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STAFF REPORT FOR THE 2012 ARTICLE IV CONSULTATION—DEBT SUSTAINABILITY ANALYSIS

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Based on the Low-Income Country Debt Sustainability Analysis (LIC DSA) framework, Ethiopia's risk of external debt distress remains low. The public DSA suggests Ethiopia's overall public sector debt dynamics are sustainable under the baseline scenario but vulnerable under several alternative scenarios. Public sector debt ratios are projected to rise in the medium term, suggesting that close monitoring of borrowing by public enterprises remains a necessity. Maintaining the growth of exports through diversification of the export sector, developing a medium-term debt strategy for the public sector, and limiting non-concessional borrowing remain keys to maintaining a low risk of external debt distress.

BACKGROUND AND KEY FINDINGS

1. The last Debt Sustainability Analysis (DSA), prepared in August 2011, concluded that Ethiopia was at a low risk of external debt distress. Ethiopia reached the completion point under the Heavily Indebted Poor Country (HIPC) Initiative in 2004 and benefited from debt relief under the Multilateral Debt Relief Initiative (MDRI) in 2006. In recent years, public and publicly guaranteed (PPG) external debt rose rapidly and reached 23 percent of GDP at end-2010/11.[1,2] The share of commercial loans in total PPG external debt at end-2010/11 was 28 percent.[3] Domestic public debt consists of short-term treasury bills and public enterprises bonds, both carrying low interest rates. There is no foreign exchange denominated domestic debt.

2. Ethiopia remains at low risk of external debt distress in 2012. The present value (PV) of PPG external debt declined from 15.3 percent of GDP as projected in the 2011 DSA to 13.6 percent of GDP, reflecting higher-than-projected inflation and smaller than-projected currency depreciation. The ratio of PV of PPG external debt to exports remains broadly the same at around 97 percent. The inclusion of workers' remittances significantly lowers the baseline average of the debt-to-exports ratios in the projection period (2011/12–2031/32) by 20 percentage points.[4] There is no breach of any indicative threshold in either case, excluding or including workers' remittances.[5] Consequently, the current DSA follows the practice prescribed in the LIC DSA framework and focuses on the baseline without remittances in the following analysis.

3. The current DSA assumes lower concessional loan disbursements, particularly from International Development Association (IDA), and higher nonconcessional external loan disbursements between 2013/14 and 2019/20. A decrease in projected concessional loan disbursements by multilateral creditors has contributed to improvements in the external debt sustainability indicators although it implies a lower

[1] The Ethiopian fiscal year runs from July 8 to July 7.

[2] While Ethiopia has received debt relief from most of its creditors, it has not been able to reach agreement with bilateral official creditors from Bulgaria, Libya, and FR Yugoslavia and commercial creditors from Italy, former Czechoslovakia, and FR Yugoslavia whose outstanding loans (US$378.8 million) accounted for 7.0 percent of the debt stock in 2009/10. HIPC terms are assumed for these loans. Negotiations with Russia on outstanding loans (US$161.6 million) are at an advanced stage, and debt service on these loans is excluded from this DSA.

[3] Ethiopian Airlines (EAL) debt is excluded from PPG debt, because, although owned by the government, it is run on commercial terms. EAL enjoys managerial independence, borrows without any government guarantees, publishes annual audited reports and has a sizeable profit margin.

[4] Based on the 2011 Country Policy and Institutional Assessment (CPIA) score, Ethiopia is classified as a medium performer. The thresholds for the debt burden for medium performers are 150, 40 and 250 for the PV of debt to exports, GDP, and revenue, respectively; debt service thresholds are 20 and 30 percent of exports and revenue, respectively. In the scenarios that include workers' remittances, the thresholds were revised recently, and the corresponding threshold for PV of debt to exports and remittances is 120 percent (compared to 135 in the 2011 DSA) and is 16 percent for debt service to exports and remittances (compared to 18 percent in the 2011 DSA); the PV of debt to GDP and remittances is 36 percent.

[5] Consistent with the approach described in the 2009 debt sustainability framework review, workers' remittances are accounted for because they have proven to be a reliable source of foreign exchange for Ethiopia, even through the crisis. They materially lower the debt and debt service ratios and their profiles, and threshold breaches associated with their exclusion are not protracted.

grant element on new borrowing throughout the projection periods (Text Table 1). Disbursements of some nonconcessional loans were delayed, resulting in a decline in 2011/12 and 2012/13. This DSA (2012) assumes disbursements of about US$523 million in nonconcessional loans a year in the next three years and US$643 million on average over the projection period (2012–32) with a peak of US$968 million in 2015/16.[6] Over the time horizon of the DSA, 53 percent of new external loans are assumed to be concessional on average. Average maturity on all new external loans is assumed to be 28 years while new nonconcessional loans are assumed to carry a maturity of 12–13 years. Average interest rates on new external loans are assumed at 3.2 percent over the horizon, and interest rates on new nonconcessional loans are assumed to be in the 6–7 percent range.

4. Some of the large public investment projects by state-owned enterprises could pose risks to Ethiopia's debt risk rating and overall public debt sustainability. The state-owned power company, the Ethiopia Electricity Power Company, is undertaking several large investment projects. Most rely on external assistance and loans (including both concessional and nonconcessional) while the Renaissance Dam project, estimated by the authorities to cost 10 percent of 2012/13 GDP, is intended to be entirely financed domestically. The Ethiopian Railway Corporation recently signed contracts with Chinese and Turkish companies for projects whose total size is more than US$3 billion, or 6 percent of 2012/13 GDP. It would be prudent for the authorities to formulate a medium-term debt management strategy and to start monitoring the overall debt (including external and domestic) of the consolidated public sector.

[6] Ethiopia is subject to the IDA Non-Concessional Borrowing Policy (NCBP). In 2011 and 2012, the authorities have requested a ceiling on nonconcessional borrowing of US$1 billion a year under IDA's nonconcessional borrowing policy framework (see IDA's Nonconcessional Borrowing Policy: A Progress Update, April 2010). In the absence of an IMF program, IDA could establish an NCB limit if consistent with the maintenance of low debt vulnerabilities and if the planned investments are critical and growth-enhancing. A request to establish such a limit has to be made by the authorities; the World Bank Board would then be informed of the decision per the NCBP. This DSA suggests a nonconcessional borrowing limit of US$1 billion a year for 2012/13–2015/16 to maintain a low risk rating.

Text Table 1. Comparison of PPG External Debt: Baseline Scenario

	2011/12	2012/13	2013/14	2014/15	2015/16	2020/21	2030/31
	(Percent, unless otherwise indicated)						
	PV of Debt to Exports Ratio						
2012DSA	94.9	98.7	102.1	103.4	106.1	97.6	58.5
2011DSA	96.5	100.4	102.1	101.9	101.5	94.8	62.8
	PV of Debt to GDP Ratio						
2012DSA	13.6	14.3	15.4	16.0	17.1	16.2	9.7
2011DSA	15.3	17.4	18.2	18.6	19.0	18.3	13.1
	PV of Debt to Revenue Ratio						
2012DSA	99.2	111.2	119.2	123.1	129.5	118.5	74.4
2011DSA	102.2	116.2	121.7	122.5	122.3	111.7	78.1
	Debt Service to Exports Ratio						
2012DSA	5.4	5.7	6.4	7.3	7.3	8.3	5.4
2011DSA	4.5	5.2	6.2	7.3	7.4	7.0	5.0
Memorandum items:							
	Grant Element of New External Borrowing						
2012DSA	22.4	30.1	25.6	23.8	17.7	25.5	21.9
2011DSA	30.2	30.3	28.0	28.0	29.5	27.6	27.4
	New Commercial Loan Disbursements (billions of U.S. dollars)						
2012DSA	0.395	0.424	0.538	0.606	0.968	0.571	0.718
2011DSA	0.514	0.493	0.519	0.500	0.500	0.571	0.718
	Real GDP Growth (annual percent change)						
2012DSA	7.0	6.5	6.5	6.5	6.5	6.5	6.5
2011DSA	6.0	6.0	6.5	6.5	6.5	6.5	6.5
	Current Account Balance to GDP Ratio						
2012DSA	-6.1	-7.5	-6.2	-6.2	-6.3	-5.6	-5.2
2011DSA	-8.5	-8.4	-7.4	-6.7	-5.9	-5.8	-5.2

Sources: Ethiopian authorities; IMF and World Bank staff estimates and projections.

MACROECONOMIC ASSUMPTIONS

5. The medium-term macroeconomic outlook remains broadly in line with the assumptions of the 2011 DSA (Box 1). Real GDP growth in 2012/13 is revised upward from 6 percent in the 2011 DSA to 6.5 percent, reflecting stronger activities mainly led by public infrastructure investment, but the projected long-run GDP growth rate is maintained at 6.5 percent. Inflation was higher than projected in 2011/12, but is projected to reach the same long-run rate as in the 2011 DSA on account of the governments' commitment to inflation reduction. Nominal GDP in US dollars is higher because of the inflationary effect of the initial periods.

6. **Robust export growth is projected to continue, a key assumption for maintaining a low risk rating**. Despite further real exchange appreciation since the 2011 DSA, export growth has been strong, partly reflecting developments in commodity prices. In the medium-to long-run, export growth would be supported by diversification of the export sector as emerging export industries expand, funded by foreign direct investment, and service exports including electricity grow albeit at a slower pace than projected in the 2011 DSA. Overall, exports of goods and services are projected to remain broadly the same as in the 2011 DSA.

Box 1. Ethiopia: Macroeconomic Assumptions for the Baseline Scenario

Real GDP growth is projected to slow to 6.5 percent in 2012/13 and to remain at that rate during the projection period. This assessment contrasts with the government's growth ambitions in the Growth and Transformation Plan (GTP) and reflects the poor business environment giving limited space for private sector growth on account of crowding out by public sector borrowing. Inflation is projected to fall to 9 percent by the end of 2012/13 and to stay at that level in the long run. The primary balance of the public sector is projected to record a large deficit initially (averaging 3.8 percent of GDP in 2012−17) reflecting investment by public enterprises, but it is expected to converge to a modest level in the long run (averaging 0.8 percent in 2018−32).

The external current account deficit (before official transfers) is expected to deteriorate from 5.2 percent of GDP in 2010/11 to 10.1 percent of GDP in 2011/12 and 11.5 percent of GDP in 2012/13, but improve to 8.5 percent of GDP in the long run.

Exports of goods are projected to grow by 11.3 percent in 2012/13, slowing from 37.1 percent in 2010/11 and 16.9 percent in 2011/12. Higher commodity prices, especially in gold and coffee, largely accounted for recent rapid export growth. Large foreign investments in the targeted sectors that receive government support are expected to contribute to export growth, and export volume growth is projected at around 10 percent over the DSA horizon. Exports of services are projected to grow at a slower pace than in the 2011 DSA on account of delays in electricity generation projects. Imports of goods and services are projected to increase in the near term (15 percent for goods imports and 10 percent for service imports in 2012/13) on account of substantial import needs for public infrastructure projects.

Workers' remittances have increased strongly in recent years and reached almost 8 percent of GDP in 2010/11. Although remittances in 2011/12 and 2012/13 are projected to remain at the same level in absolute terms, they are expected to start growing as the global economy recovers.

Foreign direct investment (FDI) is projected to increase gradually to a long run yearly average of 4.5 percent of GDP from 3.1 percent in 2011/12 on account of policies to promote large scale FDIs.

EXTERNAL DEBT SUSTAINABILITY ANALYSIS

A. Baseline Without Remittances

7. Under the baseline scenario, the PPG external debt indicators will rise in the next several years, but will remain well under the relevant indicative thresholds. The PV of PPG external debt in percent of GDP declined in 2011/12 by 2 percentage points to 13.6 percent because of high inflation and overvalued currency; but it is projected to start rising in 2012/13 to a peak of 17.5 percent of GDP in 2016/17, reflecting the assumed steady increase in new loan disbursements. The PV of debt in percent of exports increased in 2011/12, and despite continued strength in exports, it is projected to continue increasing, peaking at 106.8 percent in 2016/17. The debt service-to-exports ratio also remains well below the relevant threshold although it keeps rising to a peak of 8.6 percent in 2018/19, reflecting servicing of non-concessional loans by public enterprises.

B. Sensitivity Tests Without Remittances

8. Under the historical scenario, the debt stock indicators would be lower than under the baseline scenario in the short term but rise above those of the baseline scenario over time. The scenario reflects significantly higher nominal GDP and export growth (than in the baseline) which works to drive the debt ratios down. It also reflects larger net debt creating flows (than in the baseline) which work to drive the debt ratios up. The dynamic path under the historical scenario is determined by these two offsetting forces. As a result, the PV of debt to GDP would fall by 2.4 percentage points in three years, but would begin to rise afterward, reaching a peak of 12.1 percent. Similarly, the PV of exports would fall by 24.7 percentage points in five years, but then rise to reach the peak of 72.9 percent.

9. Without remittances, no stress test breaches the indicative threshold for the PV of PPG external debt to exports over the forecast horizon. The 2011 DSA results highlighted that Ethiopia's debt sustainability was most sensitive to the terms of new public sector borrowing and export value growth, and two stress tests breached the threshold. The 2012 DSA did not find such vulnerability: even in the most extreme case in which new public sector external loans are secured on less favorable terms (i.e., a 200 basis point increase in the interest rate), the PV of debt to export ratio would peak at 142.6 percent in 2020 relative to the threshold of 150 percent. The scenario in which export growth is slower than the historical average by one standard deviation produces the debt to exports ratio of 119 percent in 2017 (an increase from 94.9 percent in 2012).

C. A Scenario with Higher Commercial Loan Disbursements

10. An alternative scenario including additional commercial loan disbursements indicates that an annual nonconsessional borrowing limit of US$1 billion in 2012/13–2015/16 would be consistent with maintaining a low external debt risk rating. In light of several large public investment projects under considerations, the authorities asked for a simulation of the implications of increased commercial loan disbursements in addition to those assumed in the baseline. The result indicates that there would be a breach of the threshold for PV of external debt-to-exports without remittances under the most extreme shocks but there is no breach when remittances are included. The low external debt risk rating would be maintained in this scenario. However, given the result of the sensitivity analysis which indicates that a breach could occur if new public sector loans were in less favorable terms, the staffs are of the view that maintaining the concessionality of external loans is important and the authorities should remain vigilant regarding new debt accumulation, particularly with commercial loans. This view is also consistent with IDA's Non-Concessional Borrowing Policy.

PUBLIC DEBT SUSTAINABILITY ANALYSIS

11. Under the baseline scenario, the total public sector debt-to-GDP ratio would rise sharply in the near term. This reflects large domestic borrowing and continued accumulation of external PPG debt by public enterprises to implement infrastructure investment projects. It is expected that after an initial period of high spending, total public sector expenditure would revert to a lower level in the long run.

12. Debt stock related indicators peak in 2014 and debt service related indicators peak in 2017. All debt indicators decline gradually from the peak; this result depends on continuation of robust GDP growth, moderate public sector primary deficits, and most crucially the authorities' policy of keeping domestic interest rates low, at negative levels in real terms because inflation is assumed to stay at 9 percent in the long run. Compared to the 2011 DSA, the peak is to be reached earlier; at the peak, the debt-to-GDP ratio is lower, but the debt-to-revenue and grants ratio and the debt service-to-revenue and grants ratio are higher mainly because lower levels are projected from grants.

13. Under any alternative scenario, public sector debt would become unsustainable. The scenario with unchanged primary balance from 2012 shows particularly sharp deterioration because of a large primary deficit in 2012 reflecting investment activities by public enterprises. This suggests that the current level of public investment is not sustainable in the long-run. The other two alternative scenarios (real GDP growth and primary balance at the historic average; permanently lower GDP growth) show milder but unsustainable debt trajectories.

14. The baseline scenario understates the public debt burden for the economy because it reflects actual costs of borrowing by the public sector, which are significantly lower than inflation. Although inflation is projected to decline to a single-digit level, given the current policy of financing public investment at low costs, interest rates on public enterprise domestic borrowing would not be fully adjusted to a positive level in real terms.[7] If the actual cost of borrowing were to rise above inflation, the debt indicators would worsen or fiscal adjustment could be required to maintain fiscal sustainability.

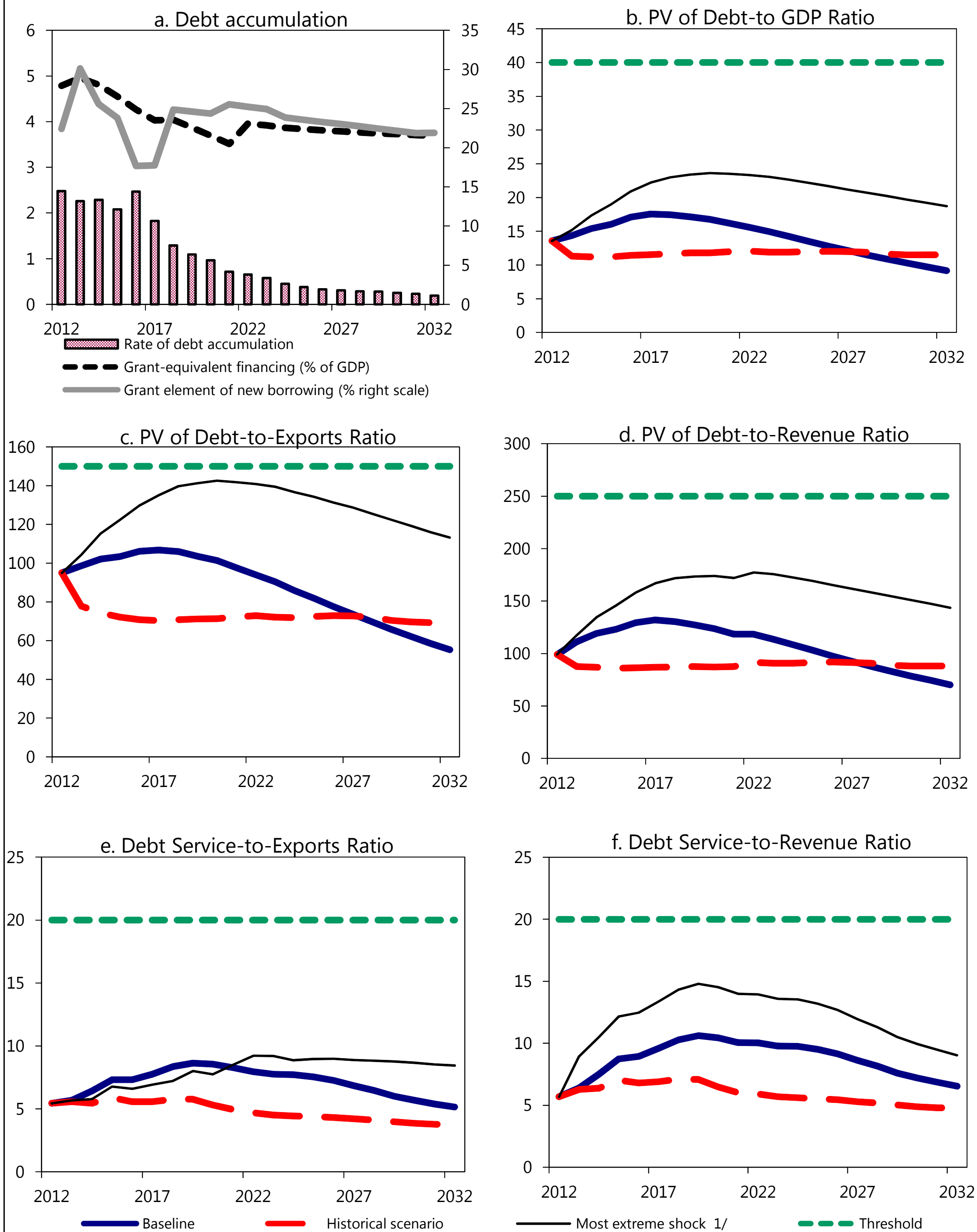
[7] The authorities claim that, once inflation stabilizes at single digits, interest rates would be adjusted to the same level as the inflation rate.

CONCLUSION

15. The level of Ethiopia's external debt distress remains at a low risk rating. The external debt ratios have risen rapidly in recent years, and this trend is projected to continue in the medium-term with the exception of 2012. The results suggest the importance for Ethiopia of monitoring debt closely and remaining vigilant regarding new debt accumulation, particularly with commercial loans. The financing plan underlying the GTP needs to be reviewed taking into account these results. Vulnerabilities identified in various sensitivity analyses are relevant for considering policies that would help maintain the low risk rating of external debt distress. Particularly important is maintaining the concessionality of external loans.

16. Monitoring the overall debt of the consolidated public sector is needed to avoid a building up of vulnerabilities. Since domestic borrowing by the public sector is rapidly increasing, it is becoming more important to monitor the overall debt (including external and domestic) of the consolidated public sector. To that end, diagnosis through Debt Management and Performance Assessment and capacity building through Medium-Term Debt Strategy technical assistance could be recommended. Also, the macroeconomic assumptions underlying the baseline scenario are subject to risks, including both exogenous shocks and policy-induced deterioration of the business environment, leading to vulnerabilities as highlighted in the alternative scenarios. Adjustments to policies to ensure price stability, remove exchange rate overvaluation, and address structural impediments to private sector investment and trading activities would go a long way in enhancing Ethiopia's debt sustainability.

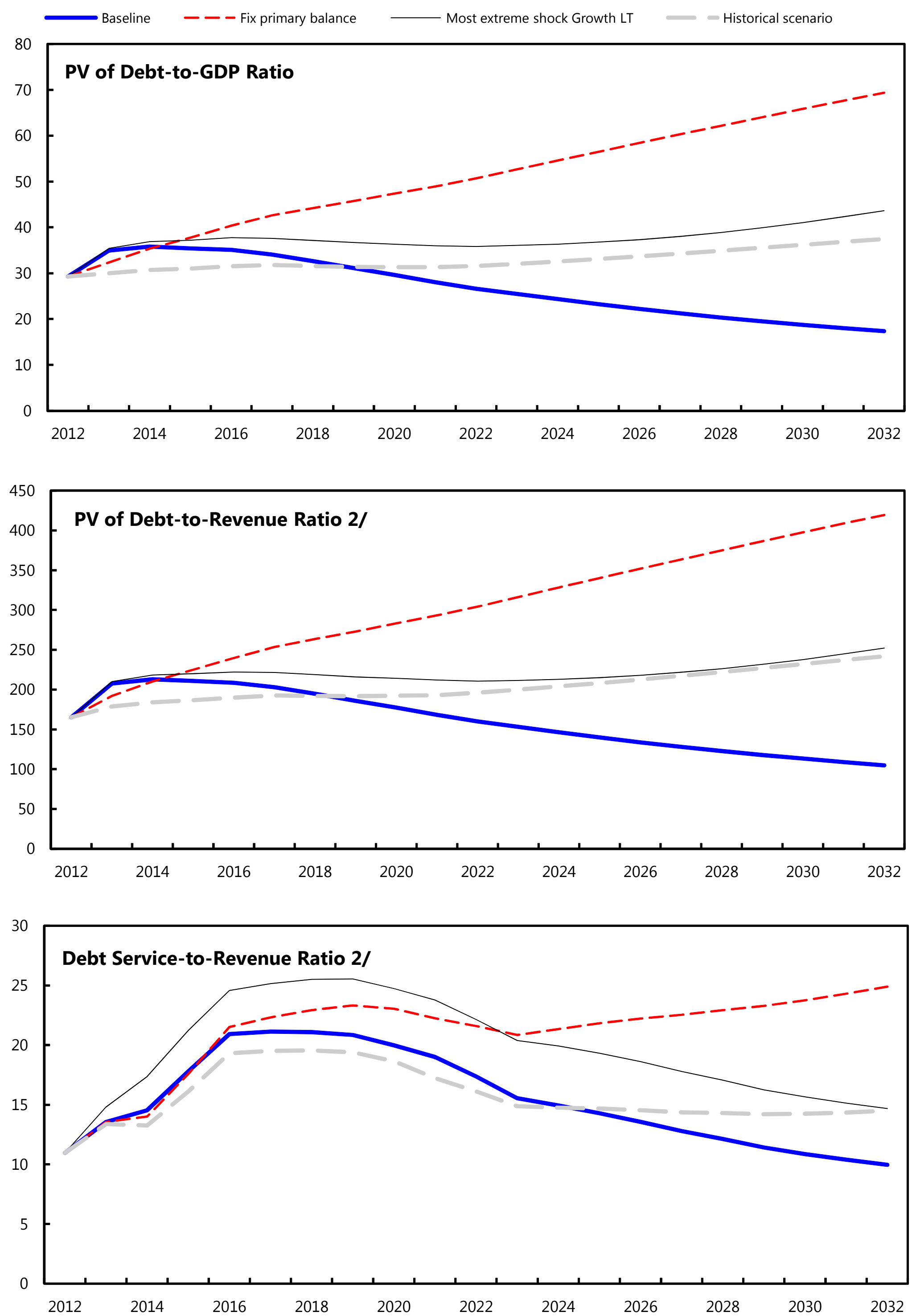
Figure 1. Ethiopia: Indicators of Public and Publicly Guaranteed External Debt Under Alternatives Scenarios, 2012–2032 1/



Sources: Ethiopian authorities; IMF ans World Bank staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2022. In figure b. it corresponds to a Terms shock; in c. to a Terms shock; in d. to a Terms shock; in e. to a Terms shock and in figure f. to a One-time depreciation shock

Figure 2. Ethiopia: Indicators of Public Debt Under Alternative Scenarios, 2012–2032 1/



Sources: Ethiopian authorities; IMF and World Bank staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio in 2022.
2/ Revenue is defined inclusive of grants.

Table 1. Ethiopia: External Debt Sustainability Framework, Baseline Scenario, 2009–2032 1/

(Percent of GDP, unless otherwise indicated)

	Actual			Historical 6/ Average	Standard 6/ Deviation	Projections									
	2009	2010	2011			2012	2013	2014	2015	2016	2017	2012–2017 Average	2022	2032	2018–2032 Average
External debt (nominal) 1/	**14.8**	**20.0**	**24.6**			**20.9**	**23.3**	**25.0**	**26.1**	**27.3**	**27.7**		**25.3**	**17.1**	
Of which: public and publicly guaranteed (PPG)	14.0	19.0	21.9			18.6	19.8	21.1	22.0	23.1	23.5		21.6	13.2	
Change in external debt	2.6	5.3	4.5			-3.6	2.3	1.8	1.0	1.2	0.4		-0.8	-0.7	
Identified net debt-creating flows	0.2	2.4	-5.9			1.7	3.1	1.3	1.0	1.1	0.5		-0.6	-0.6	
Non-interest current account deficit	**4.9**	**4.2**	**-0.9**	**3.8**	**2.9**	**5.8**	**7.1**	**5.8**	**5.6**	**5.7**	**5.3**		**4.6**	**4.8**	4.8
Deficit in balance of goods and services	18.2	19.6	15.0			17.4	17.6	16.6	15.6	15.9	15.3		14.6	14.8	
Exports	10.5	13.6	16.8			14.3	14.5	15.1	15.5	16.1	16.4		16.6	16.5	
Imports	28.7	33.2	31.8			31.7	32.1	31.6	31.2	32.0	31.8		31.2	31.3	
Net current transfers (negative = inflow)	-13.3	-15.6	-15.9	-13.9	1.6	-11.7	-10.5	-10.9	-10.0	-10.2	-10.0		-10.0	-10.0	-9.9
Of which: official	-4.9	-6.5	-6.0			-4.1	-3.9	-3.9	-3.8	-3.6	-3.5		-3.5	-3.5	
Other current account flows (negative = net inflow)	0.0	0.2	0.0			0.0	0.0	0.0	0.0	0.0	0.0		-0.1	0.0	
Net FDI (negative = inflow)	**-2.7**	**-3.2**	**-3.9**	**-2.3**	**0.9**	**-3.1**	**-3.2**	**-3.5**	**-3.7**	**-3.7**	**-3.9**		**-4.2**	**-4.5**	-4.3
Endogenous debt dynamics 2/	**-2.0**	**1.4**	**-1.1**			**-1.0**	**-0.8**	**-0.9**	**-0.9**	**-0.9**	**-0.9**		**-1.0**	**-0.8**	
Contribution from nominal interest rate	0.1	0.2	0.2			0.3	0.4	0.5	0.6	0.6	0.7		0.6	0.3	
Contribution from real GDP growth	-1.0	-1.3	-1.4			-1.3	-1.2	-1.4	-1.5	-1.6	-1.6		-1.6	-1.1	
Contribution from price and exchange rate changes	-1.1	2.6	0.1			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	**2.4**	**2.8**	**10.5**			**-5.3**	**-0.7**	**0.5**	**0.0**	**0.1**	**0.0**		**-0.2**	**-0.2**	
Of which: exceptional financing	-0.4	-0.3	-0.1			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
PV of external debt 4/	...	...	18.4			15.9	17.8	19.3	20.1	21.3	21.7		19.3	13.0	
Percent of exports	...	...	109.3			111.2	122.8	128.1	129.9	132.1	132.3		116.3	78.8	
PV of PPG external debt	**...**	**...**	**15.8**			**13.6**	**14.3**	**15.4**	**16.0**	**17.1**	**17.5**		**15.6**	**9.1**	
Percent of exports	**...**	**...**	**93.7**			**94.9**	**98.7**	**102.1**	**103.4**	**106.1**	**106.8**		**94.0**	**55.3**	
Percent of government revenues	**...**	**...**	**120.6**			**99.2**	**111.2**	**119.2**	**123.1**	**129.5**	**132.0**		**118.4**	**70.2**	
Debt service-to-exports ratio (percent)	**2.4**	**3.2**	**4.3**			**7.6**	**7.5**	**9.1**	**10.5**	**10.8**	**11.4**		**10.7**	**5.1**	
PPG debt service-to-exports ratio (percent)	**1.3**	**2.2**	**2.9**			**5.4**	**5.7**	**6.4**	**7.3**	**7.3**	**7.8**		**8.0**	**5.1**	
PPG debt service-to-revenue ratio (percent)	**1.0**	**2.3**	**3.7**			**5.7**	**6.4**	**7.5**	**8.7**	**8.9**	**9.6**		**10.0**	**6.5**	
Total gross financing need (Billions of U.S. dollars)	0.8	0.4	-1.3			1.6	2.4	1.8	2.0	2.3	2.1		2.1	2.4	
Non-interest current account deficit that stabilizes debt ratio	2.4	-1.1	-5.5			9.4	4.8	4.0	4.6	4.5	4.9		5.4	5.5	
Key macroeconomic assumptions															
Real GDP growth (percent)	10.0	8.0	7.5	8.4	4.9	7.0	6.5	6.5	6.5	6.5	6.5	6.6	6.5	6.5	6.5
GDP deflator in U.S. dollar terms (change in percent)	10.0	-14.8	-0.6	6.3	10.9	23.6	5.9	1.2	2.7	2.0	1.6	6.2	1.6	1.6	1.6
Effective interest rate (percent) 5/	1.0	1.1	1.1	0.9	0.2	1.9	2.0	2.2	2.5	2.6	2.8	2.3	2.4	1.6	2.1
Growth of exports of G&S (U.S. dollar terms, percent)	10.5	19.7	32.0	18.8	9.6	12.2	14.7	11.7	12.6	12.9	10.3	12.4	8.1	8.0	8.3
Growth of imports of G&S (U.S. dollar terms, percent)	11.6	6.7	2.4	18.7	14.7	31.6	14.5	6.1	7.7	11.6	7.4	13.1	8.6	7.9	8.1
Grant element of new public sector borrowing (percent)	...	...	...	...	...	22.4	30.1	25.6	23.8	17.7	17.7	22.9	25.2	21.9	23.6
Government revenue (excluding grants, percent of GDP)	13.9	13.2	13.1			13.7	12.9	12.9	13.0	13.2	13.3		13.2	13.0	13.2
Aid flows (Billions of U.S. dollars) 7/	2.4	2.7	2.4			2.3	2.9	3.0	3.1	3.2	3.2		4.4	8.5	
Of which: grants	1.6	1.9	1.9			1.7	1.9	2.0	2.1	2.2	2.3		3.4	7.5	
Of which: concessional loans	0.8	0.8	0.5			0.6	1.0	1.0	1.0	1.0	0.9		1.0	1.0	
Grant-equivalent financing (percent of GDP) 8/	...	...	...			4.8	5.0	4.8	4.6	4.3	4.0		4.0	3.7	3.8
Grant-equivalent financing (percent of external financing) 8/	...	...	...			65.3	67.8	65.0	64.5	59.6	63.0		74.5	84.3	76.7
Memorandum items:															
Nominal GDP (Billions of U.S. dollars)	32.3	29.7	31.7			41.9	47.3	51.0	55.7	60.6	65.5		97.2	214.2	
Nominal dollar GDP growth	21.0	-8.0	6.8			32.2	12.8	7.8	9.4	8.6	8.2	13.2	8.2	8.2	8.2
PV of PPG external debt (Billions of U.S. dollars)			4.8			5.6	6.5	7.6	8.6	10.0	11.1		14.7	19.0	
(PVt-PVt-1)/GDPt-1 (percent)						2.5	2.3	2.3	2.1	2.5	1.8	2.2	0.6	0.2	0.5
Gross workers' remittances (Billions of U.S. dollars)	1.8	2.1	2.5			2.4	2.3	2.7	2.6	3.0	3.2		4.7	10.4	
PV of PPG external debt (percent of GDP + remittances)	...	...	14.6			12.8	13.7	14.6	15.3	16.3	16.7		14.9	8.7	
PV of PPG external debt (percent of exports + remittances)	...	...	63.8			67.9	73.7	75.9	79.4	81.4	82.4		72.7	42.8	
Debt service of PPG external debt (percent of exports + remittances)	...	...	2.0			3.9	4.2	4.8	5.6	5.6	6.0		6.2	4.0	

Sources: Ethiopian authorities; IMF and World Bank staff estimates and projections.

1/ Includes both public and private sector external debt.

2/ Derived as [r - g - ρ(1+g)]/(1+g+ρ+gρ) times previous period debt ratio, with r = nominal interest rate, g = real GDP growth rate, and ρ = growth rate of GDP deflator in U.S. dollar terms.

3/ Includes exceptional financing (i.e., changes in arrears and debt relief); changes in gross foreign assets; and valuation adjustments. For projections, also includes contribution from price and exchange rate changes.

4/ Assumes that PV of private sector debt is equal to its face value.

5/ Current-year interest payments divided by previous period debt stock.

6/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

7/ Defined as grants, concessional loans, and debt relief.

8/ Grant-equivalent financing includes grants provided directly to the government and through new borrowing (difference between the face value and the PV of new debt).

Table 2b. Ethiopia: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2012–2032
(Percent)

	Projections							
	2012	2013	2014	2015	2016	2017	**2022**	2032
PV of Debt-to GDP Ratio								
Baseline	13.6	14.3	15.4	16.0	17.1	17.5	**15.6**	9.1
A. Alternative scenarios								
A1. Key variables at their historical averages in 2012–2032 1/	14	11	11	11	11	12	**12**	11
A2. New public sector loans on less favorable terms in 2012–2032 2	14	15	17	19	21	22	**23**	19
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013–2014	14	14	16	16	17	18	**16**	9
B2. Export value growth at historical average minus one standard deviation in 2013–2014 3/	14	14	16	17	18	18	**16**	9
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2013–2014	14	15	17	18	19	20	**18**	10
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013–2014 4/	14	14	16	16	17	18	**15**	9
B5. Combination of B1-B4 using one-half standard deviation shocks	14	14	16	16	17	18	**16**	9
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	14	19	21	22	23	24	**21**	12
PV of Debt-to-Exports Ratio								
Baseline	95	99	102	103	106	107	**94**	55
A. Alternative scenarios								
A1. Key variables at their historical averages in 2012–2032 1/	95	78	74	72	71	70	**73**	69
A2. New public sector loans on less favorable terms in 2012–2032 2	95	104	115	122	130	135	**141**	113
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013–2014	95	95	99	100	102	103	**90**	53
B2. Export value growth at historical average minus one standard deviation in 2013–2014 3/	95	104	117	117	119	119	**103**	59
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2013–2014	95	95	99	100	102	103	**90**	53
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013–2014 4/	95	95	104	105	107	107	**93**	54
B5. Combination of B1-B4 using one-half standard deviation shocks	95	93	96	97	100	101	**88**	52
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	95	95	99	100	102	103	**90**	53
PV of Debt-to-Revenue Ratio								
Baseline	99	111	119	123	130	132	**118**	70
A. Alternative scenarios								
A1. Key variables at their historical averages in 2012–2032 1/	99	88	87	86	86	87	**92**	88
A2. New public sector loans on less favorable terms in 2012–2032 2	99	118	135	146	158	167	**177**	144
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013–2014	99	110	122	126	132	135	**120**	71
B2. Export value growth at historical average minus one standard deviation in 2013–2014 3/	99	111	127	130	135	137	**121**	70
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2013–2014	99	118	136	140	147	150	**134**	79
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013–2014 4/	99	107	121	124	130	132	**117**	68
B5. Combination of B1-B4 using one-half standard deviation shocks	99	110	122	126	132	135	**120**	71
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	99	149	161	166	174	178	**158**	93

Table 2b. Ethiopia: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2012–2032 (continued)

(Percent)

Debt Service-to-Exports Ratio								
Baseline	5	6	6	7	7	8	**8**	5
A. Alternative scenarios								
A1. Key variables at their historical averages in 2012–2032 1/	5	6	5	6	6	6	**5**	4
A2. New public sector loans on less favorable terms in 2012–2032 2	5	6	6	7	7	7	**9**	8
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013–2014	5	6	6	7	7	8	**8**	5
B2. Export value growth at historical average minus one standard deviation in 2013–2014 3/	5	6	7	8	8	9	**9**	6
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2013–2014	5	6	6	7	7	8	**8**	5
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013–2014 4/	5	6	6	7	7	8	**8**	5
B5. Combination of B1-B4 using one-half standard deviation shocks	5	6	6	7	7	8	**8**	5
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	5	6	6	7	7	8	**8**	5
Debt Service-to-Revenue Ratio								
Baseline	6	6	8	9	9	10	**10**	7
A. Alternative scenarios								
A1. Key variables at their historical averages in 2012–2032 1/	6	6	6	7	7	7	**6**	5
A2. New public sector loans on less favorable terms in 2012–2032 2	6	6	7	8	8	9	**12**	11
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013–2014	6	7	8	9	9	10	**11**	7
B2. Export value growth at historical average minus one standard deviation in 2013–2014 3/	6	6	8	9	9	10	**11**	7
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2013–2014	6	7	9	10	11	11	**12**	8
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013–2014 4/	6	6	8	9	9	10	**10**	7
B5. Combination of B1-B4 using one-half standard deviation shocks	6	7	8	9	9	10	**11**	7
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	6	9	10	12	12	13	**14**	9
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	9	9	9	9	9	9	**9**	9

Sources: Ethiopian authorities; IMF ans World Bank staff estimates and projections.

1/ Variables include real GDP growth, growth of GDP deflator (in U.S. dollar terms), non-interest current account in percent of GDP, and non-debt creating flows.
2/ Assumes that the interest rate on new borrowing is by 2 percentage points higher than in the baseline., while grace and maturity periods are the same as in the baseline.
3/ Exports values are assumed to remain permanently at the lower level, but the current account as a share of GDP is assumed to return to its baseline level after the shock (implicitly assuming an offsetting adjustment in import levels).
4/ Includes official and private transfers and FDI.
5/ Depreciation is defined as percentage decline in dollar/local currency rate, such that it never exceeds 100 percent.
6/ Applies to all stress scenarios except for A2 (less favorable financing) in which the terms on all new financing are as specified in footnote 2.

Table 3. Ethiopia: Public Sector Debt Sustainability Framework, Baseline Scenario, 2009–2032

(Percent of GDP, unless otherwise indicated)

	Actual					Estimate	Projections								
	2009	2010	2011	Average 5/	Standard Deviation 5/	2012	2013	2014	2015	2016	2017	2012–17 Average	2022	2032	2018–32 Average
Public sector debt 1/	36.0	39.9	37.3			34.3	40.4	41.5	41.3	41.1	40.0		32.7	21.4	
Of which: foreign-currency denominated	14.0	19.0	21.9			18.6	19.8	21.1	22.0	23.1	23.5		21.6	13.2	
Change in public sector debt	-3.0	4.0	-2.6			-3.0	6.0	1.2	-0.2	-0.2	-1.1		-1.5	-0.9	
Identified debt-creating flows	-6.3	-0.5	-3.6			-4.4	5.0	0.1	-0.9	-0.7	-1.1		-1.0	-0.9	
Primary deficit	1.9	1.0	2.5	3.3	1.7	5.4	8.3	3.1	2.3	2.1	1.5	3.8	1.0	0.4	0.8
Revenue and grants	18.8	19.7	19.1			17.7	16.8	16.8	16.8	16.8	16.8		16.7	16.5	
Of which: grants	4.9	6.5	6.0			4.1	3.9	3.9	3.8	3.6	3.5		3.5	3.5	
Primary (noninterest) expenditure	20.7	20.7	21.5			23.2	25.2	20.0	19.1	19.0	18.3		17.7	17.0	
Automatic debt dynamics	-8.1	-1.3	-5.8			-9.5	-3.3	-3.1	-3.2	-2.8	-2.6		-2.0	-1.3	
Contribution from interest rate/growth differential	-7.8	-3.2	-6.2			-5.3	-2.9	-2.9	-3.0	-2.7	-2.7		-2.0	-1.3	
Of which: contribution from average real interest rate	-4.2	-0.5	-3.5			-2.9	-0.8	-0.5	-0.4	-0.2	-0.2		0.0	0.1	
Of which: contribution from real GDP growth	-3.6	-2.7	-2.8			-2.4	-2.1	-2.5	-2.5	-2.5	-2.5		-2.1	-1.4	
Contribution from real exchange rate depreciation	-0.3	1.9	0.5			-4.1	-0.4	-0.1	-0.2	-0.1	0.1		...	...	
Other identified debt-creating flows	-0.1	-0.2	-0.3			-0.4	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	-0.1	-0.2	-0.3			-0.4	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recognition of implicit or contingent liabilities	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Debt relief (HIPC and other)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Other (specify, e.g. bank recapitalization)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Residual, including asset changes	3.3	4.4	1.0			1.4	1.0	1.1	0.7	0.5	0.0		-0.5	0.0	
Other sustainability indicators															
PV of public sector debt	...	...	31.2			29.3	35.0	35.8	35.4	35.1	34.1		26.6	17.3	
Of which: foreign-currency denominated	...	...	15.8			13.6	14.3	15.4	16.0	17.1	17.5		15.6	9.1	
Of which: external	...	...	15.8			13.6	14.3	15.4	16.0	17.1	17.5		15.6	9.1	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	3.5	2.4	4.2			7.4	10.6	5.6	5.3	5.6	5.1		3.9	2.1	
PV of public sector debt-to-revenue and grants ratio (percent)	...	...	163.7			165.2	207.6	212.8	210.8	208.5	202.8		159.9	104.9	
PV of public sector debt-to-revenue ratio (percent)	...	...	238.3			214.1	271.0	277.5	271.8	266.1	256.5		202.5	133.0	
Of which: external 3/	...	...	120.6			99.2	111.2	119.2	123.1	129.5	132.0		118.4	70.2	
Debt service-to-revenue and grants ratio (percent) 4/	8.5	7.2	8.9			11.0	13.6	14.5	17.8	20.9	21.1		17.4	10.0	
Debt service-to-revenue ratio (percent) 4/	11.5	10.7	13.0			14.2	17.7	18.9	23.0	26.7	26.7		22.0	12.6	
Primary deficit that stabilizes the debt-to-GDP ratio	4.9	-3.0	5.0			8.4	2.3	2.0	2.5	2.3	2.6		2.5	1.3	
Key macroeconomic and fiscal assumptions															
Real GDP growth (percent)	10.0	8.0	7.5	8.4	4.9	7.0	6.5	6.5	6.5	6.5	6.5	6.6	6.5	6.5	6.5
Average nominal interest rate on forex debt (percent)	0.7	0.9	0.8	0.8	0.3	1.5	1.8	2.0	2.2	2.3	2.5	2.0	2.4	2.0	2.3
Average nominal interest rate on domestic debt (percent)	2.7	3.3	3.6	2.6	0.6	5.6	7.1	6.1	6.7	7.0	7.0	6.6	7.9	9.2	8.3
Average real interest rate (percent)	-11.9	-1.5	-9.3	-5.8	5.2	-8.3	-2.4	-1.3	-1.1	-0.6	-0.4	-2.3	0.1	0.3	0.1
Average real interest rate on foreign-currency debt (percent)	-1.0	-1.1	-2.1	-2.2	0.8	-1.2	-1.4	-1.4	-1.5	-1.6	-1.9	-1.5	-1.7	-1.7	-1.7
Average real interest rate on domestic debt (percent)	-16.4	-2.3	-16.6	-8.8	8.2	-20.5	-5.5	-2.9	-2.9	-2.0	-1.6	-5.9	-0.8	0.4	-0.4
Exchange rate (US dollar per LC)	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nominal appreciation (increase in US dollar value of local currency, in percer	-15.1	-16.4	-19.9	-6.4	7.7	-4.7	-8.3	-6.5	-6.5	-6.5	-6.5	-6.5	-6.5	-6.5	-6.5
Real exchange rate depreciation (percent, + indicates depreciation)	-3.0	14.5	2.7	-2.7	8.8	-20.0	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, percent)	22.7	5.7	24.2	13.4	10.1	32.8	13.3	9.2	9.9	9.2	8.7	13.9	8.7	8.7	8.7
U.S. Inflation rate (GDP deflator, percent)	1.1	1.2	2.1	2.3	0.8	1.3	1.5	1.5	1.6	1.6	1.9	1.6	1.8	1.8	1.8
Growth of real primary spending (deflated by GDP deflator, percent)	-0.1	0.1	0.1	0.1	0.1	0.2	0.2	-0.2	0.0	0.1	0.0	0.0	0.1	0.1	0.1
Grant element of new external borrowing (percent)	...	...	...	...	...	22.4	30.1	25.6	23.8	17.7	17.7	22.9	25.2	21.9	...

Sources: Ethiopian authorities; IMF and World Bank staff estimates and projections.

1/ Public sector debt covers general government and selected nonfinancial public enterprises. Gross debt is used.

2/ Gross financing need is defined as the primary deficit plus debt service plus the stock of short-term debt at the end of the last period.

3/ Revenue excluding grants.

4/ Debt service is defined as the sum of interest and amortization of medium- and long-term debt.

5/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

Table 4. Ethiopia: Sensitivity Analysis for Key Indicators of Public Debt 2012–2032
(Percent)

	Projections							
	2012	2013	2014	2015	2016	2017	2022	2032
PV of Debt-to-GDP Ratio								
Baseline	29	35	36	35	35	34	27	17
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	29	30	31	31	32	32	32	37
A2. Primary balance is unchanged from 2012	29	32	35	38	40	43	51	69
A3. Permanently lower GDP growth 1/	29	35	37	37	38	38	36	44
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviation in 2013–2014	29	36	39	39	40	39	34	28
B2. Primary balance is at historical average minus one standard deviation in 2013–2014	29	32	35	34	34	33	26	17
B3. Combination of B1-B2 using one-half standard deviation shocks	29	31	33	33	33	32	26	18
B4. One-time 30 percent real depreciation in 2013	29	41	41	40	40	39	32	24
B5. 10 percent of GDP increase in other debt-creating flows in 2013	29	44	44	44	43	42	33	21
PV of Debt-to-Revenue Ratio 2/								
Baseline	165	208	213	211	209	203	160	105
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	165	179	184	187	190	193	196	242
A2. Primary balance is unchanged from 2012	165	192	210	225	240	254	304	419
A3. Permanently lower GDP growth 1/	165	210	218	220	222	221	210	252
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviation in 2013–2014	165	214	228	230	232	229	201	167
B2. Primary balance is at historical average minus one standard deviation in 2013–2014	165	190	206	204	202	196	155	102
B3. Combination of B1-B2 using one-half standard deviation shocks	165	186	198	198	197	192	155	108
B4. One-time 30 percent real depreciation in 2013	165	242	243	239	236	230	191	144
B5. 10 percent of GDP increase in other debt-creating flows in 2013	165	261	264	259	255	248	197	128
Debt Service-to-Revenue Ratio 2/								
Baseline	11	14	15	18	21	21	17	10
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	11	13	13	16	19	20	16	14
A2. Primary balance is unchanged from 2012	11	14	14	18	22	22	22	25
A3. Permanently lower GDP growth 1/	11	14	15	18	22	22	20	17
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviation in 2013–2014	11	14	15	19	22	23	19	13
B2. Primary balance is at historical average minus one standard deviation in 2013–2014	11	14	14	17	21	21	17	10
B3. Combination of B1-B2 using one-half standard deviation shocks	11	14	14	17	21	21	17	10
B4. One-time 30 percent real depreciation in 2013	11	15	17	21	25	25	22	15
B5. 10 percent of GDP increase in other debt-creating flows in 2013	11	14	16	20	23	23	20	12

Sources: Ethiopian authorities; IMF and World Bank staff estimates and projections.
1/ Assumes that real GDP growth is at baseline minus one standard deviation divided by the square root of the length of the projection period.
2/ Revenue is defined inclusive of grants.