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PUBLIC DEBT VULNERABILITIES IN LOW-INCOME COUNTRIES: THE EVOLVING LANDSCAPE

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PUBLIC DEBT VULNERABILITIES IN LOW-INCOME COUNTRIES: THE EVOLVING LANDSCAPE

EXECUTIVE SUMMARY

This is the first joint IMF/World Bank report on public debt vulnerabilities in low income countries (LICs). It examines debt-related developments and their underlying causes since the onset of the global financial crisis. The findings will inform the upcoming review of the IMF/WB debt sustainability framework for LICs.

Over this period, improved macroeconomic performance in LICs, combined with HIPC/MDRI debt relief and high demand for commodities, contributed to improved LIC creditworthiness. At the same time, new borrowing opportunities emerged as a result of the accommodative liquidity conditions in international capital markets, the deepening of domestic financial markets for some LICs, and the growing lending activities of non-Paris Club countries. These new financing possibilities helped mitigate the decline in Paris Club lending to LICs and have been associated with a shift toward greater reliance on non-concessional credit. The changing financing landscape has been most significant for frontier LICs.

Debt relief has been the dominant influence on LIC indebtedness over the past decade. Reflecting HIPC/MDRI relief and generally healthy growth performance, the average public debt-to-GDP ratio for LICs declined sharply going into the global financial crisis. Debt ratios edged still lower for a few years following the crisis, reflecting the final stages of debt relief and a robust post-crisis growth recovery.

Debt vulnerabilities remain generally lower than before the global financial crisis. Between 2007 and 2015, the proportion of countries at high risk of external debt distress (or in distress) fell from 43 to 26 percent. At the same time, however, liquidity buffers have narrowed, and debt-to-GDP ratios have edged higher in recent years, reflecting counter-cyclical policies as well as some utilization of borrowing headroom to finance priority spending. Small states are the exception to the generally improved LIC debt situation, seeing a steady and significant rise in debt ratios. This reflected their weak growth, the impact of natural disasters, and the absence of countervailing HIPC/MDRI debt relief.

Notwithstanding stronger fundamentals in LICs, heightened vigilance is needed to navigate shifting market conditions and a weaker global outlook. LICs' closer integration into the global economy, greater exposure to market risks, and reduced fiscal buffers puts a premium on prudent fiscal policies and enhanced debt management. These policies are likely to be tested, in the near term, by lower global commodity prices, prospects for less favorable global lending conditions as monetary

policies normalize, and currency pressures faced by some LICs. A few frontier LICs and commodity exporters have recently seen risk ratings deteriorate because of inadequate fiscal discipline in the context of less favorable external conditions. Stronger policy frameworks across LICs will be important to ensure that these cases remain atypical.

Approved By
Siddharth Tiwari (IMF) and John Panzer (WB)

This report was prepared by a joint IMF-World Bank team. The IMF team was led by Said Bakhache and included Amr Hosny, Keiichi Nakatani, Alex Pienkowski, Joyce Saito, Hajime Takizawa, and Suchanan Tambunlertchai, under the supervision of Peter Allum and Reza Baqir (all SPR). The World Bank team was led by F. Leonardo Hernández and included William G. Battaile, Jane Bogoev, Fayavar Hayati and Vivian Norambuena, under the supervision of Mark R. Thomas (all GMFDR).

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I. MOTIVATION

1. This report builds on earlier assessments of debt trends and vulnerabilities in low-income countries (LICs). Until 2011, debt vulnerabilities in LICs were largely discussed and monitored in the context of the implementation of the Heavily Indebted Poor Countries (HIPC) initiative and Multilateral Debt Relief Initiative (MDRI). Recognizing that the HIPC initiative has largely achieved its objectives and was winding down, the Boards agreed to discontinue the HIPC/MDRI implementation reports in favor of an annual HIPC Statistical Update and periodic joint IMF-World Bank reporting on debt vulnerabilities. Since 2011, the debt situation in LICs has been analyzed in the context of several stand-alone reports, including "Revisiting the Debt Sustainability Framework for Low-Income Countries" (IDA-IMF, 2012a), "Macroeconomic Developments in Low-Income Developing Countries" (IMF, 2014a), "Reform of the Policy on Public Debt Limits in Fund-Supported Programs" (IMF, 2014c) and "Review and Update of IDA's Non-Concessional Borrowing Policy (NCBP)" (IDA, 2015).

2. This is the first joint IMF-World Bank report on public debt vulnerabilities in LICs. The report examines debt-related developments and their underlying causes since the onset of the global financial crisis and explores the extent to which the financing mix is changing for LICs, including the rising importance of financing from commercial and non-Paris Club creditors (NPCCs). Recent access to new sources of finance for many LICs presents opportunities and challenges. Opportunities arise because the possibility to diversify sources of finance can help compensate for the relative decline in concessional financing from traditional Paris Club creditors (PCCs) and support countries' development efforts. At the same time, there are concerns that this changing financing landscape may create new types of risks for LICs. The report also takes stock of the impact of the HIPC/MDRI on debt burdens and recent trends in poverty-reducing government spending in countries that have reached decision point.

3. The findings of this report will inform the upcoming review of the joint World Bank-IMF LIC Debt Sustainability Framework (LIC DSF). A key objective of the periodic reviews of the LIC DSF is to assess the extent to which the framework captures relevant risks to debt sustainability in LICs. By analyzing recent developments in LICs' debt vulnerabilities, the findings in this report will be a useful input to the upcoming LIC DSF review.

4. The set of LICs covered in this report includes 74 countries that were eligible for concessional financing from both the IMF and the World Bank as of end-2014. These countries have used the LIC DSF for evaluating debt sustainability (see Annex I for further details). Debt coverage follows the definitions used under the LIC DSF: public debt is measured in gross terms and, unless otherwise specified, comprises the stocks of public and publicly guaranteed (PPG) external and domestic debt.

5. Much of the analysis in the report relies on data from the LIC DSF database and a new survey of IMF country desks. The survey collected information on components of debt not available in the LIC DSF database, and sheds new light on the changing financing landscape of LICs.

Data coverage in the survey is not uniform because of data gaps (sometimes significant) at the country desk level. Furthermore, most survey responses provided data on *central* government debt (face value), suggesting that the results may be understating overall indebtedness. The World Bank's Debt Management Performance Assessment (DeMPA) and Medium Term Debt Management Strategy (MTDS) databases are also used. The report refers to five main country groups—i) *HIPCs*, which are predominantly in Sub-Saharan Africa; ii) *non-HIPCs*; iii) *frontier LICs*, which are increasingly resembling Emerging Markets (EMs) in terms of international market access; iv) *commodity exporters*; and v) *small states*. For small states, analysis in this paper focuses on the sub-group of countries that are IDA/PRGT-eligible despite having per capita incomes higher than the generally-applicable eligibility thresholds.[1] This approach is useful to identify trends in small states' debt vulnerabilities that may be separate from those found more broadly in low-income countries. Sample coverage and country grouping are explained in detail in Annex I. Definitions follow the *Public Sector Debt Guide for Compilers and Users* (IMF 2013) and the *Government Financial Statistics Manual* (IMF 2014).

6. The remainder of the report is structured as follows. Section II covers recent public debt trends in LICs, including their main drivers. Section III discusses the changing landscape of LICs' financing and the potential risks associated with it. Section IV explores how debt vulnerabilities have evolved in light of recent developments in debt and financing. Section V distills the analysis in the paper and identifies key sources of vulnerabilities in the period ahead.

[1]Countries in this group are small states (population of less than 1.5 million) with an income level more than twice the 2013 IDA operational cutoff. The group excludes a number of lower income small states—Bhutan, Comoros, Djibouti, Kiribati, Sao Tome and Principe, and Solomon Islands.

II. RECENT DEBT TRENDS AND DYNAMICS

7. For LICs, public debt trends were dominated in the 2000s by the impact of HIPC Initiative debt relief (Figures 1 and 2). The HIPC Initiative provided significant relief,[2] helping support increased poverty-reducing spending (Box I). However, with a declining number of countries benefiting from HIPC debt relief after 2007 and the majority of countries having graduated from the HIPC by 2013, debt relief has played a progressively smaller role in reducing debt ratios in recent years.

8. Debt dynamics were also impacted by the 2008–09 global financial crisis (GFC) and the subsequent economic recovery. In general, debt ratios closely reflected the balance between new borrowing (as measured by fiscal deficits) and the pace of economic growth (with faster growth helping reduce debt ratios). Notwithstanding improved tax revenue mobilization in most LICs (see Section III), primary deficits on average increased debt ratios by a cumulative 14 percentage points of GDP between 2007 and 2014 (Figure 3). Some of this borrowing reflected fiscal stimulus designed to mitigate the impact of the GFC, while some countries also undertook debt-financed capital and current spending in the context of relatively rapid economic expansion.[3] [4]

9. Buoyant LIC growth contributed favorably to debt dynamics in most cases (Figure 4). LICs were more resilient to the GFC, both in comparison to the rest of the world and relative to LICs' own performance after previous crises (Figure 5). On average, real GDP over 2007–14 reduced LICs' debt–to-GDP ratio by about 12 percentage points, broadly offsetting the debt-creating impact of primary deficits noted above. Real interest rates, which were close to zero on average, had a negligible impact on debt dynamics during this period (for all country groups, see Figures A.II.3–12).

10. Debt trends varied across LICs sub-groups. Trends in debt ratios were most favorable for HIPCs (reflecting debt relief) and commodity exporters reflecting the impact of favorable commodity prices in strengthening primary balances, at least until 2013 (Figure 6).[5] [6] By contrast, for small states, none of which met the eligibility criteria for HIPC debt relief, debt ratios have risen steadily, reaching a new peak in 2014.[7] This reflected weaker growth performance and high borrowing over the past

[2] See also Merotto and others (2015).

[3] See IMF (2014a) for more details.

[4] External debt (which includes private sector debt) dynamics showed a similar pattern to public debt for the entire sample of LICs and the sub-groups, with debt relief playing an important role in the decline of debt, and the current account contributing significantly to the accumulation of debt starting well before the GFC. See Annex II Figures AII.1–AII.2 for more details.

[5] See also Battaile and others (2015).

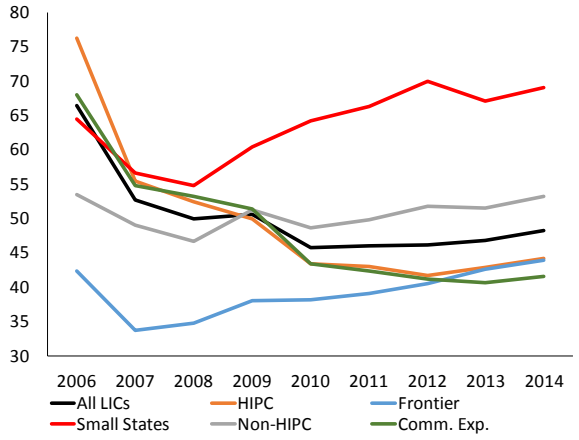
[6] Fragile states eligible for concessional financing from the IMF and the World Bank are mostly HIPCs and follow similar trends. See IMF (2015c) for a definition of fragile states and more details.

[7] Analysis of all PRGT and IDA eligible small states yields generally similar results. This broader group saw a sharper decline in debt ratios prior to 2008 on account of HIPC/MDRI debt relief for some small LICs and a more gradual rise in debt-ratios between 2008 and 2015. Figure AII.29 in Annex II shows results for the broader small states definition.

decade.[8] Frontier markets saw an early rise in debt ratios, starting around 2008, but ratios remain at a relatively low level. Details on the debt dynamics for all LICs and sub-groups are summarized in Annex II. At the time of the analysis, the 2014 data were projections from the DSA.

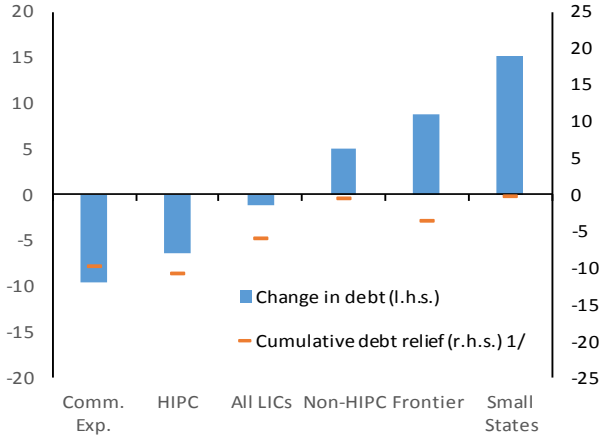
11. The borrowing space that emerged since 2006 has been accompanied by increased capital and current spending (Figures 7 and 8).[9] The focus of this report is on trends in public borrowing and related debt vulnerabilities, and analysis of the use of fiscal space created by debt relief or new borrowing goes beyond its scope. That said, aggregate data show that lower debt service costs following HIPC/MDRI debt relief was accompanied by a rise in poverty-reducing spending (Box I). Similarly capital spending has increased relative to GDP for most LICs— most notably through 2010, and most durably for commodity exporters and frontier markets. Current spending has also increased in recent years, again most notably for frontier markets and commodity exporters.

Figure 1. Total Public Debt
(in percent of GDP)



Source: LIC DSF Database.

Figure 2. Change in Public Debt, 2007–14
(in percent of GDP)

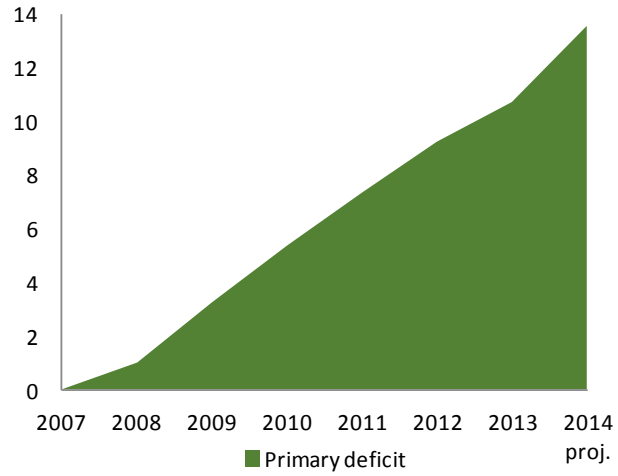


Source: LIC DSF Database.
1/ Includes HIPC and other debt relief.

[8]Many small states are among the most disaster prone countries in the world, with natural disasters having a significant effect on growth and debt as most of their investment needs are directed for capital replacements following natural disasters. A recent study by Acevedo (2014) on Caribbean small states, for instance, reports that the debt–to-GDP ratio in the Eastern Caribbean Currency Union (ECCU) grows by almost 5 percentage points the year a storm strikes, with a cumulative debt increase of 5 percent of GDP 8 years later.

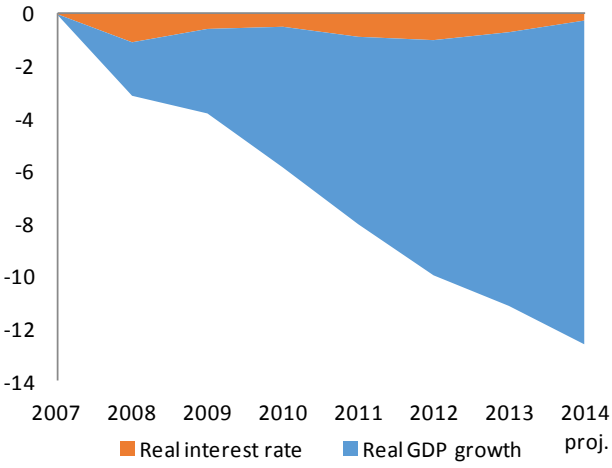
[9]See also *Fiscal Monitor—Public Expenditure Reform: Making Difficult Choices*, IMF, April 2014.

Figure 3. Cumulative Contribution of the Primary Balance to Debt
(in percent of GDP)



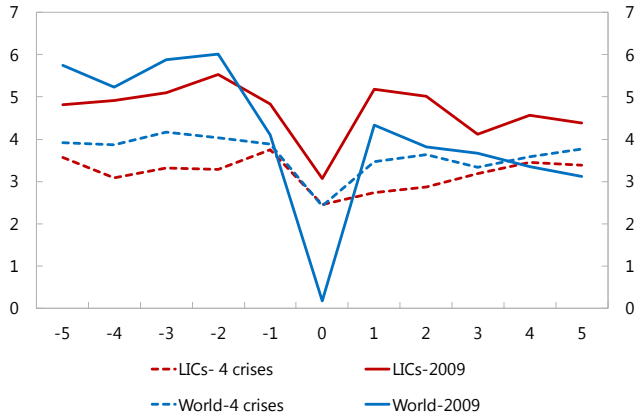
Source: LIC DSF Database.

Figure 4. Cumulative Contribution of Growth and Interest to Debt
(in percent of GDP)



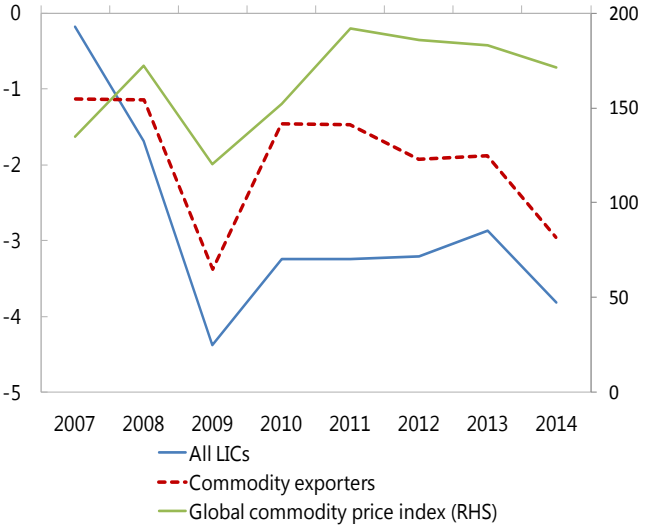
Source: LIC DSF Database.

Figure 5. World's and LICs' GDP Growth in Past and 2009 Crises
(annual growth in percent)



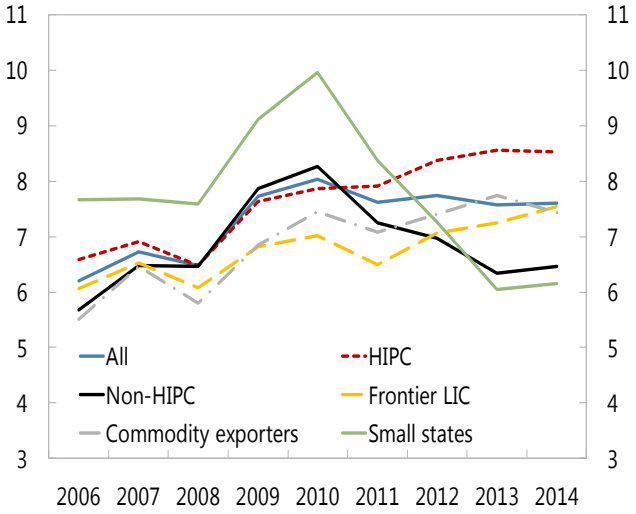
Sources: Spring 2015 WEO and staff calculations.
* The chart plots real GDP growth in the world and in LICs 5 years before and 5 years after the global crises of 1975, 1982, 1991, and 1998 and the 2009 crisis (0 on the horizontal axis denotes the start of the crisis).

Figure 6. Primary Balance
(in percent of GDP)



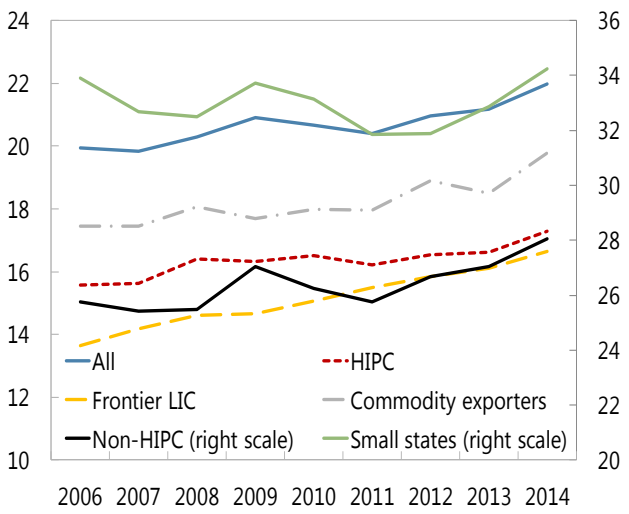
Sources: Spring 2015 WEO and staff calculations.

Figure 7. Capital Spending
(in percent of GDP)



Sources: Spring 2015 WEO.

Figure 8. Current Spending
(in percent of GDP)



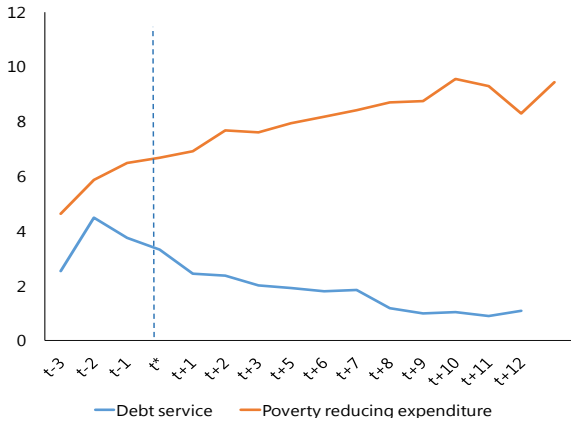
Sources: Spring 2015 WEO.

Box 1. HIPC and MDRI: A Synopsis

The HIPC/MDRI is nearly complete—out of the 39 countries eligible under the Initiative, 36 have reached their completion point. The latest country—Chad—reached completion point in April 2015. Three pre-decision point countries—Eritrea, Somalia, and Sudan—have yet to start the process of qualifying for debt relief under the Initiative.

Debt relief has substantially alleviated debt burdens in recipient countries and has enabled them to increase poverty-reducing expenditures and respond to the GFC. Since reaching the decision point, recipient countries, on average, have been able to reduce debt service by more than two percentage points of GDP and increase poverty reducing-expenditures by almost three percentage points of GDP (figure below).[1] However, despite the increase in poverty-reducing expenditures, HIPCs are lagging behind on reaching the Millennium Development Goals in many areas, especially in education and health related sectors.

Debt Service and Poverty Reduction Expenditures before and after HIPC Decision Point (t*)
(Annual, in percent of GDP)



Sources: Staff calculations based on IDA and IMF (December 2014) before Chad reached the completion point.

[1]It should be noted that the expenditure switching from one form of spending (debt service) to another (poverty-reducing) does not improve the government's "economic" solvency. The switching does however improve the government's "accounting" solvency as the present value of future poverty reducing spending is not reported on countries' balance sheet as a contractual obligation of the government. See Burnside and Fanizza (2004).

III. THE CHANGING FINANCING LANDSCAPE

12. The LIC financing landscape has been gradually changing since 2007 (See Table). Lower debt to multilateral creditors and Paris Club creditors (PCCs) has been offset by increased borrowing from domestic markets, international capital markets, and NPCCs. While these changes at the aggregate level are modest in scale, the change in the balance of financing has been more apparent for some sub-groups of LICs. This evolution reflects a variety of factors: improved fundamentals in a number of LICs, a prolonged period of low interest rates in advanced economies, and the decline in concessional financing from PCCs accompanied by the growing role of EMs in this regard. This section discusses these changes, looks at the contributory factors, and assesses whether new risks and vulnerabilities have emerged. The analysis in this section mainly draws on data from the survey of IMF country desks. This allows key trends to be identified, even if the data set is not sufficient to define precise changes. A breakdown between domestic and external debt for the full 2007-14 period is available for only half the country sample, and a comparable breakdown of bilateral external financing between PCC and NPCCs is available for only one third of the sample.

Debt Stock in Low-Income Countries by Creditor, 2007–14
(in percent of GDP)[1]

	2007	2014
External	**38.0**	**33.8**
Multilateral	20.4	16.1
Bilateral	14.1	13.8
Paris Club[2]	*7.0*	*3.0*
Non-Paris Club[2]	*8.0*	*11.7*
Commercial	3.5	4.1
Domestic	**14.7**	**15.1**

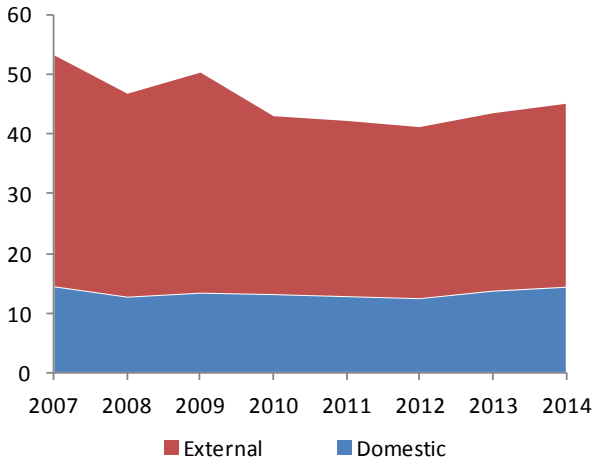
Sources: 2015 survey of IMF country desks.
[1]Based on countries with continuous data from 2007 to 2014, representing slightly over 50 percent of the sample.
[2]The sum of PC and NPCC does not equal to the total bilateral debt stock because countries with continuous data on PCC and NPCC debt from 2007 to 2014 represent only around 30 percent of the sample.

Domestic Debt

13. Domestic financing has expanded most significantly for frontier LICs (Figures 9–10). While domestic debt has remained stable at around 13 percent of GDP for LICs as a whole, the ratio has increased from 14 to 19 percent of GDP for frontier LICs from 2007 to 2014 respectively. While data are limited, they point to an increasing participation of nonresident investors in some cases. For the five frontier LICs with continuous data on foreign participation in domestic debt markets since 2009 (Ghana, Nigeria, Senegal, Uganda, and Zambia), two (Senegal and Ghana) have maintained a relatively large share of foreign holdings (with an average of about one-third of domestic debt), while the other three (Nigeria, Uganda, and Zambia) have seen a significant increase in foreign holdings of domestic debt from a low base to over 10 percent of total domestic debt in recent

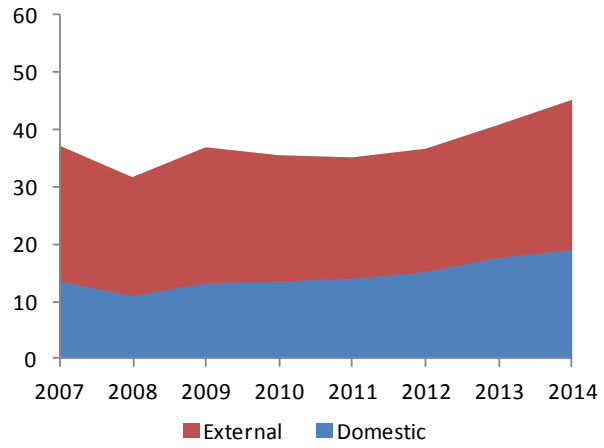
years.[10] For LICs as a whole, the maturity composition of domestic financing has been broadly stable over this period, with about 20 percent comprising short-term debt.

Figure 9. Domestic and External Public Debt: All LICs
(in percent of GDP)



Source: Calculations based on 2015 Survey of IMF country desks.

Figure 10. Domestic and External Public Debt: Frontier LICs
(in percent of GDP)



Source: Calculations based on 2015 Survey of IMF country desks.

14. While higher reliance on domestic debt can generate vulnerabilities, risks may be attenuated by the benefits of a more developed domestic debt market. Typically, LIC domestic borrowing is on less favorable terms (higher real interest rate and shorter maturity) than external borrowing. Data from the survey of IMF country desks suggests that the average nominal effective interest rate on domestic debt is around 8 percent, while for external debt the average is around 2 percent. Increased domestic financing of the public sector can also crowd out the private sector. On the other hand, domestic debt can help reduce currency risk and is less prone to market volatility given the relatively more stable nature of the domestic investor base. Also, where domestic financial markets are developing rapidly, increased public borrowing may not lead to crowding out; indeed, the supply of liquid public debt may help develop the domestic debt market and strengthen the monetary transmission mechanism and monetary policy control.[11]

15. The increase in frontier LICs' domestic debt appears to be associated with financial deepening, and is not a source of evident vulnerability. Figure 11 shows that for frontier LICs, increases in domestic debt have largely been associated with economic growth. This is supported by the more general relationship between the level of public domestic debt and the depth of domestic

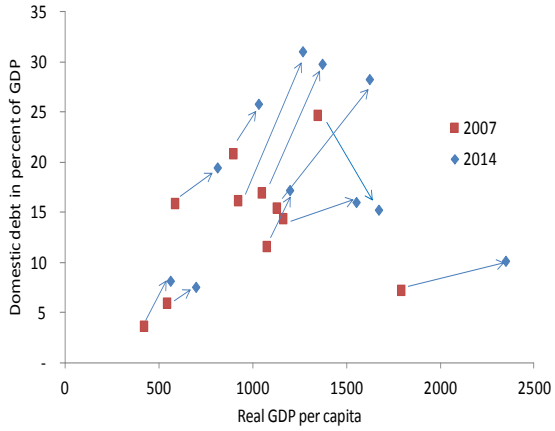
[10]Survey of IMF country desks for the report, "Eligibility to Use the Fund's Facilities for Concessional Financing," (IMF 2015b), Washington: International Monetary Fund.

[11]See Bacchiocchi and Missale (2012), Bua, Pradelli, and Presbitero (2014), Calvo (2005), and Mehrotra, Miyajima, and Villar (2012).

financial markets (Figure 12).[12] Systematic monitoring and periodic assessments of the risks associated with these instruments will be important for formulating safeguards and policy responses.

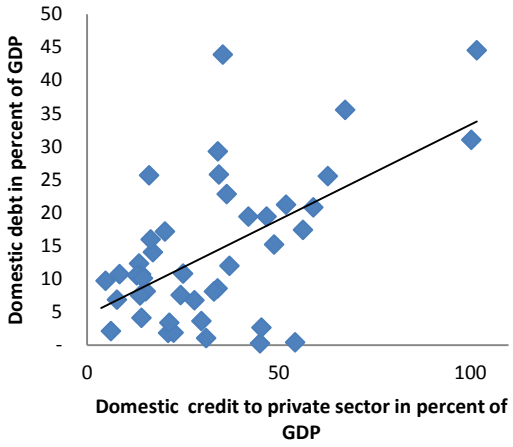
16. Nonresident participation in the domestic debt market broadens the investor base, but may bring increased funding volatility. Nonresident appetite for domestic debt is dependent, among other factors, on global financial conditions and confidence in host markets. Risks associated with the presence of potentially volatile nonresident investors could be mitigated for example, by issuing domestic debt instruments with a broad range of maturities to avoid spikes in gross financing needs, as well as strengthening the monetary policy response to changing liquidity conditions. It also is important that improved macroeconomic management and institutions that have supported the expansion of the domestic debt market continue to develop to keep investor confidence anchored.

Figure 11. Domestic Debt and Real GDP per Capita: Frontier LICs, 2007–14



Source: WEO.
Note: Sample includes Frontier LICs for which data are available.

Figure 12. Domestic Debt and Private Credit: All LICs, 2014



Sources: WEO and World Bank Global Financial Development Database.

External commercial borrowing

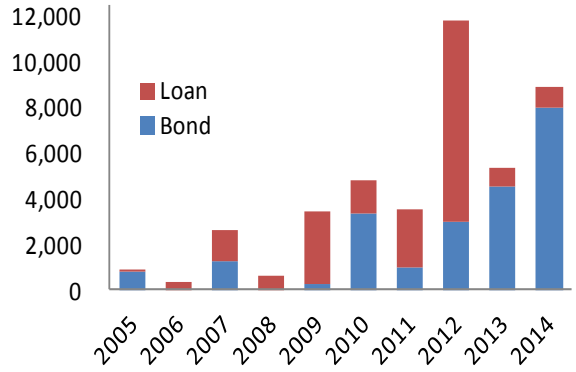
17. Changes in external commercial borrowing over the past decade have been dominated by increased issuance of international bonds by frontier LICs, particularly in the last three years (Figure 13).[13] For frontier LICs, external commercial borrowing by the central government in

[12]Consistent with the literature, credit to the private sector is used as a proxy for financial depth (see IMF, 2012b; IMF, 2015a). This excludes holdings of the government debt, and so avoids spurious correlations with domestic debt.

[13]The sample in Figure 13 includes the Frontier LICs (Bangladesh, Bolivia, Cote d'Ivoire, Ghana, Kenya, Mongolia, Mozambique, Nigeria, Papua New Guinea, Senegal, Tanzania, Uganda, Vietnam, and Zambia) plus other LICs that have issued at least one international bond (Republic of Congo, Ethiopia, Honduras, and Rwanda). The full list of Eurobond issuance by those countries is in Table AII.1 of Annex II.

the form of sovereign bonds and commercial loans has amounted to about US$41 billion since 2007, with the majority borrowed during 2010–14 ($34 billion). Available data suggest that there has also been a shift from commercial loans to bonds, with the latter rising from 20 percent of external commercial financing in 2005 to 90 percent in 2014. Of the 74 countries covered by this review, 13 issued sovereign bonds during 2010–14, with each market issue providing average financing equivalent to 3.2 percent of GDP.

Figure 13. External Commercial Borrowing: Frontier LICs
(in US$ million)



Sources: Dealogic, Bloomberg.

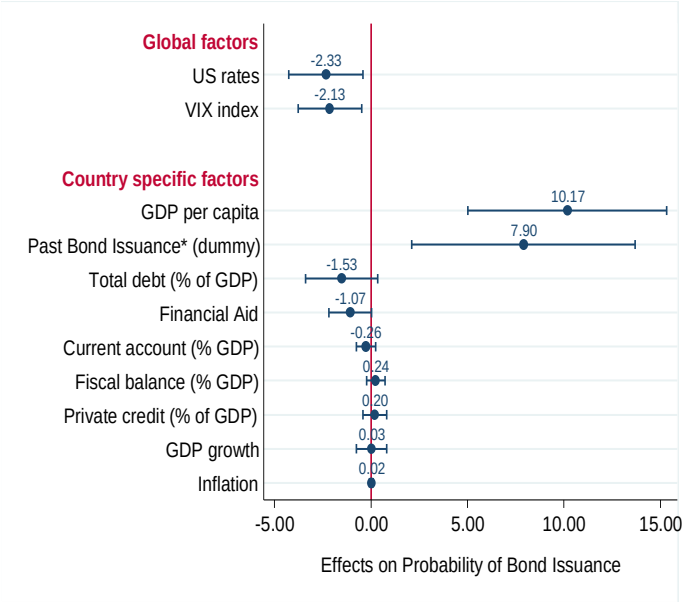
18. Access to the international bond market appears to be driven by the greater economic development of LICs, although global factors also matter. Since debut issues also tend to make future issues more likely (by establishing a financial infrastructure and an investor base), LICs' access to sovereign bond markets is likely to be sustained. Regression analysis based on a sample of LICs shows that both global and country-level factors drive sovereign bond market access, with the latter playing the largest role. At the country level, the probability of an international bond issue is positively related to higher levels of GDP per capita and lower financial aid. Results also suggest that once countries access international markets, they are more likely to issue again (Column 1 in Table AIII.1, Annex III). In terms of global factors, easy liquidity conditions have contributed to a search for yield that helped LICs issue Eurobonds. Consistent with this, the likelihood of LIC bond issuance is positively related to lower U.S. interest rates and lower global volatility (as measured by the VIX, a measure of market expectations of near-term volatility). Overall, domestic factors appear most powerful, with a one percent rise in GDP per capita increasing the probability of sovereign bond issuance by around 10 percent (Figure 14).[14] The same figure shows that a one percentage point

[14]Notwithstanding that the regression results imply correlations and not causation, it is also worth noting that elasticities are calculated around the sample mean, and they diminish as a country's explanatory variables move away from the mean; i.e., in our regression, a 10 percent rise in GDP per capita does not imply that the probability of bond issuance would increase by 100 percent. Also, the interpretation of marginal effects (elasticities in Figure 14) in probit models is different for continuous versus discrete variables. For example, a one percent increase in a continuous variable (like GDP per capita) changes the probability that the LHS variable takes the value one by 10 *percent*, while for dummy variables (like past bond issuances) a change in the dummy from zero to one changes the probability that the LHS variable takes the value one by 8 *percentage points* (see Sperman 2009).

increase in U.S. interest rates would, on average, only decrease the probability of issuance by around 2 percent. More details on the methodology and robustness of the results are provided in Annex III. These results are broadly consistent with analysis based on a wider sample that also includes emerging markets, which shows that countries with "regular market access" also have more developed financial markets, lower indebtedness, stronger external positions, and better institutions than countries with "occasional market access" or "no market access" (Figure 15).[15]

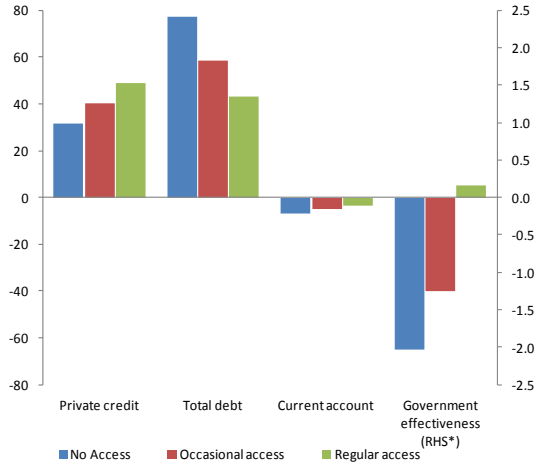
19. The shift in LICs' composition of external borrowing from commercial loans to bonds likely reflects changing domestic and global factors as well as a preference for flexibility. Commercial loans are often collateralized by specific projects, which can lead to a lengthy negotiation process. Improved creditworthiness and increased demand for frontier LICs' Eurobonds may have given country authorities the opportunity to raise unsecured funds that previously would have been restricted to specific uses.

Figure 14. Marginal Impacts of Global and Domestic Factors on Probability of Bond Issuance



Source: Staff calculations based on regression results in Column 1 in Table AIII.1, Annex III.
Note: Elasticities are shown with 90 percent confidence intervals. Variables where the confidence intervals cross the zero vertical line are statistically insignificant.
* The marginal effect of issuing at least one sovereign bond in the past three years corresponds to a 7.9 percentage points increase in the probability of issuance in the current year.

Figure 15. Macroeconomic Drivers of Bond Issuance
(in percent of GDP)



Source: Presbitero and others (2015 forthcoming).
*The government effectiveness index is based on the World Bank World Governance Indicators, which ranges from -2.5 (weak) to 2.5 (strong).
Note: Sample includes 57 'no access' countries with no international bond issuance during 1995–2013; 31 'occasional access' countries with no issuance in the last 5 years, and; 18 'regular access' countries with issuance within the last 5 years. For each metric, the access groups show mean characteristics which are statistically significantly different from each other based on a test of equality of means.

[15]See Presbitero and others (2015 forthcoming) for more details.

20. Preliminary evidence suggests that bond issuance has eased fiscal financing constraints. A panel regression analysis (summarized in Box II) explores the relationship between the primary balance and bond issuance in LICs. Bond issuance is not typically associated with a near-term loosening of fiscal policy. This implies that issuers substituted bond proceeds for other forms of financing, rather than increasing expenditure. That said, the relationship between the fiscal balance and debt levels is assessed to weaken following a bond issuance, which suggests that financing constraints may have become less binding. This increased flexibility for LICs is welcome, as it allows space for counter-cyclical fiscal policy during times of pressure. However, the increased flexibility also comes with risks if authorities do not react to higher debt levels over the longer term.

Box 2. Fiscal Response to Debt Levels Before and After Debut Bond Issuance

This box summarizes the results of an empirical analysis assessing whether there are discernible changes in LICs' fiscal behavior following issuance of an international bond. For a sample of low-income countries a fiscal reaction function—similar to Abiad and Ostry (2005)—is augmented with an interactive dummy variable for debut bond issuance. The model specification is as follows:

$$pb_{i,t} = u_i + (\beta_1 + \beta_2 \cdot D_{i,t}) d_{i,t-1} + x_{i,t}\gamma + \delta D_{i,t} + \varepsilon_{i,t}$$

where $pb_{i,t}$ is primary balance-to-GDP ratio; u_i is country-specific fixed effects; $d_{i,t-1}$ is lagged public debt-to-GDP ratio, and $\mathrm{D_{i,t}}$ is the dummy variable set to one at the time of and after a debut bond issuance; $x_{i,t}$ is a vector of other drivers of the primary balance (GDP gap and the World Bank's CPIA score); and $\varepsilon_{i,t}$ is an error term. An interactive term with oil prices and net oil exports-to-GDP ratio is also included to control for oil terms-of-trade shocks. This specification allows comparison between the coefficients associated with debt level before and after the debut bond issuances (more specifically between β_1 and $\beta_1 + \beta_2$).

The results suggest that LICs tend to respond more weakly to lagged debt after debut bond issuances, with β_2 being negative and significant. The signs of other determinants are as expected with a range of significance levels. Oil prices are also associated with primary surpluses. The coefficient δ on $\mathrm{D_{i,t}}$ (no interaction effects) is not significant—this implies that there is no immediate loosening of policy following bond issuance. Access to international capital markets may have at least temporarily relaxed issuers' fiscal response to changes in debt. However, unless growth continuously exceeds interest rates going forward, these economies will eventually need to raise the primary balance to meet the government's inter-temporal budget constraint. It should be noted that most LICs issued bonds only after 2010 and, until recently, they have depended on official resources which had a significant influence on fiscal outcomes. It is therefore likely that a more robust fiscal reaction function for LICs would be established only after more data are accumulated over the coming years.

The results are robust to other specifications. This includes other measures of public debt such as (i) public debt minus Eurobond debt; and (ii) public debt minus central government deposits at the central bank.

Box 2. Fiscal Response to Debt Levels Before and After Debut Bond Issuance (concluded)

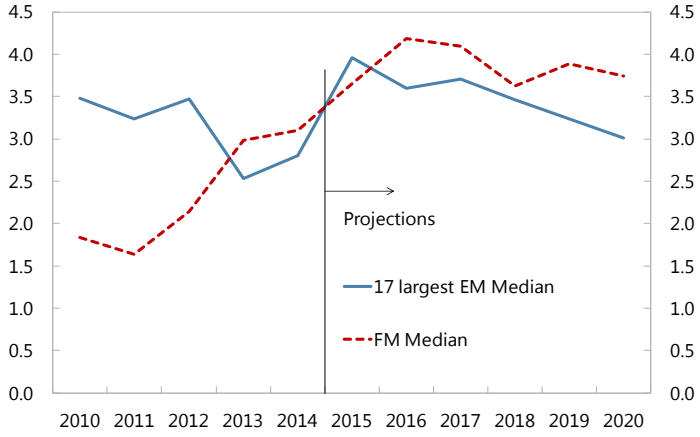
Determinants of Fiscal Reaction Function

Dependent variable:	(1)	(2)	(3)	(4)	(5)
Primary surplus / GDP	GLS	GLS-AR(1)	GLS-Lag	FE	Arellano-Bond
Response to debt levels					
BeforeEurobond (i)	0.0298	0.0327	0.0285	0.0405	0.0761
After Eurobond ((i)+(ii))	-0.0171	-0.0211	-0.0131	-0.0249	-0.0363
(i) Lagged debt/GDP	0.0298***	0.0327***	0.0285***	0.0405**	0.0761**
	(0.0057)	(0.0063)	(0.0056)	(0.0201)	(0.032)
(ii) Post-Eurobond Dummy	-0.0469*	-0.0538*	-0.0416	-0.0654**	-0.1124**
* Lagged debt/GDP	(0.0271)	(0.0292)	(0.0264)	(0.0294)	(0.057)
(iii) GDP gap	0.1216***	0.1382***	0.1139***	0.1257**	0.1296
	(0.0362)	(0.0384)	(0.0391)	(0.058)	(0.0824)
(iv) Expenditure gap	-0.0822***	-0.0849***	-0.0813***	-0.0920***	-0.0608**
	(0.0112)	(0.011)	(0.0111)	(0.0305)	(0.0252)
(v) 2009 crisis dummy	-1.3353***	-1.4197***	-1.4789***	-2.1863***	-2.3934***
	(0.2953)	(0.2826)	(0.2917)	(0.4791)	(0.5491)
(vi) Post-Eurobond dummy	0.1067	0.4808	0.2396	0.4617	1.7604
	(0.9675)	(1.0307)	(0.9341)	(1.1678)	(1.5525)
(vii) CPIA	-1.6393***	-1.6595***	-1.4237***	-2.7656	-4.3103
	(0.5681)	(0.617)	(0.5466)	(2.4112)	(2.8801)
(viii) Oil prices * Net oil exports /GDP	15.4888***	17.2689***	17.5639***	20.0909**	23.6800***
	(4.817)	(4.6709)	(4.7464)	(8.2963)	(8.3244)
(vi) Lagged Primary surplus			0.1726***		0.1059
			(0.0323)		(0.0738)
Sample of years			2000-2014		
No. of countries	48	45	48	48	45
No. of samples	430	427	430	430	382

(Note) *, **, *** show significance at 10%, 5% and 1%, respectively. Country-specific fixed effects are included. The numbers in parenthes show standard errors. Samples before the HIPC completion points are dropped. GLS includes country-specific intercepts. Hausman test rejects random-effects model. For Arellano-Bond estimator, tests for zero autocorrelations and overidentifying restrictions (Sargan test) were conducted.

21. Access to international capital markets can help LICs diversify their borrowing options, although it changes the nature of the risks facing them. Enhanced access to financing opportunities provides more flexibility to conduct discretionary fiscal policy with looser borrowing constraints. A more diversified funding mix also gives LICs more capacity to balance different risks as part of debt management: for example, Eurobond maturities tend to be significantly longer than for debt issued in the domestic market. At the same time, sovereign bonds bring elevated currency risks and Eurobonds that involve bullet payments can create spikes in gross financing needs. This greater rollover risk is highlighted by the LIC DSA results: over a 10-year projection horizon, the thirteen LICs that have issued Eurobonds will face an average debt service-to-export ratio of 9.1 percent in years when principal repayments fall due, compared to 5.7 percent in other years. Furthermore, principal repayments of sovereign external debt (in percent of exports of goods and services) by frontier LICs are projected to exceed those of the 17 largest EMs over the next five years (Figure 16).

Figure 16. Amortization of Sovereign External Debt
(in percent of goods and services exports)



Source: Spring 2015 WEO.

22. While frontier LICs' access to international capital markets is likely to be sustained, shifting global conditions present a source of vulnerabilities going forward. With prospective tightening of global liquidity conditions in the coming years, the terms for market access by frontier LICs will likely be less favorable than in recent times. However, a complete loss of market access is not deemed likely, as in recent years, frontier LICs have retained market access despite large swings in risk sentiments, albeit with corresponding shifts in spreads. To minimize vulnerabilities associated with enhanced market access, sustainable fiscal and debt policies will be important, together with strengthened debt management. Prudent macroeconomic management will be particularly important for frontier LICs dependent on commodity exports (where lower global prices may prove prolonged) and for frontier LICs sensitive to growth in emerging markets, where prospects have deteriorated recently. Efforts to improve debt management practices, including by diversifying the investor base and smoothing the repayment profile could also help alleviate rollover risks. In this context, a few frontier LICs have recently issued Eurobonds with amortizations spread over several years, rather than a single bullet repayment (see Table AII.1).

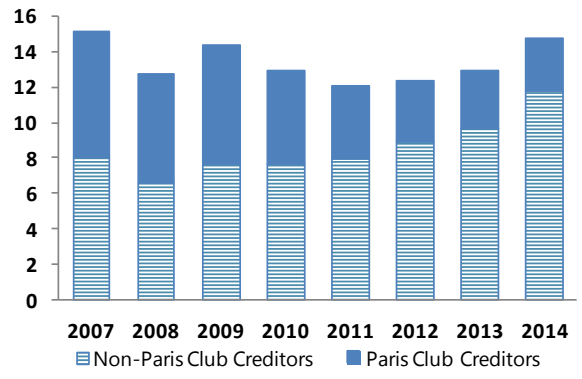
Non-Paris Club Creditors

23. There has also been a change in the mix of creditors, with a particularly marked increase in official bilateral lending from non-Paris Club creditors (NPPCs). The stock of debt owed to NPCCs, a group comprising major EM economies such as China, India, and Brazil, has increased steadily in recent years. China is a dominant player amongst the NPCCs, with the greatest number of loans and amount of financing provided to LICs. The growth in Chinese financing to LICs has been substantial, especially for infrastructure projects in Africa. NPCC credits comprised the

majority of new lending by official bilateral creditors in recent years,[16] helping offset receding lending by Paris Club creditors.[17] It is important to note, however, that a substantial part of the decline in Paris Club debt was driven by debt relief; and that new financing since HIPC has primarily come in the form of grant support or through multilateral agencies. Without NPCC financing at recent levels, countries may have had to either compress investment spending or resort to higher levels of domestic or external market borrowing, potentially on less concessional terms. As NPCCs continue to grow and become more integrated into the global economy, financing from these sources will likely become increasingly important.

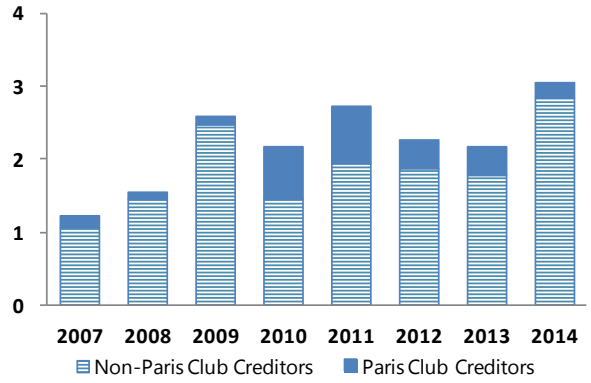
24. The share of the debt stock and the disbursements owed to NPCC has increased significantly in recent years (Figures 17–18). Debt to NPCCs has risen from about 8 percent of GDP in 2007 to over 11 percent of GDP in 2014. NPCC lending varies across different country groups (Figures 19 and AII.18–22). While lending to non-HIPCs has varied around 2 percent of GDP over 2007–14, loans to HIPCs have risen from under 1 percent of GDP in 2007 to over 3 percent in 2014. Increased NPCC lending to HIPCs may reflect the greater borrowing capacity of these economies following debt relief, as well as the sizeable investment needs and opportunities in commodity-exporting HIPCs. NPCC lending to commodity exporters has risen sharply since 2007 (Figure 19).

Figure 17. Official Bilateral Debt Stock
(in percent of GDP)



Source: Calculations based on 2015 Survey of IMF country teams.

Figure 18. Official Bilateral Debt Disbursements
(in percent of GDP)



Source: Calculations based on 2015 Survey of IMF country teams.

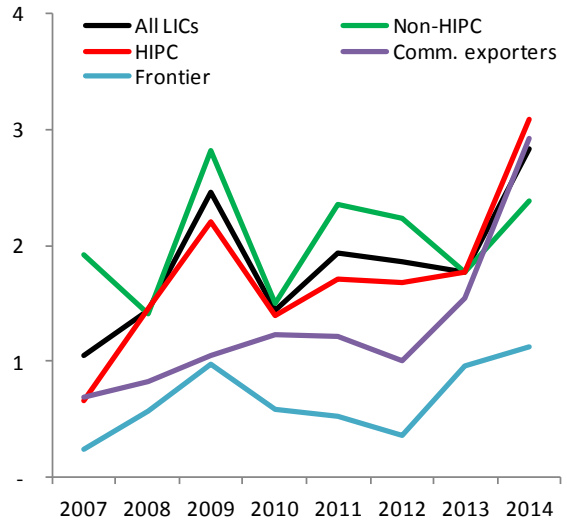
25. With the rise in debt owed to NPCCs, any future debt relief operations will require coordination across a more diverse group of bilateral creditors. Although LICs have sought ad hoc modifications to improve the terms of NPCC loans in some instances, over time more formal

[16]Based on 2015 survey of IMF country desks. Coverage of PCC/NPCC financing is limited, with only 33 countries surveyed providing data. Nonetheless, the rapid growth in NPCCs disbursement seen in the data is consistent with the increase in non-DAC official development assistance in the OECD's Development Assistance Committee database (which consists of grants and concessional loans). See Table AII.2 in Annex II.

[17]See World Bank (2015a) for more details.

coordination amongst bilateral creditors will be important for timely and efficient resolution of debt distress. Past experience suggests that a forum (like the Paris Club) where creditors share information and coordinate their actions to avoid holdout problems has been effective in helping countries emerge from debt difficulties through the provision of debt relief in the context of an effective macroeconomic adjustment program. However, as the role of the Paris Club in bilateral official flows has significantly declined, a gap has emerged in the global architecture for resolving official debt crises. As an interim step, a systematic effort is needed to collect more data on the terms of borrowing for countries to better understand the risks from increased reliance on NPCCs. (Illustrative loan terms and concessionality based on a 2014 survey of IMF country desks are provided in Table 1).

Figure 19. NPCC Bilateral Disbursements
(in percent of GDP)



Source: Calculations based on the 2015 survey of IMF country desks.
Note: Data for small states were available for only four countries and were therefore excluded.

Table 1. Loan Terms from Major NPCCs

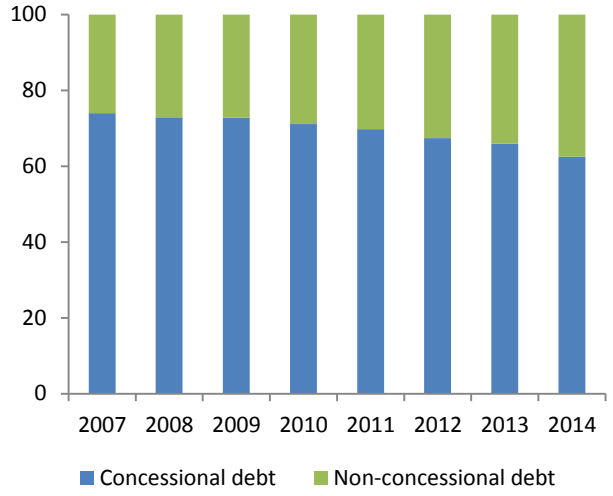
	Concessional	Non-Concessional
Number of loans surveyed	9	75
Grace period	0-10 years	0-9 years
Maturity	20-25 years	6-25 years
Interest rate	Fixed: 0% - 1% Float: n/a	Fixed: 0% - 12% Float: 6m LIBOR + 0.5% - 5y LIBOR + 2%
Avg grant element	45%	19%
Range of grant element	36 - 53%	0 - 34%
Overall Avg grant element	**21.8%**	

Source: Survey of IMF country desks conducted in 2014.

Debt Concessionality

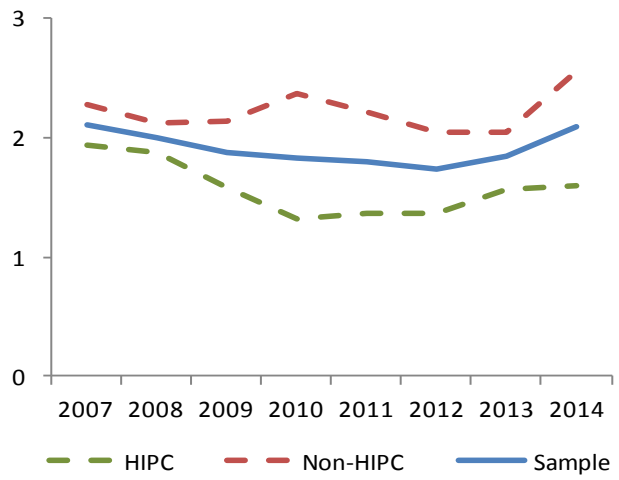
26. In recent years, LIC debt portfolios have included an increased share of non-concessional debt (Figure 20). This reflects the elimination of some concessional debt through the HIPC/MDRI as well as new borrowing on non-concessional terms, including from commercial sources and NPCCs. A lack of data on disbursement flows makes it difficult to assess the relative effects of debt relief versus new borrowing on concessionality, and some variation may also be due to changes in the discount rate. It should be noted that the average effective interest rate has remained broadly constant at around 2 percent since 2007 (Figure 21). To the extent that the concessionality of debt has declined over this period, this suggests that this decline may have been associated with a shortening of maturities or grace periods, or even higher loan service fees.

Figure 20. Debt Stock Concessionality
(Share of total)



Source: Calculations based on the 2015 survey of IMF country desks.

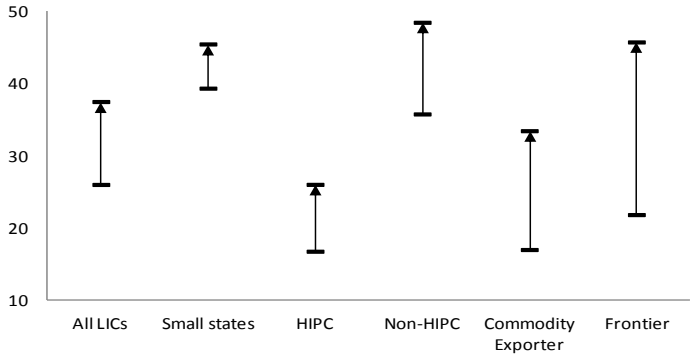
Figure 21. Average Effective Interest Rate
(in percent)



Source: LIC DSF Database.

27. Frontier LICs have witnessed the greatest increase in non-concessional borrowing (Figure 22). The share of non-concessional debt in frontier LIC portfolios broadly doubled between 2007 and 2014 (up from 21 percent to 45 percent of total debt).[18] Commodity exporters saw a similarly rapid increase (up from 17 to 33 percent of total debt). Small states saw the smallest shift toward non-concessional debt over this period, although they were the group with the highest initial share in 2007 (Figure 22).

Figure 22. Levels and Changes in Non-Concessional Debt, 2007–14
(Share of Total)



Source: Calculations based on 2015 Survey of IMF country teams.

[18]Using the World Bank MTDS database, the average characteristic of Frontier LICs' debt can be explored in more detail. In these countries, the average grant element on external debt is 19 percent, compared to 26 percent in other countries. Both groups have a similar average debt maturity (13 years), so this difference is mainly driven by higher average interest rates in Frontier LICs (2.0 percent) than Non-Frontier LICs (1.5 percent).

28. In general, the shift toward more non-concessional borrowing appears to be part of a progression to market based borrowing as LICs converge with emerging market practices. Recognizing this shift, the Fund's Debt Limits Policy (DLP) and IDA's non-concessional borrowing policy (NCBP) have been modified in recent years to allow countries with greater capacity to benefit from the new borrowing options and enhance their ability to cover their developmental financing needs while safeguarding debt sustainability (Annex IV). Further, for both frontier LICs and commodity exporters, the risks associated with higher non-concessional debt are partly mitigated by their generally low average debt ratios (41 and 44 percent of GDP, respectively). To this extent and reflecting their improved macro performance, a number of countries have moved to lower risk ratings under the LIC DSF despite higher levels of non-concessional debt. Nonetheless, it is important that the rise in non-concessional borrowing be closely scrutinized, especially as increased integration in the global financial market exposes countries to the risk of market volatility.

Contingent Liabilities

29. In addition to standard debt contracts, sovereigns face liabilities for explicit and implicit contingent liabilities (CLs). CLs can refer to debt guarantees, agreements linked to public-private partnerships (PPPs), pension funds, debts from state-owned enterprises and sub-national entities, as well as bailouts of nonpublic entities and natural disasters. While these financial obligations are not current commitments of the sovereign, they can move onto the sovereign's balance sheet under certain circumstances, often in the context of adverse economic shocks. If these liabilities move to the sovereign's balance sheet, debt levels can increase sharply, potentially jeopardizing debt sustainability.

30. The presence of CLs means headline deficit numbers are often insufficient for capturing fiscal vulnerabilities. For example, public enterprises and large infrastructure projects are not always included in the fiscal framework. When losses incurred by these entities and projects require fiscal transfers, the change in debt can be quite substantial. PPPs, which can increase efficiency and defer public investment spending, can pose risks related to delays in construction, litigation, increases in financing costs, and guarantees being called on the government by the service provider.[19]

31. While data availability is poor, there is evidence to suggest that CLs are large and growing in LICs. According to estimates by the World Bank, there was US$73 billion of private investment in infrastructure in IDA-eligible countries during 2009–14. Many of these projects would have involved sovereign guarantees or PPPs, such as power purchase agreements. The IMF estimates the average capital stock of PPPs in LICs at just below 10 percent of GDP, with the flow of new PPP investments decelerating in recent years (Figure 23). A survey of Eastern and Southern African countries undertaken by the OECD and MEFMI reveals levels of contingent liabilities that vary between 4 and 31 percent of GDP in the countries surveyed.[20] While it is unlikely that all of

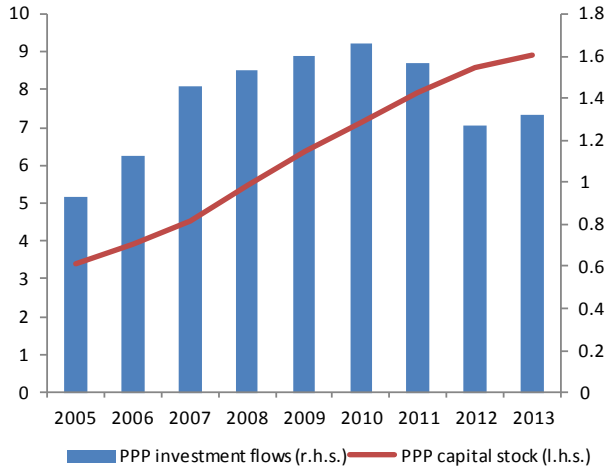
[19]See IMF (2015f) for more details.

[20]See OECD and MEFMI (2015) for more details.

these liabilities would need to be taken on by the sovereign at once, the limited data available do suggest that CLs can pose significant debt sustainability risks in the absence of careful management.

32. Overall, contingent liabilities represent a "known unknown" with regards to debt vulnerabilities. We know that the risks may be significant for some countries, but do not have adequate data to identify the scale of the risks in each country. CLs in LICs will likely continue to grow, especially as the size of the banking sector increases and countries undertake infrastructure development. Better monitoring of CLs, periodic assessments of risks, and a strengthening of the LIC DSF analysis in this regard, should be given priority in the coming years. Moreover, a strong legal framework for project selection and appraisal would help curtail the probability of CLs materializing.

Figure 23. PPPs in LICs
(in percent of GDP)



Source: IMF (2015e)

Debt Management

33. With more financing options, debt management takes on enhanced importance for debt sustainability. The changing debt landscape presents LICs with new challenges in terms of tracking and staying current on their more diverse debt portfolios, while properly assessing the associated risks and costs. These debt management challenges need to be addressed to prevent the emergence of debt distress situations in a potentially less accommodative financing environment. Addressing them involves a comprehensive analysis of the level and composition of debt, taking into account the different risks associated with each type of debt. This is particularly important for frontier markets where domestic and international financing have increased interest rate, exchange rate, and rollover risks.

34. Sound debt management policies, buttressed by a medium-term debt management strategy (MTDS), can help manage and reduce the possible emergence of debt distress

situations.[21] To ensure accountability and transparency, a clear legal framework, organizational structure, and reporting policies should be established.[22] In addition, operational arrangements including robust systems and procedures that ensure timely debt recording and debt service payments are critical. Effective debt management will also require active use of mitigating measures to address debt vulnerabilities. These measures may include the conduct of liability management operations such as buybacks, exchanges, switches, and reverse auctions; diversification of the investor base; efforts to deepen the domestic debt market; building cash buffers; and enhancing communications with investors. Stronger fiscal institutions can also play a crucial role in debt management policies, including by fostering the efficiency of public investment spending through increased transparency in the appraisal and selection processes.[23]

35. Despite the growing need for effective debt management, many countries' capacities in this area are lagging. Evidence from the Debt Management Performance Assessment (DeMPA) Tool indicates that debt management capacity is generally weak in LICs (Figure 24). Evaluations of 58 LICs undertaken over 2008–14 indicate that the majority of countries do not meet the minimum requirement for sound practice in seven out of fifteen debt performance indicators.[24] While Frontier LICs' performance is slightly better on a few indicators, HIPCs have particularly weak capacity. Moreover, debt capacity as measured by the World Bank's Country Policy and Institutional Assessment (CPIA Q3B) appears to have shown little or no improvement during 2011–14 for the majority of the countries.[25] Only a quarter of the sample saw a marginal improvement in this measure. Also, from the sample of 58 LICs for which a DeMPA evaluation was undertaken during 2008–14, seven out of the ten countries that have been assessed twice, have experienced an improvement in the score.

36. LICs need to step up their efforts to build their debt management capacity as they move towards commercial funding. Better debt management capacity has proven to be strongly positively associated with the sustainability of debt in LICs (Figure 25). Improvements in debt management capacity, like all institutional changes, take time to achieve, and should therefore be

[21]Formulating a MTDS involves projecting the costs and risks of the alternative borrowing strategies over the medium term with a view to reduce vulnerabilities while ensuring that funding needs are met and costs are contained. The borrowing strategies should be stress tested to assess their robustness. See IDA and IMF, (2009) for further details.

[22]These should include a clear legal framework that clarifies the delegation of authority and accountability of the government to develop a debt management strategy, execute the borrowing strategy and report back to the Parliament; an organizational structure that separates the borrowing function, the policy setting and control function, and the back office functions to minimize operational risk; and reporting policies that increase transparency of the operations.

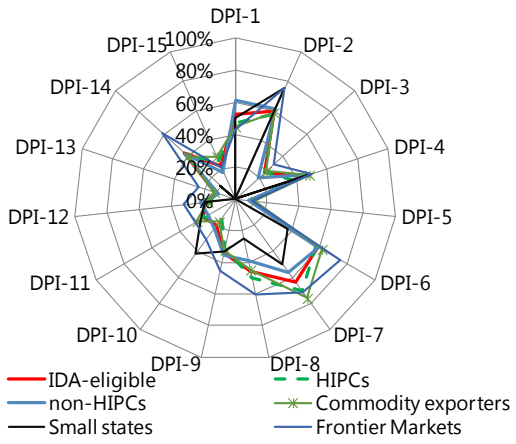
[23]See also IMF (2014b) for the experience of public investment efficiency in the oil-exporting countries in the Middle East and Central Asia regions.

[24]It should be noted that these are necessary but not sufficient conditions to ensure proper debt management in a country. See Annex I for an explanation of the DeMPA methodology and database.

[25]CPIA Q3B assesses the effectiveness of debt management functions of a country. This score is available on an annual basis and for most IDA eligible countries since 2011. See Annex I for an explanation of the DeMPA database.

initiated even before commercial borrowing begins. Despite institutional improvements, many LICs continue to lack a well-defined medium-term fiscal strategy while reforms to strengthen budget planning and execution and revenue mobilization efforts are still lagging (IMF, 2014a). To this end, improvements in these areas and enhanced technical assistance from the IMF and the World Bank can contribute to further building up local capacity.

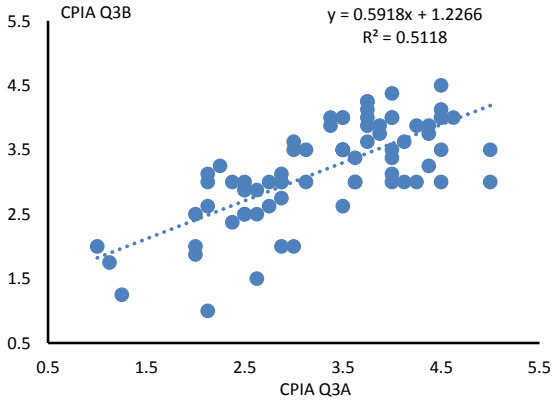
Figure 24. Summary of DeMPA Results
(in percent of countries that meet minimum score)



DPI-1	Legal framework
DPI-2	Managerial structure
DPI-3	Debt management strategy
DPI-4	Evaluation of debt management operations
DPI-5	Audit
DPI-6	Coordination with fiscal
DPI-7	Coordination with monetary policy
DPI-8	Domestic borrowing
DPI-9	External borrowing
DPI-10	Loan guarantees, on lending, and derivatives
DPI-11	Cash flow forcasting and cash balance management
DPI-12	Debt administration and data security
DPI-13	Segregation of duties, staff capacity & BCP
DPI-14	Debt records
DPI-15	Debt reporting

Source: The World Bank.
Note: DeMPA scores are based on the most recent DeMPA report for countries in the sample.

Figure 25. Debt Monitoring and Debt Sustainability



Source: The World Bank.
Note: Data shown for all IDA eligible countries, except Somalia. Chart shows scores averaged over 2011-14. CPIA Q3A evaluates the extent to which external and domestic debt is contracted with a view to achieving/maintaining debt sustainability. CPIA Q3B evaluates the effectiveness of debt management functions. The high correlation between the two concepts does not establish causality.

IV. DEBT VULNERABILITIES

37. Against a background of a generally stable average public debt–to-GDP ratio and a gradual shift in the debt composition, this section discusses LIC DSF indicators of debt vulnerabilities. Using different vintages of LIC DSAs for individual countries, this section analyzes how the main risks to debt sustainability have changed over time and how they are projected to change in coming years. A more extended analysis is also presented in Annex V. Since not every country has a fresh DSA each year, trends are based on the most recent DSA for any given year. As a result, measured debt vulnerabilities using this approach may tend to slightly lag actual debt market conditions.

38. Overall, there has been a substantial net improvement in the LIC DSF risk of debt distress ratings since 2007 (Figure 26).[26] Ratings reached their most favorable point in 2013 with 24 percent of DSAs showing high risk of debt distress, down from 43 percent in 2007. In the past two years however, there has been a net deterioration in risk ratings, with 11 downgrades set against seven upgrades (Figure 27). Of the downgrades, six countries moved from low to moderate risk and five countries moved from moderate to high risk: eight out of these 11 countries are commodity exporters, and three are classified as frontier LICs.[27] The downgrades generally reflect inadequate fiscal discipline under less favorable external conditions, and underline the importance of cautious macroeconomic management in the context of LICs' closer integration into the global economy, greater exposure to market risks, lower commodity prices, and reduced fiscal buffers (see below). The seven rating upgrades during 2013-15 reflect various factors, primarily the use of a higher discount rate to calculate present value.

39. In contrast to the broader LIC grouping, small states have not seen an improvement in risk ratings since 2007. While the limited number of small states for which DSAs are available complicates the analysis of trends, evidence shows a steady rise in the proportion of countries at moderate risk, offset by a corresponding decline in the proportion of low risk cases. Indeed, of the four small LICs that were at low risk in 2011, only one remained so in 2015. As discussed above, the less favorable debt dynamics for small states reflects their slower growth and weaker fiscal positions, linked in some cases to the impact of natural disasters.

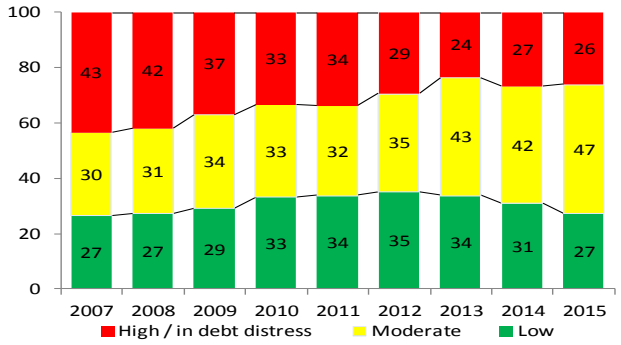
40. The trend improvement in risk ratings from 2007 to 2014 reflects stronger tax revenue and export performance. These are key determinants in the LIC DSF of a government's ability to sustain higher debt levels. Average tax revenue increased from 13½ to almost 15 percent of GDP

[26]The analysis of risk ratings is based on published DSAs from 2007 through end-September 2015. The number of countries included in this measure rose from 60 in 2007 to 73 in 2015. In cases where a DSA was not conducted in a particular year, the previous risk rating was used. A country is excluded from this analysis until it received a risk rating. Thus, trends reflect DSA changes for individual countries as well as the influence of new countries joining the sample.

[27]It is worth noting that of the 19 countries that are at high risk of (or in) debt distress in 2015, 12 are fragile states (see Figures AII.23–28 for the evolution of risk ratings for country groups analyzed in the paper).

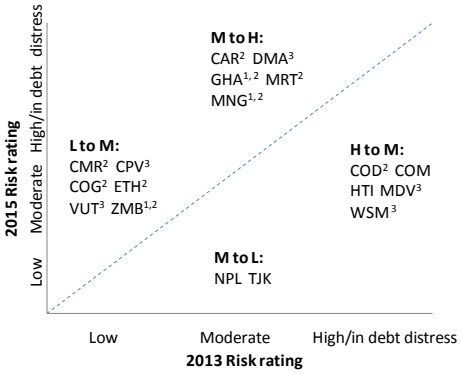
between 2007–10 and 2011–14 (Figure 28). Similarly, exports increased from 31 percent of GDP over 2007–10 to 33 percent of GDP over 2011–14 (Figure 29). Similar trends occurred for all country groups.[28] Improved institutional capacity has played a more marginal role. Countries' CPIA scores, classified as strong, medium, or weak, are used in the LIC DSF to determine risk rating thresholds. Thirteen countries moved into a higher CPIA category, while nine moved to a lower category (Figure 30).[29]

Figure 26. Evolution of the Risk of Debt Distress
(in percent of total)



Sources: LIC DSF database and staff calculations.
Note: The number of countries in 2007 was 60; this increased to 73 by 2015. If a DSA was not conducted in a particular year, the previous risk rating is used. As of end-September 2015, 42 new DSAs had been conducted in 2015.

Figure 27. Changes in Risk Ratings, 2013–15



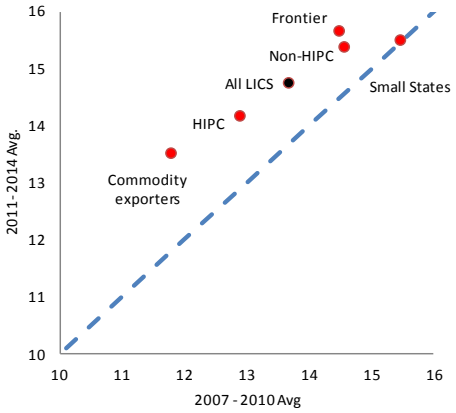
1: Frontier LICs 2: Commodity Exporters 3: Small States

Source: LIC DSF database.
Note: CAR is Central African Republic, CMR Cameroon, COD Democratic Republic of Congo, COG Republic of Congo, COM Comoros, CPV Cabo Verde, DMA Dominica, ETH Ethiopia, GHA Ghana, MRT Mauritania, MNG Mongolia, NPL Nepal, TJK Tajikistan, HTI Haiti, MDV Maldives, VUT Vanuatu, WSM Samoa, and ZMB Zambia.

[28]See also World Bank (2015b).

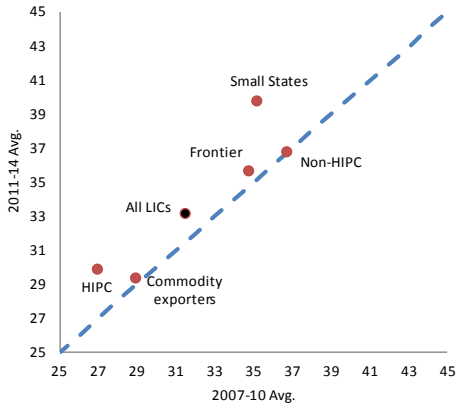
[29]Of the 35 cases where the three-year average CPIA score improved between the periods 2006–08 and 2011–13, 13 (Burkina Faso, Cambodia, Gambia, Kenya, Lao PDR, Moldova, Papa New Guinea, Rwanda, Senegal, Sierra Leone, Tonga, Uzbekistan, and Vanuatu) moved to higher thresholds. Of the 33 cases where the three-year CPIA average fell, 9 (Bhutan, Honduras, Madagascar, Malawi, Mauritania, St. Lucia, St. Vincent and the Grenadines, Tanzania, and Uganda) moved to lower thresholds.

Figure 28. Tax Revenue by Country Group
(in percent of GDP)



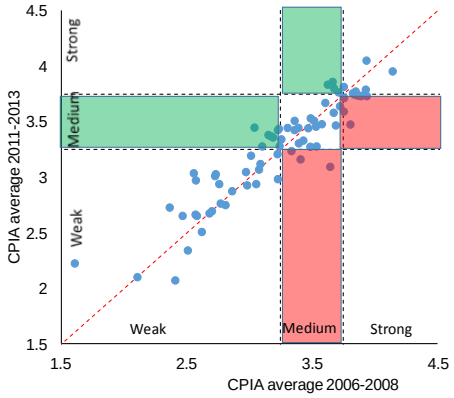
Source: WEO.

Figure 29. Exports by Country Group
(in percent of GDP)



Source: WEO.

Figure 30. Change in three-year average CPIA Scores



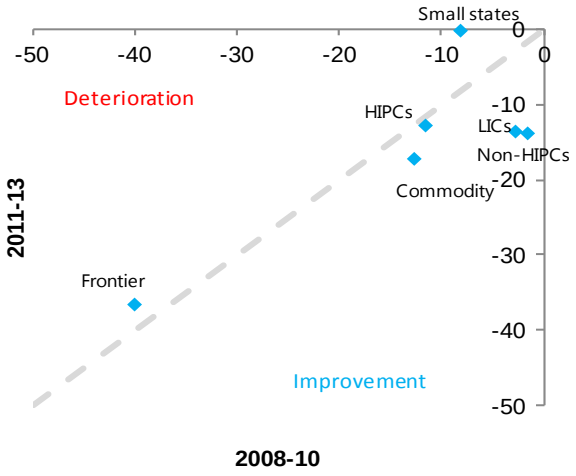
Source: The World Bank.
Note: Green (red) cells indicate improvement (deterioration) in CPIA average over 2011–13 compared to 2006–08.

41. There has been a general improvement in solvency risk indicators across LICs, set against a worsening of liquidity indicators. A metric of vulnerabilities is derived from the LIC DSF's solvency and liquidity indicators.[30] Using the baseline projection in the LIC DSF for each country, debt vulnerabilities are captured by the maximum distance of each indicator from the relevant LIC DSF threshold. The median distance of each country group is reported for each indicator. Figures 31 and 32 show that for the median country in each country group, both the solvency and liquidity indicators remain below the LIC DSF thresholds (as indicated by the negative

[30]Solvency indicators are present value (PV) of debt-to-GDP, PV of debt-to-exports, and PV debt-to-revenue. Liquidity indicators are debt service-to-exports and debt service-to-revenue.

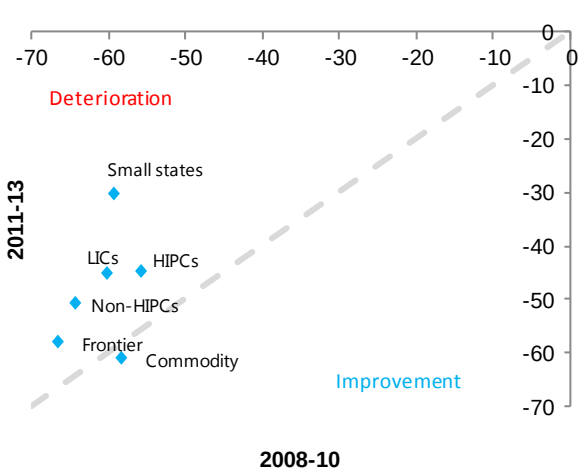
distance), with a general worsening of liquidity buffers (as shown by the decreased distance between the liquidity indicators and the thresholds). It is worth noting, however, that there is a considerable degree of variation in the distance from the threshold, with some countries seeing very large breaches. Figure 31 shows that solvency indicators have improved for all country groups, except for frontier LICs and small states which have seen a minor deterioration. Liquidity indicators have deteriorated for all groups except commodity exporters (Figure 32).[31] So while the DSF risk ratings may not have deteriorated, as noted above, countries' liquidity buffers have generally decreased, especially for frontier LICs and small states. [32]

Figure 31. Change in DSA Solvency Metrics



Sources: LIC DSF database and staff calculations.

Figure 32. Change in DSA Liquidity Metrics



Sources: LIC DSF database and staff calculations.

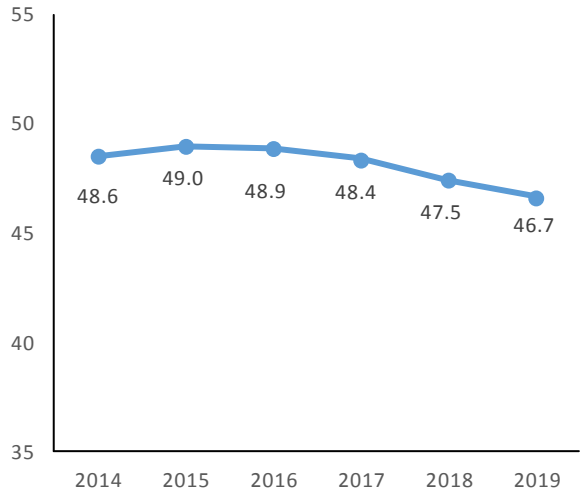
42. DSA projections show that public debt is expected to slightly decline for LICs, with the primary balance and GDP growth as the main drivers of debt dynamics. The latest DSAs forecast an initial increase in total public debt in the first few years of projections, followed by a gradual decline over the medium term (Figure 33). This applies across all country groups, albeit at slightly different paces. Figure 34 shows that initially, the size of the average projected primary deficit (3 percent of GDP) dominates the real growth impact (less than 2 percent of GDP). Over time, however, the effect from real GDP growth surpasses the significant but declining size of the average primary deficit and the change in gross total public debt turns negative by the third or fourth years of projection. With growth projected to be the main driver of debt dynamics, LICs are vulnerable for further downward revisions to the global growth outlook. The reduction in fiscal deficits will depend

[31] Analysis of all PRGT-eligible small states yields a similar deterioration in solvency and liquidity indicators. However, this broader group exhibits small breaches in the solvency indicators in both periods.

[32] A similar exercise is done using the distance of each indicator from its threshold under the most extreme scenario, that is, the shock that causes the debt burden indicator to reach its highest value relative to the threshold at any point during the projection horizon. To aggregate these results into the country groupings the simple average is derived for each country's largest breach. See Annex V for details.

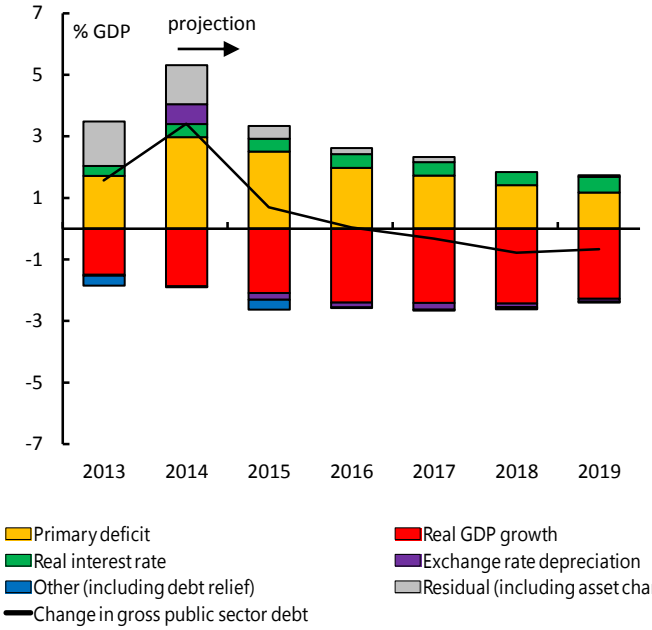
importantly on continued fiscal prudence for LICs as a whole, which could be challenging for commodity exporters if global commodity prices remain subdued.

Figure 33. Public Debt Projections, 2014–19
(in percent of GDP)



Source: LIC DSF Database.

Figure 34. Public Debt Dynamics Projections



Source: LIC DSF Database.

43. DSAs confirm that LICs are especially vulnerable to shocks to growth, exports, and the exchange rate. Table 2 illustrates which LIC DSF shocks result in the maximum increase in indebtedness across the sample of LICs. For public debt, shocks in the nature of a "permanently lower GDP" result in the largest rise in indebtedness for a third of the sample. A contingent liabilities shock, which often materializes in low growth scenarios, can cause a similar increase in indebtedness as well as a spike in debt service. For external debt, the majority of countries are vulnerable to a depreciation of the nominal exchange rate and a slowdown in export growth.

44. Recent developments in the global environment present LICs with considerable uncertainty going forward. The weaker growth outlook in key advanced and emerging market economies are likely to impact activity in LICs through lower demand for traded goods, with commodity producers particularly affected. At the same time, the prospect of tighter global liquidity conditions could lead to higher global interest rates with implications on the ability of LICs to access the international capital markets to rollover existing Eurobonds and raise new financing at affordable rates. This may also lead to higher cost of domestic borrowing for countries that rely on foreign participation in their domestic debt markets. In addition, exchange rate pressures in LICs, for example those resulting from the recent appreciation of the US dollar, could have significant implications for both the level of debt and the repayment capacity of debtor countries.

45. Strong domestic policies will be critical for managing public debt vulnerabilities in the context of a shifting global environment. Many LICs are more integrated into global capital markets, even as liquidity buffers have narrowed in some cases. This puts a premium on maintaining prudent macroeconomic policies with an eye to downside risks, and being ready to quickly and forcefully implement policy corrections where warranted by adverse shifts in the external environment, including to terms of trade, export markets, and financing terms. For a few countries that have already experienced a serious deterioration in debt dynamics, urgent policy correction will be key to strengthening debt sustainability. For other countries, close vigilance is needed with regard to debt trends and financing risks, and contingency plans should be developed for macroeconomic adjustment in the event of adverse shocks.

Table 2. Percentage of Countries that Reach Maximum Indebtedness by each Extreme Shock

(A) Public DSA

Stress tests	PV of Debt-to-		Debt Service-to-	
	GDP	Revenue	Revenue	GDP
Permanently lower GDP growth	29	30	13	12
Real GDP growth short-term shock	4	4	0	1
Primary balance short-term shock	25	20	9	9
Combination of B1–B2	3	1	3	3
One-time 30 percent real depreciation	0	1	0	0
Other debt creating flows shock[1]	28	25	61	59
One-time 30 percent nominal depreciation	12	17	14	16
	100	**100**	**100**	**100**

(B) External DSA

Stress tests	PV of Debt-to-			Debt Service-to-	
	GDP	Exports	Revenue	Exports	Revenue
New public sector loans on less favorable terms	7	20	9	13	4
Real GDP growth shock	0	0	0	0	1
Export value growth shock	13	57	14	68	6
U.S. dollar GDP deflator shock	0	0	0	1	1
Net non-debt creating flows shock	17	19	14	14	9
Combination of B1–B4 shocks	10	4	9	3	7
One-time 30 percent nominal depreciation	52	0	54	0	71
	100	**100**	**100**	**100**	**100**

Source: LIC DSF Database.

[1]An exogenous 10 percent of GDP increase in debt in one specific year, usually associated with the materialization of a contingent liability.

V. CONCLUSIONS

46. Amidst a changing financing landscape, debt vulnerabilities in LICs have generally declined. Following debt relief for many LICs in 2005–06 and a diminishing number in later years, and with robust economic growth, debt-to-GDP ratios fell for LICs as a whole through around 2011-2012. With HIPC/MDRI debt relief largely implemented and LICs taking on new debts to finance priority projects, average LIC debt ratios rose modestly in recent years to a level broadly similar to that in 2007. The use of non-concessional financing has increased, reflecting expanded use by some countries of domestic financing, international capital markets, and non-concessional bilateral financing. LIC DSA analysis confirms that fewer countries are at risk of debt distress than in 2008. That said, liquidity buffers have narrowed relative to some thresholds, and risk ratings have edged higher for frontier and commodity-exporting LICs.

47. The financing landscape has changed most rapidly for frontier LICs. As aid and concessional flows from richer countries declined, LICs' traditional recourse for deficit financing has been increasingly replaced by non-concessional and market debt. This change was most apparent in frontier markets, where debt ratios have increased, albeit from a low level, mainly on the back of rising domestic debt and greater access to international capital markets. There is evidence to suggest that much of this was driven by economic development including financial deepening, though ample global liquidity and the low interest rate environment also played a role. Although risks to debt sustainability generally do not appear imminent at this time, greater reliance on market financing carries important risks that should be closely monitored especially in the current global environment. Two frontier LICs that moved to high risk of debt distress in 2015 underline the importance of prudent fiscal policies and careful debt management.

48. Debt conditions are most challenging for small states. This group saw the largest rise in debt-to-GDP ratios in recent years, driven by sizeable fiscal deficits and weak growth performance. There is less evidence of new borrowing innovations for this group, with only a modest increase, for example, in the use of non-concessional debt. To this extent, while this was the only group of countries to see a trend increase in the risk of debt distress, this reflected weak underlying debt dynamics, rather than risks associated with the changing financing landscape. These countries will need to strengthen their fiscal frameworks and debt management capacity to help increase their resilience to shocks, reduce debt levels, and boost potential growth.

49. HIPC beneficiaries and commodity exporters go forward with more favorable debt dynamics. HIPC economies and commodity exporters benefit from lower debt ratios, notwithstanding increases in the recent past. The challenge is to safeguard these positions in the face of changing global conditions. Again, the deterioration of risk ratings for 9 commodity exporters in the past two years underlines this message.

50. Baseline projections for declining debt-to-GDP ratios are contingent on continuing strong growth and fiscal performance. DSAs show that less favorable debt dynamics would emerge with slower GDP growth, larger fiscal deficits, or weaker external current account

performance. Given this, LIC policymakers need to be ready to manage downside risks,[33] including to global growth, commodity prices, exchange rate, and export markets. These risks are potentially most significant for commodity exporters and frontier markets. With reduced buffers relative to liquidity thresholds,[34] close monitoring of changing debt conditions and risks will be important.

51. Countries' own fiscal and financing decisions remain paramount for weathering the current shifts in global conditions. Fiscal prudence and greater attention to debt management at this juncture can help countries limit the impact of the downside risks to the global outlook. These risks include a slowdown in global demand, the prospective hike of the U.S. interest rates and associated strengthening of the U.S. dollar, and low commodity prices. For many low-income commodity exporters, lower commodity prices have already necessitated fiscal adjustment. Additional adjustment may be warranted to stem debt pressures as low commodity prices are likely to be sustained, and exchange rate depreciation are likely to exacerbate debt service burden. For frontier markets, tightening global liquidity may imply greater difficulties in accessing the Eurobond market. Adjustments will have repercussions for growth especially if capital spending bears the brunt of the adjustment burden.

52. Safeguarding countries' debt sustainability in the context of greater financial integration and a changing global environment will require improved institutional capacity. A sustainable approach to borrowing depends on institutional capacity to manage fiscal policy and budgets, guided by a medium-term debt management strategy. The analysis in this report shows that debt management capacity in LICs continue to lag behind. The assessment of fiscal risks from contingent liabilities related to state-owned enterprises, PPPs, the nonpublic sector, and natural disaster remains limited. These areas should be the focus of intensified capacity building. Finally, debt monitoring and creditor harmonization are important, with the LIC DSF a key information source and coordination mechanism for a wide range of creditors.

53. The analysis in this paper suggests a number of factors relevant for the assessment of debt sustainability in the forthcoming review of the LIC DSF. This includes a more systematic assessment of risks associated with greater access to international capital markets and reliance on domestic debt, and tools to assess the realism of baseline projections of key macro variables. The upcoming LIC DSF review could consider the merit of exploring these and other issues based on the experience with the implementation of the framework since the last review and consultation with key stakeholders.

[33]See World Bank (2015b) for more details.

[34]See World Bank (2015a) for more details.

References

Abiad, A., and J. D. Ostry, 2005, "Primary Surpluses and Sustainable Debt Levels in Emerging Market Countries," IMF Policy Discussion Paper 05/6 (Washington: International Monetary Fund).

Acevedo, S., 2014, "Debt, Growth and Natural Disasters: A Caribbean Trilogy," IMF Working Paper 14/25, (Washington: International Monetary Fund).

Asonuma, T., S. Bakhache, and H. Hesse, 2015, "Is Banks' Home Bias Good or Bad for Public Debt Sustainability?" IMF Working Paper 15/44 (Washington: International Monetary Fund).

Presbitero, Andrea F., Dhaneshwar Ghura, Olumuyiwa S. Adedeji, and Lamin Njie, 2015 (forthcoming), "International Sovereign Bonds by Developing Economies: Drivers of Issuance and Spreads", IMF Working Paper, (Washington: International Monetary Fund).

Battaile, B., L. Hernández, and V. Norambuena, 2015, "Debt sustainability in sub-Saharan Africa: unraveling country-specific risks," Manuscript. (Washington: The World Bank).

Bacchiocchi, E., and A. Missale, 2012, "Multilateral Indexed Loans and Debt Sustainability", *UNCTAD Discussion Papers* No. 209. BIS, European Central Bank, IMF, 2009. Handbook.

Bua, G., J. Pradelli, and, A. F. Presbitero, 2014, "Domestic Public Debt in Low-Income Countries: Trends and Structure," Policy Research Working Paper no. 6777, (Washington: The World Bank).

Burnside, C. and D. Fanizza (2004), "Hiccups for HIPCs?", NBER Working Paper No. 10903 (November, 2004)

Calvo, G., 2005, "Emerging Capital Markets in Turmoil," (Cambridge, Massachusetts: MIT Press).

Foster, V., W. Butterfield, C. Chen, and N. Pushak, 2009, "Building Bridges: China's Growing Role as Infrastructure Financier for Sub-Saharan Africa," Trends and Policy Options No. 5, (Washington: The World Bank).

Gelos, G.R., Sahay, R., and Sandleris, G., 2011, "Sovereign Borrowing by Developing Countries: What Determines Market Access?" *Journal of International Economics*, Vol. 83: pp. 243–54.

Ghosh, A. R., J. I. Kim, E. G. Mendoza, J. D. Ostry, and M. S. Qureshi, 2011, "Fiscal Fatigue, Fiscal Space and Debt Sustainability in Advanced Economies," NBER Working Paper no. 16782.

International Development Association, 2008, "IDA's Non-Concessional Borrowing Policy: Review and Update," (Washington).

———, 2010, "IDA's Non-Concessional Borrowing Policy: Progress Update," (Washington).

———, 2015, "Review and Update of IDA's Non-Concessional Borrowing Policy (NCBP)," (Washington).

International Development Association–International Monetary Fund, 2009, "Developing a Medium-Term Debt Management Strategy (MTDS)—Guidance Note for Country Authorities," (Washington).

———, 2012a, "Revisiting the Debt Sustainability Framework for Low-Income Countries," (Washington).

———, 2012b, "Enhancing Financial Sector Surveillance in Low-Income Countries: Financial Deepening and Macro Stability," (Washington)

———, 2014, "Heavily Indebted Poor Countries (HIPC) Initiative and Multilateral Debt Relief Initiative (MDRI)—Statistical Update," (Washington).

International Monetary Fund, 2014a, "Macroeconomic Developments in Low-Income Developing Countries," (Washington).

———, 2014b, "Making the Most of Public Investment in MENA and CCA Oil-Exporting Countries", IMF Staff Discussion Note 14/10, (Washington).

———, 2014c, "Reform of the Policy on Public debt Limits in Fund-supported Programs," (Washington).

———, 2014d, "Heavily Indebted Poor Countries (HIPC) Initiative and Multilateral Debt Relief Initiative (MDRI)—Statistical Update," (Washington).

———,2015a, "Rethinking Financial Deepening: Stability and Growth in Emerging Markets," Staff Discussion Note 15/08 (Washington).

———, 2015b, "Eligibility to Use the Fund's Facilities for Concessional Financing, 2015," (Washington).

———, 2015c, "IMF Engagement with Countries in Post-Conflict and Fragile Situations–Stocktaking," IMF Policy Paper (Washington).

———, 2015d, "Macroeconomic Developments and Selected Issues in Small Developing States," (Washington).

———, 2015e, "Making Public Investment More Efficient," IMF Policy Paper, (Washington).

———, 2015f, "Monitoring and Managing Fiscal Risks in the East African Community," (Washington).

Mehrotra, A.N., Miyajima, K., A. Villar, 2012, "Developments of Domestic Government Bond Markets in EMEs and their Implications," Chapter in *Fiscal Policy, Public Debt and Monetary Policy in Emerging Market Economies*, vol. 67." Bank for International Settlements, pp. 31–50.

Merotto, D., T. Stucka, and M. R. Thomas, 2015, "African Debt since HIPC: How Clean is the Slate?" MFM Discussion Paper 2, March.

Organization for Economic Co-operation and Development (OECD) and Macroeconomic and Financial management Institute MEFMI, 2015, "Findings of the MEFMI Study on Contingent Liabilities, Presentation at the Debt management Stakeholder's Forum."

Sperman A, 2009, "The Probit Model," University of Freiburg, SS 2009. Available on http://www.zew.de

The World Bank, 2015a, "Africa's Pulse," Vol. 12, October, (Washington).

———, 2015b, "Feet on the Ground, Eyes on the Horizon: Assessing Vulnerability and Resilience in Sub-Saharan Africa," forthcoming, (Washington).

———, 2015c, "Global Economic Prospects. The Global Economy in Transition," June, (Washington).

Annex I. Sample Coverage, Country Classification, and Data Sources

This report covers 74 low income countries that were both IDA and PRGT eligible as of end-2014 (Table AI.1). The criterion ensures coverage of countries eligible for concessional financing from the IMF and the World Bank that use the Low Income Countries' Debt Sustainability Framework (LIC DSF), making findings in this report directly relevant for the upcoming review of the LIC DSF.

Table AI.1. Countries in Sample

Afghanistan	Guyana	Rwanda
Bangladesh	Haiti	Samoa
Benin	Honduras	São Tomé and Príncipe
Bhutan	Kenya	Senegal
Bolivia	Kiribati	Sierra Leone
Burkina Faso	Kyrgyz Republic	Solomon Islands
Burundi	Laos, PDR	Somalia
Cambodia	Lesotho	South Sudan
Cameroon	Liberia	St. Lucia
Cape Verde	Madagascar	St. Vincent and the Grenadines
Central African Republic	Malawi	Sudan
Chad	Maldives	Tajikistan
Comoros	Mali	Tanzania
Congo Republic	Marshall Islands	Timor-Leste
Congo, Democratic Republic	Mauritania	Togo
Cote d'Ivoire	Micronesia, FS	Tonga
Djibouti	Moldova	Tuvalu
Dominica	Mongolia	Uganda
Eritrea	Mozambique	Uzbekistan
Ethiopia	Myanmar	Vanuatu
Gambia	Nepal	Vietnam
Ghana	Nicaragua	Yemen, Republic of
Grenada	Niger	Zambia
Guinea	Nigeria	Zimbabwe
Guinea-Bissau	Papua New Guinea	

To understand debt developments in different types of economies, analyses in the report classify countries into the following groups:

- HIPC eligible countries.

- Frontier markets—countries that resemble EMs with regards to international market access.[1]
- Commodity exporters—countries in which commodity exports represent at least 85% of merchandise exports (averaged over 2008-13). The data source is UNCTAD, *State of Commodity Dependence, 2014*.
- Small states—defined as countries eligible for PRGT resources on account of vulnerabilities associated with their small size despite having per capita incomes above the more generally applied thresholds for PRGT eligibility.[2] Specifically, these are countries with a 2013 population of less than 1.5 million and a per capita income above the IDA cutoff of $2390].

Table AI.2. List of Countries by Group

HIPC eligible (39)	Afghanistan, Benin, Bolivia, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Comoros, Congo Republic of, Congo Democratic Republic of, Cote d'Ivoire, Eritrea, Ethiopia, Gambia, The, Ghana, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Nicaragua, Niger, Rwanda, Sao Tome & Principe, Senegal, Sierra Leone, Somalia, Sudan, Tanzania, Togo, Uganda, Zambia.
Frontier Markets (14)	Bangladesh, Bolivia, Cote d'Ivoire, Ghana, Kenya, Mongolia, Mozambique, Nigeria, Papua New Guinea, Senegal, Tanzania, Uganda, Vietnam, Zambia
Commodity Exporter (37)	Afghanistan, Benin, Bolivia, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo, Rep. of, Congo, Dem. Rep. of, Cote d'Ivoire, Eritrea, Ethiopia, Ghana, Guinea, Guinea-Bissau, Kiribati, Malawi, Mali, Mauritania, Micronesia, FS, Mongolia, Mozambique, Myanmar, Nigeria, Papua New Guinea, Rwanda, Sierra Leone, Somalia, Solomon Islands, South Sudan, Sudan, Timor-Leste, Uzbekistan, Yemen, Republic of, Zambia, Zimbabwe.
Small States (as defined above) (14)	Cape Verde, Dominica, Grenada, Guyana, Maldives, Marshall Islands, Micronesia, FS, Samoa, St. Lucia, St Vincent, Timor-Leste, Tonga, Tuvalu, Vanuatu.

Data Sources

Analyses in this report mainly draw on data from three sources—the LIC DSF database, a survey of IMF country teams, the DeMPA database, the MTDS database, and the Dealogic database.

[1]A number of market access related indicators, including cross-border loans, M2/GDP, and issuance of international bonds, are used to create a market access index. Frontier states are those whose indices are within one standard deviation from the EM average.

[2]Small countries are defined as those with a population below 1.5 million. These countries can be considered eligible for the PRGT if: (i) the sovereign does not have capacity to access international financial markets on a durable and substantial basis (as defined in the Decision on PRGT-Eligibility Criteria); and (ii) per capita GNI is less than *twice (five times)* the IDA operational threshold for small states with population greater (smaller) than 200,000. For non-small states, entry to PRGT eligibility is considered at a per capita income equal to the IDA operational threshold. See "Eligibility to Use the Fund's Facilities for Concessional Financing, 2013" for more details.

- The LIC DSF database has the most comprehensive coverage and consistent data on historical and projected debt related variables.

- The survey was conducted to collect more detailed data on public debt composition that is not available in the LIC DSF database. The response rate to the survey was high, covering around 90 percent of all LICs. It should be noted, however, that despite the high response rate, information on certain variables remains sparse due to lack of official data. The survey questionnaire is included in Table AI.3.

- The Debt Management Performance Assessment (DeMPA) database contains assessments of countries' public debt management capacity. The DeMPA Tool developed by the World Bank assesses debt management capacity on 35 dimensions spanning the full range of government debt management functions. For each dimension countries are assessed against criteria that represent international best practice. The DeMPA scores are of a qualitative nature: DeMPA evaluation assigns scores from A to D. Score A is assigned when the maximum requirement is met, score C when the minimum requirement is met, and score D when the minimum requirement is not met. The B score is assigned when sound practice is not met but performance is above the minimum requirement. For the 69 countries for which a DeMPA assessment has been completed during 2008–14, coordination with monetary policy has the highest share of countries meeting the minimum international standard (65%), followed by managerial structure (62%), while audit (10%) and segregation of duties, staff capacity and business continuity plan (15%) have the lowest share of countries meeting the minimum standard.

- The Medium Term Debt Management Strategy (MTDS) database contains key information on countries' debt portfolios, including measures of costs and risks for the initial portfolio, projected gross financing needs and projected future debt portfolios—and the associated costs and risks—under varying borrowing strategies. Through 2010–14 forty MTDS missions have been conducted including 26 IDA-eligible countries representing 33.3 percent of all IDA eligible countries.

- Data on commercial loans and Eurobonds are from Dealogic. The former is from its Loan Analytics database, which is a widely used comprehensive dataset for commercial loans. Commercial loans are reported to Dealogic on a voluntary basis (usually by financial institutions to be listed in the league tables for several categories of loan deals) and stored in the database on a loan-by-loan basis. Out of these loans, we picked up all the loans provided to central governments by commercial lenders as well as bilateral Export Credit Agencies and International Finance Corporation / European Investment Bank, which usually provide insurance / guarantee to (or provide loan / equity together with) commercial lenders on commercial terms. Loans from other official multilateral and bilateral lenders, such as aid agencies, are not included.

Table AI.3. Survey Questionnaire

Definitions for the purpose of this survey:

1. Please specify the definition of external debt for your country, i.e., on the basis of residency or currency.

2. Please specify the coverage of public debt for your country, i.e., general government or central government, and whether publicly guaranteed debt is included.

3. Concessional debt is defined as loans with a grant element of at least 35%. Please specify otherwise.

I. Stock of public debt, by financing sources

1. For each year, please provide stock of public debt (and interest payments for memo items):

Millions of US$	2007	2008	2009	2010	2011	2012	2013	2014
Stock								
External public debt								
Domestic public debt								
Memo items (flow):								
Interest payments on								
External public debt								
Domestic public debt								

2. For external public debt stock, please provide composition by:

i) Main creditors (multilateral, bilateral, and other):

Millions of US$	2007	2008	2009	2010	2011	2012	2013	2014
Multilaterals								
Official Bilateral								
Paris Club								
Non-Paris Club								
China								
India								
Other								
Other (commercial and								
Of which: external holdings of domestic currency debt 1/								

1/ This applies to countries defining external debt on residency basis.

Table AI.3. Survey Questionnaire (concluded)

ii) Share of concessional debt in total external public debt:

% of total PPG debt	2007	2008	2009	2010	2011	2012	2013	2014
Concessional								
Non-concessional								

2. For domestic debt stock, please provide break-down specified below (by original maturity):

Millions of US$	2007	2008	2009	2010	2011	2012	2013	2014
Marketable instruments								
Short-term (1 year or less)								
Medium- and long-term								
Non-marketable instruments								
Short-term (1 year or less)								
Medium- and long-term								

II. Lending by creditor (on disbursement basis)

1. For each year, please provide lending data:

Millions of US$	2007	2008	2009	2010	2011	2012	2013	2014
External public debt								
Domestic public debt								

2. For public external lending, please provide composition by:

i) Main creditors (multilateral, bilateral, and other):

Millions of US$	2007	2008	2009	2010	2011	2012	2013	2014
Multilaterals								
Official Bilateral								
Paris Club								
Non-Paris Club								
China								
India								
Other								
Other (commercial and market financing)								

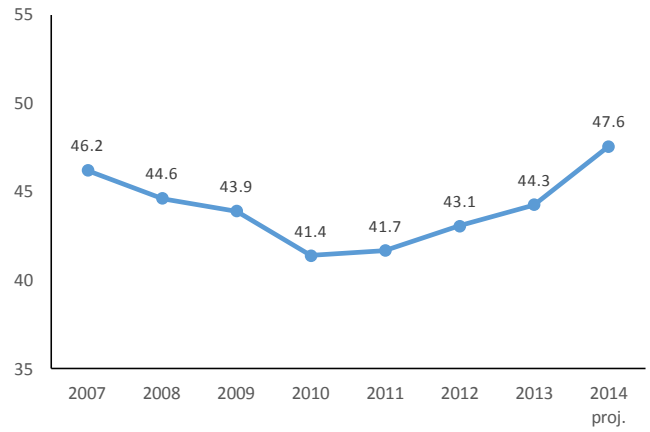
ii) Concessional and non-concessional loans:

Millions of US$	2007	2008	2009	2010	2011	2012	2013	2014
Concessional								
Non-concessional								

Annex II. Chart Pack

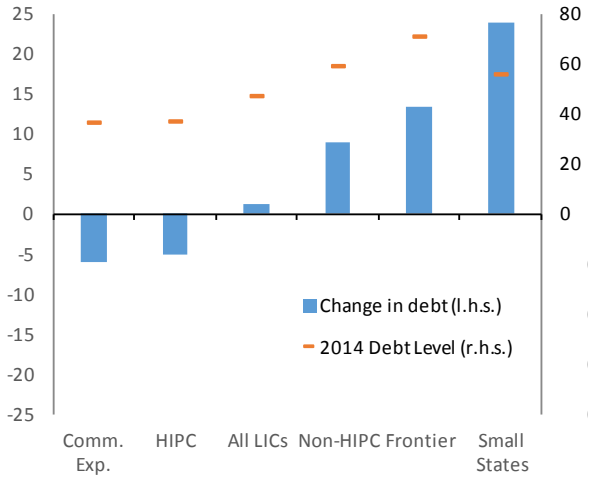
This annex provides graphical information on debt development that supplements the analyses contained in the report. It pulls together information on public debt developments for the different country groups. It also shows charts on sources of financing, and the evolution of the risk of debt distress for country groups not included in the report.

Figure AII.1. Total External Debt
(in percent of GDP)



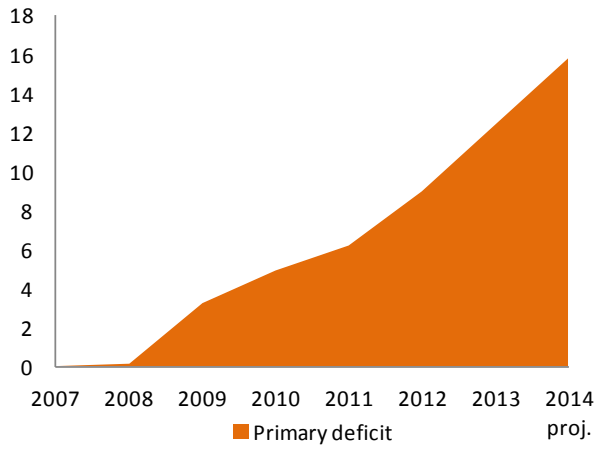
Source: LIC DSF Database.

Figure AII.2. Change in External Debt, 2007-14
(in percent of GDP)



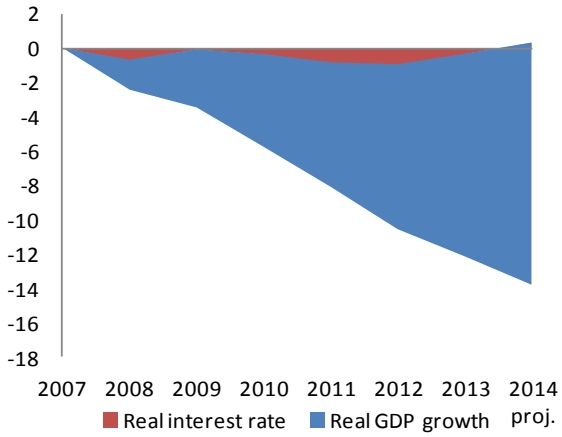
Source: LIC DSF Database.

Figure AII.3. Cumulative Contribution of the Primary Balance to Debt: Frontier LICs
(in percent of GDP)



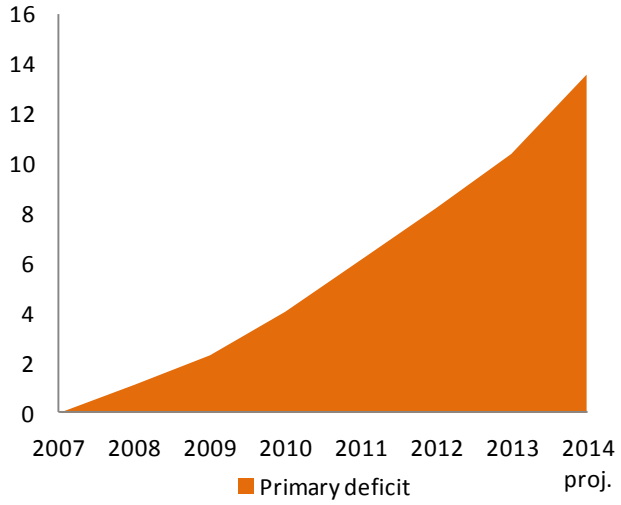
Source: LIC DSF Database.

Figure AII.4. Cumulative contribution of Growth and Interest to Debt: Frontier LICs
(in percent of GDP)



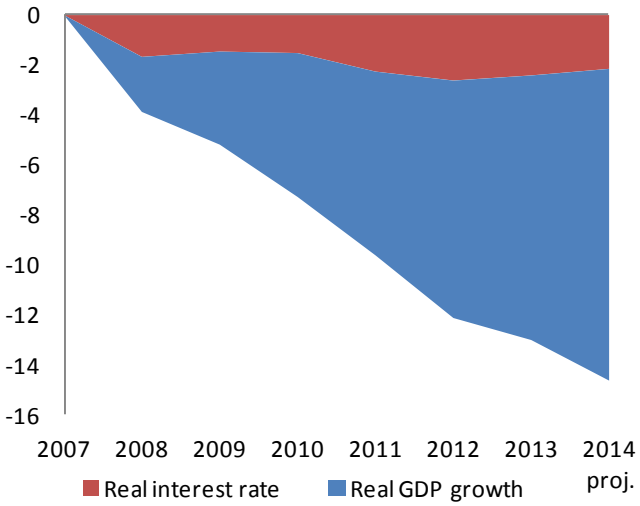
Source: LIC DSF Database.

Figure AII.5. Cumulative Contribution of the Primary Balance to Debt: HIPC
(in percent of GDP)



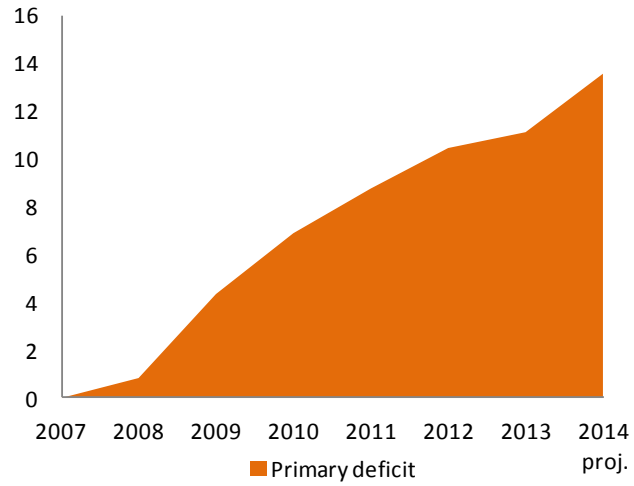
Source: LIC DSF Database.

Figure AII.6. Cumulative contribution of Growth and Interest to Debt: HIPC
(in percent of GDP)



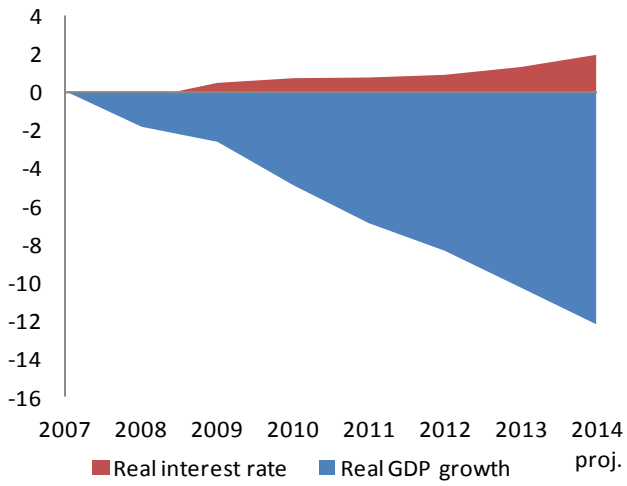
Source: LIC DSF Database.

Figure AII.7. Cumulative Contribution of the Primary Balance to Debt: Non-HIPC
(in percent of GDP)



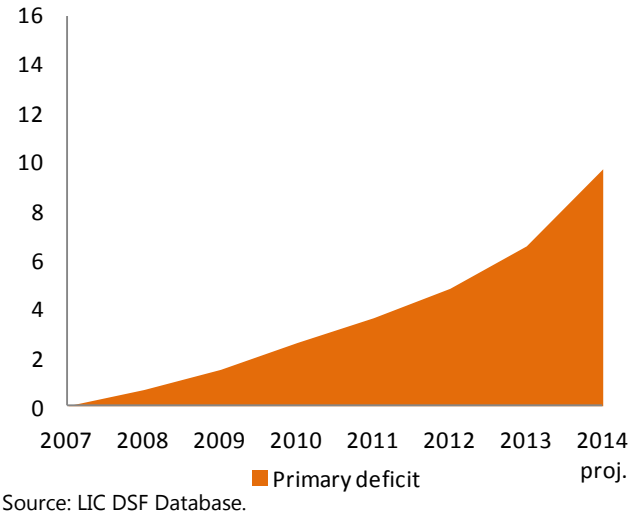
Source: LIC DSF Database.

Figure AII.8. Cumulative contribution of Growth and Interest to Debt: Non-HIPC
(in percent of GDP)



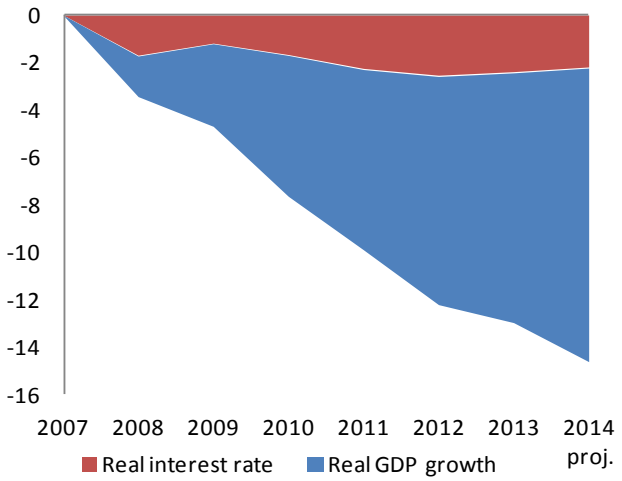
Source: LIC DSF Database.

Figure AII.9. Cumulative Contribution of the Primary Balance to Debt: Commodity Exporters (in percent of GDP)



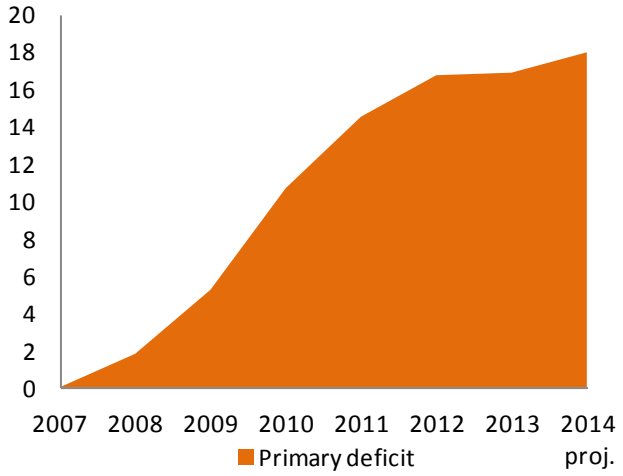
Source: LIC DSF Database.

Figure AII.10. Cumulative contribution of Growth and Interest to Debt: Commodity Exporters (in percent of GDP)



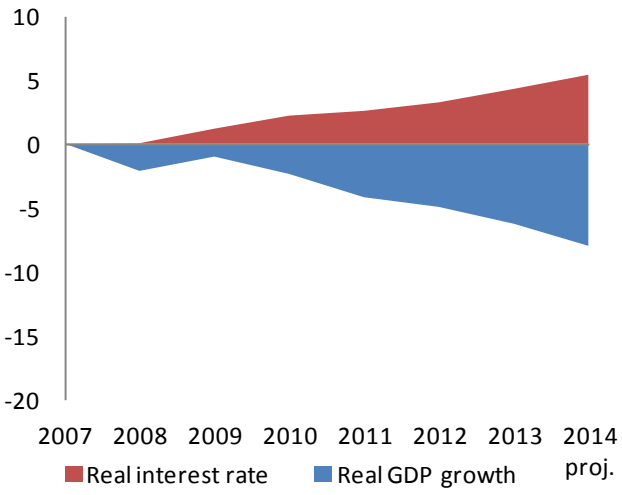
Source: LIC DSF Database.

Figure AII.11. Contribution of the Primary Balance to Debt: Small States (in percent of GDP)



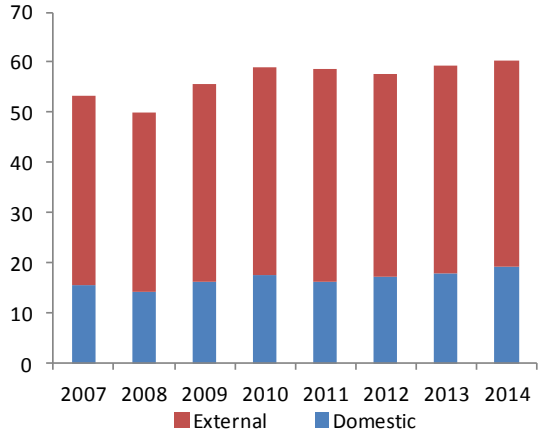
Source: LIC DSF Database.

Figure AII.12. Cumulative contribution of Growth and Interest to Debt: Small States (in percent of GDP)



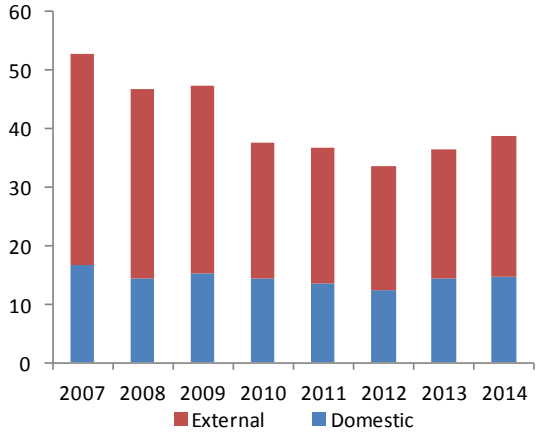
Source: LIC DSF Database.

Figure AII.13. Domestic and External Public Debt: Small States
(in percent of GDP)



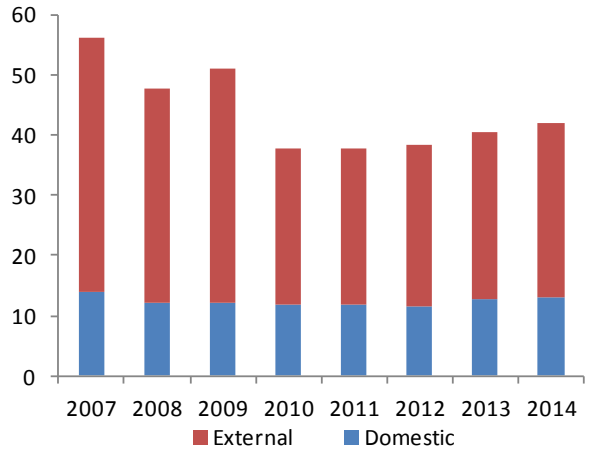
Source: Calculations based on 2015 Survey of IMF country teams.

Figure AII.14. Domestic and External Public Debt: Commodity Exporters
(in percent of GDP)



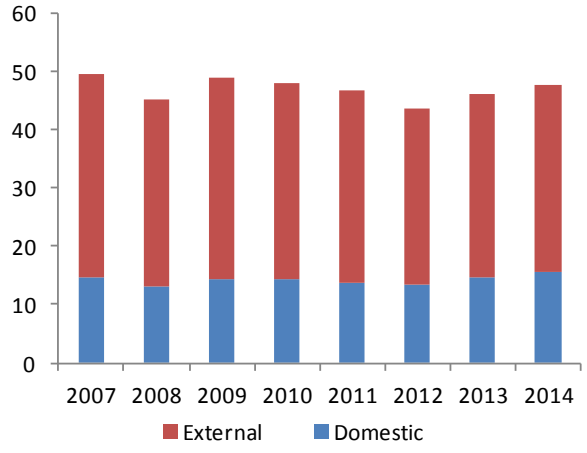
Source: Calculations based on 2015 Survey of IMF country teams.

Figure AII.15. Domestic and External Public Debt: HIPC
(in percent of GDP)



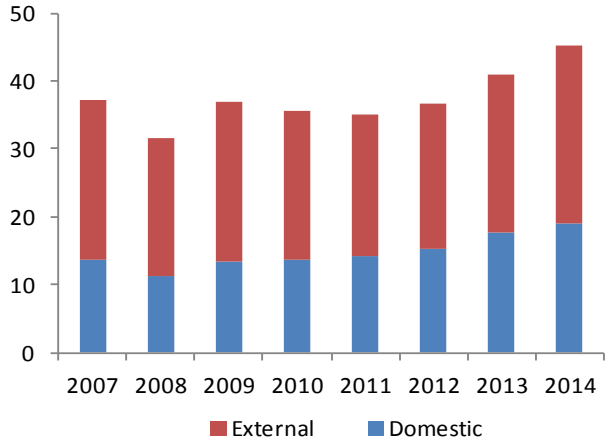
Source: Calculations based on 2015 Survey of IMF country teams.

Figure AII.16. Domestic and External Public Debt: Non-HIPC
(in percent of GDP)



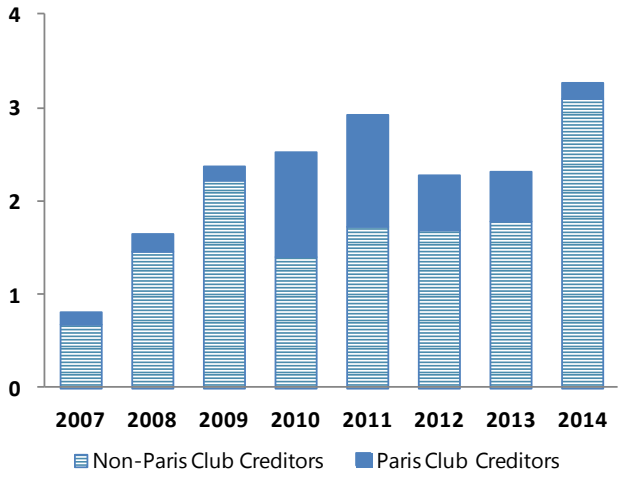
Source: Calculations based on 2015 Survey of IMF country teams.

Figure AII.17. Domestic and External Public Debt: Frontier Markets
(in percent of GDP)



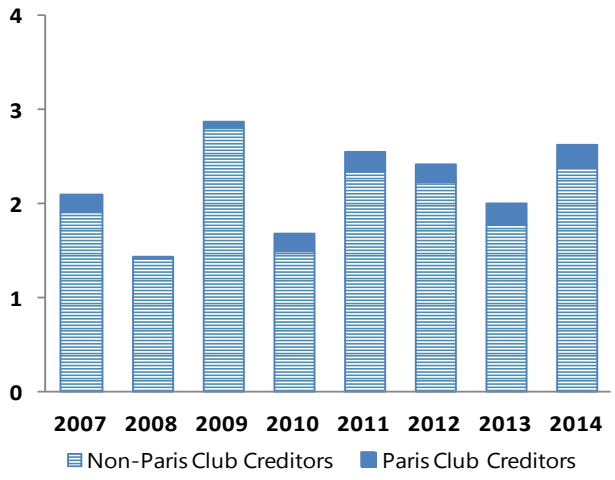
Source: Calculations based on 2015 Survey of IMF country teams.

Figure AII.18. Official Bilateral Debt Disbursements: HIPC
(in percent of GDP)



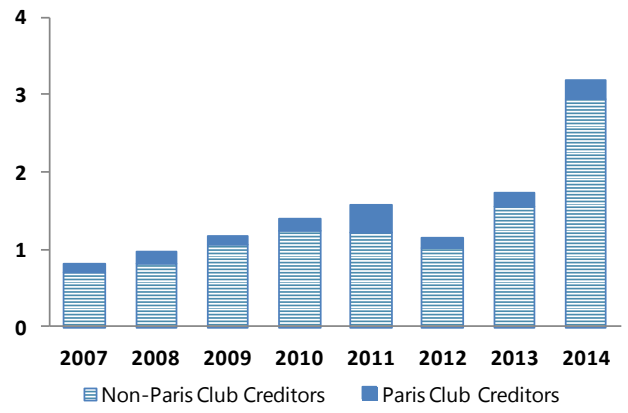
Source: Calculations based on 2015 Survey of IMF country teams.

Figure AII.19. Official Bilateral Debt Disbursements: Non-HIPC
(in percent of GDP)



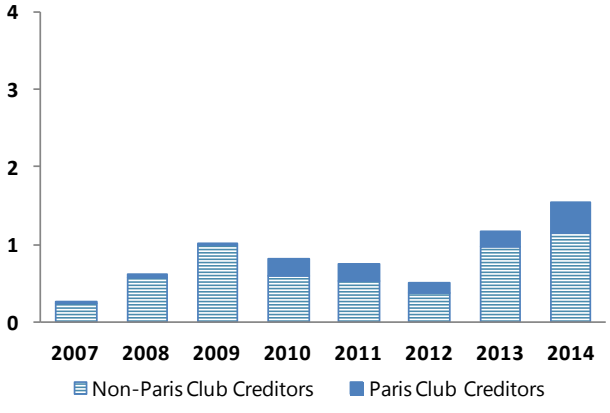
Source: Calculations based on 2015 Survey of IMF country teams.

Figure AII.20. Official Bilateral Debt Disbursements: Commodity Exporters
(in percent of GDP)



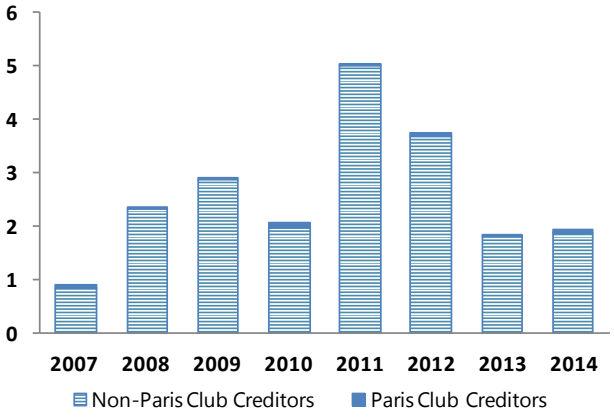
Source: Calculations based on 2015 Survey of IMF country teams.

Figure AII.21. Official Bilateral Debt Disbursements: Frontier LICs
(in percent of GDP)



Source: Calculations based on 2015 Survey of IMF country teams.

Figure AII.22. Official Bilateral Debt Disbursements: Small States
(in percent of GDP)



Source: Calculations based on 2015 Survey of IMF country teams.

Table AII.1. Issuance of Eurobonds by Frontier LICs

Country	Year	Currency	Amount (US$ mn)	Coupon	Yield	Tenor	Redemption	Rating at issue
Bolivia	2012	USD	500	4.875	4.875	10	Bullet	BB−
Bolivia	2013	USD	500	5.95	6.25	10	Bullet	BB−
Cote d'Ivoire	2010	USD	2332	2.5	−	23	Amortization/Debt exchange	NA
Cote d'Ivoire	2012	USD	187	3.75	−	20	Amortization/Debt exchange	NA
Cote d'Ivoire	2014	USD	750	5.375	5.625	10	Bullet	NA
Cote d'Ivoire	2015	USD	1000	6.375	6.625	13	Amortization	NA
Republic of Congo	2007	USD	480	2.5	8.77	22	Amortization/Debt exchange	NA
Ethiopia	2014	USD	1000	6.625	6.735	10	Bullet	B
Ghana	2007	USD	750	8.5	8.5	10	Bullet	B+
Ghana	2013	USD	1000	7.875	8.002	10	Bullet	B
Ghana	2014	USD	1000	8.125	8.25	11	Amortization	B
Honduras	2013	USD	500	7.5	7.5	11	Amortization	B+
Honduras	2013	USD	500	8.75	8.75	7	Bullet	B+
Kenya	2014	USD	500	5.875	5.875	5	Bullet	B+
Kenya	2014	USD	1500	6.875	6.993	10	Bullet	B+
Kenya	2014	USD	500	6.875	5.971	10	Bullet	B+
Kenya	2014	USD	250	5.875	5	5	Bullet	B+
Mongolia	2012	USD	500	4.125	4.167	5	Bullet	BB−
Mongolia	2012	USD	1000	5.125	5.191	10	Bullet	BB−
Nigeria	2011	USD	500	6.75	7.126	10	Bullet	B+
Nigeria	2013	USD	500	5.125	5.45	5	Bullet	BB−
Nigeria	2013	USD	500	6.375	6.738	10	Bullet	BB−
Rwanda	2013	USD	400	6.625	6.996	10	Bullet	B
Senegal	2009	USD	200	8.75	9.473	5	Bullet	B+
Senegal	2011	USD	500	8.75	9.339	10	Bullet	B+
Senegal	2014	USD	500	6.25	6.25	10	Bullet	B+
Tanzania	2013	USD	600	6−mth Libor + 600bp		7	Amortization	NA
Vietnam	2005	USD	750	6.875	7.247	10	Bullet	BB−
Vietnam	2010	USD	1000	6.75	7.073	10	Bullet	BB
Vietnam	2014	USD	1000	4.8	4.8	10	Bullet	BB−
Zambia	2012	USD	750	5.375	5.625	10	Bullet	B+
Zambia	2014	USD	1000	8.5	8.625	10	Bullet	B+

Sources: Dealogic, Bloomberg.

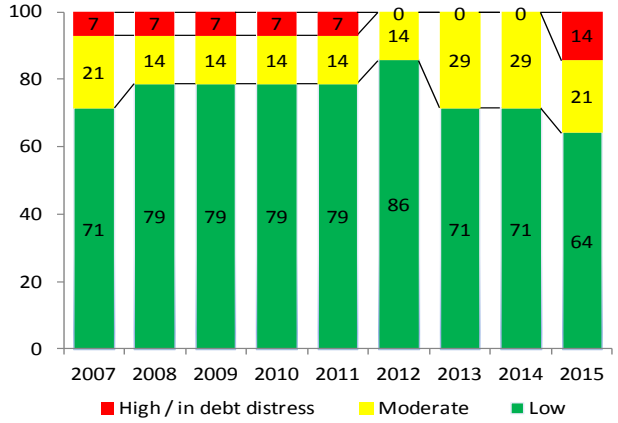
Table AII.2. Official Development Assistance by Creditor Type

US$ billion (unless otherwise stated)

	2010	2011	2012	2013
ODA from current DAC members	141.8	149.6	140	151.4
Flows from non-DAC providers	11.4	14.7	12.8	23.5
Non-DAC flows (percent of total flows)	*7.4*	*8.9*	*8.4*	*13.4*
Estimated global total	**153.2**	**164.3**	**152.9**	**174.9**

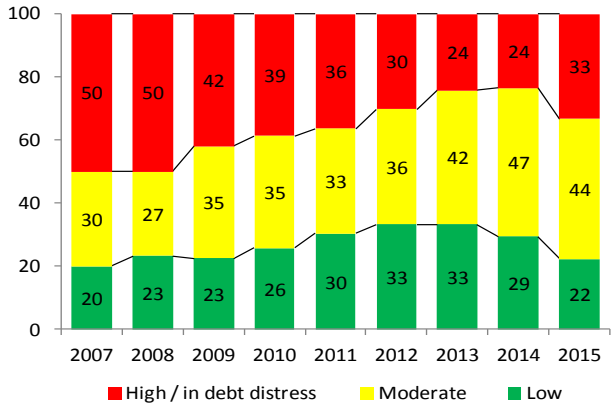
Source: OECD Development Assistance Committee (DAC).
Note: While the DAC provides a reliable and widely recognized source of donor flow data, it does not directly focus on debt flows. The DAC data include grant support and bilateral lending through multilaterals, which is not the focus on this report. Furthermore it does not include lending that does not meet the definition of ODA i.e., trade credit or loans on commercial terms.

Figure AII.23. Evolution of the Risk of Debt Distress: Frontier LICs
(in percent of total)



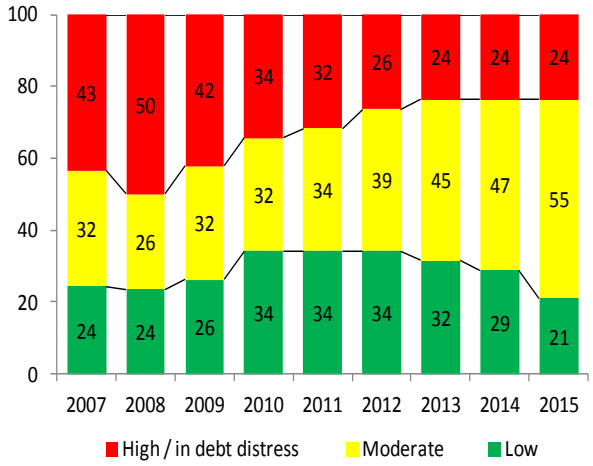
Sources: LIC DSF database and staff calculations.
Note: The number of countries in 2007 through 2015 was 14.

Figure AII.24. Evolution of the Risk of Debt Distress: Commodity Exporters
(in percent of total)



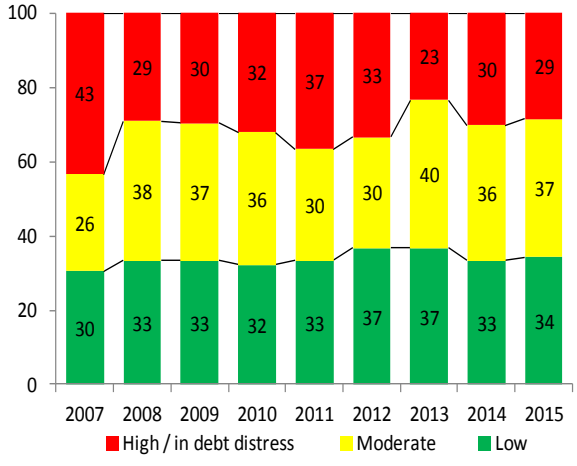
Sources: LIC DSF database and staff calculations.
Note: The number of countries in 2007 was 30; this increased to 36 by 2015.

Figure AII.25. Evolution of the Risk of Debt Distress: HIPCs
(in percent of total)



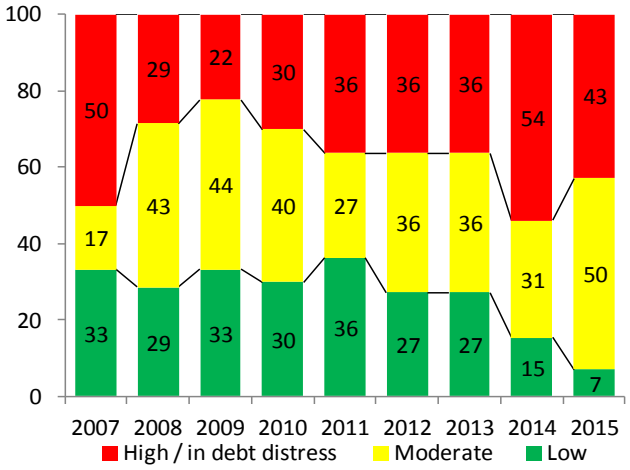
Sources: LIC DSF database and staff calculations.
Note: The number of countries in 2007 was 37; this increased to 38 by 2015.

Figure AII.26. Evolution of the Risk of Debt Distress: Non-HIPCs
(in percent of total)



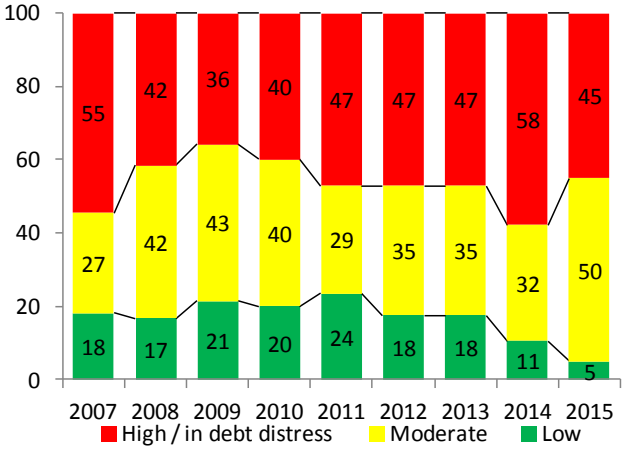
Sources: LIC DSF database and staff calculations.
Note: The number of countries in 2007 was 23; this increased to 35 by 2015.

Figure AII.27. Evolution of the Risk of Debt Distress: Small States
(in percent of total)



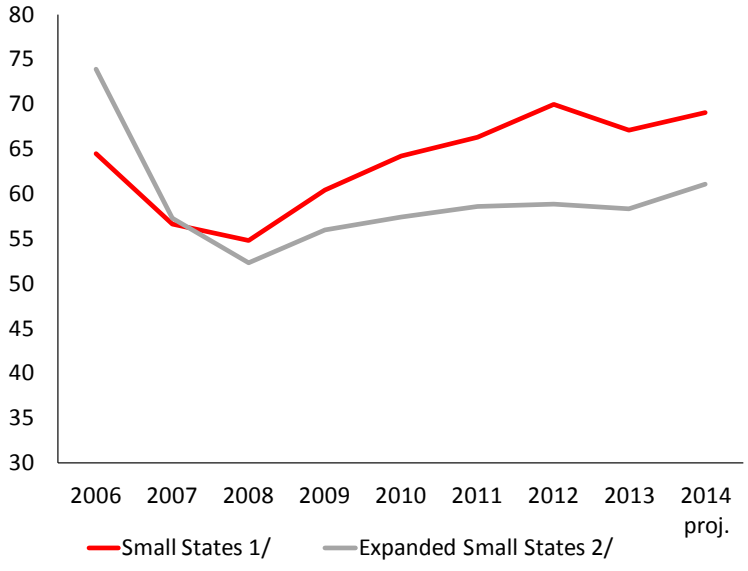
Sources: LIC DSF database and staff calculations.
Note: The number of countries in 2007 was 6; this increased to 14 by 2015.

Figure AII.28. Evolution of the Risk of Debt Distress: Expanded Small States
(in percent of total)



Sources: LIC DSF database and staff calculations.
Note: The number of countries in 2007 was 11; this increased to 20 by 2015. In addition to the small states, the expanded sample includes Bhutan, Comoros, Djibouti, Kiribati, Sao Tome and Principe, and Solomon Islands,

Figure AII.29. Total Public Debt
(in percent of GDP)



Source: LIC DSF Database.1/ Sample includes Cape Verde, Dominica, Grenada, Guyana, Maldives, Marshall Islands, Micronesia, FS, Samoa, St. Lucia, St Vincent, Timor-Leste, Tonga, Tuvalu, and Vanuatu.
2/ Sample additionally includes Bhutan, Comoros, Djibouti, Kiribati, Sao Tome and Principe, and Solomon Islands.

Annex III. Determinants of Sovereign Bond Issuances in LICs

The drivers of the probability of sovereign bond issuance in Frontier LICs are estimated using a probit regression following Presbitero and others (2015). Specifically, the likelihood to access international markets is modeled as follows:

$$\text{Prob}(\text{SBI} = 1)_{i,t} = \Phi(\text{GLOBAL}_t; \text{DOMESTIC}_{i,(t-1;t-3)})$$

Where the dependent variable is a binary indicator that takes the value 1 when country i issued a sovereign bond in year t, and 0 otherwise (SBI). Independent variables include a set of global and domestic factors. Global factors include measures of global liquidity and volatility, proxied by the contemporaneous values of the yield on the 10 year U.S. Treasury notes and the VIX index, respectively. The set of domestic factors includes measures of overall economic performance (GDP per capita, GDP growth, inflation), external sector imbalances (current account balance to GDP ratio), fiscal position (fiscal balance to GDP ratio, total debt-to-GDP ratio), financial depth (private sector credit to GDP ratio), and foreign financial assistance to GDP ratio. Domestic explanatory variables are measured as the 3-year-average prior to the year of issuance to minimize the incidence of outliers and possible endogeneity concerns (Gelos and others, 2011). We also include a dummy variable equal to 1 if a LIC country issued at least once in the previous 3-year period. Data for sovereign bonds comes from Bloomberg, and data on independent variables comes from the Word Economic Outlook and the World Development Indicators. Our sample covers annual data for 50 LICs, including 14 Frontier LICs, over the 1995–2014 period.

The analysis suggests that the likelihood of bond issuance increases with stronger domestic fundamentals in issuer countries, although global conditions also matter (Table AIII.1). Results indicate that domestic factors such as higher GDP per capita, and lower dependence on financial aid increase the probability of bond issuance. Countries that issued in the past are also more likely to continue to access international markets. Other factors, including the debt level, inflation, GDP growth, current account, and private credit show the expected signs but their coefficients are not statistically significant (Column 1 in Table AIII.1). Results also indicate that looser global liquidity (measured by U.S. rates) and lower global volatility (measured by VIX) increases the likelihood of bond issuance in LICs, although the magnitude of the marginal effects of domestic factors is bigger than that of global factors (see Figure 14 in the main text).

Results are robust to changing specifications. Columns 2–5 in Table AIII.1 suggest that results from our basic specification – chosen as the preferred model with the lowest AIC and BIC criteria – are mostly robust to additional explanatory variables such as an index of government effectiveness, an index of global commodity prices, a measure of volatility of debt, and a dummy on whether a country has had an IMF program in the past three years. Results do not materially change if we drop some variables such as past bond issuances, financial aid, or private sector credit. Other robustness checks (not reported) using one-year lags instead of 3-year average lags, as well as using global fuel and nonfuel price indices in place of the global overall commodity price index do not change the results.

Table AIII.1. Bond Issuance Probit: Robustness Checks

	(1) SBI	(2) SBI	(3) SBI	(4) SBI	(5) SBI
Global factors					
U.S. rates	-0.185**	-0.330***	-0.114	-0.300***	-0.293***
	(0.0909)	(0.0945)	(0.159)	(0.103)	(0.104)
VIX index	-0.0361**	-0.0502**	-0.0475**	-0.0460**	-0.0493**
	(0.0170)	(0.0222)	(0.0220)	(0.0214)	(0.0221)
Country specific factors					
Fiscal balance (% of GDP)	-0.0312	-0.0508	-0.0407	-0.0287	-0.0300
	(0.0362)	(0.0401)	(0.0380)	(0.0415)	(0.0402)
Total debt (% of GDP)	-0.00656	-0.00589	-0.00323	-0.00417	-0.00591
	(0.00466)	(0.00570)	(0.00535)	(0.00521)	(0.00523)
CA balance (% of GDP)	0.0142	0.0425***	0.0404**	0.0308*	0.0428**
	(0.0161)	(0.0158)	(0.0161)	(0.0170)	(0.0169)
GDP per capita	0.569***	0.839***	0.704***	0.577***	0.699***
	(0.165)	(0.200)	(0.208)	(0.209)	(0.220)
GDP growth	0.00212	-0.0160	-0.0170	-0.0137	0.00821
	(0.0389)	(0.0493)	(0.0454)	(0.0421)	(0.0433)
Inflation	0.000461	0.0263*	0.0200	0.0217	0.0230
	(0.00147)	(0.0151)	(0.0147)	(0.0136)	(0.0145)
Government Effectiveness		0.568**	0.598**	0.617**	0.578**
		(0.251)	(0.252)	(0.257)	(0.253)
Past Bond Issuance	0.685**		0.553*	0.581*	0.661**
	(0.308)		(0.284)	(0.297)	(0.292)
Financial Aid	-0.0304*			-0.0274	
	(0.0184)			(0.0169)	
Private sector credit (% of GDP)	0.00273			0.000208	0.000816
	(0.00503)			(0.00497)	(0.00551)
Volatility of Debt					0.0154
					(0.0110)
Past IMF program					0.939*
					(0.552)
Global Commodity Prices			0.683		
			(0.448)		
Constant	-3.751***	-4.560***	-7.786***	-2.915*	-4.216**
	(1.201)	(1.613)	(2.972)	(1.753)	(1.867)
No. of Observations	949	833	833	825	824
Pseudo (McFadden's) R^2	0.29	0.29	0.32	0.32	0.33
Wald Chi^2	78.34 (0.00)	63.10 (0.00)	74.43 (0.00)	72.24 (0.00)	77.51 (0.00)
AIC	0.203	0.216	0.212	0.217	0.217
BIC	-6254.828	-5375.079	-5368.620	-5300.148	-5287.589

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Annex IV. The IMF Debt Limits Policy and the World Bank Non-Concessional Borrowing Policy

The IMF's debt limits policy (DLP) aims at ensuring debt sustainability in Fund-supported programs. Until 2009, the DLP limited contracting of non-concessional external borrowing—generally loans with a grant element less than 35 percent—while there was no limit on concessional external borrowing. The policy was reformed in 2009 to move away from a single design of "concessionality" requirement toward a menu of options. In particular, the modality of debt limits became systemically linked to the risk of external debt distress assessed under the LIC DSF as well as macroeconomic and public financial management capacity. While the policy allowed for flexibility in the setting of debt limits, in practice, debt limits were seen as restrictive and constrained the ability of countries to diversify their financing sources given that the concessional/non-concessional dichotomy of debt was maintained. This also tended to unduly focus program discussions on individual projects, rather than on broader fiscal program and overall borrowing policy.

The DLP reform in 2014 which entered into effect in June 2015 addressed these issues: (i) The policy was broadened to focus on all public debt; (ii) the policy has adopted an integrated treatment of external finance and now covers both concessional and non-concessional borrowing; (iii) the link between debt vulnerabilities, capacity, and the use and specification of debt conditionality have been tightened; and (iv) capacity assessment has been simplified and is now focused only on debt monitoring. On this basis, the use of debt conditionality is generally not warranted anymore for countries at low risk of external debt distress, while countries at moderate risk of external debt distress and with sufficient capacity are now eligible for limits on the present value of new external public borrowing.[1]

IDA supports countries' debt sustainability through a range of mechanisms. These mechanisms include the IDA grant allocation framework[2], technical assistance in building debt management capacity, support in monitoring external public debt developments, the implementation of IDA's Non-Concessional Borrowing Policy (NCBP), and creditor outreach to advocate concessional financing and to disseminate the joint WB-IMF debt sustainability framework. This broad-based approach builds on debt relief provided by the international community, including IDA, through the Heavily-Indebted Poor Country (HIPC) Initiative and the Multilateral Debt Relief Initiative (MDRI). Debt relief substantially enhanced the borrowing space of IDA countries, and IDA seeks to maintain the benefits of that relief.

[1]See IMF (2014c) for more details.

[2]The grant allocation framework differentiates three groups of countries: (a) countries at low risk of debt distress according to the joint WB-IMF Debt Sustainability Analysis, which receive 100 percent of the annual IDA allocation on credit terms; (b) countries at moderate risk of debt distress which are subject to a 50:50 split between credit and grants in the annual IDA allocation, and (c) countries at high risk of debt distress or in debt distress, which receive 100 percent grants. All grant allocations are discounted 20 percent in volume.

The NCBP is an integral part of IDA's broader dialogue with authorities, and focuses on the debt burden impact of external non-concessional borrowing. This policy supports the dialogue with the authorities on how to balance debt sustainability with the developmental component of non-concessional financing. Non-concessional financing can be an important source of financing for the development needs of IDA countries, which can be a useful complement to concessional financing, and can in particular help address the infrastructure gap in low income countries. Since its introduction in 2006, the NCBP has been reviewed twice,[3] enhancing flexibility in recognition of the increasingly heterogeneous nature of NCBP countries. In particular, the policy was adapted to allow for project packages instead of a purely loan-by-loan approach (2008), and to set *ex-ante* non-zero debt ceilings for countries that plan to access non-concessional financing on a more regular basis (2010).

Several lessons have been learned from experience since the 2010 reform of the NCBP. In collaboration with the IMF's DLP, the NCBP identifies countries with adequate capacity to handle more flexible options of financing, thus enabling countries to move away from the default policy based on loan-by-loan exceptions (Table AIV.1 below shows the current options where the default policy is described in the upper left quadrant). From an operational point of view, however, the two-by-two assessment matrix based on the combination of debt vulnerability and capacity has proven to be overly complex and has not been applied to the full extent.

The current review aims at harmonizing the NCBP with the IMF's DLP approved end-2014. In particular, two modifications have been proposed:

- The Bank would adopt the streamlined joint WB-IMF capacity assessment and distinguish two types of countries based on debt monitoring and management capacity alone (Table AIV.2, first row): (1) those with adequate capacity, and (2) those with limited capacity.

- The Bank would harmonize with the IMF's DLP and introduce PV ceilings on total external debt for those countries with adequate capacity, while countries with limited capacity would maintain the current system.

As a result, countries at low or moderate risk of debt distress with adequate debt monitoring capacity would be eligible for ceilings on external public borrowing in PV terms rather than nominal terms for non-concessional loans or relying on the default option of the ex-ante loan-by-loan considerations.

[3]See IDA (2008) and IDA (2010) for more details.

Table AIV.1. NCBP Financing Options after 2010 Revision

		DEBT VULNERABILITY	
		LOWER	**HIGHER**
CAPACITY	**LOWER**	Minimum concessionality requirement based on-by-loan approach, but with added flexibility on non-concessional external debt (e.g., higher and untied non-zero limits, if consistent with maintenance of low debt vulnerabilities)	Minimum concessionality requirement based on-by-loan approach, likely higher than 35 percent, with limited or no room for non-concessional external borrowing debt
	HIGHER	Minimum average concessionality requirement applied to total external or total public borrowing. For most advanced IDA countries no concessionality requirements and overall nominal debt limit if needed	Overall limit on the Present Value of external or total public debt. For most advanced IDA countries, ceilings on nominal external or public debt

Table AIV.2. Adjustments to the NCBP

Current approach	**Enhanced approach**
1. Capacity assessment	
Assessed on a wide range of debt and public financial management indicators	Assessment based on ability to record and monitor external PPG debt in timely manner
2. Debt ceilings	
Nominal ceiling only	Nominal and PV ceiling for countries at low and moderate risk with adequate capacity
Zero ceilings with loan by loan exceptions	Zero ceilings with loan by loan exceptions

Annex V. Debt Vulnerabilities

This Annex extends the analysis presented in Section IV of the report and shows the evolution of the solvency and liquidity indicators for the different country groups. The analysis looks at deviations of the indicators from their respective LIC DSF thresholds under the baseline and the most extreme shock scenario in the DSA across two time periods: 2008–10 and 2011–13.[1] We use the mean deviations for each country group to assess whether the solvency and liquidity indicators have improved or deteriorated over time. The solvency indicators are PV debt-to-GDP, PV debt-to-export, and PV debt-to-revenue ratios while the liquidity indicators are debt service-to-export and debt service-to-revenue ratios.

Figures A.IV.1 and A.IV.2 summarize the evolution of debt vulnerability, as measured by the LIC DSF debt burden indicators, under the baseline and the most extreme shock scenario, respectively. The columns show each country group while each row reflects the performance of each debt burden indicator in the DSF for the two time periods. A green cell means that the indicator for that country group was on average below its threshold, while a red cell represents a breach of the threshold. For example, the fourth column in Figure AV.1 shows that HIPCs were on average in breach of the threshold of PV of debt-to-exports in 2008–10, but not in 2011–13. The green and red circles summarize the evolution of debt vulnerability across the two time periods, with green indicating an improvement and red a deterioration. For example, HIPCs' debt service-to-revenue indicator had green cells for both time periods but a red circle in Figure AV.1, meaning that although the baseline did not breach the threshold in either time period, the group as a whole saw a deterioration in their liquidity position over time. Similarly, a green circle on top of red cells is a sign that even though the country group remained in breach of the threshold, there was an overall improvement (reduction) in the size of the breach.

Consistent with the improvement in risk of debt distress among LICs reported in the main text, the number of breaches fell between 2008–10 and 2011–13. Figure A.IV.2 shows that for all countries there was on average a breach in the PV of debt-to-revenue indicator in 2008–11, but not in 2011–13. Further, HIPCs witnessed an improvement in 4 of the 5 debt burden indicators under both the baseline and most extreme scenarios. The group had no breaches in 2011–13 under the baseline, while it had a breach of the PV debt-to-exports threshold in 2008–10. Frontier markets and small states, on the other hand, experienced a deterioration in almost all indicators in the baseline, with small states actually breaching the PV debt-to-GDP threshold during the second time period. Non-HIPCs also saw a deterioration in all indicators under both baseline and the most extreme shock scenarios, although the worsening was not large enough to increase the number of breaches. Frontier markets breached the PV debt-to-GDP threshold during the second time period only under the most extreme shock scenario.

[1]The most extreme scenario is the shock that causes the debt burden indicator to reach its highest value relative to the threshold at any point during the projection horizon.

Figure AV.1. Summary Table of the Evolution of Debt Vulnerability by Indicator and Country Group in the Baseline

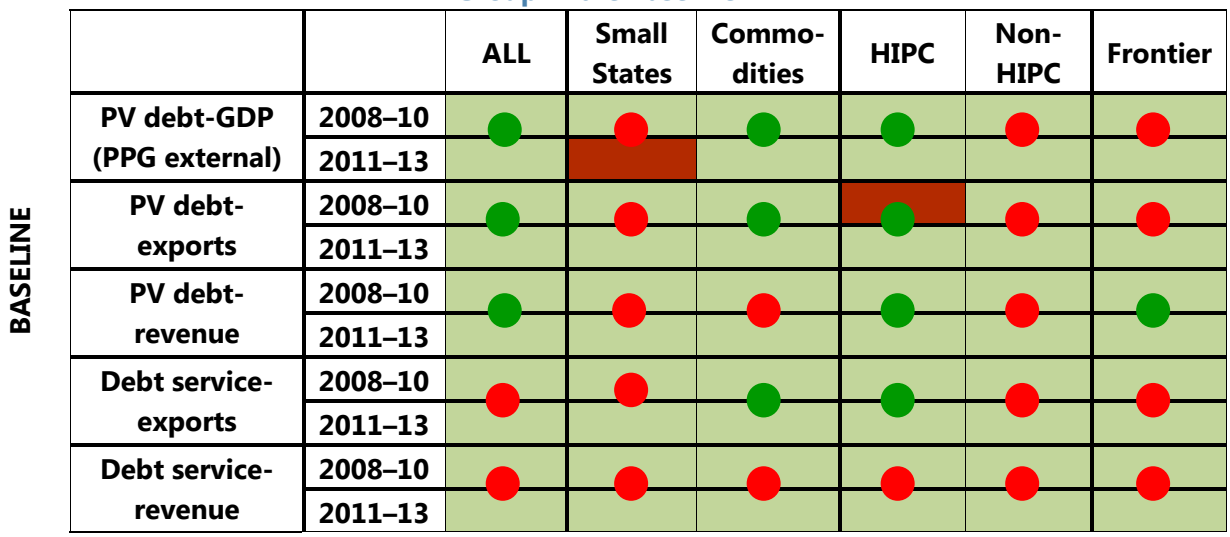
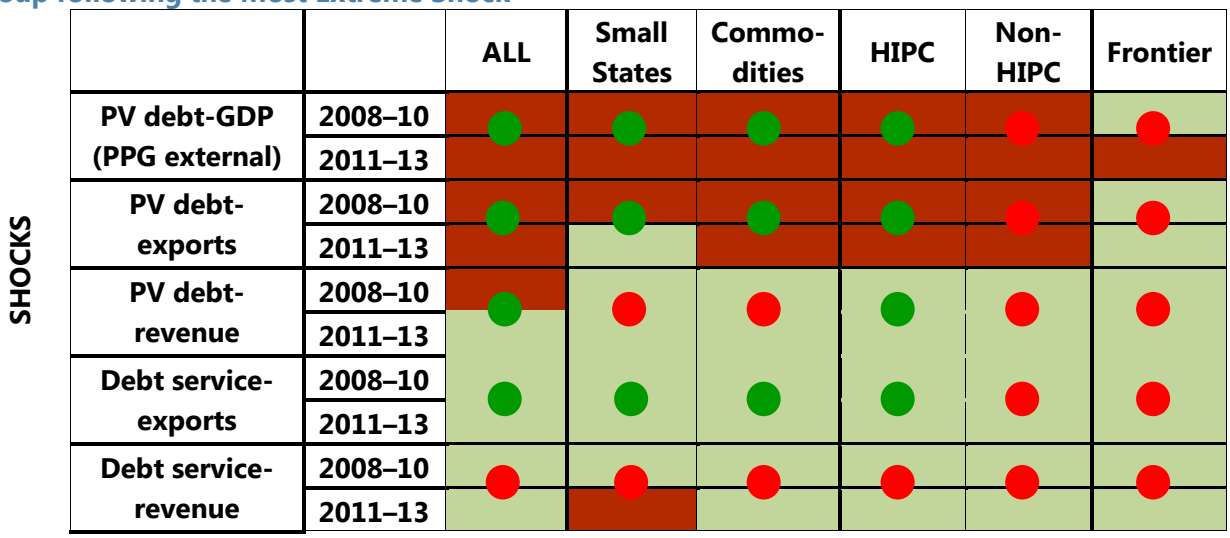


Figure AV.2 Summary Table of the Evolution of Debt Vulnerability by Indicator and Country Group following the Most Extreme Shock



Sources: LIC DSF database; and staff calculations.
Notes: A green dot means improvement between two periods; a red dot means worsening between periods. A green bar means below threshold and a red bar means above threshold.