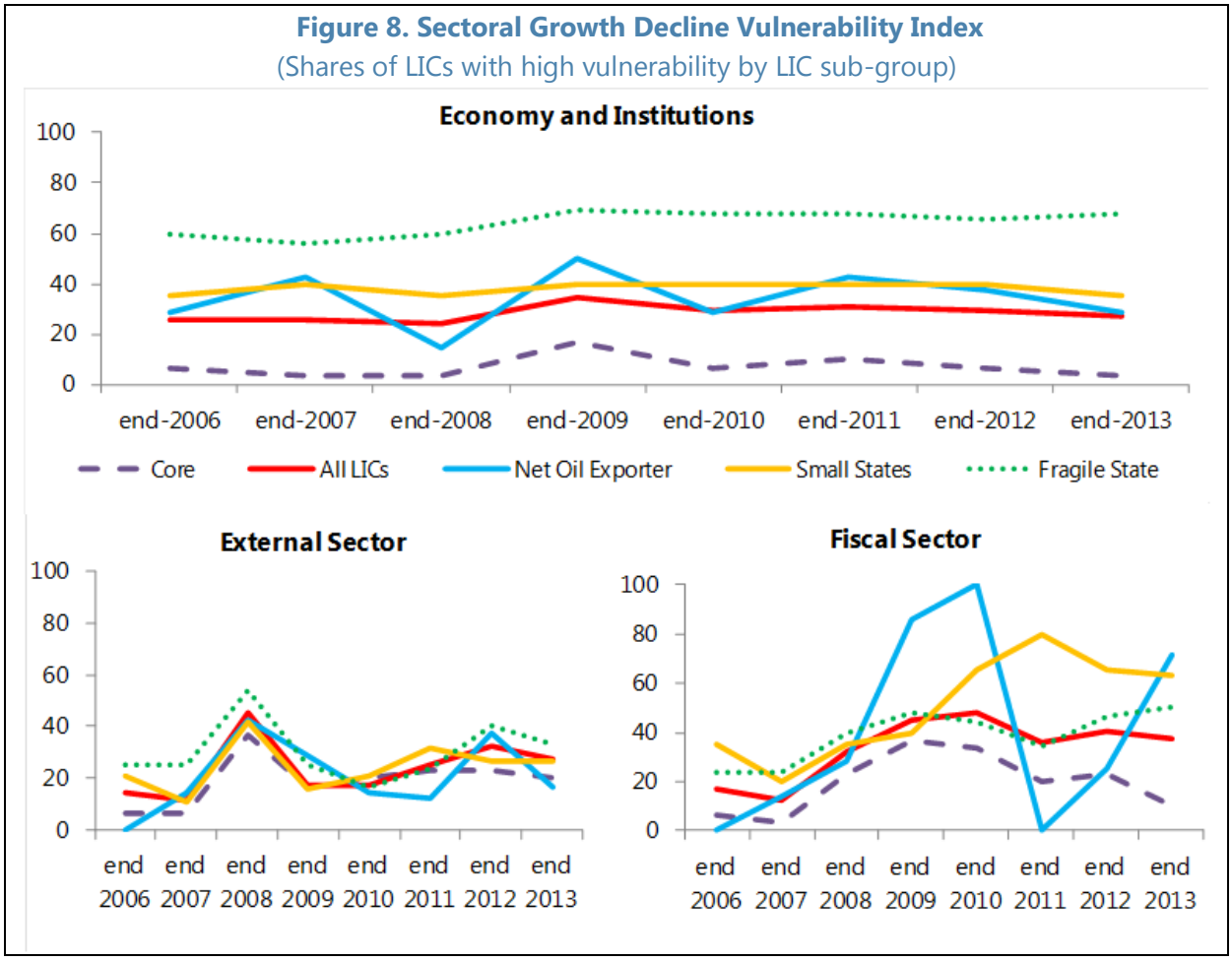
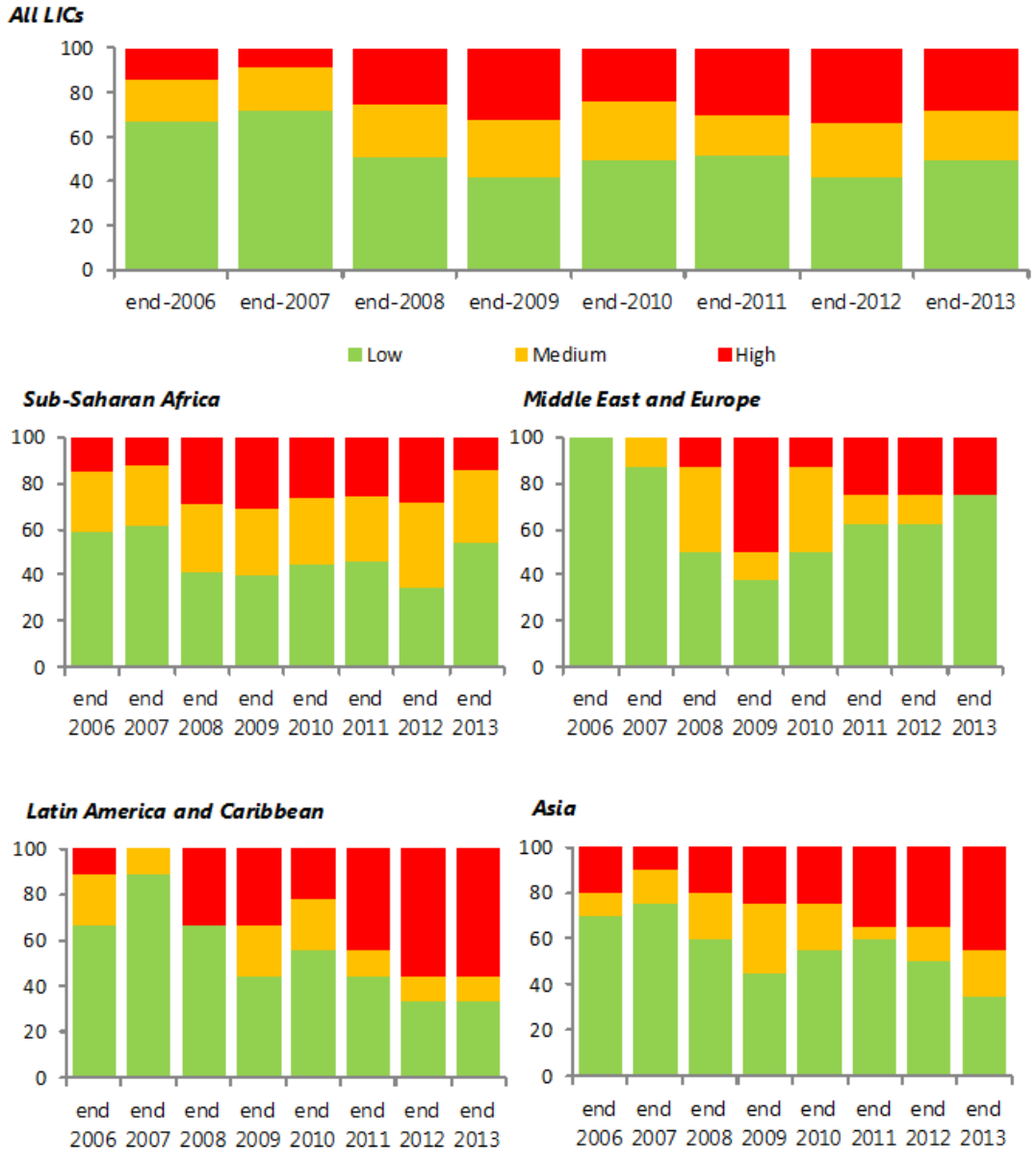


Figure 9. Baseline GDVI by Region



C. LICs Exposure to Global Shocks

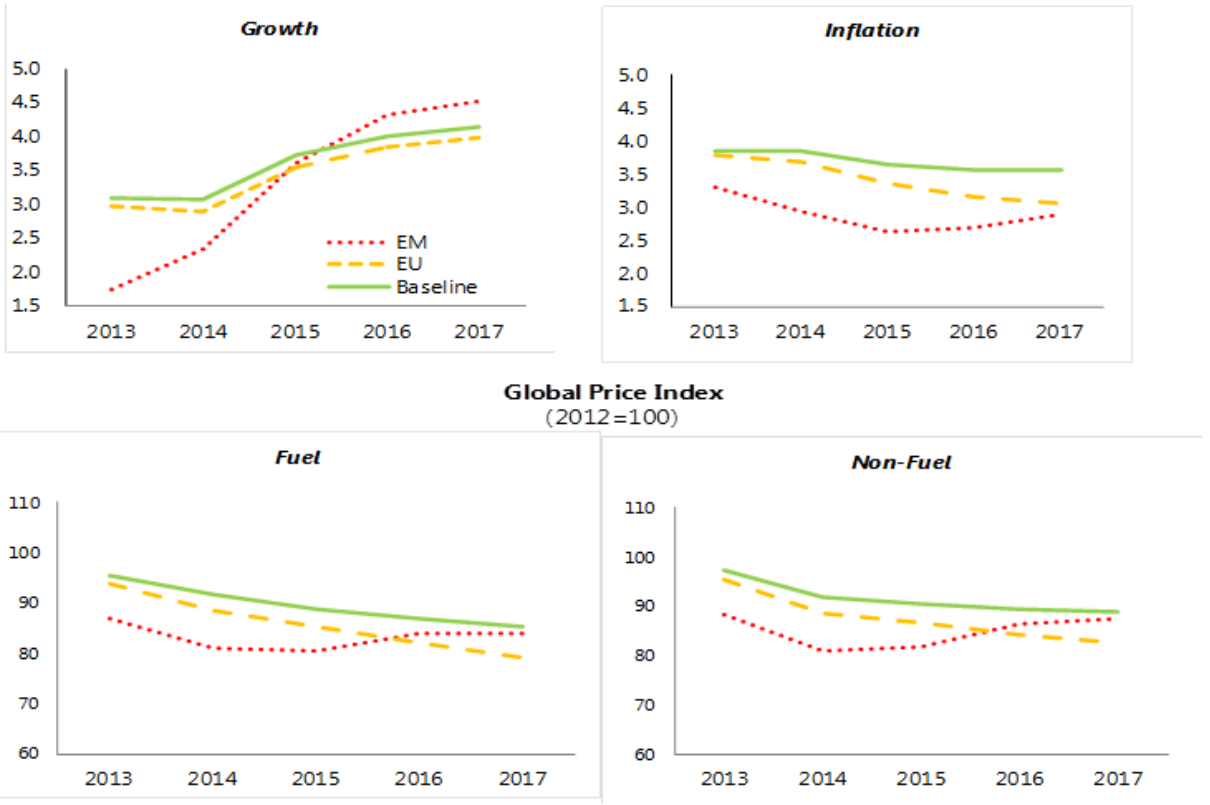
The external shock scenarios that are analyzed in this paper are chosen from the list of near-term global risks identified in the Spring 2013 WEO. The scale of the shocks considered now are more modest than the shock assessed in the 2012 analysis of LIC vulnerabilities. Nonetheless, LICs could face considerable additional financing needs even with these more moderate shocks. Simulations indicate that fiscal adjustment can lower financing needs somewhat, albeit at the cost of slower growth.

21. We examine here the impact on all LICs of two adverse global shocks associated with near-term risks identified in the Spring 2013 WEO.[12] These risks are also used as a consistent reference point for assessing risks in bilateral and multilateral surveillance. We also examine the impact of an acceleration in the pace of monetary policy tightening in the United States on the budgetary positions of a sub-group of frontier LICs, since a sharp reversal of prior portfolio inflows could lead to higher-than-expected domestic interest rates. The specific shocks analyzed and their impact on the global economic environment are summarized below (Figure 10).

- **Emerging markets growth slowdown**. This scenario involves a significant decline in investment in leading emerging market economies, reflected in a significant temporary slowdown of growth.

- **Protracted period of slower Euro area growth**. This scenario entails a larger-than-expected adverse impact of public and private sector debt and deleveraging on the real economy resulting in Euro area growth nearly ¾ percent per year below current expectations**.**

Figure 10. Global Growth, Inflation, and Fuel and Non-Fuel Price Index



[12] Other risks, such as those associated with higher oil prices and emerging market capital flow reversals have very recently reemerged. The impact of a significant fuel price shock was simulated in the context of the analysis of LIC vulnerabilities in 2012.

22. Reflecting a shift in focus from tail risks to proximate risks, the main global shocks being simulated in this report are less severe than those in the 2012 exercise. The focus here is on near-term risks taken from the Spring 2013 WEO, rather than the severe tail risk shocks considered in the 2012 report (Table 1).

Table 1. Comparison of Global Shocks in the 2012 and 2013 Analyses of LIC Vulnerabilities
(Deviation in percentage points from baseline)1

	2012 Growth slowdown			2013 Emerging market slowdown			2013 Euro area slowdown		
	2013	2014	2013-16 Cumulative	2013	2014	2013-17 Cumulative	2013	2014	2013-17 Cumulative
Global real GDP growth	-0.50	-1.70	-5.40	-1.35	-0.73	-1.51	-0.13	-0.17	-0.79
Oil prices	-3.80	-12.70	-29.28	-9.10	-2.10	0.71	-1.76	-1.53	-6.20
Non-oil prices	-3.70	-11.20	-21.53	-4.40	-1.10	-0.56	-0.83	-0.94	-4.08

[1] The baseline refers to the July 2013 WEO Update.

23. One other important issue that is relevant for the impact on LICs under these shocks is the composition of the decline in global growth. In particular, while advanced countries continue to account for a significant share of LICs' trading partners, LICs as a group are becoming more integrated with emerging markets not only through terms-of-trade channels but also with respect to remittances and financial linkages. The close correlation between expected growth in systemic emerging markets and commodity prices provides a strong transmission channel to economic growth and fiscal and external positions in LICs.

Emerging markets growth slowdown

24. A deeper-than-expected slowdown in emerging markets has a significant impact on LICs' real GDP growth. Reflecting reduced economic activity in trading partners and the associated decline in the terms of trade, growth in 2013 is lowered by nearly one percent in the median LIC, and by broadly similar magnitudes in all of the sub-groups of countries. The impact on fragile states is, however, somewhat lower, reflecting weaker trade linkages. In line with developments in global economic activity, growth in LICs (including the sub-groups) stabilizes by 2015, before rising above the baseline in 2016–17 as the global economy recovers.

25. Key macroeconomic indicators in LICs are also significantly impacted.

- With the shock, the median LICs' fiscal deficit expands to more than 4 percent of GDP by 2014, relative to just under 3½ percent in the baseline. By 2017, the fiscal deficit adjusts down to about 3½ percent of GDP, but remains some ¾ percentage points of GDP above the baseline.
- As a consequence, by 2017, public debt levels in the median LIC are higher than under the baseline by about 5½ percentage points of GDP.

- The median LICs' current account deficit in 2014 rises to about 5½ percent of GDP following the shock, some 1¾ percentage points of GDP higher than under the baseline. However, even under the passive scenario the current account deficit recovers to 3¼ percent of GDP, its level under the baseline, by 2016.

- While reserve levels under the baseline for the median LIC are well in excess of the three months of import cover threshold, the shock lowers such reserves to about 2½ months of import cover by 2014 and improves only modestly thereafter through 2016 due to reduced export receipts, adverse terms of trade for some countries and subdued remittances and FDI inflows, but by 2017 rises to three months of cover.

26. The impact of a slowdown in emerging markets impacts fiscal and external positions in oil exporting countries most significantly, but fragile and small states are also materially impacted (Figure 11).

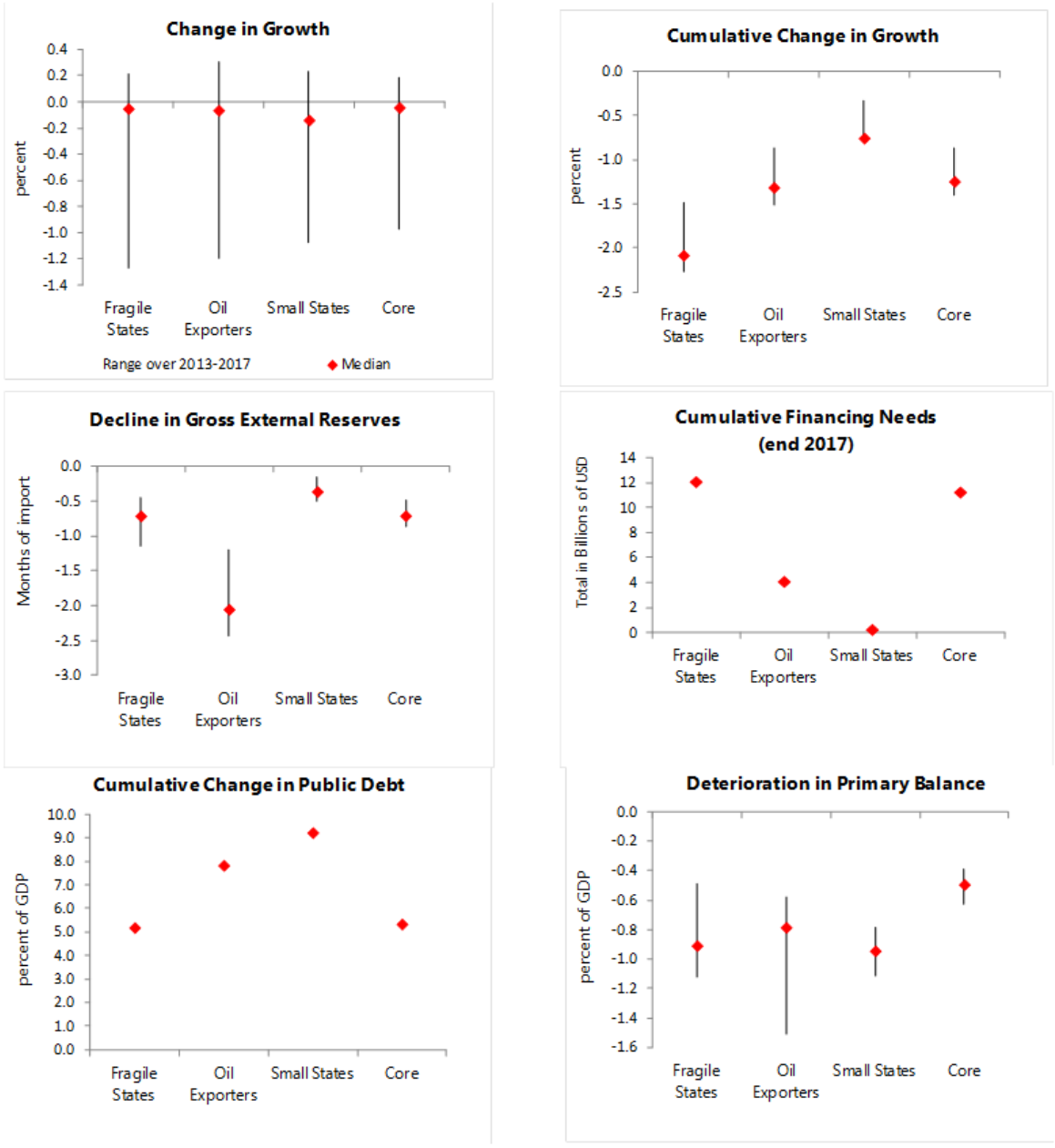
- Oil exporting countries are adversely affected, given a drop in oil prices. The median oil exporters' primary balance deteriorates on average by nearly 1 percentage point of GDP per year over 2013–17 in relation to the baseline scenario, reaching a peak decline of about 1½ percentage points in 2015. Reserve cover also declines sharply in 2014, by more than two months of imports, and stabilizes thereafter at about three months of imports.

- The impact on fragile states' buffers is also significant. On average over 2013–17, the median primary balance deteriorates by a little more than ¾ percentage points of GDP. Reserve cover declines by about one month of imports in 2014, and then recovers to the baseline level of about 3.3 months by 2017.

- In small states too, the primary balance declines on average by about 1 percentage point of GDP over 2013–17. However, reserve coverage declines modestly, by ⅓ month of imports per year relative to the baseline.

- For core LICs the fiscal impact of the shock is largely contained. The primary balance declines on average by about ½ percentage point of GDP over 2013–17. However, reserves fall by about ¾ month of imports on average over 2013–17, stabilizing at around 2½ months by 2017.

Figure 11. Impact of an Emerging Market Shock by LIC Sub-Group[1]



[1] Individual LICs may belong to more than one sub-group and hence the total of some variables across the sub-groups could exceed the total for LICs as a whole.

27. Simulations that allow for fiscal policy adjustment, and its feedback to growth, yield significantly stronger policy buffers by 2017 and somewhat lower external financing needs,

but at the cost of lower growth.[13] Under the specified fiscal adjustment rule, the need for additional adjustment in the median LIC to restore fiscal space is almost eliminated by 2017 (compared to further adjustment of some 1⅓ percentage points of GDP required under the no adjustment scenario) and the increase in public debt levels relative to that under the baseline scenario is smaller. Gross external reserves return above three months of import cover by 2017. However, the simulated fiscal adjustment, which implies a procyclical stance, leads to lower real GDP growth by about ⅓ percent relative to the no policy adjustment scenario in 2014–2015, the years when the shock lowers global real GDP growth below the baseline.[14] In 2016–17, as global growth rises above the baseline, mitigating the need for further fiscal adjustment, the adverse impact of such adjustment on the median LIC's growth is somewhat lower.

28. The shock results in a large proportion of countries being left with inadequate buffers in a medium-term perspective (Table 2).

- In the baseline nearly 70 percent of countries have inadequate fiscal buffers prior to the shock, but this percentage drops substantially by 2017.[15] Following the shock, the share of countries with inadequate fiscal buffers rises by some 10 percentage points, and even with subsequent growth and macroeconomic stabilization, the share of countries with adequate fiscal buffers does not return to its pre-shock level.

- As regards external buffers, while the initial pre-shock situation is stronger than with fiscal buffers, here too the share of countries with inadequate buffers rises substantially following the shock, and growth and macroeconomic stabilization is unable to restore buffers to their pre-shock level.

- Fiscal adjustment unsurprisingly helps to rebuild fiscal buffers—by 2017 the share of countries with inadequate fiscal buffers is lowered to 60 percent, just slightly higher than the level in the baseline. The impact of such policy adjustment on external positions—which under this framework is confined to adjusting spending—is more modest, and by 2017, the share of countries with inadequate external buffers is substantially higher than the level under the baseline, and also the pre-shock level (i.e., its level in 2012).

[13] Based on all LICs adjusting in line with the rule specified in Box 1, irrespective of their debt level. The impact on financing needs when LICs with low debt postpone adjustment is discussed below.

[14] Safeguarding health, education and targeted spending on social safety nets can reduce the potentially negative social impact of procyclical fiscal adjustment.

[15] A country is defined to have an inadequate fiscal buffer when its primary balance is lower than the constant primary balance (as defined in Box 1 above), i.e., it has negative fiscal space. As also noted in Box 1, the concept of fiscal space is most relevant from a longer-term policy perspective, and where shocks are permanent. While countries with low debt levels may have some flexibility in the short run, as discussed below, financing constraints may be binding in many such cases.

Table 2. Availability of Policy Buffers in LICs Under an Emerging Market Shock

	2012	2013	2014	2015	2016	2017
Percentage of countries with insufficient fiscal buffers						
Baseline	69	70	73	61	59	55
EM Shock						
passive		81	83	77	73	73
adjustment, m=0.5		81	83	72	67	61
Percentage of countries with insufficient external buffers						
Baseline	34	34	38	38	38	36
EM Shock						
passive		51	57	55	52	50
adjustment, m=0.5		51	57	54	51	48

29. The shock produces significant gross external financing needs for LICs, but these are modestly lowered after policy adjustment.[16]

- LICs experience a large increase in cumulative additional external financing needs, rising rapidly to nearly $37 billion by 2015, as reductions in exports through both price and volume channels contribute to an increase in current account deficits. Thereafter, as the shock dissipates, and global growth rates rise above the level in the baseline in 2016–17, current account balances improve and cumulative additional financing needs by 2017 settle at about $25 billion. As compared to the shock simulated in 2012, the distribution of financing needs is more dispersed, with many more countries facing modest financing needs.

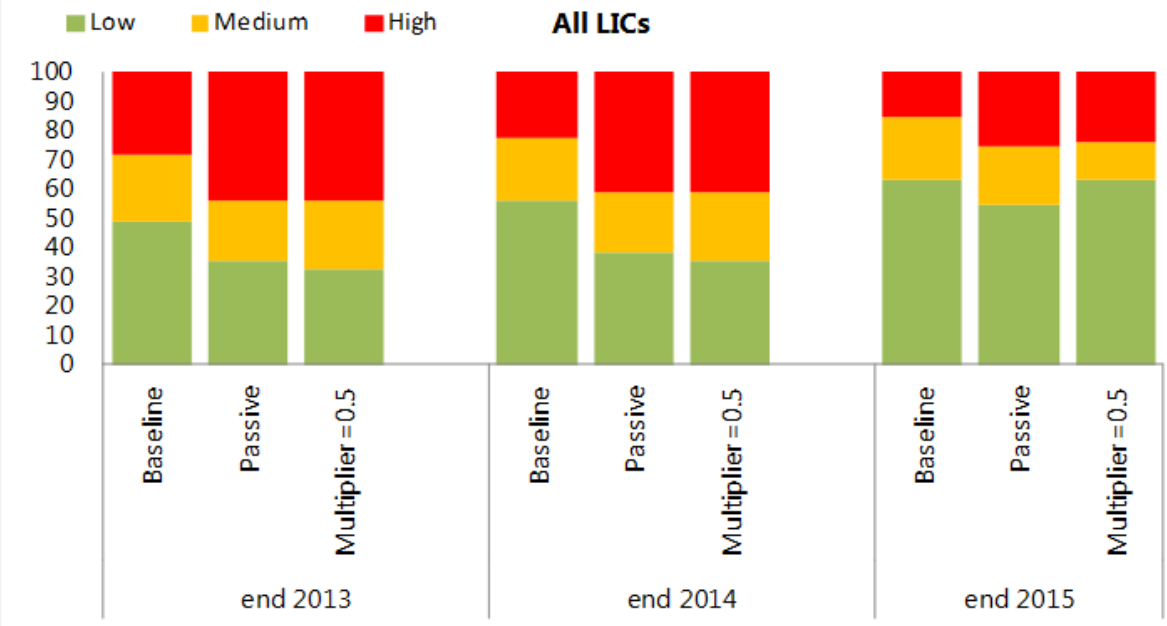
- Financing needs could range from $18-23 billion depending on the extent of policy adjustment. Additional external financing needs are somewhat lower at about $18 billion by 2017 (0.2 percent of GDP lower than the scenario without fiscal policy adjustment) when fiscal policy adjustment rules are followed, although the impact of policy adjustment is more significant in the medium-term. However, if LICs with low debt, i.e., with debt levels that are 10 percentage points below their indicative thresholds, were to postpone adjustment until after 2017, financing needs would rise to $23 billion, very nearly the same level as under the passive scenario.[17]

30. LICs' vulnerability, as measured by the GDVI, deteriorates in the aftermath of the shock, with policy adjustment mitigating the adverse impact (Figure 12).

[16] Key assumptions in this exercise relate to export and import elasticities and WEO commodity price projections. Estimates of financing needs are therefore subject to uncertainties surrounding these assumptions.

[17] Since nearly ⅔ of LICs have public debt levels that are more than 10 percentage points of GDP below their policy dependent thresholds, this scenario is very similar to the passive scenario.

Figure 12. Evolution of the GDVI Under an Emerging Market Shock



A protracted period of slower Euro area growth

31. The Spring 2013 WEO pointed to a protracted period of slower Euro area growth as a risk to the global economic outlook. The scenario considered here involves Euro area growth that is about ¾ percent per year below the baseline. A distinguishing feature of this shock is that its small negative impact on global growth (up to 0.2 percent per year) is protracted, remaining below the baseline throughout the period of analysis. The cumulative negative impact on global growth over 2013–17 of about ¾ percent is about half that of the emerging market shock, but the impact on oil and non-oil prices, which decline by about 6¼ and 4 percent respectively, is larger.

32. The shock has a modest impact on key macroeconomic indicators and policy buffers in LICs.

- The impact on growth in 2013 is negligible, and thereafter real GDP growth in the median LIC is lowered by up to ¼ percent per year over 2013–2017. The impact on the sub-groups of LICs being considered is broadly similar.
- The fiscal balance in the median LIC deteriorates by about ¼–½ percent of GDP per year relative to the baseline, which contributes to the public debt ratio in 2017 being about 3½ percentage points of GDP above the baseline.
- The impact of this shock on the current account balance is small, except in oil exporters.

- The shock has dissimilar impacts on the median LIC's fiscal and external policy buffers. The impact on fiscal space gradually builds up, and by 2017 fiscal space is about ⅔ percentage point of GDP lower than under the baseline. By contrast, reflecting developments in the current account, the impact on the level of reserve cover is modest, remaining above 3½ months of imports even under the passive scenario.

33. The impact of the shock on fiscal and external positions is particularly large for oil exporters, but fragile and small states' fiscal positions are also impacted, albeit by less than under the emerging market shock (Figure 13). The impact of the shock on external positions is modest.

- In fragile states, the deterioration in primary balances is mainly concentrated in 2015–17 and ranges from about ¼–½ percentage points of GDP. The decline in reserves is more modest over 2014–17, staying above three months of imports in 2017.

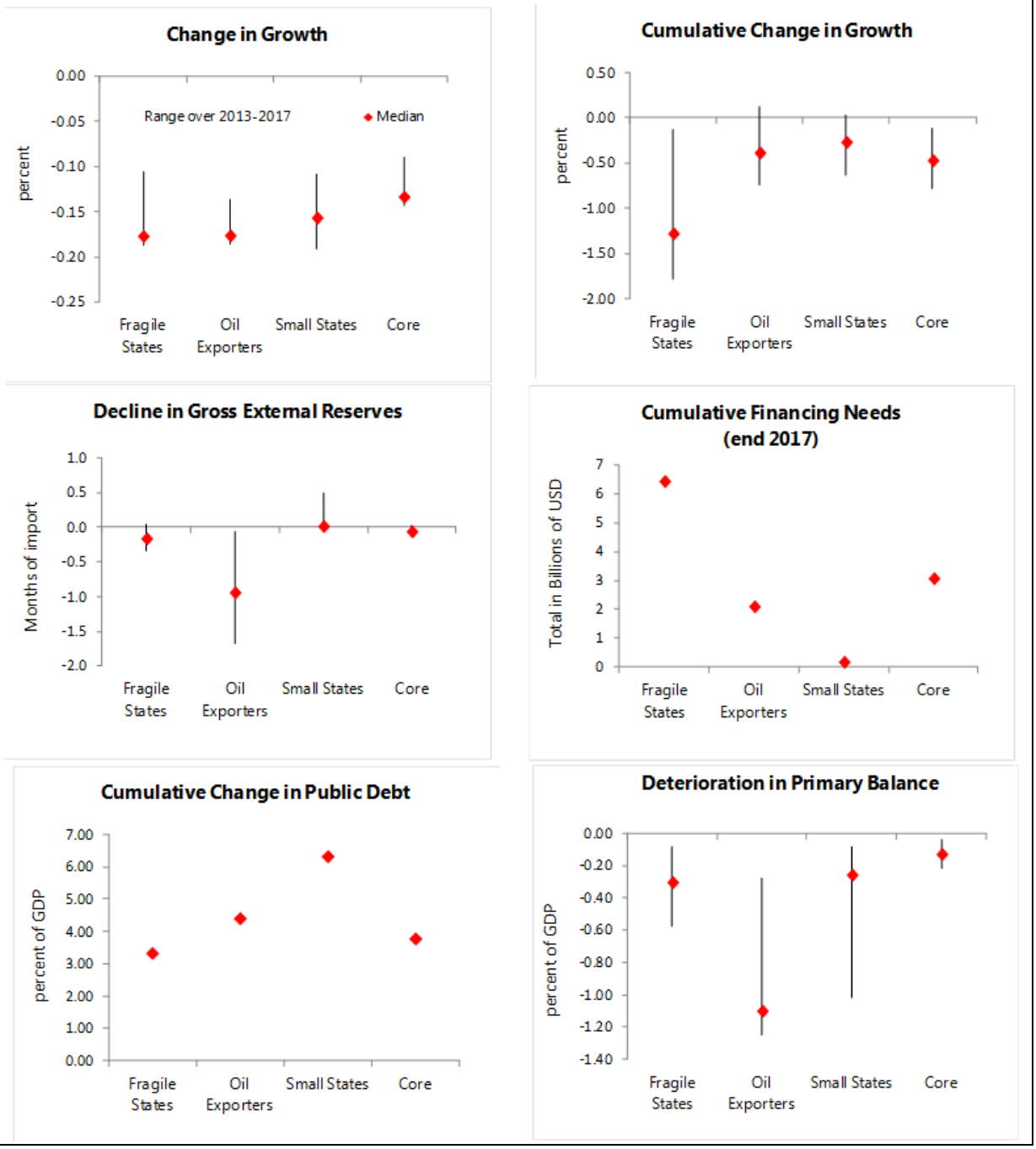
- Policy buffers are most significantly impaired for oil exporters, as the slowdown leads to oil prices below its baseline level over a protracted period. Thus, the primary balance in the median oil exporter deteriorates significantly, exceeding 1 percentage point of GDP over 2015–17. The decline in reserves is also significant, falling sharply, by nearly 1–1½ months of imports over 2015–17, and stabilizing at about four months of imports.

- The change in primary balances for the median small states is also significant, deteriorating by about ½–1 percentage point of GDP over 2016–17 relative to the baseline, with more modest deterioration prior to that. However, reserve coverage increases relative to the baseline.[18]

- For core LICs, the impact of the shock on the primary balance is limited, as is the case with reserve coverage.

[18] The shock lowers imports, which are large in relation to exports, very significantly, while other major inflows such as remittances are not significantly affected by the shock.

Figure 13. Impact of a Euro Area Slowdown by LIC Sub-Group



34. Allowing for fiscal policy adjustment mitigates significantly the impact on policy buffers, while the negative impact on growth is modest.[19] The median LICs' fiscal space, relative

[19] These results are based on all LICs with post-shock primary balances lower than the constant primary balance adjusting as specified in Box 1.

to the no policy adjustment scenario, improves by about ⅓–1 percentage point of GDP, nearly restoring fiscal space by 2017. Such adjustment produces a significant strengthening of the external reserves position, which is almost unchanged from its level under the baseline. As a result of the policy adjustment, real GDP growth over 2014–17 in the median LIC would be some ¼ percent lower than under the no adjustment scenario, with the level of the GDP some 1¼ percentage points below the baseline. The change in public debt, which was very small even in the passive response scenario, is lower still with fiscal adjustment.

35. The Euro area shock has a significant impact on the share of LICs with inadequate fiscal buffers, but is less damaging for external buffers (Table 3).

- Reflecting the small but sustained nature of the shock, the initial impact of the shock on the share of countries with inadequate fiscal buffers is smaller than under the emerging market shock, but by 2017 the shares of countries with inadequate buffers is only a little lower. Nonetheless, the underlying strengthening of the macroeconomic situation over the period under analysis (even with the shock) ensures that by 2017 the share of countries with inadequate buffers is back to its pre-shock level (i.e., its level in 2012).

- The impact of the shock on countries with inadequate external buffers is minimal even under the passive adjustment scenario.

- Policy adjustment is particularly helpful to address this shock, with the share of countries with inadequate fiscal and external buffers by 2017 down to near or below the level under the baseline.

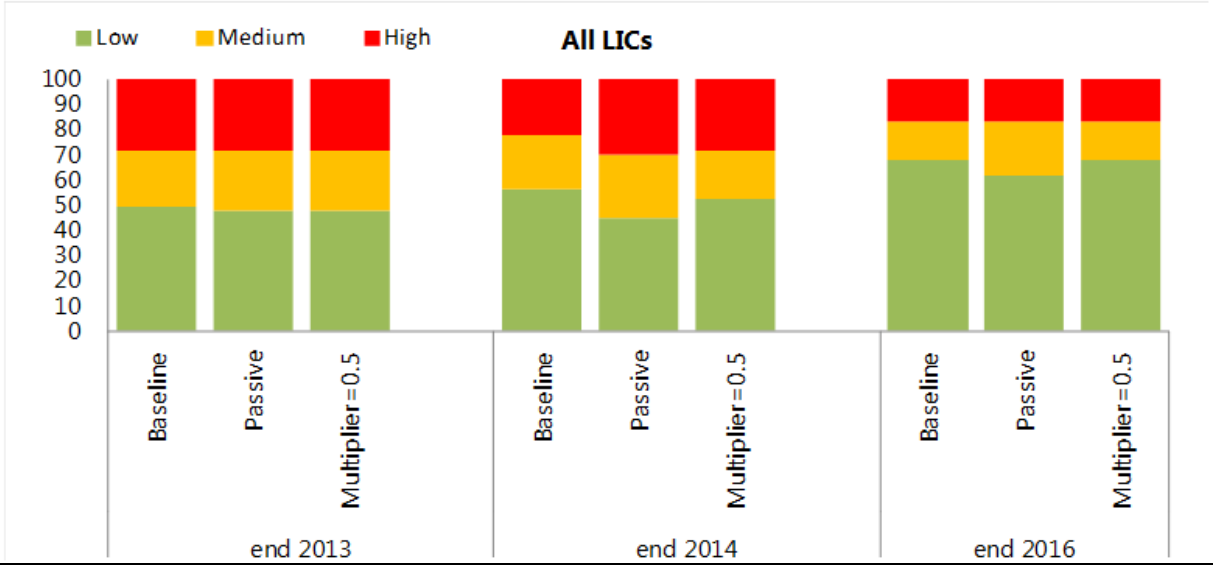
Table 3. Availability of Policy Buffers in LICs Under a Euro Area Shock
(In percent of LICs)

	2012	2013	2014	2015	2016	2017
Percentage of countries with insufficient fiscal buffers						
Baseline	69	70	73	61	59	55
Euro Area Shock						
passive		75	77	72	67	69
adjustment, m=0.5		75	75	66	66	58
Percentage of countries with insufficient external buffers						
Baseline	34	34	38	38	38	36
Euro Area Shock						
passive		34	40	35	35	38
adjustment, m=0.5		34	40	31	31	33

36. The additional financing needs ranging from $7.5 billion to $10 billion are small even under the passive adjustment scenario and decline further with policy adjustment. Cumulative additional financing needs are about $10 billion with no policy adjustment, declining to about $7.5 billion if all LICs undertake policy adjustment guided only by the constant primary balance needed to achieve their long-term debt target.[20] By contrast, if low debt countries postpone adjustment, cumulative additional financing requirements would be in the range of $9.2 billion (close to the passive adjustment figure) by 2017.

37. The shock affects adversely the GDVI on a temporary basis (Figure 14). The impact of the shock on the GDVI is greatest in 2014, especially under the passive scenario, but begins to recede rapidly thereafter. By end-2016, even under the passive scenario the GDVI risk profile is nearly as favorable as the end-2016 baseline, and significantly more favorable than the 2013–14 profiles under the baseline. With policy adjustment, the end-2016 GDVI risk profile is identical to the baseline.

Figure 14. Evolution of the GDVI Under the Euro Area Shock



The role of fiscal multipliers in adjustment scenarios

38. The impact of fiscal adjustment on growth depends on the size of the fiscal multiplier (Table 4). As reported in Appendix II, there is no consensus on the size of the multiplier in the literature. The results indicate that outcomes for growth, fiscal space, reserves and financing needs are plausibly, but not dramatically, affected by changing the assumed value of the fiscal multiplier.

[20] Although reserve coverage of the median LIC with policy adjustment increases relative to the baseline, additional financing needs arise since for many LICs even after policy adjustment reserves remain below its level in the baseline.

The fiscal adjustment scenarios discussed above used the mid-point multiplier value of 0.5, but alternative scenarios using multiplier values of 0.1 and 0.9 are also examined.

Table 4. Key Indicators with Alternative Multiplier Values

	m=0.5		m=0.1		m=0.9	
	2014	2017	2014	2017	2014	2017
Emerging Market Shock						
GDP Growth (in percent)	4.4	5.4	4.8	5.5	4.4	5.3
GDP Growth (in percent) 1/	4.4	5.3	5.0	5.5	4.2	5.1
Fiscal Space (in percent of GDP)	-2.0	-0.2	-1.9	-0.1	-2.0	-0.3
Reserves (months of imports)	2.6	3.3	2.6	3.1	2.7	3.4
Financing needs (cumulative from 2013, bil. $)	21.8	18.2	23.4	21.4	20.2	15.1
Financing needs (cumulative from 2013, bil. $) 1/	21.8	16.6	23.4	19.4	20.2	13.9
Euro Area Shock						
GDP Growth (in percent)	5.3	5.0	5.2	5.1	5.0	4.9
GDP Growth (in percent) 1/	5.3	4.9	5.6	5.1	4.9	4.8
Fiscal Space (in percent of GDP)	-1.4	-0.3	-1.4	-0.3	-1.4	-0.4
Reserves (months of imports)	3.4	3.8	3.4	3.7	3.4	3.9
Financing needs (cumulative from 2013, bil. $)	3.4	7.5	3.8	9.0	3.1	6.3
Financing needs (cumulative from 2013, bil. $) 1/	3.4	6.4	3.8	7.8	3.1	5.1

1/ Excluding countries pursuing countercyclical policies.

Capital Flow Reversal and Higher Interest Rates[21]

39. How might a reversal in capital flows to LICs resulting from higher US interest rates affect LICs?[22] As an illustration we consider a shock in which U.S. dollar interest rates paid by LICs increase by 300 basis points in 2014–16 and 100 basis points in 2017 relative to the gradual increases assumed in the baseline scenario.[23]

[21] Unlike the previous external shock scenarios, this shock was analyzed outside the VE-LIC framework and considers only a handful of countries since the framework does not incorporate financial sector transmission channels and the latter is less relevant for most LICs considered in this paper. This is because LICs typically have underdeveloped financial sectors, shallow markets, and are not well-integrated into international financial markets. Simulations of this external shock using the VE-LIC framework results in minimal impact on most vulnerability indicators, with total additional financing additional needs amounting to only about US$2 billion assuming fiscal adjustment. The LIC interest shock assumes unchanged global growth and commodity prices.

[22] The forthcoming *Global Financial Stability Report* indicates that the search for yield and demand for portfolio diversification resulted in demand-driven easy financing conditions for many LICs in recent years. Since markets began to focus on the possibility of the Federal Reserve tapering in late May, several LICs have experienced a substantial liquidation of built-up foreign positions. Moreover, there has been a high correlation between the volume of inflows prior to May 2013 and the outflows thereafter.

[23] While the choice of the specific interest rate increases are purely illustrative, it is instructive to note that Senegal's Eurobond yields have increased by about 250 basis points in recent months. The assumption that a change in U.S. dollar interest rates feed through directly to domestic interest rates is also purely illustrative. In practice, the pass-through may be imperfect.

40. The transmission of this shock to LICs through financial market channels could be important for some "frontier" LICs. The analysis considers the impact on five such countries—Ghana, Nigeria, Senegal, Uganda, and Vietnam—which have had access to international financial markets, and now have a significant stock of public sector debt held by non-residents.

41. These countries' access to capital markets has been picking up significantly. Such access includes the issuance of international sovereign bonds and the participation of non-residents in domestic government bond markets. Investors' interest in frontier LICs has been underpinned by improved macroeconomic performance, an enhanced governance framework, a more stable political landscape, and more favorable commodity prices. Foreign holdings of domestic government debt are substantial both as a share of total issuance and a share of GDP.[24]

42. In considering how capital flow reversal might impact these LICs, the analysis is static and looks only at the effects on financing costs and debt levels. Capital flow reversal raises interest rates on LICs external financing and is assumed to be channeled through to LIC domestic debt markets and, given the generally short-term maturities, quickly reflected in higher interest charges.[25, 26] No policy adjustment is assumed in reaction to the shock. In the analysis that follows, we consider the impact of such developments on the evolution of public debt over the medium term and the change in gross financing needs.

43. The results point to higher public debt and increased interest costs (Tables 5 and 6). Over the projection period, the interest rate shock pushes up the debt-to-GDP ratio by some 1–2 percentage points of GDP by 2017.

Table 5. Nominal Public Debt-GDP Ratio

(In percent)

	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
			Baseline					Higher interest rates Scenario		
Ghana	52.4	53.3	53.2	53.5	55.6	52.4	53.7	54.3	55.1	57.3
Nigeria	17.9	18.0	17.6	17.0	16.4	17.9	18.2	18.1	17.8	17.2
Senegal	45.4	47.2	48.8	49.0	49.0	45.4	47.5	49.4	50.0	50.1
Uganda	42.6	44.7	45.2	48.1	49.7	42.6	45.0	45.7	48.8	50.5
Vietnam	46.6	45.5	44.6	43.4	42.2	46.6	45.9	45.5	44.6	43.4

Source: IMF staff estimates

[24] As at end-2012, foreign holdings of domestic public debt as a share of the total amounted to 31 percent in Nigeria (4.8 percent of GDP); 26.6 percent in Ghana (7.5 percent of GDP); 14.2 percent in Uganda (1.8 percent of GDP); and 18 percent in Vietnam (3.3 percent of GDP).

[25] The share of projected domestic debt to total debt by end-2013 is as follows: Ghana: 55.4 percent; Nigeria: 81.2 percent; Senegal 25.4 percent; Uganda 26.3 percent; and Vietnam 36.8 percent.

[26] Reflecting information on the composition of external debt, interest hikes are assumed to affect 20 percent of the external debt stock. As regards domestic debt, it is assumed that for 80 percent of the debt the average maturity is expected to be a little higher than one year (the rest is assumed to be long-term debt). It is assumed that 60 percent of the short-term domestic debt rolls over each year, at which time it is affected by the higher interest rates.

Table 6. Additional Interest Costs

	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017
	(percent of GDP)				(percent of non primary expenditure)				(percent of oustanding domestic debt)			
Ghana	0.5	0.7	0.7	0.2	1.8	2.9	2.8	1.0	1.6	2.4	2.5	0.9
Nigeria	0.2	0.3	0.3	0.1	0.8	1.3	1.3	0.4	1.4	2.3	2.4	0.8
Senegal	0.3	0.4	0.4	0.3	1.0	1.5	1.7	1.1	2.0	2.8	3.2	2.0
Uganda	0.2	0.3	0.2	0.1	1.2	1.6	1.5	0.4	2.0	3.2	2.7	0.7
Vietnam	0.4	0.6	0.4	0.1	1.5	2.0	1.3	0.4	2.6	3.7	2.7	0.9

Source: IMF staff estimates

44. The impact of higher rates on interest costs support the need to make progress in building fiscal buffers. The additional gross financing needs in the medium term would be in the range of 3.5 to 8.5 percent of primary expenditure and about 7.5–10 percent of outstanding domestic debt. Responding to this shock could entail a combination of expenditure consolidation, while still preserving expenditures on infrastructure and social sector and/or additional issuance of domestic debt. Even in relatively shallow markets it is likely that such additional debt could be placed without significant difficulty.[27]

45. One additional element that warrants particular attention is the non-resident's share of domestic debt. Were non-residents to suddenly withdraw from domestic government bond markets, rollover risks could emerge. For example, if foreign investors were to leave Ghana, domestic investors would have to absorb 27 percent more debt (7.5 percent of GDP) and about 5 percent of GDP in the case of Nigeria. The required adjustment in the balance of payments and domestic financial intermediation under such situations could give rise to macroeconomic instability in frontier LICs.

SUMMARY AND POLICY RECOMMENDATIONS

A. Key Findings

46. Growth performance in most LICs has remained robust since the onset of the global crisis, helped by solid pre-crisis macroeconomic fundamentals and generally prudent management since the crisis hit. Small states have fared less well than larger states, experiencing both a sharper initial growth decline and a slower rebound, in part linked to slow growth in trading partners but also to weak fiscal (debt) and external positions. The near-term outlook is favorable, with some pick-up in growth rates expected on the back of a slowly improving global economic outlook. But the risk of experiencing a severe growth shock remains elevated for many small and/or fragile countries and for oil exporters.

47. The shock scenarios simulated in the paper are less severe than those considered in 2012, mainly because they focus on more plausible downside events rather than tail risk

[27] Nonetheless, individual countries would need to be mindful of longer-term debt sustainability and more immediate debt management concerns in making decisions about placing additional debt.

scenarios. The scenarios still produce significant adverse effects on growth for most LICs, with the emerging market downturn yielding a drop in the median growth rate of about ¾ of a percentage point. Moreover, only one-quarter of LICs have fiscal deficits and foreign reserve levels that are seen as providing adequate policy space to handle shocks; in the shock scenarios, this grouping falls to one-tenth of LICs in the emerging market scenario, and one-sixth in the euro area scenario. In a passive policy scenario, average annual additional external financing needs for 2013–2017 would be in the order of $5 billion in the case of the more adverse emerging market shock (cumulatively $25 billion)—about one fourth of the estimated financing needs in the 2012 report on LIC vulnerabilities resulting from a more severe protracted slowdown scenario. Fiscal policy adjustment in the face of the shock reduces modestly the estimated financing need, but this reduction would entail a cost in terms of lower growth rates.

48. External financing gaps will have to be closed via some mix of domestic policy adjustments and the provision of additional external funding (Box 3). To the extent that the external financing gaps are a reflection of budget financing needs that cannot be filled from domestic sources on account of the shallow domestic financial markets, additional external funding will be needed to finance temporarily the larger budget deficits and smooth the adjustment path. The IFIs, including the Fund, are well positioned to provide financial assistance in support of sound policy packages, but, under most scenarios, there would be a need for additional support from bilateral donors. In situations where additional financial support is limited, it will be especially important to provide support to the countries most affected by the shock, including many small and fragile states. It would be particularly desirable to provide such financial support in the form of grants to limit the build-up of public debt and mitigate fiscal vulnerabilities.

Box 3. Donor Financing and Adverse Global Shocks

LICs would face large additional financing needs to mitigate the impact of shocks. Cumulative additional financing needs could rise to about $25 billion by 2017 under the emerging markets shock, and up to $10 billion under the Euro area shock. We look here at the significance of these estimated financing needs relative to current flows of official development assistance (ODA) flows in recent years.

Realization of adverse shocks to global output impairs bilateral donors' ability to provide additional financing for LICs. The literature on the factors determining aid flows indicates that macroeconomic conditions in donor countries play a key role in determining official aid flows.1/ On average, aid tends to rise during economic expansions and fall during recessions (although there is some diversity in this experience); high public debt levels in donor countries are associated with a sharper contraction in aid flows in the aftermath of donor recessions.

After increasing sharply through much of the last decade, bilateral aid flows declined in 2009 but have rebounded since then. By contrast, financial support from multilateral sources rose during the crisis year of 2009, easing off somewhat in 2010.

Net Official Development Assistance, 2002–11
(In billions of U.S. dollars)

	2002	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*
DAC	41.0	50.1	54.7	83.0	77.4	73.5	87.0	83.8	90.8	94.2
Non-DAC	3.2	3.6	3.1	2.9	4.5	5.6	8.2	5.5	5.4	7.9
Multilateral	17.9	18.1	22.3	22.7	25.5	29.4	32.8	37.7	35.4	39.1
Total	62.0	71.7	80.1	108.6	107.3	108.5	127.9	127.0	131.7	141.2

The additional external financing needs projected earlier in this paper would require an increase in donor assistance. The average annual additional financing needs under the emerging markets shock scenario over 2013–17 would represent 3½ percent of net ODA provided in 2011. However, this would represent a much larger share of the ODA provided to the sample of countries considered in this analysis since aid is increasingly directed to middle-income countries. For instance, in 2012, DAC members provided $125.6 billion in ODA, but such aid to sub-Saharan Africa (SSA) amounted to only $26.2 billion.2/ As noted above, the realization of shocks would impair growth and fiscal positions in traditional ODA providers, and thus the realization of additional aid, especially grants, would be even harder to achieve.

1/ Frot (2009); Dabla-Norris and Mwase (2009); and Dabla-Noris, Minoiu, and Zanna (2010).

2/ See Follow-up to and Implementation of the Monterrey Consensus and Doha Declaration on Financing for Development, Report of the Secretary General to the United Nations General Assembly, August 2013.

B. Policy Recommendations

Reducing Vulnerabilities

49. Most LICs have relatively weak fiscal and external buffers but also pressing development needs that require budgetary outlays. There is a balancing act to be made in

trading off medium-term growth needs with the need to strengthen macroeconomic policy space; the appropriate mix is very much dependent on country circumstances.

50. There are several key policy measures that can be deployed over time to limit vulnerabilities in LICs:

- Improvements in the composition of public spending—such as the phasing out of universal energy subsidies, while implementing appropriately targeted social safety nets—can support more inclusive growth by generating fiscal space to ease the trade-offs between priority spending and strengthening fiscal positions.[28] Similarly, well-designed tax reforms and strengthened tax administration will expand revenue bases and hence ease difficult fiscal trade-offs. In this manner, additional domestic revenues can further support inclusive growth by financing higher spending in health, education and social safety nets. Key measures in the case of LICs include broadening the income tax base, strengthening the efficiency of the VAT, limiting exemptions and tax incentives, and adjusting excise taxes to inflation.[29]

- Oil exporters (and other countries that are heavily dependent on natural resource revenues and exports) can address the key source of domestic vulnerability—resource revenue volatility—by building an adequately-resourced stabilization fund in the "good years" to avoid the need for procyclical fiscal adjustments that would amplify the negative macroeconomic and social impact of volatile swings in commodity prices.[30]

- Fiscal policy space—the room to adopt counter-cyclical fiscal policies—can be substantially enhanced over time by measures to develop domestic debt markets, and financial markets more generally. Such financial deepening takes time to achieve, but will provide governments (that do not dominate the domestic supply of credit) with domestic borrowing options to avoid being pressed into pro-cyclical fiscal adjustment. Financial sector development also has a role to play in enhancing the efficacy of monetary policy which, as discussed below, has a role to play in managing macroeconomic vulnerability in LICs.

[28] In SSA, energy subsidies amounted to 1½ percent of regional GDP or 5½ percent of total government revenues in 2011, with electricity subsidies accounting for over 70 percent of this amount. In some cases, the total energy subsidies exceeded 4 percent of GDP (Mozambique, Zambia, and Zimbabwe). See IMF (2013a).

[29] See IMF (2011a).

[30] In the longer term, the exhaustibility of resource revenues requires careful fiscal planning to ensure that part of resource wealth is saved to avoid abrupt adjustments when the resources are exhausted. See IMF (2012b).

- Frontier market LICs—the increasing number of financially-developing countries that have attracted potentially volatile foreign portfolio investment into domestic capital markets—face a new source of vulnerability. Managing this new risk requires accumulating higher levels of foreign reserves, but also strengthening oversight of domestic financial markets and institutions.

51. Strengthening institutional capacity is also critical to enhance the resilience of LICs, especially in fragile states. Coordinated support for capacity-building from both multilateral agencies and bilateral donors is needed to strengthen those government functions that underpin resilience—including revenue collection, public financial management, debt management, and financial sector supervision. In this context, the Fund's technical assistance (TA) program is well aligned with reform needs in vulnerable countries; for example about a quarter of fiscal TA is allocated to fragile states, small states and net oil exporting countries—a share much larger than population or economic size would warrant.

Managing Adverse External Shocks

52. In the event of an adverse global shock, policy-makers will need to assess the extent to which changes are permanent or transitory, with the appropriate mix of policy adjustment versus extra financing very much dependent on this assessment. The emerging market shock considered above is more in the nature of a transitory shock, with global growth recovering to baseline levels within 2–3 years; the euro area shock is permanent in nature, requiring domestic adjustment to new external conditions over time.

53. Many LICs have insufficient fiscal space to absorb the full impact of the adverse external shocks examined above. For countries with insufficient fiscal space or access to financing at concessional terms, fiscal adjustment is likely to be needed even in the face of the temporary (but longish) emerging market shock. Where fiscal adjustment is undertaken, it should be implemented in a manner that safeguards priority spending, such as infrastructure and poverty-related spending. In most cases such spending is associated with high fiscal multipliers, and efforts to protect it would limit the negative growth impact of fiscal adjustment. Countries with moderate debt levels and adequate space to borrow domestically without disrupting credit markets have more room for fiscal maneuver, but will likely need to pursue some degree of fiscal consolidation in the face of a lengthy or permanent shock.

54. LICs with monetary autonomy and a flexible exchange rate have additional policy tools to handle external shocks. While the paper's methodology for scenario analysis does not model explicitly the use of these policy tools, deploying such policies where available could mitigate the impact of shocks and limit further the additional financing needs.

- With inflation well-contained and falling in most LICs, monetary easing can be deployed to support demand without destabilizing price movements and expectations; the scope for easing is more constrained in the relatively small number of countries where the authorities are struggling to contain high inflation.

- Exchange rate depreciation also offers scope for accommodating external shocks without suffering sizeable output losses, particularly in larger countries where inflation pass-through is more likely to be modest. The majority of LICs, including almost all small states, have pegged exchange rates, often within the context of currency unions; in many such cases, unilateral adjustment would be a potentially destabilizing measure rather than a tool for improving external positions. But for larger LICs with managed and or fully-floating exchange rates (the latter typically accompanied by more developed financial markets), exchange rate depreciation is an appropriate response to a significant external shock—and often an inevitable event when countries experience a severe shock (such as an export price collapse).

Appendix I. Description of Countries in LIC Sub-Groups

For the purposes of this paper, "low income countries" refers to the 73 countries that are currently eligible to borrow on concessional terms from the Fund's Poverty Reduction and Growth Trust (see IMF, 2013b). The grouping is quite heterogeneous, whether viewed in terms of country size, per capita income level, or the severity of political stresses and weak institutional development. It is useful for analytical purposes to divide the LIC group into four sub-groups, each with distinctive economic and institutional features.[31]

- **Fragile states** are countries where severe institutional weaknesses have significantly impaired the pace of economic development over time. For the purpose of the analysis in this paper, countries are deemed to be fragile if they currently record a score of 3.2 or less in the World Bank's Country Policy and Institutional Assessment (CPIA). The grouping contains 27 countries—in most cases they are quite poor (falling below the International Development Association (IDA) operational cutoff income level of $1,205 per capita (2012), but also include a number of small states with significantly higher income levels. Many of these countries have benefited from debt relief under the HIPC/MDRI process, but about one-half of the countries were deemed to be either at high risk of, or already in, debt distress in the most recent Fund/Bank debt sustainability analysis (DSA). The fragile states sub-group comprises of: Afghanistan, Burundi, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Republic of the Congo, Côte d'Ivoire, Eritrea, Guinea, Guinea-Bissau, Haiti, Kiribati, Liberia, Marshall Islands, Federal States of Micronesia, Myanmar, Nepal, Sierra Leone, Solomon Islands, Somalia, South Sudan, Sudan, Timor-Leste, Togo, Tuvalu, and Yemen.

- **Oil exporters** are countries where net oil exports are sufficiently large that movements in world oil prices and domestic oil supply constitute key drivers of domestic economic growth. The group includes eight countries, again diverse in terms of country characteristics, but in the main have income levels above the IDA operational cutoff level and modest levels of external debt. The oil exporters sub-group comprises of: Cameroon, Chad, Republic of the Congo, Nigeria, Papua New Guinea, South Sudan, Timor-Leste, and Yemen.

- **Small states** are countries with a population below 1.5 million. The grouping includes 20 countries, most of which have relatively high-income levels (only two countries have income levels below the IDA operational cutoff) but also high levels of public debt. The public debt-GDP ratio for the median small state was some 66 percent in 2012–13, with some 60 percent of the countries assessed to be at high risk of debt distress. The small states sub-group comprises of: Bhutan, Cape Verde, Comoros, Djibouti, Dominica, Grenada, Guyana, Kiribati, Maldives, Marshall Islands, Federal States of Micronesia, Samoa, St. Lucia, St. Vincent and the Grenadines, Sao Tome and Principe, Solomon Islands, Timor-Leste, Tonga, Tuvalu, and Vanuatu.

[31] Countries can fall into more than one of the first three groups: for example a country classified as an oil exporter may also be classified as a fragile state.

- **Core LICs:** We use the term "core LICs" to refer to countries that do not fall into any of the preceding groups—i.e., countries that are not fragile, not small, and not significant oil exporters. The grouping includes 30 countries of varying income levels; the median level of the public debt-GDP ratio is 39 percent during 2012–13, with all of the countries assessed to be at a low or moderate risk of debt distress. The core LICs sub-group comprises of: Bangladesh, Benin, Bolivia, Burkina Faso, Cambodia, Ethiopia, The Gambia, Ghana, Honduras, Kenya, Kyrgyz Republic, Laos, Lesotho, Madagascar, Malawi, Mali, Mauritania, Moldova, Mongolia, Mozambique, Nicaragua, Niger, Rwanda, Senegal, Tajikistan, Tanzania, Uganda, Uzbekistan, Vietnam, and Zambia.

Appendix II. Fiscal Multipliers in Low-Income Countries[32]

55. Notwithstanding extensive analysis, there is no consensus among researchers about the size of fiscal multipliers in both advanced and developing economies.[33] Recent studies indicate a number of factors that influence the size of fiscal multipliers, such as the state of the economy, the monetary policy stance, fiscal leakages,[34] the share of liquidity-constrained consumers, debt levels, and the types of fiscal instruments used. The state-dependency of the size of fiscal multipliers is in line with intuition and has important policy implications: during economic expansions, when unemployment and output are above potential levels, the crowding-out effects of a fiscal expansion tends to offset the direct impact of fiscal stimulus on aggregate demand, whereas during economic recessions, government spending better utilizes idle resources (i.e., unemployed labor and capital), further augmenting private consumption and/or investment.

56. There are only a limited number of studies on the size of fiscal multipliers in LICs. The literature, however, tends to find smaller sizes of fiscal multipliers in developing economies than in advanced economies (especially compared to the United States). Applying nonlinear approaches in developing economies to estimate state-dependent fiscal multipliers is not always feasible because of limited data availability, but linear approaches seem to indicate that first-year government spending multipliers are in the range of 0.2–0.8. While developing economies may have certain characteristics that are linked to larger multipliers—for example, a higher share of liquidity-constrained consumers, a fixed exchange rate regime, and smaller automatic stabilizers—IMF (2008) and Ilzetzki, Mendoza, and Végh (2013) find that credibility issues, especially related to debt concerns, triggering an adverse interest rate response, may explain smaller multipliers in developing economies. Furthermore, fiscal leakages caused by a large import component and relatively poor efficiency of public expenditure—for example, an economic stimulus may not be well targeted to liquidity-constrained consumers—may also explain generally smaller fiscal multipliers in LICs.

57. For this report, a government spending multiplier of 0.5 is used as the baseline calibration based on findings in the literature. However, sensitivity analyses using government spending multipliers of 0.1 and 0.9 are also conducted because the literature mainly uses linear approaches, which effectively average the size of multipliers in different contingent states and initial conditions,

[32] For more discussion on the determinants and sizes of fiscal multipliers, see Mineshima, Poplawski-Ribeiro, and Weber (forthcoming).

[33] There are several ways to measure fiscal multipliers. Most commonly, fiscal multipliers are defined as the ratio of a change in output (ΔY) to a discretionary change in government spending or tax revenue that causes it (ΔG or ΔT) (Spilimbergo, Symansky, and Schindler, 2009). Thus, the fiscal multiplier measures the effect of a $1 increase in spending or a $1 decrease in tax revenue on the level of real GDP or another measure of output. For this report, a fiscal multiplier is defined as the cumulative over four years (the cumulative change in output over the cumulative change in government spending).

[34] The degree of fiscal leakages tends to be determined by the size of the automatic stabilizer, trade openness, and exchange rate regimes.

including economic recessions and expansions, size of import sector, exchange rate regime and other factors that influence the size of multipliers.

Table 7. Literature Survey on Fiscal Multipliers for Developing Economies

	Methodology	Sample	First-year multiplier, unless otherwise indicated
Aart Kraay (2012)	empirical	102 developing economies	Total government expenditure: 0.4
Espinoza and Senhadji (2011)	empirical	the Gulf Cooperation Council	Total government expenditure: 0.3 Government capital expenditure: 0.2-0.3, (long run: 0.6-1.1) Government current epxenditure: 0.2-0.4, (long run: 0.3-0.7)
Ilzetzki and Vegh (2008)	empirical	27 developing economies	Total government expenditure: 0.4
Ilzetzki, Mendoza, and Vegh (2011)	empirical	24 developing economies	Government consumption: -0.03 (impact), (cumulative for 20 quarters: -0.63) Government investment: 0.57 (impact), (cumulative for 20 quarters: 1.6)
Shen and Yang (2012)	DSGE	A stylized model of a country with limited international capital mobility, as featured by most developing countries.	Total government expenditure: 0.26-0.83 1/

1/ The size becomes larger if there is more home bias in government purchases.

Appendix III. Methodology for the Growth Decline Vulnerability Index and the Scenario Analysis

58. The VE-LIC is a quantitative tool for identifying emerging risks and vulnerabilities in LICs. The framework has two complementary components:[35]

- An assessment of the underlying risks to a severe growth recession in the event of exogenous shocks, summarized in an indicators-based **GDVI**.
- A model-based ***scenario analysis*** that simulates the economic impact of global shocks on key macroeconomic variables and assesses the adequacy of external and fiscal buffers across countries, thus deriving estimates of external financing needs.

Growth Decline Vulnerability Index

Methodology: The approach examines a range of individual indicators to identify variables and thresholds that separate crisis from non-crisis cases. For each of the individual indicators, the approach involves searching for a split that minimizes the combined percentages of missed crisis (Type I error) and false alarms (Type II error). Thresholds that yield the best split are used to map indicator values into zero–one scores. These indicators are then aggregated into sectoral indices using weights that depend on the individual indicator's ability to discriminate between crisis and non-crisis cases. The overall vulnerability index, which ranges from zero (low vulnerability) to one (high vulnerability), is a summary measure of underlying vulnerabilities to a growth decline.[36]

[35] Background on the framework is presented in IMF (2011b), IMF (2012c), and Dabla-Norris and Bal Gündüz (2012).

[36] Within the index, the post-shock policy variables and the size of the contemporaneous simulated shocks will change the projected post-shock flags for the overall index.

Table 8. Non-Parametric Signaling Approach: Performance of Indicators and Model Fit

Variables 1/	Direction to be safe	Thresholds 2/	Type I error	Type II error	Index weight	Index weight VE-LIC 2011
Overall economy and institutions					**0.37**	**0.47**
Real GDP growth	>	2.96	0.24	0.26	0.11	0.20
CPIA	>	3.00	0.49	0.20	0.07	0.11
Gini coefficient	<	44.95	0.23	0.36	0.11	0.15
Real GDP per capita growth, sample average	>	0.84	0.30	0.33	0.09	
External Sector					**0.33**	**0.25**
Reserve coverage (GIR/Imports G&S)	>	2.30	0.42	0.33	0.09	0.15
Real export growth (G&S)	>	1.77	0.52	0.33	0.05	0.10
Exchange market pressure index	<	0.48	0.37	0.39	0.08	
Growth in trading partners weighted by lagged exports to GDP	>	0.48	0.37	0.43	0.06	
Change in export prices weighted by lagged exports to GDP	>	0.35	0.27	0.55	0.06	
Fiscal Sector					**0.30**	**0.28**
Government balance (% of GDP)	>	-4.21	0.40	0.36	0.10	0.08
Public debt (% of GDP)	<	65.32	0.01	0.80	0.05	0.05
Real government revenue (Cumulative two year percent change)	>	4.73	0.43	0.27	0.13	0.13
Government tax revenue (% of GDP)	>	10.51	0.64	0.29	0.02	0.02
Fit of the Model						
Overall Index threshold 3/					0.44	0.42
Proportion of Crises Missed 4/					0.16	0.20
Proportion of Non-crises mis-specified (false alarms) 4/					0.31	0.29
Overall error					0.28	0.27

1/ The variables are lagged one period, except real GDP growth, growth in trading partners, and change in export prices.
2/ Thresholds are achieved by minimizing type I and type II errors.
3/ Threshold for the overall index is derived by minimizing the asymmetrically weighted loss function giving more weight to type I error.
4/ Missed crises plus false alarms as percent of total observations.

Scenario analysis

59. The framework for the 2013 VE-LIC scenario analysis consists of three main modules that assess the impact of a dynamic, multi-year tail risk scenario (i.e., protracted scenario)—on LICs' economic growth, external balances, and fiscal balances.[37]

Growth Module

60. The impact on economic growth is assessed using a model that regresses real GDP growth against trading partners' growth, terms of trade, investment, and government consumption.[38] However, the only two transmission channels considered when calculating the impact of a shock on individual countries' economic growth are: (i) external demand (partner countries' growth) and (ii) terms of trade (TOT).

[37] The details of the estimation methodology and the related data sources is fully described in Appendix III of IMF (2011b) and IMF (2012c).

[38] The residuals from investment and government consumption equations, estimated by regressing these variables on trading partners' growth and terms of trade, are used in the estimation of the growth equation, instead of directly introducing government consumption and investment as variables. This is done in order to avoid multicollinearity problems.

External Sector Module

61. To assess the impact on external balances, four channels are considered: exports, imports, remittances, and FDI.

- Export volume equations are estimated for each of the food, fuel, and other export commodity groups, and elasticities derived to estimate the sensitivity of export volumes with respect to changes in external demand and relative prices.

- Import volume equations are also estimated for each of food, fuel, and other import commodity groups, and elasticities derived to estimate the sensitivity of export volumes with respect to changes in domestic demand and relative prices.

- Similar dynamic effects are analyzed to assess the impact on remittances and FDI. Both are assumed to depend on changes in growth in source countries through elasticities borrowed from the empirical literature.

- External shocks that impact growth (domestic and foreign), as well as commodity prices, are then transmitted to the external accounts through their impact on exports, imports, FDI and remittances. The impact of changes in demand and relative prices on other elements of the balance of payments are not estimated.

Fiscal Sector Module

62. The analysis of the fiscal impact of a protracted global growth decline scenario comprises three approaches: (a) the impact of a passive policy scenario; (b) modeling of a benchmark policy response based on an illustrative fiscal space; and (c) a hybrid where some countries undertake the policy response specified in (b) and others with low debt levels, in the sense described below, undertake no policy response. The increase in LIC financing needs as a result of the shock for each of these approaches is computed.

- *Passive policies:* The impact on revenues is estimated as a weighted average of revenues from general economic activity, assumed to be affected by GDP growth, and also by the impact from natural resources when relevant, as affected by the corresponding commodity price index (calculated based on export shares). Primary expenditures are assumed to remain unchanged at the baseline level in nominal terms. As a result, spending as a percent of GDP changes only to the extent GDP (the denominator) is affected by the global growth slowdown.

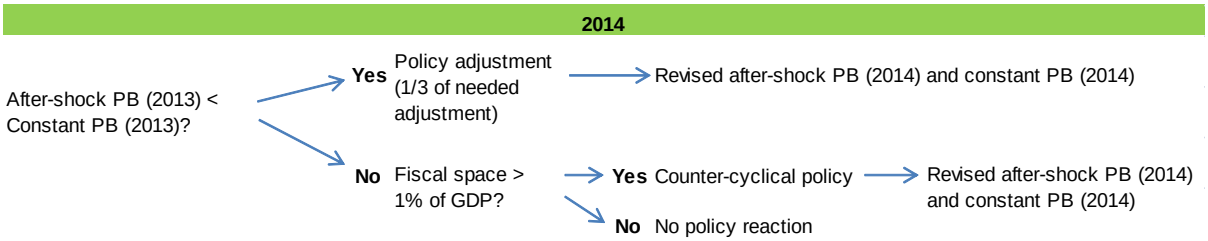
- *Policy reaction:* To define the policy reaction, three steps are required: (i) define the magnitude of the fiscal consolidation; (ii) specify the nature of the adjustment process; and (iii) specify the timing of the consolidation over a transition period over which the shock unravels.

    - Given the permanent nature of the protracted growth decline shock, the analysis of the fiscal policy stance focuses on the magnitude of structural fiscal consolidation that might be necessary to remain fiscally sustainable in the long term. The magnitude of the consolidation

is assessed according to the constant primary balance consistent with long-term public debt sustainability targets, which are assumed to be reached by 2030.[39] The long-term debt targets are set at the policy dependent indicative threshold for the nominal public debt to GDP ratio set out in IMF (2012a) if the pre-shock debt stock (at end 2012) is above the policy dependent threshold; or the end-2012 level if the pre-shock debt stock (at end 2012) is below the policy dependent threshold. These assumptions are set so as to allow countries to gradually rebuild their fiscal buffers over the long term. For countries with high initial levels of public debt, the calculations would result in the minimum need for consolidation, given the use of a debt sustainability threshold. For countries with lower debt ratios than the policy dependent thresholds, the calculations take into account the need to rebuild buffers to the levels prevailing before the global growth and commodity shocks in 2009, to the extent these have been used, or to the pre-shock level.

- The adjustment rule specifies how countries adjust their primary balances to the constant primary balance with the long-term public debt target. Based on country circumstances, there are three possible outcomes: (i) if a country's post-shock primary balance is lower than the constant primary balance in any given year, in the next year it lowers expenditure by an amount that reduces the difference between the post-shock and constant primary balances by a third, i.e., adjustment to the constant primary balance takes place over three years; (ii) if the post-shock primary balance exceeds the constant primary balance, but by less than 1 percentage point of GDP, it leaves spending unchanged; (iii) finally, if the post-shock balance exceeds the constant primary balance by more than 1 percentage point of GDP in any year, in the next year it can increase spending to lower the gap by a third.

Schematic Presentation of the Fiscal Adjustment Rule



- *Delayed policy response:* The fiscal module also considers a hybrid case in which some countries delay their policy response. Specifically, countries with post-shock primary balances that are

[39] In constructing the discount rate used in the calculation of the constant primary balance, it is assumed that LICs gradually access financial markets at commercial (as opposed to concessional) interest rates over time, while also gradually overcoming financial repression that allows systematically negative real interest rates that are observed in the sample period. This methodology results in more conservative (less negative) discounting than under baseline WEO projections, based on the assumption that the discount factor under a protracted growth downturn scenario should be higher than the baseline given: (i) lower GDP growth rates; (ii) higher interest rates (based on an increase in sovereign spreads as weakened fiscal positions worsen creditworthiness); and (iii) an increase in share of market financing at commercial interest rates as other concessional sources of financing decline.

lower than the constant primary balance, can postpone adjustment for five years, if their post-shock public debt ratio in 2013 is less than their policy dependent threshold by 10 percentage points of GDP or more.

63. The fiscal module also allows the adjustment in spending to feed back onto real GDP growth through the use of a fiscal multiplier. Calculations using a central value of 0.5 for the multiplier are reported in some detail in the paper, but stress tests using multiplier values of 0.1 and 0.9 are also conducted to ensure that the results are robust.

Appendix IV. Methodology for Complementary Vulnerability Indicators

This appendix reports the definitions, thresholds, and data sources used for the complementary vulnerability indicators.

Table 9. Selected Vulnerability Indicators

Indicator	Definition	Thresholds	Data Source
(i) Macroeconomic Fundamentals			
▪ Debt distress	*I = number of countries with a specific debt distress rating (based on latest available debt distress risk rating)*	3 categories (0="low risk", 1="moderate risk", 2="high risk" or "in debt distress")	last available DSA (as of end-July 2013)
Improved rating	*I = number of countries for which the debt distress rating has now improved to "Low" or "Moderate" risk and that were rated as "in debt distress" or "in high risk of debt distress" in their previous assessment*		last available DSA and next to last DSA (as of end-July 2013)
Worsening rating	*I = number of countries for which the debt distress rating has now deteriorated to "in debt distress" or "in high risk of debt distress" and that were assessed as "Low" or "Medium" risk in their previous assessment*		last available DSA and next to last DSA (as of end-July 2013)
▪ Exchange rate	*I = number of countries with a specific exchange rate assessment (based on latest available real exchange rate alignment assessment)*	2 categories (0="equilibrium" or "undervalued", 1="overvalued")	last available Article IV staff report (as of end-July 2013)
Improved assessment	*I = number of countries for which exchange rate assessment is now "undervalued" or "in equilibrium" and that were assessed as "overvalued" in their previous assessment*		last and next to last available Article IV staff reports (as of end-July 2013)
Worsening assessment	*I = number of countries for which exchange rate assessment is now "overvalued" and that were assessed as "undervalued" or "in equilibrium" in their previous assessment*		last and next to last available Article IV staff reports (as of end-July 2013)
(ii) Financial Indicators			
▪ Cross-border claims	*I = consolidated foreign claims of BIS reporting banks as a share of GDP (2011–2012 average)*	Thirtiles	BIS, WEO
▪ Non-performing loans [1/]	*I = composite index of (R1=ratio of non-performing loans (NPLs) to total loans (%) and R2=ratio of provisions for NPLs to total NPLs (%) in 2012*	3 categories (0="R1<=5 AND R2>=70", 2="R1>5 AND R2<70" 1=otherwise)	VE-LIC questionnaire
▪ Credit-to-GDP	*I = percentage change of the private credit-to-GDP ratio between 2010 and 2012*	3 categories (0="R<=5", 1="5<R<=25", 1="R>25")	IFS
▪ Real Credit	*I = Real Credit Growth ratio between 2010 and 2012*	3 categories (0="R<=5", 1="5<R<=25", 1="R>25")	IFS
Financial vulnerability	*I = composite index of the number of countries rated as "high risk" for at least 2 of the following indicators above: Non-performing loans, Credit-to-GDP and Real Credit*		

1/ There is no common definition of NPLs used here. Instead, data are collected from country desks reflecting each country's specific circumstances.

Summary of Complementary Vulnerability Indicator Outcomes

All LICs. While the number of countries classified as "high" debt has not changed much, the composition of the "high" risk rating has changed (Chad, Samoa, and St. Lucia have joined the group while The Gambia, Lao PDR, Myanmar, Tajikistan, and Yemen have left). Exchange rate overvaluation has also become more of an issue for LICs in the past two years, particularly for small states, fragile states, and oil exporters.

Small states. The CVIs confirm that this group of countries face additional challenges that are sources of vulnerability. Most small states' debt distress risk is rated "high" and more states in this group have seen their rating worsen to "high risk" over the last few years. At the same time, the number of small states assessed as having an overvalued currency is high (almost half of the group) and has marginally increased over the last few years.

Fragile states. Almost half of the countries in this group are assessed as having an overvalued exchange rate. Weaknesses in the financial sector also constitute a source of vulnerability in more than a third of fragile states.

Oil exporters. Weaknesses in the financial sector constitute a source of vulnerability in almost half of oil exporters.

Core LICs. No area of high vulnerability.

Table 10. Vulnerability Indicators – Share of Countries in the Low Risk (L), Medium Risk (M), and High Risk (H) Category

(Macroeconomic fundamentals and financial indicators)

	(i) Macroeconomic Fundamentals and Financial Indicators												(ii) Financial Indicators								
	Debt Distress					Exchange Rate Alignment				Cross-Border Claims-to-GDP			Non-Performing Loans			Credit-to-GDP			Real Credit		
	Most Recent Rating			Improved rating	Worsening rating	Most Recent Assessment		Improved Assessment	Worsening Assessment							Change			Change		
	L	M	H			L	H			L	M	H	L	M	H	L	M	H	L	M	H
All LICs	22	28	16	5	3	36	32	8	13	23	22	23	7	14	22	27	20	11	16	24	17
Small states	2	5	9	0	2	8	11	2	6	4	7	6	0	6	8	11	5	0	9	5	1
Fragile State	4	9	9	2	1	13	11	3	4	8	8	7	1	5	7	8	5	6	6	5	7
Net Oil Exporter	5	1	1	1	1	4	2	0	2	0	3	4	1	3	2	3	1	3	2	1	3
Core LICs	14	15	0		-3	17	11	4	3	11	9	10	5	4	7	8	12	4	2	14	8
ASI	8	4	5	2	1	10	9	1	4	5	5	7	2	4	3	8	3	3	6	3	4
LAC	1	5	3	0	1	4	5	2	2	4	3	2	2	0	5	3	5	1	2	6	1
MEU	1	4	2	2	0	2	5	0	3	2	3	3	1	2	5	5	1	0	3	3	0
SSA	12	15	6	1	1	20	13	5	4	12	11	11	2	8	9	11	11	7	5	12	12

Appendix V. Selected Economic Indicators

	GDP growth (in percent)					Inflation (in percent)					International Reserves (in months on next year imports)					Fiscal Balance (in percent of GDP)					Current Account Balance incl. FDI (in percent of GDP)					Gross Public Debt (in percent of GDP)				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Afghanistan, I.S. of	21.0	8.4	7.0	10.2	1.5	-10.0	7.1	10.4	4.5	6.2	4.0	4.4	5.3	6.0	6.1	-1.3	0.9	-0.8	0.3	-1.2	4.0	4.8	4.0	6.7	4.6	9.3	8.2	7.0	6.6	6.7
Bangladesh	5.9	6.4	6.5	5.8	5.4	5.4	8.1	10.7	8.7	7.7	2.8	3.1	2.9	2.8	3.8	-3.5	-2.9	-3.8	-3.2	-3.8	3.8	1.3	-0.4	1.4	1.3	45.4	41.4	42.9	42.7	43.0
Benin	2.7	2.6	3.5	3.8	4.1	0.9	2.2	2.7	6.7	3.5	7.3	7.1	5.4	3.8	3.2	-3.3	-0.4	-1.4	-0.8	-0.9	-7.4	-4.3	-7.1	-6.6	-4.6	27.3	30.2	31.2	32.5	28.7
Bhutan	6.7	11.7	8.5	9.2	5.8	4.4	7.0	8.9	10.9	11.1	9.0	7.5	9.0	8.3	7.0	-0.5	1.5	-2.0	-4.0	-1.8	-1.4	-8.2	-20.5	-15.7	-21.3	64.1	50.2	60.1	66.1	76.8
Bolivia	3.4	4.1	5.2	5.2	5.4	3.3	2.5	9.9	4.5	4.8	15.5	12.7	14.9	15.7	15.4	0.0	1.7	0.8	1.8	1.5	6.7	7.3	3.9	11.7	7.7	40.0	38.5	34.7	33.1	34.2
Burkina Faso	3.0	8.4	5.0	9.0	6.5	2.6	-0.6	2.8	3.8	2.0	5.5	4.5	4.4	3.7	3.4	-5.3	-4.6	-2.4	-3.2	-2.3	-3.6	-1.9	-0.9	-1.7	-4.8	26.1	27.1	29.3	27.7	25.2
Burundi	3.5	3.8	4.2	4.0	4.5	4.6	4.1	14.9	11.8	10.0	4.4	4.1	3.2	3.9	3.7	-72.4	-3.6	-4.0	-3.7	-1.7	1.8	-12.2	-13.6	-17.5	-13.3	40.0	39.4	36.2	32.0	28.6
Cambodia	0.1	6.1	7.1	7.3	7.0	-0.7	4.0	5.5	2.9	2.9	5.4	4.6	4.0	4.4	4.5	-4.2	-2.8	-4.1	-2.7	-2.4	0.5	2.9	3.4	0.3	0.1	28.9	29.1	28.5	28.5	28.1
Cameroon	1.9	3.3	4.1	4.4	4.8	3.0	1.3	2.9	2.4	2.5	6.6	5.3	4.8	4.6	4.2	0.0	-1.1	-2.7	-1.1	-3.2	-1.3	-1.1	-0.8	-1.8	-1.7	10.6	12.1	13.9	14.9	17.7
Cape Verde	3.7	5.2	5.0	4.3	4.1	1.0	2.1	4.5	2.5	4.0	4.3	3.4	3.3	3.3	3.4	-6.4	-10.8	-7.3	-7.5	-7.6	-8.2	-5.7	-10.4	-7.7	-9.8	68.8	75.0	92.6	103.4	106.3
Central African Republic	1.7	3.0	3.3	4.1	-14.5	3.5	1.5	1.2	5.2	6.8	5.2	4.5	4.3	5.1	0.0	-0.1	-1.4	-2.4	0.0	-1.6	-7.1	-7.1	-5.9	-3.0	-5.1	36.8	32.3	32.6	30.6	28.3
Chad	4.2	13.5	0.1	8.9	3.9	10.1	-2.1	1.9	7.7	2.6	1.6	1.5	2.3	2.8	2.5	-9.2	-4.2	2.4	0.5	-2.4	0.9	-1.1	1.5	0.2	-3.0	30.5	32.8	36.1	34.5	36.1
Comoros	1.8	2.1	2.2	3.0	3.5	4.8	3.9	6.8	6.3	4.1	6.4	5.7	6.5	7.1	7.4	0.6	2.1	1.4	3.5	19.8	-5.2	-4.1	-5.6	-4.4	-7.3	53.5	50.3	44.6	19.8	22.8
Congo, Dem. Rep. of	2.8	7.2	6.9	7.2	6.2	46.2	23.5	15.5	2.1	4.4	1.2	1.3	1.5	1.8	1.7	-2.6	4.9	-1.8	-0.1	-2.8	-0.4	3.4	-0.4	1.9	-0.9	136.3	38.4	33.0	36.0	41.3
Congo, Republic of	7.5	8.8	3.4	3.8	5.8	4.3	5.0	1.8	5.0	5.3	6.7	6.5	9.1	9.2	10.8	4.8	16.1	16.4	6.4	14.3	14.2	22.0	27.0	15.1	21.9	57.2	23.9	22.5	21.1	25.4
Côte d'Ivoire	3.7	2.4	-4.7	9.8	7.5	1.0	1.4	4.9	1.3	3.2	3.0	4.2	4.1	3.0	3.5	-1.6	-2.3	-4.3	-3.4	-3.1	9.2	3.8	14.1	0.5	-0.4	66.5	66.4	71.2	49.1	45.4
Djibouti	5.0	3.5	4.5	4.8	4.9	1.7	4.0	5.1	3.7	2.5	5.8	4.4	4.0	3.6	5.1	-4.6	-0.5	-0.7	-2.7	-3.1	0.2	-3.0	-7.8	-4.2	5.5	43.2	41.4	36.7	38.6	40.1
Dominica	-1.1	1.2	1.0	-1.7	1.1	0.0	2.8	1.3	1.4	2.0	2.9	3.0	3.6	4.3	4.1	-0.3	-3.5	-4.6	-3.8	-4.0	-14.1	-12.0	-12.0	-7.4	-5.8	63.7	70.0	72.2	73.6	74.7
Eritrea	3.9	2.2	8.7	7.0	1.1	33.0	12.7	13.3	12.3	12.3	2.2	2.3	2.0	0.1	0.0	-14.7	-16.0	-16.2	-13.5	-12.5	-2.7	-1.3	2.0	3.7	1.5	144.6	143.8	133.0	125.8	123.8
Ethiopia	10.0	10.6	11.4	8.5	7.0	8.5	8.1	33.2	24.1	6.8	2.2	2.6	2.6	1.9	0.0	-0.9	-1.3	-1.6	-1.2	-2.8	-2.3	-0.8	3.3	-4.1	-3.9	25.1	27.6	25.9	21.6	23.0
Gambia, The	6.4	6.5	-4.3	5.3	6.4	4.6	5.0	4.8	4.6	6.0	5.3	4.4	4.4	4.7	4.5	-2.7	-5.4	-4.7	-4.4	-2.7	-4.2	-7.1	-8.9	-10.2	-9.7	66.4	67.4	75.0	77.2	70.4
Ghana	4.0	8.0	15.0	7.9	7.9	19.3	10.7	8.7	9.2	11.0	2.7	2.9	2.9	2.8	2.3	-7.0	-9.4	-5.5	-9.3	-7.0	5.8	-0.8	-0.8	-4.0	-5.6	36.2	46.3	43.4	56.5	56.6
Grenada	-6.7	-0.4	1.0	-0.8	0.8	-0.3	3.4	3.0	2.4	1.6	9.6	8.5	8.6	8.0	8.4	-5.2	-3.1	-4.4	-5.4	-9.2	-10.3	-16.1	-17.0	-18.8	-17.7	97.7	104.3	109.0	112.6	116.1
Guinea	-0.3	1.9	3.9	3.9	2.9	4.7	15.5	21.4	15.2	12.7	0.8	0.5	2.9	2.8	1.4	-7.1	-14.0	-1.3	-3.3	-4.8	-12.7	-17.1	-19.5	-29.2	-14.5	89.1	105.5	86.0	43.0	44.9
Guinea-Bissau	3.0	3.5	5.3	-1.5	3.5	-1.6	1.1	5.1	2.1	2.6	5.5	4.6	8.9	5.3	4.9	1.6	-2.1	-2.1	-3.1	-0.1	-4.5	-5.2	1.5	-5.8	-5.4	157.9	51.7	50.8	59.8	60.5
Guyana	3.3	4.4	5.4	4.8	5.3	3.0	3.7	5.0	2.6	4.1	4.2	4.2	3.9	3.5	3.1	-3.5	-2.7	-3.0	-4.5	-2.7	-1.0	-0.9	-3.5	-6.4	-5.7	64.8	65.3	65.2	60.3	61.3
Haiti	2.9	-5.4	5.6	2.8	3.4	3.4	4.1	7.4	6.8	7.1	2.8	5.2	6.2	6.8	5.8	-4.6	2.4	-3.7	-5.1	-5.5	-2.9	-10.2	-2.1	-2.3	-4.4	28.2	17.7	12.2	15.4	20.4
Honduras	-2.4	3.7	3.7	3.3	2.8	5.5	4.7	6.8	5.2	5.7	2.8	2.8	2.9	2.5	2.6	-4.5	-2.8	-2.8	-4.2	-6.3	-0.4	0.9	-2.8	-3.8	-5.3	24.6	29.7	32.1	34.7	36.2
Kenya	2.7	5.8	4.4	4.6	5.9	10.6	4.3	14.0	9.4	5.4	3.4	3.2	2.9	3.8	4.0	-5.4	-5.5	-5.1	-6.3	-5.8	-4.4	-4.4	-7.4	-6.7	-4.9	47.5	49.9	48.5	48.2	47.9
Kiribati	-0.7	-0.5	2.7	2.8	2.9	9.8	-3.9	1.5	-3.0	2.5	46.7	42.3	38.0	39.8	41.9	-12.0	-12.7	-21.2	-6.8	-21.4	-23.1	-17.0	-32.4	-28.7	-38.0	30.5	31.9	33.6	40.4	46.2
Kyrgyz Republic	2.9	-0.5	6.0	-0.9	7.4	6.8	7.8	16.6	2.8	8.6	4.6	3.8	3.2	3.5	3.4	-1.1	-5.8	-4.6	-5.8	-5.3	1.5	2.7	4.7	-9.6	-1.7	58.0	60.3	50.1	48.9	48.7
Lao PDR	7.5	8.1	8.0	7.9	8.3	0.0	6.0	7.6	4.3	7.3	2.0	1.8	1.2	1.2	1.2	-5.3	-4.5	-2.0	-2.5	-4.4	-7.4	-8.5	-0.6	-13.1	-12.5	61.5	58.6	52.4	51.6	49.8
Lesotho	4.8	6.3	5.7	4.5	4.1	5.9	3.4	6.0	5.6	6.6	5.4	4.2	3.8	4.5	4.9	-4.0	-5.1	-10.6	5.3	2.0	6.1	-6.6	-16.6	-6.0	-3.6	37.8	35.4	39.1	41.9	43.1
Liberia	5.3	6.0	7.7	8.7	7.4	7.4	7.3	8.5	6.8	8.1	2.1	2.2	2.3	1.9	1.9	-10.0	-5.7	-3.1	-1.6	-6.1	-13.7	-14.9	-13.7	-20.5	-37.4	171.1	31.6	27.3	29.1	26.9
Madagascar	-4.1	0.4	1.8	1.9	2.6	9.0	9.3	10.0	5.8	6.9	3.6	3.3	3.6	3.2	3.3	-3.1	-1.5	-4.8	-2.9	-2.7	-13.0	-5.7	2.6	-2.2	-0.1	36.0	36.1	37.4	38.3	37.5
Malawi	9.0	6.5	4.3	1.9	5.0	8.4	7.4	7.6	21.3	26.0	0.7	1.7	1.1	1.1	2.0	-4.1	2.4	-5.1	-3.6	-2.4	-3.7	1.6	-4.8	-2.9	0.3	40.1	35.1	40.5	50.3	45.6
Maldives	-3.6	7.1	7.0	2.1	3.1	4.5	6.1	11.3	10.9	4.6	1.9	2.3	2.1	1.8	1.9	-21.1	-16.3	-12.4	-13.0	-18.3	-5.5	-4.4	-15.9	-24.4	-23.6	52.7	60.2	66.6	77.5	91.9
Mali	4.5	5.8	2.7	-1.2	4.8	2.2	1.3	3.1	5.3	0.6	4.9	3.9	4.2	2.4	2.8	-4.2	-2.7	-3.7	-1.1	-2.6	1.1	-8.4	-0.9	-0.5	-4.0	24.7	28.7	32.9	32.0	31.2
Marshall Islands	-1.5	5.6	0.8	1.9	2.3	0.5	1.8	5.4	5.7	3.9	0.2	0.2	0.3	0.3	0.4	1.4	4.6	3.7	-1.1	-0.1	-7.2	-5.3	-3.5	-4.1	-0.4	63.0	65.4	61.3	60.0	54.1
Mauritania	-1.2	4.7	3.6	6.9	6.4	2.1	6.3	5.7	4.9	4.1	0.8	1.6	1.7	5.6	8.1	-5.1	-1.9	-1.5	2.8	-4.3	-11.8	-5.7	11.4	3.2	-7.1	118.4	97.6	92.5	79.7	77.1
Micronesia, Fed. States of	1.0	2.5	2.1	1.4	0.8	5.0	6.3	4.6	5.6	4.2						1.6	0.5	0.6	1.2	0.8	-18.5	-16.6	-18.9	-15.0	-14.0	30.5	28.7	28.1	26.6	25.7
Moldova	-6.0	7.1	6.8	-0.8	4.0	0.0	7.4	7.6	4.6	4.4	3.9	3.4	3.9	4.4	4.5	-6.3	-2.5	-2.4	-2.1	-2.6	-5.7	-4.4	-7.6	-5.1	-4.2	26.7	26.5	23.1	23.8	22.5
Mongolia	-1.3	6.4	17.5	12.3	11.8	6.3	10.2	7.7	15.0	11.1	4.0	3.6	3.7	6.4	3.4	-5.2	0.5	-4.8	-11.8	-13.2	1.9	10.3	21.4	10.2	-9.4	46.6	45.3	51.7	56.7	54.2
Mozambique	6.3	7.1	7.3	7.4	7.0	3.3	12.7	10.4	2.1	5.5	5.2	3.3	2.9	3.0	2.7	-5.5	-4.3	-5.0	-4.0	-4.6	-3.3	2.4	-3.7	0.1	-8.1	51.9	49.3	45.1	46.6	47.0
Myanmar	5.1	5.3	5.5	6.3	6.5	8.2	8.2	4.0	6.1	6.5	3.3	3.6	3.4	3.4	3.4	-5.2	-5.5	-6.0	-5.3	-5.2	-0.1	0.8	1.3	0.2	-1.4	57.5	52.4	52.9	47.5	45.4

	GDP growth (in percent)					Inflation (in percent)					International Reserves (in months on next year imports)					Fiscal Balance (in percent of GDP)					Current Account Balance incl. FDI (in percent of GDP)					Gross Public Debt (in percent of GDP)				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Nepal	4.5	4.8	3.4	4.9	3.6	12.6	9.5	9.6	8.3	9.9	6.0	5.4	5.8	7.2	6.7	-2.6	-0.8	-1.0	-0.6	1.0	4.4	-2.1	-0.5	5.3	3.1	39.3	35.4	33.3	33.1	26.8
Nicaragua	-2.2	3.6	5.4	5.2	4.2	11.6	3.0	7.4	7.9	7.0	3.4	3.1	2.9	2.7	2.4	-1.7	-0.6	0.3	0.0	-0.7	-4.0	-5.1	-3.6	-5.2	-6.7	61.3	62.8	56.1	52.1	50.2
Niger	-1.0	10.7	2.2	11.2	6.2	1.1	0.9	2.9	0.5	2.1	2.8	2.8	2.7	3.7	3.4	-5.4	-2.4	-1.5	-2.6	-4.4	-11.0	-2.3	-8.0	-7.5	-22.7	28.1	24.0	27.7	31.1	39.2
Nigeria	7.0	8.0	7.4	6.6	6.2	12.5	13.7	10.8	12.2	9.9	7.4	4.5	5.0	6.1	6.8	-9.4	-6.7	0.8	-1.8	-2.2	12.5	8.1	6.9	9.6	5.3	15.2	15.5	17.2	17.8	17.9
Papua New Guinea	6.1	7.6	11.1	9.1	4.8	6.9	6.0	8.4	2.2	7.9	3.9	5.1	5.8	5.7	5.4	-9.6	3.1	1.7	-3.2	-5.7	-11.2	-17.3	8.0	-15.7	-13.2	31.5	25.6	25.2	23.2	21.3
Rwanda	6.2	7.2	8.2	8.0	7.5	10.3	2.3	5.7	6.3	5.7	5.4	4.5	5.1	3.7	3.8	0.3	0.4	-2.2	-1.8	-2.8	-5.0	-4.7	-5.6	-9.2	-9.5	22.9	23.1	23.8	28.0	27.7
Samoa	-5.2	0.5	1.3	3.1	0.1	14.6	-0.2	2.9	6.2	-0.2	3.4	5.8	4.5	4.4	4.1	-4.2	-7.3	-6.2	-5.5	-4.8	-6.2	-7.6	-4.5	-9.9	-13.4	75.9	82.9	76.4	80.3	84.2
São Tomé and Príncipe	4.0	4.5	4.9	4.0	4.5	17.0	13.3	14.3	10.6	8.6	6.6	3.9	4.5	4.0	4.1	-18.4	-11.0	-12.0	-10.8	-8.0	-15.9	2.6	-13.5	-13.0	-11.3	69.2	77.8	73.3	75.5	65.6
Senegal	2.2	4.3	2.6	3.5	4.0	-1.7	1.2	3.4	1.4	1.2	4.9	3.8	3.6	3.6	3.5	-4.9	-5.2	-6.3	-5.6	-5.3	-4.7	-2.4	-5.9	-8.2	-7.3	34.2	35.7	40.0	45.0	47.2
Sierra Leone	3.2	5.3	6.0	15.2	13.3	9.2	17.8	18.5	13.8	10.3	3.7	2.0	1.8	2.0	2.1	-2.3	-5.0	-4.6	-5.2	-3.1	-3.3	-5.9	-6.2	-3.7	-3.2	47.8	49.3	53.7	44.5	40.1
Solomon Islands	-4.7	7.8	10.7	4.8	4.0	7.1	0.9	7.4	5.9	6.1	3.2	5.2	7.6	8.5	8.4	1.8	6.2	9.0	3.9	0.8	-1.9	3.7	9.5	6.6	0.5	33.9	28.5	22.2	18.2	15.4
Somalia																														
South Sudan				-47.6	24.7				45.1	2.8		0.0	5.4	3.4	2.5			4.4	-16.0	-9.0			18.2	-28.3	5.2					
St. Lucia	-0.1	-0.2	1.8	-0.9	0.2	-0.2	3.3	2.8	4.2	3.1	2.3	2.7	2.9	2.9	2.7	-3.1	-4.9	-6.4	-10.4	-7.6	0.8	-6.5	-11.3	-6.4	-6.5	61.8	66.2	71.2	79.4	85.9
St. Vincent and the Grenadines	-2.2	-2.3	0.4	1.5	1.3	0.4	0.8	3.2	2.6	2.1	2.3	3.5	2.6	3.0	2.7	-3.0	-3.9	-3.6	-2.7	-2.6	-12.9	-16.3	-16.4	-12.7	-12.6	64.6	66.2	67.8	70.2	74.2
Sudan	5.2	2.5	-1.8	-3.3	3.9	11.3	13.0	18.1	35.5	25.6	1.5	1.8	1.5	1.9	2.0	-5.1	0.3	0.2	-3.8	-2.0	-4.6	2.3	3.6	-6.7	-6.5	71.8	73.1	71.0	97.6	102.9
Tajikistan	3.9	6.5	7.4	7.5	6.8	6.5	6.5	12.4	5.8	7.5	1.1	1.3	1.4	1.5	1.9	-5.2	-3.0	-2.1	0.5	-2.3	-4.6	-0.9	-3.7	0.6	0.0	36.2	36.3	35.5	32.5	31.6
Tanzania	6.0	7.0	6.4	6.9	7.0	12.1	7.2	12.7	16.0	8.5	4.5	4.1	3.4	3.4	3.4	-6.0	-6.5	-5.0	-5.0	-5.3	-4.9	-4.9	-8.0	-9.4	-8.7	32.6	37.7	40.0	41.4	44.9
Timor-Leste, Democratic Republic of	-6.7	-1.4	7.3	6.1	-3.1	0.7	6.8	13.5	11.8	11.0	38.2	27.1	32.7	31.5	27.5	31.3	38.1	42.7	44.9	34.4	39.0	39.8	40.4	42.6	33.9					
Togo	3.5	4.0	4.8	5.6	5.5	1.9	1.9	3.7	2.6	3.2	4.5	3.7	4.4	2.0	2.1	-2.8	-1.6	-2.9	-6.9	-6.0	-6.3	-5.1	-9.3	-10.6	-8.9	73.4	48.6	47.2	46.7	46.1
Tonga	3.3	3.1	1.9	0.7	1.0	3.5	3.9	4.6	3.1	3.2	4.2	4.5	6.3	7.8	7.5	4.4	-3.7	-3.6	-0.6	0.2	0.0	-2.0	-3.5	-4.5	-2.9	41.2	41.8	45.4	43.6	40.0
Tuvalu	-3.0	-2.8	8.6	0.2	1.1	-0.3	-1.9	0.5	1.4	2.7	9.4	5.6	6.2	7.1	6.9	-3.2	-23.5	-7.6	7.4	-1.1	22.2	-6.9	-36.2	4.3	-7.4	65.6	61.7	50.0	43.7	42.5
Uganda	6.5	6.3	5.0	4.4	5.7	13.1	4.0	18.7	14.0	5.0	4.6	3.7	3.6	4.1	4.1	-2.4	-6.7	-3.2	-3.3	-1.8	-3.0	-6.9	-7.0	-4.2	-5.6	22.2	27.0	32.2	34.5	37.6
Uzbekistan	8.1	8.5	8.3	8.2	7.0	14.1	9.4	12.8	12.1	12.1	13.1	12.3	13.2	12.8	12.1	2.8	4.9	8.8	8.5	1.2	4.7	10.3	9.4	2.0	2.1	11.0	10.0	9.1	8.6	8.5
Vanuatu	3.3	1.6	1.4	2.3	3.3	5.2	2.7	0.7	1.4	1.5	4.9	4.8	5.2	5.2	5.3	-0.8	-2.5	-2.2	-1.6	-1.0	-1.1	0.3	-0.8	-1.6	-1.9	20.5	19.4	19.3	20.0	23.0
Vietnam	5.3	6.4	6.2	5.2	5.3	6.7	9.2	18.7	9.1	8.8	1.9	1.4	1.4	2.3	3.0	-6.6	-2.8	-2.9	-4.8	-4.0	0.8	2.5	5.1	10.6	10.0	51.2	54.0	50.8	52.1	50.9
Yemen, Republic of	3.9	7.7	-12.7	2.4	6.0	3.7	11.2	19.5	9.9	12.0	6.9	5.6	3.8	5.4	4.4	-10.2	-4.0	-4.4	-6.3	-5.8	-10.9	-5.8	-7.1	0.0	-4.7	49.9	40.9	43.2	46.7	48.5
Zambia	6.4	7.6	6.8	7.2	6.0	13.4	8.5	8.7	6.6	7.1	3.7	3.0	2.8	2.8	2.4	-2.5	-3.0	-2.2	-3.1	-7.8	7.5	11.0	9.4	5.2	1.7	26.9	25.8	25.1	26.9	28.7
Medians	3.3	5.3	5.0	4.7	4.8	4.7	4.7	7.4	5.8	5.6	4.1	3.8	3.8	3.7	3.5	-4.0	-2.8	-2.9	-3.1	-2.8	-3.3	-4.1	-3.5	-4.1	-4.8	44.3	40.2	40.3	42.3	42.7
Sub-Saharan Africa	3.8	5.9	4.9	4.6	5.7	5.3	4.2	7.2	6.3	5.5	4.5	3.7	3.6	3.4	3.4	-4.0	-3.9	-3.1	-3.2	-2.8	-3.7	-4.2	-5.6	-4.2	-4.9	38.9	35.9	38.3	37.2	39.6
Asia	2.1	5.8	6.7	5.0	3.5	5.1	6.1	7.5	5.8	6.1	4.0	4.6	5.2	5.7	5.3	-3.3	-2.7	-2.6	-2.6	-2.1	-0.6	-2.1	-0.6	-0.7	-2.4	45.4	41.8	45.4	43.6	43.0
Middle East and Europe	3.9	5.6	5.2	3.6	6.2	5.1	7.6	12.6	5.3	8.1	4.2	3.6	3.5	4.0	4.4	-5.1	-2.2	-1.8	-2.4	-2.9	-4.6	-2.0	-0.1	-2.1	-3.0	46.6	41.1	40.0	42.7	44.3
Latin America and Caribbean	-1.1	1.2	3.7	2.8	2.8	3.0	3.3	5.0	4.2	4.1	2.9	3.5	3.6	3.5	3.1	-3.1	-2.8	-3.6	-4.2	-4.0	-2.9	-6.5	-3.6	-6.4	-5.8	61.8	65.3	65.2	60.3	61.3
Net oil exporters	4.0	7.4	3.8	6.1	5.8	5.5	6.4	9.6	7.7	5.3	6.7	5.2	5.2	5.5	4.9	-5.2	-1.7	0.2	-2.6	-3.1	0.2	2.4	5.1	0.2	-0.9	31.0	24.7	23.8	22.2	23.4
Net oil importers	3.3	4.8	5.0	4.5	4.5	4.7	4.1	7.4	5.7	5.7	4.0	3.7	3.6	3.6	3.4	-3.5	-3.0	-3.6	-3.2	-2.8	-3.6	-4.4	-4.5	-4.4	-5.4	46.0	41.6	43.1	43.3	44.0

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