INTERNATIONAL DEVELOPMENT ASSOCIATION
INTERNATIONAL MONETARY FUND

KENYA

Joint Bank/Fund Debt Sustainability Analysis

Prepared by the Staffs of the International Development Association and the International Monetary Fund

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The debt sustainability analysis (DSA) was prepared jointly by Bank and Fund staffs in accordance with the standardized methodology for low-income countries. It is based on the general framework approved by the Executive Boards of the World Bank and the IMF in April 2005 and subsequently modified, including combining the external and public debt templates in a single file.[1] The DSA has also benefited from consultation with African Development Bank staff. As in the previous DSA (EBS/07/30, 3/27/07), the findings indicate the risk of external debt distress is low. Risks are somewhat greater for public debt, particularly in the event of lower growth.

A. Methodology

1. **Debt sustainability is assessed in relation to policy-dependent debt burden thresholds**. Kenya is classified as a medium performer in terms of the quality of its policies and institutions as measured by a three-year average of Kenya's score on the World Bank's Country Policy and Institutional Assessment (CPIA) index.[2, 3]

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[1] http://www.imf.org/external/pubs/ft/dsa/lic.aspx

[2] http://go.worldbank.org/AXO6I14PK0

[3] For a medium performer, the indicative thresholds for external debt sustainability are an NPV of debt-to-GDP ratio of 40 percent, an NPV of debt-to-exports ratio of 150 percent, an NPV of debt-to-revenue ratio of 250 percent, a debt service-to-exports ratio of 20 percent, and a debt service-to-revenue ratio of 30 percent.

2. **The DSA is based on: updated data provided by the authorities, available data on private sector borrowing, and estimates by the staffs**. The DSA uses non-reconciled debt data and a single discount rate.

3. **This DSA consists of two parts—external and fiscal**. The external DSA covers borrowing by the central government (including parastatal borrowing with a government guarantee) and the central bank, and also includes estimates for private sector borrowing based on available information. The fiscal DSA aims at assessing the sustainability of total debt—external and domestic—incurred or guaranteed by the central government.[4]

4. **Key assumptions underlying the DSA are consistent with the 2008 Article IV Staff Report:**

- Average annual real GDP growth of 6.2 percent for 2008 through 2013, which is somewhat below the 7.0 percent growth recorded in 2007, followed by 6.0 percent growth from 2014 through 2028. Although the assumed growth level is below that achieved in 2007, it is well above the recent historical average for Kenya. There is a risk that constraints to growth—including infrastructure bottlenecks and the need for further improvements in the business environment—will prove binding in the medium-term. Accordingly, an additional scenario that assumes real growth for 2009-2013 is one standard deviation lower than in the baseline scenario is included (average real growth for 2009-2013 in this scenario would be 4.4 percent).

- Average inflation of about 5.6 percent for 2008-2013 as measured by a GDP deflator, which falls to 4.9 percent for the 2014-2028 period.

- A constant real exchange rate through 2013, followed by some real appreciation for the remainder of the forecast period, which would be consistent with sustained high growth. WEO exchange rate projections are used.

- Annual goods and services export growth in U.S. dollar terms of about 12-13 percent such that goods and services exports as a share of GDP rise from about 25 percent to 31 percent over the forecast period. The non-interest external current account deficit rises to about 6.3 percent of GDP in 2008 before falling to an average of 3.3 percent of GDP over the 2014-2028 period.

- Fiscal projections are in line with those of the Article IV staff report, which are based on an unchanged policies scenario. Under this assumption, revenues remain constant as a share of GDP at 21.6 percent; expenditure developments are characterized by constant domestically financed development spending of 4.5 percent of GDP, which is slightly below the 2008/09 budgeted level which includes special one-off projects;

[4] Public domestic debt includes central government debt. External public debt includes public and publicly guaranteed central government and central bank debt. In this analysis, total public debt refers to the sum of public domestic and public external debt, but does not cover the entire public sector (e.g., parastatal borrowing without a government guarantee is not covered).

a constant wage bill of 6.6 percent of GDP, and a gradual decline in other recurrent spending from 7.2 percent of GDP to 7.0 percent of GDP over the medium-term in line with ongoing improvements in procurement. The primary fiscal deficit is 2.5 percent of GDP in 2008 and narrows to a deficit of 1.5 percent by 2013 and remains near that level through the forecast period. Interest on short-term public domestic debt is assumed at 8 percent, whereas medium- and long-term debt carry an assumed interest rate of about 10.5 percent.

- New external borrowing increases (including nonconcessional borrowing described below) from about 2 percent of GDP in 2007 to 3.2 percent in 2009 followed by a decline to just under 2 percent of GDP by the end of the forecast period. The NPV of domestic debt is assumed to be equal to its face value.

- New external borrowing assumptions include the issuance of an initial sovereign bond of $500 million in 2009 and $200 million in annual sovereign bond issuance from 2010 through 2013, which is consistent with the authorities' medium-term budget framework. Annual external sovereign bond issuance would then rise gradually beginning in 2014 to about $500 million by 2028. Assumptions on terms include an 8 percent interest rate and a bullet amortization in year ten (implying a nine year grace period on principal payments).

- The only debt relief assumed under the DSA is an existing swap agreement with Italy, which would cancel about Euro 44 million in external obligations.

- Continued eligibility for concessional borrowing from IDA is assumed although achievement of assumed growth rates could imply graduation during the forecast period.

B. Recent Developments

5. **At end-2007, the face value of public external debt is estimated at $6.2 billion (25 percent of GDP).**[5] About 60 percent of this debt is to multilateral creditors (including 47 percent owed to the World Bank). About 39 percent of the debt is owed to bilateral creditors (largely Paris Club), and a small share (2 percent) is owed to commercial creditors, some of which is for disputed security-related contracts and in arrears (see below).

6. **Kenya has managed its debt burden relatively well and has regularly met its obligations to most creditors**. Limited external borrowing has left Kenya with more manageable debt ratios than many of its low-income country peers. Kenya's income level led it to be considered in the context of the Enhanced HIPC Initiative, but due to a sustainable level of debt, Kenya did not qualify to receive HIPC relief. Apart from disputed commercial arrears, described in greater detail below, Kenya has regularly serviced its debts.

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[5] The face value of public external debt as a share of GDP is significantly lower than for end-2005, which was the base year for the last DSA. This reflects better data—the 2005 stock figure overstated Kenya's debt—as well as very strong growth and significant exchange rate appreciation against the U.S. dollar in 2006 and 2007.

7. **Kenya has benefited from Paris Club reschedulings**. In addition to rescheduling agreements in 1994 and 2000, Kenya received a rescheduling on Houston terms in 2004 covering US$353 million falling due from 2004 through 2006. Bilateral agreements with Paris Club creditors were finalized for all three phases of the 2004 treatment, although agreement on amounts to be covered in 2006 (roughly US$100 million) entered into force somewhat late due to delays in the completion of Kenya's second review under the PRGF arrangement.

8. **Kenya's end-2007 external arrears of about $91 million were to commercial creditors and are under dispute**. The arrears stem from non-payment on commercial credits for security-related contracts, many of which have been found by Kenya's Controller and Auditor-General to be fraudulent or deeply flawed (these projects are often referred to as the "Anglo-Leasing" scandal). The authorities are disputing the validity of the claims based on the contracts not being fulfilled, have obtained an external audit to determine the value of the goods and services provided, and intend to renegotiate the amounts owed based on the audit results. Once agreement on the amounts to be paid is reached, it is expected that Kenya will refinance these payments through issuance of new nonconcessional external debt—potentially commercial bank loans initially, although the proceeds of planned sovereign bond issuance described above could ultimately be used to finance arrears clearance.

9. **Kenya's net domestic debt declined to 18.5 percent of GDP at end-June 2008**. Since end-June 2003, domestic debt has gradually declined as a percent of GDP thanks to strong economic growth, prudent fiscal policies, and lower interest rates, despite primary surpluses below historical averages and the realization of some one-off contingent liabilities in the last two years.[6] However, Kenya's relatively low reported domestic debt-to-GDP ratio masks vulnerabilities from further realization of contingent liabilities. In response, the government has launched a study of contingent liabilities in 24 parastatals and the National Social Security Fund. Results from this study will be incorporated into future debt sustainability analyses. In addition, the government's current pay-as-you-go pension scheme for civil servants has accumulated claims that were estimated at Ksh 271 billion (11.4 percent of 2008/09 GDP) in an August 2005 actuarial study. About 70 percent of Kenya's domestic debt is longer-term borrowing with maturities extending up to 20 years. Fiscal data, which are based on a July-June fiscal year, are converted to calendar year data for the purposes of the DSA.[7]

C. External Debt Sustainability

10. **Under the baseline scenario, Kenya's external debt indicators show a low risk of debt distress**. Kenya's initial debt ratios are well below all of the indicative thresholds for a medium performer and decline somewhat through the forecast period (see Figure 1 and

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[6] In 2006/07, the National Bank of Kenya was recapitalized and in 2007/08 contingent liabilities from Kenya Telkom were realized.

[7] Averaging fiscal year data into calendar year data explains differences with Tables 2a and 2b in the staff report.

Table 1a). Although external borrowing is projected to rise sharply in 2009 to 3.2 percent of GDP, new obligations would fall gradually as a share of GDP thereafter. In addition to reasonably contained borrowing (although on less concessional terms than in the past as shown in panel a of Figure 1), the improvement in the baseline scenario reflects favorable real output and export growth projections in comparison to longer-term historical performance. Growth has accelerated significantly since 2003, and the authorities are undertaking substantial infrastructure investments (financed partly through an assumed increase in external assistance) and structural reforms intended to support export and overall growth. It should be noted that the authorities' *Kenya Vision 2030* targets much faster growth than assumed in the DSA. Although Kenya would remain well below its indicative thresholds in the baseline scenario, panels e and f of Figure 1 show how issuance of a sovereign bond with a bullet amortization structure could create a spike in debt service. An amortizing bond or a means for saving in advance of the amortization could lessen budgetary pressures and rollover risks.

11. **The alternative scenarios and stress tests indicate that Kenya's external debt situation is generally resilient although shocks would lead to a sharp initial worsening in debt stock indicators (see Table 1b)**. Kenya would remain under its indicative debt stock and debt service thresholds under all alternative scenarios and stress tests. The most extreme stress tests are shown in Figure 1 and described here. A shock combining lower GDP growth, weaker exports, a lower GDP deflator, and a fall in non-debt creating flows would push the NPV of public external debt as a share of GDP from 14 to 28 percent, the NPV of debt-to-exports from 55 to 105 percent, and the NPV of debt-to-revenue from 64 to 126 percent. Despite an immediate worsening, the three debt stock measures would then improve with ratios only somewhat worse than under the baseline scenario by the end of the projection period. The combined shock described above would also raise the debt service-to-exports and debt-service-to-revenue ratios, but would not push the debt service burden particularly high. The scenario of lower growth for 2009-13 shows external debt indicators only marginally above those in the baseline scenario. Perhaps surprisingly, a "historical" scenario, which uses the recent performance of key economic variables instead of the baseline assumptions, yields debt ratios that are better than in the baseline scenario. While growth is much lower under the historical scenario and foreign direct investment is also lower, the historical current account deficit is much lower than the deficit in the baseline. The latter factor reduces the borrowing need and thus leads to lower debt ratios than under the baseline scenario.

Summary -- External Debt Sustainability Assessment
(in percent of GDP)

	2008	2009	2010	2011	2012	2013
NPV of PPG External Debt						
In percent of GDP (threshold=40)						
Baseline	13.7	13.8	14.2	13.2	13.6	13.5
Combined shocks	13.7	20.3	28.1	25.7	25.9	25.3
In percent of exports (threshold=150)						
Baseline	53.2	56.2	54.9	52.9	52.0	50.0
Combined shocks	53.2	77.3	105.2	99.5	95.8	90.5
PPG External Debt Service						
In percent of exports (threshold=20)						
Baseline	4.5	3.9	4.0	3.9	3.7	3.4
Combined shocks	4.5	4.1	5.2	5.8	5.4	5.0

D. Public Debt Sustainability

12. **Under the baseline scenario, the inclusion of domestic debt substantially increases the NPV of public debt-to-GDP, even though all debt indicators remain within comfortable levels** (see Figure 2 and Table 2a). The NPV of total public debt-to-GDP, at 34 percent in 2008, remains broadly stable at that level up to 2028 as the gradual decline of NPV of external debt is offset by a small increase in the domestic debt-to-GDP ratio. Throughout the projection period, the NPV of total public debt remains below 40 percent under the baseline scenario. Given Kenya's relatively strong revenue performance, the NPV of debt-to-revenue ratio remains well below 250 percent, and is broadly unchanged during the period 2008-2028 at below 150 percent. The debt service-to-revenue ratio, which takes into account debt service on longer-term domestic and external debt, is 25 percent in 2008, and gradually declines after that.

13. **Alternative scenarios and stress tests indicate that Kenya's debt indicators are particularly vulnerable to slower growth, while being broadly resilient under other alternative assumptions** (see Figure 2 and Table 2b). A two-year growth shock leads to a rise in the NPV of debt-to-GDP ratio to 57 percent by 2028, an NPV of debt-to-revenue ratio just below 250 percent by 2028, and a rise in the debt service-to-revenue ratio to over 30 percent by 2012, indicating some risk of debt distress under this scenario. Permanently lower growth would also increase the NPV of debt-to-GDP beyond 40 percent, and would raise the debt service-to-revenue ratio to about 30 percent, even though the NPV of debt-to-revenue ratio would remain below 250 percent. The NPV of debt-to-GDP ratio also breaches the 40 percent level under a scenario with primary balances unchanged from 2008, and a combination of a two year growth and primary balance shock. The scenario of lower growth for 2009-2013 results in debt indicators that are somewhat higher than the baseline in the medium-term and a good deal higher in the long-term (e.g., by the end of the forecast period, the NPV of debt-to-GDP ratio would be 52 percent versus 34 percent in the baseline scenario). This result reinforces the importance of expanding productive capacity in the medium term, in addition to a prudent borrowing approach, to avoid a rising debt burden.

E. Conclusions

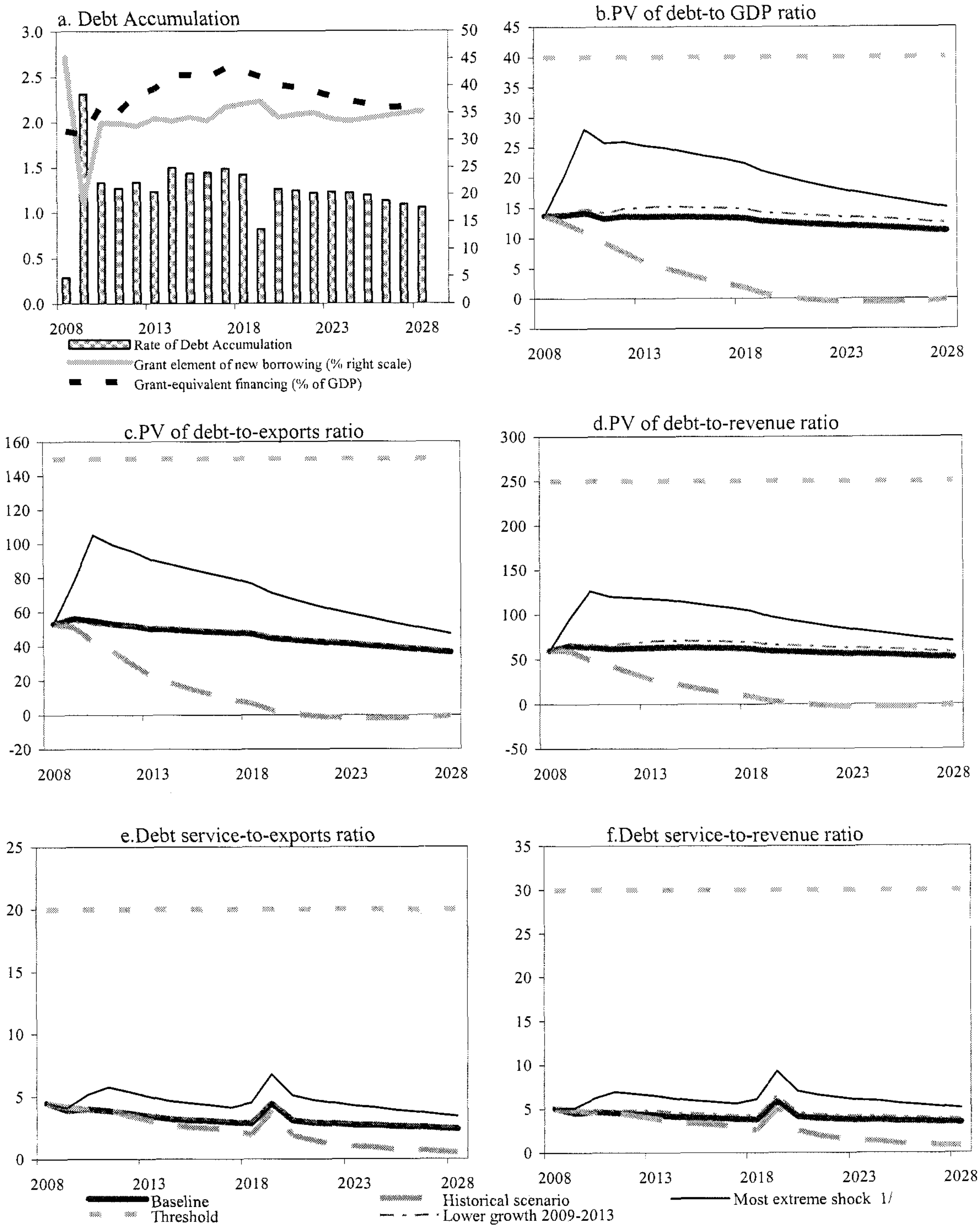
14. **Reflecting relatively limited reliance on external borrowing and an expected improvement in macroeconomic performance, Kenya faces a low risk of external debt distress**. All external public debt indicators remain below the relevant country-specific debt burden thresholds. Standard stress tests reveal an initial upward trend for the debt indicators but do not result in a breach of the thresholds during the projection period.

15. **Taking all public debt into account, however, the DSA shows greater risk of unfavorable debt developments, especially under a shock to GDP growth**. Even temporarily lower GDP growth would set the NPV of public debt-to-GDP, the NPV of debt-to-revenue, and the ratio of debt service-to-revenue on a sharply increasing trend as shown in Figure 2. Considering that the nominal value of public debt would be near, and in some years above the 40 percent of GDP that staff has recommended as an anchor for fiscal policy, unchanged policies would indeed imply some risk of debt distress. Potentially large but unreported contingent liabilities also pose additional risks to the sustainability of public debt.

16. **The sustainability of Kenya's debt depends on macroeconomic performance and a prudent borrowing strategy**. Achieving the ambitious growth and export figures in the baseline scenario depends on: policies to sustain macroeconomic stability, substantial investment in infrastructure, and regulatory and governance reforms to improve the investment climate. Additionally, Kenya's success in avoiding unsustainable debt to date reflects good management, but also limited willingness on the part of creditors to provide financing, at times due to governance concerns. As Kenya is likely to have greater access to external financing, it will be important to avoid excessive borrowing and to limit nonconcessional borrowing.

17. **The staffs encourage Kenya to use tools such as the joint Bank-Fund DSA template to develop a prudent borrowing strategy to maintain both external and fiscal debt sustainability**. Efforts to use the DSA template and to develop a debt management strategy, including through a workshop in 2007, are welcome. Such a strategy should consider the total concessionality and interest costs of Kenya's borrowing, the return on individual projects and overall growth impact, and steps that would help guard against volatility, whether due to shocks such as droughts or to fluctuations in external assistance. Strategies to guard against shocks could include some further build-up in international reserves. A better understanding of holdings of shilling-denominated debt by non-residents would also help guide efforts to assess and potentially reduce vulnerabilities.

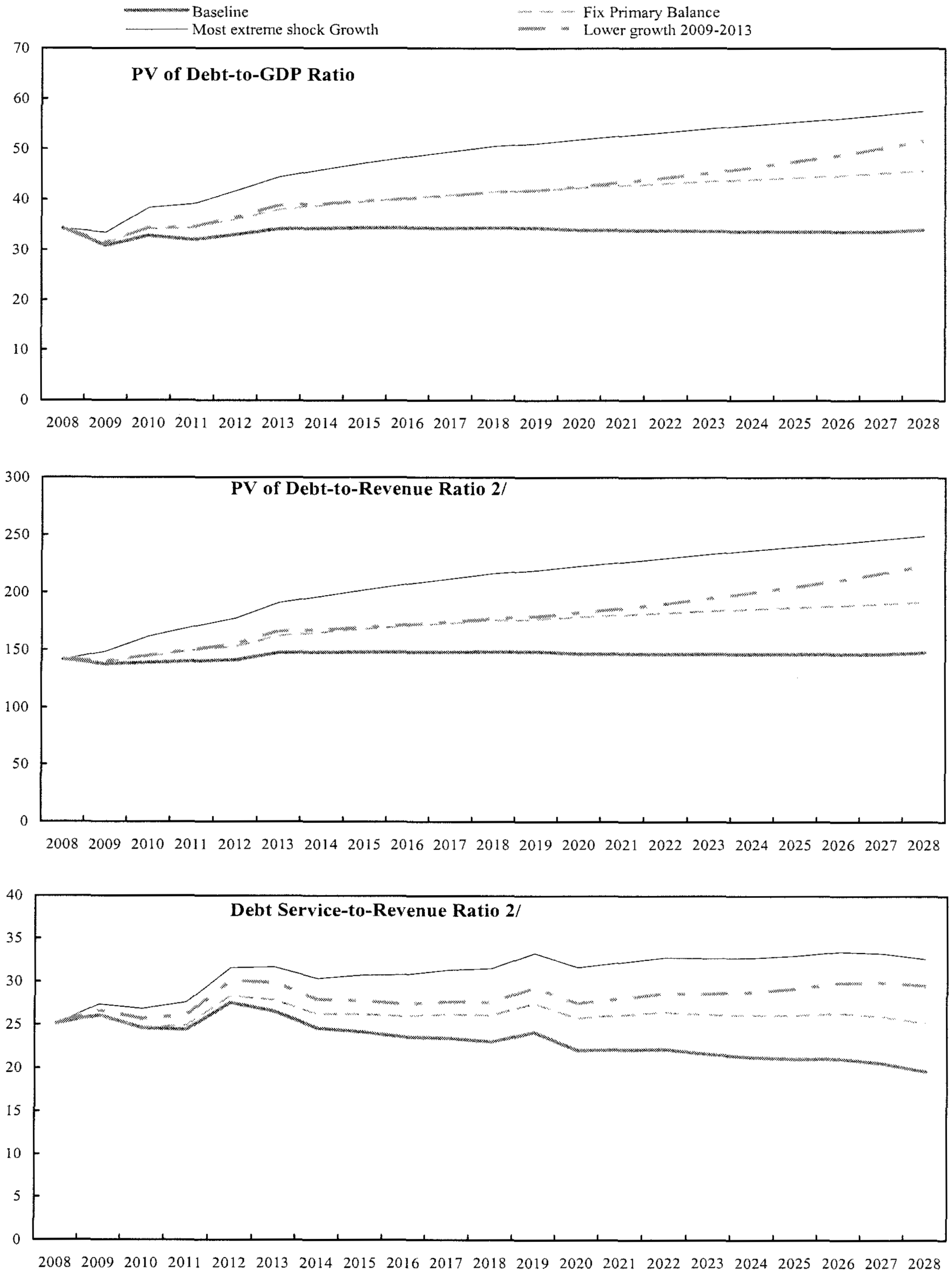
Figure 1. Kenya: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2008-2028 1/



Sources: Country authorities and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2018. In figure b. it corresponds to a Combination shock; in c. to a Combination shock; in d. to a Combination shock; in e. to a Combination shock and in picture f. to a Combination shock.

Figure 2. Kenya: Indicators of Public Debt Under Alternative Scenarios, 2008-2028 1/



Sources: Country authorities and staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio in 2018.
2/ Revenues are defined inclusive of grants.

Table 1a. Kenya: External Debt Sustainability Framework, Baseline Scenario, 2005-2028 1/
(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average 2/	Standard Deviation 2/	Projections									
	2005	2006	2007			2008	2009	2010	2011	2012	2013	2008-2013 Average	2018	2028	2014-2028 Average
External debt (nominal) 1/	**31.3**	**26.8**	**24.7**			**21.4**	**20.6**	**20.9**	**19.6**	**20.3**	**20.2**		**19.5**	**16.3**	
o/w public and publicly guaranteed (PPG)	28.9	24.9	22.8			19.9	19.4	19.9	18.6	19.1	19.0		19.1	16.3	
Change in external debt	-3.4	-4.5	-2.1			-3.3	-0.8	0.3	-1.2	0.7	-0.1		-0.1	-0.3	
Identified net debt-creating flows	-5.2	-5.2	-4.8			3.3	2.0	1.9	1.5	1.8	1.8		1.1	0.5	
Non-interest current account deficit	**0.1**	**1.8**	**2.6**	**0.6**	**1.8**	**6.3**	**5.5**	**4.8**	**4.9**	**4.9**	**4.9**		**3.7**	**2.3**	3.3
Deficit in balance of goods and services	7.5	9.9	10.5			13.9	12.8	12.2	11.7	11.7	11.7		10.1	8.2	
Exports	28.4	25.1	25.4			25.7	24.6	25.8	25.0	26.2	27.0		28.2	30.7	
Imports	35.9	35.0	35.9			39.6	37.4	38.1	36.7	37.9	38.7		38.3	39.0	
Net current transfers (negative = inflow)	-7.0	-7.7	-7.6	-6.0	1.5	-7.1	-6.9	-6.9	-6.4	-6.4	-6.4		-6.0	-5.1	-5.7
o/w official 3/	0.0	-0.3	-0.2			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Other current account flows (negative = net inflow)	-0.3	-0.4	-0.3			-0.4	-0.5	-0.5	-0.5	-0.4	-0.4		-0.5	-0.9	
Net FDI (negative = inflow)	**-1.0**	**-2.2**	**-3.4**	**-1.0**	**1.0**	**-2.6**	**-2.5**	**-2.4**	**-2.2**	**-2.3**	**-2.3**		**-1.9**	**-1.3**	-1.7
Endogenous debt dynamics 4/	**-4.3**	**-4.7**	**-4.0**			**-0.5**	**-1.0**	**-0.5**	**-1.2**	**-0.8**	**-0.8**		**-0.7**	**-0.6**	
Contribution from nominal interest rate	0.7	0.5	0.4			0.4	0.3	0.4	0.4	0.4	0.4		0.4	0.3	
Contribution from real GDP growth	-1.7	-1.7	-1.6			-0.9	-1.3	-0.9	-1.5	-1.2	-1.2		-1.1	-0.9	
Contribution from price and exchange rate changes	-3.2	-3.5	-2.9			...	...	...	...	...	...		...	...	
Residual (3-4) 5/	**1.8**	**0.7**	**2.7**			**-6.6**	**-2.9**	**-1.6**	**-2.7**	**-1.2**	**-1.9**		**-1.3**	**-0.8**	
o/w exceptional financing	-1.0	-0.9	0.0			0.0	0.2	0.0	0.0	0.0	0.0		0.0	0.0	
PV of external debt 6/	...	...	17.7			15.2	15.0	15.1	14.3	14.8	14.7		13.7	11.2	
In percent of exports	...	...	69.6			59.1	60.9	58.6	57.0	56.5	54.5		48.7	36.5	
PV of PPG external debt	...	...	**15.7**			**13.7**	**13.8**	**14.2**	**13.2**	**13.6**	**13.5**		**13.3**	**11.2**	
In percent of exports	...	...	**62.0**			**53.2**	**56.2**	**54.9**	**52.9**	**52.0**	**50.0**		**47.3**	**36.4**	
In percent of government revenues	...	...	**70.0**			**59.8**	**65.3**	**63.7**	**61.7**	**62.4**	**62.9**		**62.2**	**52.2**	
Debt service-to-exports ratio (in percent)	**6.9**	**7.0**	**6.1**			**5.4**	**4.8**	**4.7**	**4.4**	**4.2**	**3.9**		**3.0**	**2.4**	
PPG debt service-to-exports ratio (in percent)	**6.0**	**6.0**	**5.0**			**4.5**	**3.9**	**4.0**	**3.9**	**3.7**	**3.4**		**2.9**	**2.4**	
PPG debt service-to-revenue ratio (in percent)	**8.0**	**7.1**	**5.7**			**5.1**	**4.5**	**4.7**	**4.5**	**4.4**	**4.3**		**3.8**	**3.5**	
Total gross financing need (billions of U.S. dollars)	0.2	0.3	0.2			1.6	1.5	1.4	1.7	1.8	2.0		2.4	4.7	
Non-interest current account deficit that stabilizes debt ratio	3.5	6.3	4.7			9.6	6.3	4.5	6.1	4.3	5.0		3.8	2.6	
Key macroeconomic assumptions															
Real GDP growth (in percent)	5.8	6.4	7.0	3.8	2.3	4.1	6.9	4.7	8.6	6.6	6.6	6.2	6.0	6.0	6.0
GDP deflator in US dollar terms (change in percent)	10.2	12.8	12.2	3.9	8.9	12.5	8.3	2.0	7.4	0.4	3.0	5.6	5.0	5.0	4.9
Effective interest rate (percent) 7/	2.2	2.0	2.0	1.8	1.0	1.8	1.6	2.0	2.0	2.1	2.1	1.9	2.3	2.1	2.2
Growth of exports of G&S (US dollar terms, in percent)	23.3	6.0	21.3	9.2	10.3	18.6	10.6	12.3	13.1	11.9	13.3	13.3	12.1	12.5	12.2
Growth of imports of G&S (US dollar terms, in percent)	27.4	17.0	22.9	10.9	15.5	29.4	9.4	8.7	12.6	10.3	12.2	13.7	11.2	11.7	11.3
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	45.3	18.4	33.2	33.1	32.6	33.9	32.7	36.5	35.3	34.7
Government revenues (excluding grants, in percent of GDP)	21.2	21.1	22.5			22.8	21.1	22.2	21.4	21.8	21.5		21.4	21.4	21.4
Aid flows (in billions of US dollars) 8/	0.2	0.2	0.3			0.8	1.6	2.4	3.3	4.3	5.4		13.3	41.6	
o/w Grants	0.2	0.2	0.3			0.4	0.5	0.5	0.6	0.7	0.9		1.5	4.0	
o/w Concessional loans	0.0	0.0	0.0			0.4	1.1	1.9	2.6	3.6	4.6		11.8	37.6	
Grant-equivalent financing (in percent of GDP) 9/	...	...	...			1.9	1.9	2.2	2.1	2.3	2.4		2.6	2.2	2.4
Grant-equivalent financing (in percent of external financing) 9/	...	...	...			72.5	41.6	57.2	59.3	59.1	62.4		63.4	64.8	62.9
Memorandum items:															
Nominal GDP (billions of US dollars)	18.8	22.5	27.0			31.7	36.7	39.2	45.7	48.8	53.6		90.6	264.3	
Nominal dollar GDP growth	16.6	20.0	20.0			17.2	15.8	6.8	16.6	6.9	9.8	12.2	11.3	11.3	11.2
PV of PPG external debt (in billions of US dollars)			4.3			4.3	5.1	5.5	6.0	6.7	7.2		12.1	29.6	
(PVt-PVt-1)/GDPt-1 (in percent)						0.3	2.3	1.3	1.3	1.3	1.2	1.3	1.4	1.0	1.2

Sources: Country authorities and staff estimates and projections.

1/ Includes both public and private sector external debt.

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

3/ Includes only program grants.

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

5/ 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.

6/ Assumes that PV of private sector debt is equivalent to its face value.

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

8/ Defined as grants (program and project), concessional loans, and debt relief.

9/ 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 1b. Kenya: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2008-2028
(In percent)

										Projections											
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	**2018**	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
PV of debt-to GDP ratio																					
Baseline	14	14	14	13	14	14	14	14	13	13	**13**	13	13	12	12	12	12	12	12	11	11
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2008-2028 1/	14	13	11	9	8	6	5	4	3	3	**2**	1	0	0	0	-1	-1	-1	-1	0	0
A2. New public sector loans on less favorable terms in 2008-2028 2	14	13	15	14	15	15	15	16	16	16	**16**	16	16	16	16	16	16	15	15	15	15
A3. Alternative Scenario: Growth lower by one standard deviation 2009-2013	14	14	15	14	15	15	15	15	15	15	15	14	14	14	14	13	13	13	13	13	12
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2009-2010	14	15	15	14	15	15	15	15	15	15	**14**	14	14	13	13	13	13	13	13	12	12
B2. Export value growth at historical average minus one standard deviation in 2009-2010 3/	14	16	20	18	19	18	18	18	17	17	**17**	16	15	15	14	14	14	13	13	12	12
B3. US dollar GDP deflator at historical average minus one standard deviation in 2009-2010	14	16	17	16	17	17	17	17	16	16	**16**	16	15	15	15	15	15	14	14	14	14
B4. Net non-debt creating flows at historical average minus one standard deviation in 2009-2010 4/	14	17	21	19	19	19	19	18	18	18	**17**	16	16	15	15	14	14	13	13	13	12
B5. Combination of B1-B4 using one-half standard deviation shocks	14	20	28	26	26	25	25	24	24	23	**22**	21	20	19	18	18	17	17	16	16	15
B6. One-time 30 percent nominal depreciation relative to the baseline in 2009 5/	14	19	20	18	19	19	19	19	19	19	**18**	18	17	17	17	17	17	16	16	16	15
PV of debt-to-exports ratio																					
Baseline	53	56	55	53	52	50	50	49	48	48	**47**	45	44	43	42	41	40	40	39	38	36
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2008-2028 1/	53	51	43	37	29	22	18	15	12	9	**7**	3	1	0	-1	-2	-2	-2	-2	-1	-1
A2. New public sector loans on less favorable terms in 2008-2028 2	53	54	57	56	57	56	56	57	57	57	**57**	56	55	54	54	53	53	52	51	50	49
A3. Alternative Scenario: Growth lower by one standard deviation 2009-2013	53	55	53	52	52	51	51	50	50	49	49	46	45	44	43	42	41	41	40	39	37
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2009-2010	53	56	55	53	52	50	50	49	48	48	**47**	45	44	43	42	41	40	40	39	38	36
B2. Export value growth at historical average minus one standard deviation in 2009-2010 3/	53	71	98	93	90	86	84	81	79	78	**75**	70	68	65	62	60	58	56	54	52	50
B3. US dollar GDP deflator at historical average minus one standard deviation in 2009-2010	53	56	55	53	52	50	50	49	48	48	**47**	45	44	43	42	41	40	40	39	38	36
B4. Net non-debt creating flows at historical average minus one standard deviation in 2009-2010 4/	53	70	81	77	74	70	69	67	65	63	**61**	57	55	52	50	48	47	45	43	41	40
B5. Combination of B1-B4 using one-half standard deviation shocks	53	77	105	99	96	91	88	85	82	80	**77**	71	68	65	62	59	56	54	52	49	47
B6. One-time 30 percent nominal depreciation relative to the baseline in 2009 5/	53	56	55	53	52	50	50	49	48	48	**47**	45	44	43	42	41	40	40	39	38	36
PV of debt-to-revenue ratio																					
Baseline	60	65	64	62	62	63	64	63	63	63	**62**	59	58	58	57	56	56	55	54	53	52
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2008-2028 1/	60	59	50	43	35	28	24	19	15	12	**9**	4	1	-1	-2	-3	-3	-3	-2	-2	-1
A2. New public sector loans on less favorable terms in 2008-2028 2	60	62	66	66	68	70	72	73	74	75	**75**	73	73	73	73	73	72	72	72	71	70
A3. Alternative Scenario: Growth lower by one standard deviation 2009-2013	60	67	67	66	68	70	71	70	70	70	69	66	65	64	64	63	62	61	60	59	58
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2009-2010	60	69	69	67	68	68	69	69	68	68	**68**	64	64	63	62	61	61	60	59	58	57
B2. Export value growth at historical average minus one standard deviation in 2009-2010 3/	60	74	90	86	85	85	84	83	81	80	**78**	73	71	69	66	65	63	61	60	58	56
B3. US dollar GDP deflator at historical average minus one standard deviation in 2009-2010	60	74	78	76	76	77	78	77	77	77	**76**	73	72	71	70	69	68	67	66	65	64
B4. Net non-debt creating flows at historical average minus one standard deviation in 2009-2010 4/	60	81	94	90	89	89	88	86	84	82	**80**	75	73	70	68	66	64	62	61	59	57
B5. Combination of B1-B4 using one-half standard deviation shocks	60	96	126	120	119	118	116	113	110	108	**104**	97	93	90	86	83	80	78	75	73	70
B6. One-time 30 percent nominal depreciation relative to the baseline in 2009 5/	60	90	88	85	86	87	88	87	87	87	**86**	82	81	80	79	78	77	76	75	74	72

Table 1b. Kenya: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2008-2028 (continued)
(In percent)

										Projections											
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	**2018**	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Debt service-to-exports ratio																					
Baseline	4	4	4	4	4	3	3	3	3	3	**3**	4	3	3	3	3	3	3	3	3	2
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2008-2028 1/	4	4	4	4	3	3	3	3	2	2	**2**	4	2	1	1	1	1	1	1	1	1
A2. New public sector loans on less favorable terms in 2008-2028 2	4	4	4	4	4	4	4	4	4	4	**4**	3	3	3	3	3	3	3	3	3	3
A3. Alternative Scenario: Growth lower by one standard deviation 2009-2013	4	4	4	4	4	4	3	3	3	3	3	5	3	3	3	3	3	3	3	3	2
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2009-2010	4	4	4	4	4	3	3	3	3	3	**3**	4	3	3	3	3	3	3	3	3	2
B2. Export value growth at historical average minus one standard deviation in 2009-2010 3/	4	4	5	6	5	5	5	5	4	4	**4**	7	5	5	4	4	4	4	4	4	4
B3. US dollar GDP deflator at historical average minus one standard deviation in 2009-2010	4	4	4	4	4	3	3	3	3	3	**3**	4	3	3	3	3	3	3	3	3	2
B4. Net non-debt creating flows at historical average minus one standard deviation in 2009-2010 4/	4	4	4	5	4	4	4	4	4	3	**4**	5	4	4	4	3	3	3	3	3	3
B5. Combination of B1-B4 using one-half standard deviation shocks	4	4	5	6	5	5	5	4	4	4	**4**	7	5	5	4	4	4	4	4	4	3
B6. One-time 30 percent nominal depreciation relative to the baseline in 2009 5/	4	4	4	4	4	3	3	3	3	3	**3**	4	3	3	3	3	3	3	3	3	2
Debt service-to-revenue ratio																					
Baseline	5	5	5	5	4	4	4	4	4	4	**4**	6	4	4	4	4	4	4	4	4	3
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2008-2028 1/	5	5	5	5	4	4	3	3	3	3	**3**	5	3	2	2	1	1	1	1	1	1
A2. New public sector loans on less favorable terms in 2008-2028 2	5	5	4	5	5	5	5	5	5	5	**5**	4	4	4	4	4	4	4	4	4	4
A3. Alternative Scenario: Growth lower by one standard deviation 2009-2013	5	5	5	5	5	5	5	4	4	4	4	7	5	4	4	4	4	4	4	4	4
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2009-2010	5	5	5	5	5	5	4	4	4	4	**4**	6	4	4	4	4	4	4	4	4	4
B2. Export value growth at historical average minus one standard deviation in 2009-2010 3/	5	5	5	5	5	5	5	5	5	4	**5**	7	5	5	5	5	4	4	4	4	4
B3. US dollar GDP deflator at historical average minus one standard deviation in 2009-2010	5	5	6	6	5	5	5	5	5	5	**5**	7	5	5	5	5	5	4	4	4	4
B4. Net non-debt creating flows at historical average minus one standard deviation in 2009-2010 4/	5	5	5	5	5	5	5	5	5	4	**5**	7	5	5	5	5	5	4	4	4	4
B5. Combination of B1-B4 using one-half standard deviation shocks	5	5	6	7	7	7	6	6	6	6	**6**	9	7	7	6	6	6	6	5	5	5
B6. One-time 30 percent nominal depreciation relative to the baseline in 2009 5/	5	6	6	6	6	6	6	6	5	5	**5**	8	6	5	5	5	5	5	5	5	5
Memorandum item:																					
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	29	29	29	29	29	29	29	29	29	29	**29**	29	29	29	29	29	29	29	29	29	29

Sources: Country authorities and 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 2a. Kenya: Public Sector Debt Sustainability Framework, Baseline Scenario, 2005-2028
(In percent of GDP, unless otherwise indicated)

	Actual					Estimate					Projections				
	2005	2006	2007	Historical Average 5/	Standard Deviation 5/	2008	2009	2010	2011	2012	2013	2008-13 Average	2018	2028	2014-28 Average
Public sector debt 1/	46.4	42.9	40.6			39.7	36.7	38.8	37.5	38.8	39.5		40.1	39.1	
o/w foreign-currency denominated	28.9	24.9	22.8			19.9	19.4	19.9	18.6	19.1	19.0		19.1	16.3	
Change in public sector debt	-7.5	-3.4	-2.4			-0.8	-3.0	2.1	-1.3	1.3	0.7		0.1	0.1	
Identified debt-creating flows	-6.0	-4.2	-5.0			-0.5	-3.6	1.7	-1.3	1.2	0.6		-0.1	-0.2	
Primary deficit	-0.6	0.1	1.0	-1.3	1.4	2.5	1.9	1.5	1.5	1.6	1.5	1.7	1.4	1.4	1.4
Revenue and grants	22.4	22.2	23.6			24.2	22.4	23.6	22.8	23.4	23.1		23.1	22.9	
of which: grants	1.2	1.1	1.1			1.3	1.3	1.4	1.4	1.5	1.6		1.7	1.5	
Primary (noninterest) expenditure	21.8	22.3	24.6			26.6	24.3	25.1	24.3	25.0	24.6		24.6	24.4	
Automatic debt dynamics	-5.2	-4.5	-4.4			-0.9	-5.2	0.2	-2.8	-0.5	-0.9		-1.6	-1.6	
Contribution from interest rate/growth differential	-2.5	-2.4	-1.8			-1.5	-2.9	0.2	-2.1	-0.6	-1.3		-1.0	-1.2	
of which: contribution from average real interest rate	0.5	0.4	1.0			0.1	-0.3	1.8	1.0	1.7	1.1		1.2	1.0	
of which: contribution from real GDP growth	-3.0	-2.8	-2.8			-1.6	-2.6	-1.7	-3.1	-2.3	-2.4		-2.3	-2.2	
Contribution from real exchange rate depreciation	-2.7	-2.1	-2.6			0.6	-2.3	0.0	-0.7	0.1	0.4		...	...	
Other identified debt-creating flows	-0.3	0.3	-1.6			-2.1	-0.3	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	-0.2	-0.3	-2.2			-2.2	-0.3	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	0.6	0.6			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Residual, including asset changes	-1.5	0.8	2.7			-0.3	0.6	0.4	0.0	0.1	0.1		0.2	0.3	
Other Sustainability Indicators															
PV of public sector debt	17.5	18.0	32.5			34.2	30.8	32.8	32.0	33.0	34.1		34.4	34.0	
o/w foreign-currency denominated	0.0	0.0	14.7			14.4	13.5	13.9	13.1	13.4	13.7		13.3	11.2	
o/w external	...	...	14.7			14.4	13.5	13.9	13.1	13.4	13.7		13.3	11.2	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	11.0	11.6	11.0			12.1	12.1	11.8	11.7	11.3	12.6		11.6	11.1	
PV of public sector debt-to-revenue and grants ratio (in percent)	78.0	81.2	137.8			141.7	137.6	138.9	140.3	141.4	147.7		148.4	148.0	
PV of public sector debt-to-revenue ratio (in percent)	82.5	85.5	144.5			149.8	145.9	147.5	149.4	151.3	158.9		160.2	158.5	
o/w external 3/	...	...	65.3			62.9	64.0	62.5	61.1	61.2	63.6		62.2	52.2	
Debt service-to-revenue and grants ratio (in percent) 4/	31.6	30.0	26.7			25.1	26.1	24.6	24.4	27.5	26.5		23.0	19.6	
Primary deficit that stabilizes the debt-to-GDP ratio	6.9	3.5	3.4			3.3	4.9	-0.6	2.8	0.3	0.8		1.3	1.4	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	5.8	6.4	7.0	3.8	2.3	4.1	6.9	4.7	8.6	6.6	6.6	6.2	6.0	6.0	6.0
Average nominal interest rate on forex debt (in percent)	1.6	1.6	1.5	1.6	1.0	1.5	1.3	1.8	1.9	2.0	2.1	1.8	2.3	2.1	2.2
Average real interest rate on domestic debt (in percent)	5.3	4.8	7.6	8.7	5.8	4.0	8.6	14.9	9.6	17.5	13.7	11.4	9.4	8.0	9.1
Real exchange rate depreciation (in percent, + indicates depreciation)	-12.4	-12.3	-17.3	-6.6	7.1	1.0	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	10.2	12.8	12.2	3.9	8.9	12.5	8.3	2.0	7.4	0.4	3.0	5.6	5.0	5.0	4.9
Growth of real primary spending (deflated by GDP deflator, in percent)	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Grant element of new external borrowing (in percent)	...	...	...	...	...	45.3	18.4	33.2	33.1	32.6	33.9	32.7	36.5	35.3	...

Sources: Country authorities and staff estimates and projections.

1/ Public sector debt includes domestic central government debt and external debt issued or guaranteed by the central government and central bank.

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/ Revenues 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 2b. Kenya: Sensitivity Analysis for Key Indicators of Public Debt 2008-2028

	Projections							
	2008	2009	2010	2011	2012	2013	2018	2028
PV of Debt-to-GDP Ratio								
Baseline	34	31	33	32	33	34	34	34
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	34	29	29	27	26	26	19	11
A2. Primary balance is unchanged from 2008	34	31	34	34	36	38	41	46
A3. Permanently lower GDP growth 1/	34	31	33	33	35	36	41	52
A4. Alternative Scenario: Growth lower by one standard deviation 2009-2013	34	31	34	34	36	39	41	52
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2009-2010	34	33	38	39	42	44	50	57
B2. Primary balance is at historical average minus one standard deviations in 2009-2010	34	29	30	29	31	32	33	33
B3. Combination of B1-B2 using one half standard deviation shocks	34	30	31	31	34	36	41	44
B4. One-time 30 percent real depreciation in 2009	34	35	37	35	36	37	36	35
B5. 10 percent of GDP increase in other debt-creating flows in 2009	34	40	42	40	41	42	40	37
PV of Debt-to-Revenue Ratio 2/								
Baseline	142	138	139	140	141	148	148	148
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	142	128	121	117	112	111	82	45
A2. Primary balance is unchanged from 2008	142	139	145	149	153	162	176	192
A3. Permanently lower GDP growth 1/	142	138	141	144	148	157	175	227
A4. Alternative Scenario: Growth lower by one standard deviation 2009-2013	142	140	145	150	155	166	178	223
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2009-2010	142	149	162	170	177	191	217	249
B2. Primary balance is at historical average minus one standard deviations in 2009-2010	142	130	127	129	131	138	141	144
B3. Combination of B1-B2 using one half standard deviation shocks	142	132	129	136	143	154	172	184
B4. One-time 30 percent real depreciation in 2009	142	157	156	155	155	162	156	152
B5. 10 percent of GDP increase in other debt-creating flows in 2009	142	178	176	176	175	181	173	161

Table 2b. Kenya: Sensitivity Analysis for Key Indicators of Public Debt 2008-2028 (continued)

	Projections							
	2008	2009	2010	2011	2012	2013	2018	2028
Debt Service-to-Revenue Ratio 2/								
Baseline	25	26	25	24	28	27	23	20
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	25	27	25	24	27	24	16	6
A2. Primary balance is unchanged from 2008	25	26	25	25	28	28	26	25
A3. Permanently lower GDP growth 1/	25	26	25	25	28	28	26	29
A4. Alternative Scenario: Growth lower by one standard deviation 2009-2013	25	27	26	26	30	30	28	30
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2009-2010	25	27	27	28	32	32	31	33
B2. Primary balance is at historical average minus one standard deviations in 2009-2010	25	26	24	23	26	25	22	19
B3. Combination of B1-B2 using one half standard deviation shocks	25	27	26	24	27	27	26	24
B4. One-time 30 percent real depreciation in 2009	25	27	26	26	29	29	26	23
B5. 10 percent of GDP increase in other debt-creating flows in 2009	25	26	26	30	32	32	26	22

Sources: Country authorities and staff estimates and projections.
1/ Assumes that real GDP growth is at baseline minus one standard deviation divided by the length of the projection period.
2/ Revenues are defined inclusive of grants.