INTERNATIONAL MONETARY FUND

SENEGAL

FIFTH REVIEW UNDER THE POLICY SUPPORT INSTRUMENT AND REQUEST FOR PROGRAM EXTENSION AND MODIFICATION OF ASSESSMENT CRITERIA—DEBT SUSTAINABILITY ANALYSIS

June 4, 2013

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Senegal continues to face a low risk of debt distress, although the external outlook has worsened somewhat since the previous assessment. A slightly larger fiscal deficit in 2013, expected to be financed in part by a new $500 million Eurobond, should lead to a marginal deterioration in external public debt ratios, while at the same time reducing financing risks and lengthening the average maturity of overall debt. To maintain the low risk rating, Senegal will need to sustain its fiscal consolidation efforts in the medium term, approach nonconcessional borrowing with caution, and continue to improve debt management capacity.[1]

[1] The DSA presented in this document is based on the Debt Sustainability Framework (DSF) for low-income countries (LICs). See "Debt Sustainability in Low-Income Countries—Proposal for an Operational Framework and Policy Implications" and "Debt Sustainability in Low-Income Countries—Further Considerations on an Operational Framework and Policy Implications."

UNDERLYING ASSUMPTIONS

1. **This debt sustainability analysis (DSA) updates the joint IMF-World Bank DSA produced in November 2012 for the Fourth Review under the Policy Support Instrument (PSI).**[2] The last DSA found that, although the risk of debt distress was low, vulnerabilities had increased since Senegal benefited from comprehensive debt relief under the Heavily Indebted Poor Countries (HIPC) Initiative and the Multilateral Debt Relief Initiative (MDRI), as evidenced by a steady increase in public debt ratios. Key changes to macroeconomic assumptions since the last DSA area as follows:

- Real GDP growth is expected to be marginally lower over the medium term, while long-term growth projections are essentially unchanged.
- The 2013 and 2014 fiscal deficits have been revised upward, reflecting a slightly slower pace of fiscal consolidation to accommodate the impact of exogenous shocks. Projected fiscal deficits beyond 2014 are essentially unchanged.
- Medium- and long-term current account deficit projections have been revised upward following much higher-than-expected imports in 2011 and 2012.

Evolution of selected macroeconomic indicators

	2011	2012	2013	2014	2015	Long term 1/
Real GDP growth						
Current DSA	2.6	3.5	4.0	4.6	4.7	5.3
Previous DSA	2.6	3.7	4.3	4.8	5.0	5.2
Overall fiscal deficit (percent of GDP)						
Current DSA	6.7	5.9	5.3	4.6	3.9	2.8
Previous DSA	6.7	5.9	4.9	4.3	3.9	2.7
Current account deficit (percent of GDP)						
Current DSA	7.9	10.3	9.3	8.7	8.3	7.6
Previous DSA	6.1	7.6	7.1	6.7	6.3	5.3

1/ Defined as the last 15 years of the projection period. For the current DSA, the long term covers the years 2019-2033; for the previous DSA, it covers 2018-2032.

[2] See "Staff Report for the 2012 Article IV Consultation, Fourth Review Under the Policy Support Instrument, and Request for Modification of an Assessment Criterion—Debt Sustainability Analysis" for a more complete discussion of the macroeconomic assumptions in the DSA.

- The government is expected to issue a new 10-year, $500 million Eurobond this year at an interest rate of about 6 percent, in line with current yields on the 2011 Eurobond.[3] The previous DSA had assumed a $200 million Eurobond in 2013 on the same terms as the 2011 Eurobond (10-year maturity, 8.75 percent interest rate).

- The assumption in the last DSA that Senegal will borrow 0.5 percent of GDP per year on nonconcessional terms starting in 2014 has been shifted to 2016, reflecting the anticipated frontloading of nonconcessional borrowing in 2013.

- Over the period 2013-2014, Senegal is expected to borrow CFAF 67 billion (about $136 million) in external debt with a grant element of between 15 and 35 percent, upwardly revised from CFAF 44 billion and consistent with the new ceiling in the program.

2. Another key change compared to the last DSA is the presentation of remittances-based debt indicators in the base case. According to new guidance issued in March 2013, remittances must be presented as the base case in the DSA if they are both greater than 10 percent of GDP and greater than 20 percent of exports of goods and services.[4] Over the period 2010-2012, remittances in Senegal equaled, on average, 52 percent of exports of goods and services and 13 percent of GDP. Gross remittances inflows continued to show resilience in the face of the crisis in Europe, growing 6.1 percent in 2012 in local currency terms.

EXTERNAL DSA

3. Public and publicly guaranteed (PPG) external debt ratios remain comfortably below indicative thresholds in the baseline scenario, but stress tests lead to breaches of two thresholds (Figure 1a and Table 1a). The PV of debt to the sum of GDP and remittances breaches the threshold under a stress test simulating a one-time 30-percent depreciation of the exchange rate. The breach lasts for 13 years but is relatively small (less than 2 percentage points at its peak).[5] The same threshold is breached under a scenario where borrowing terms are less favorable than under the baseline scenario, but the breach is even smaller and of shorter duration. The debt service-to-revenue threshold is breached by a small margin in 2021 under the one-time 30-percent depreciation shock. The spikes in debt service in 2021 and 2023 reflect the repayment of the 10-year Eurobonds issued in 2011 and 2013.

4. The slightly worse outlook for PPG external debt compared to the last DSA can be attributed in part to the expected 2013 Eurobond issuance. The authorities' intention to issue a $500 million Eurobond this year, rather than a $200 million bond as assumed in the last DSA, is motivated

[3] The authorities plan to obtain technical assistance from IDA to help them prepare for raising financing from international capital markets.

[4] Both ratios should be measured on a backward-looking, three-year average basis.

[5] As noted in the previous DSA, the exchange rate shock is arguably overstated in the case of Senegal in light of the peg to the euro, which is guaranteed by the French Treasury, and the relatively large percentage of Senegal's public external debt stock denominated in euro and SDR (which is partially linked to the euro).

by their desire to have an issue large enough to be included in international bond indexes, which allows for higher liquidity and therefore a lower interest rate, and by their objective of lengthening the average maturity of public debt. Substituting resources from a 10-year Eurobond for short-term financing in local currency from the WAEMU market would significantly lengthen the average maturity at issuance of new financing without significantly affecting the interest cost.[6] This switching from domestic to external debt, combined with a slightly slower pace of fiscal consolidation and downwardly revised GDP growth projections, is projected to lead to a marginal deterioration in PPG external debt ratios compared to the last DSA.

PUBLIC DSA

5. Indicators of overall public debt (external plus domestic) and debt service do not point to significant vulnerabilities related to the level of domestic debt (Figure 2 and Table 2a). In the baseline scenario, the PV of total public debt to GDP and the PV of total public debt to revenue are expected to decline gradually over time. The PV of public debt to GDP peaks at 44 percent, well below the benchmark level of 56 percent associated with heightened public debt vulnerabilities for medium performers.[7] Stress tests, however, indicate that the path of public debt would reach unsustainable levels in the absence of fiscal consolidation (Table 2b). In a scenario that assumes an unchanged primary deficit (as a percent of GDP) over the entire projection period, starting with the level projected in 2013, the PV of public debt to GDP grows rapidly, breaching the 56 percent benchmark level in 2023. The benchmark level is also breached in the historical scenario (holding real GDP growth and the primary deficit constant at their historical levels). These stress tests highlight the importance of reducing fiscal deficits and raising potential output growth.

6. The limited development of the WAEMU financial market poses financing risks. The short average maturity of domestic debt (slightly over one year) continues to be a source of vulnerability, as it exposes the government to significant rollover and interest rate risks in an unreliably liquid regional market. In that regard, the 2013 Eurobond issuance—which is expected to carry an interest rate similar to what Senegal is paying on one-year Treasury bills—should help reduce financing risks in 2013 and beyond, albeit at the expense of increasing exchange rate risk.

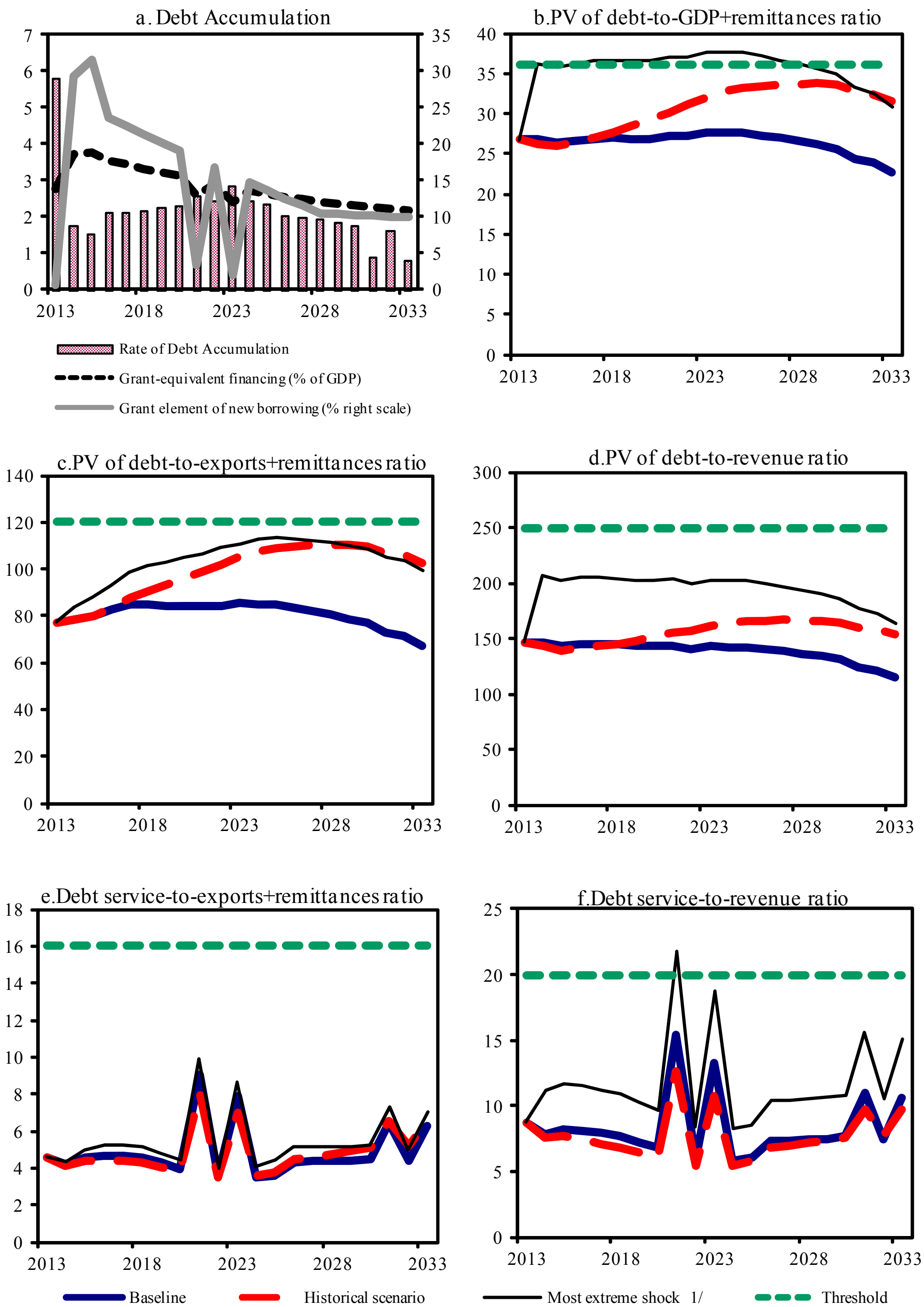
[6] The authorities were initially planning to issue CFAF 538 billion on the regional market in 2013, with an average maturity at issuance of about 1.5 years. With the 10-year Eurobond expected to substitute for CFAF 145 billion and the remaining CFAF 393 billion issued on the market expected to have an average maturity at issuance of about 2 years, the average maturity of the whole CFAF 538 billion would increase by about 2 years. The current yields on short-term local currency debt and the 2011 Eurobond are comparable, at about 5.5 percent. Issuing in US dollars, however, increases the exchange rate risk.

[7] See Revisiting the Debt Sustainability Framework for Low-Income Countries for a discussion of public debt benchmarks. Senegal's three-year average CPIA score is 3.71, which places the country at the upper end of the medium policy performance category. Senegal's CPIA score has increased every year since 2008.

CONCLUSION

7. **In staff's view, Senegal continues to face a low risk of debt distress, despite a marginal deterioration in the outlook for PPG external debt.** Although stress tests result in two breaches of thresholds in the external DSA, the overall picture is more balanced. The 2013 Eurobond, while pushing up PPG external debt ratios, should help reduce vulnerabilities associated with short-term domestic debt, consistent with the authorities' medium-term debt strategy. To maintain debt sustainability and avoid a downgrade to moderate risk, it will be critical to reduce fiscal deficits from levels seen in recent years. While Senegal is expected to gradually shift to nonconcessional external borrowing as it moves toward emerging market status, it should approach such borrowing with caution given current debt levels and the sensitivity of debt indicators to less favorable borrowing terms. Further improvements in debt management capacity can also help consolidate the low risk rating. Indeed, if recent trends in Senegal's CPIA score continue, Senegal stands to be upgraded to the strong performer category next year and will face higher indicative thresholds for PPG external debt.

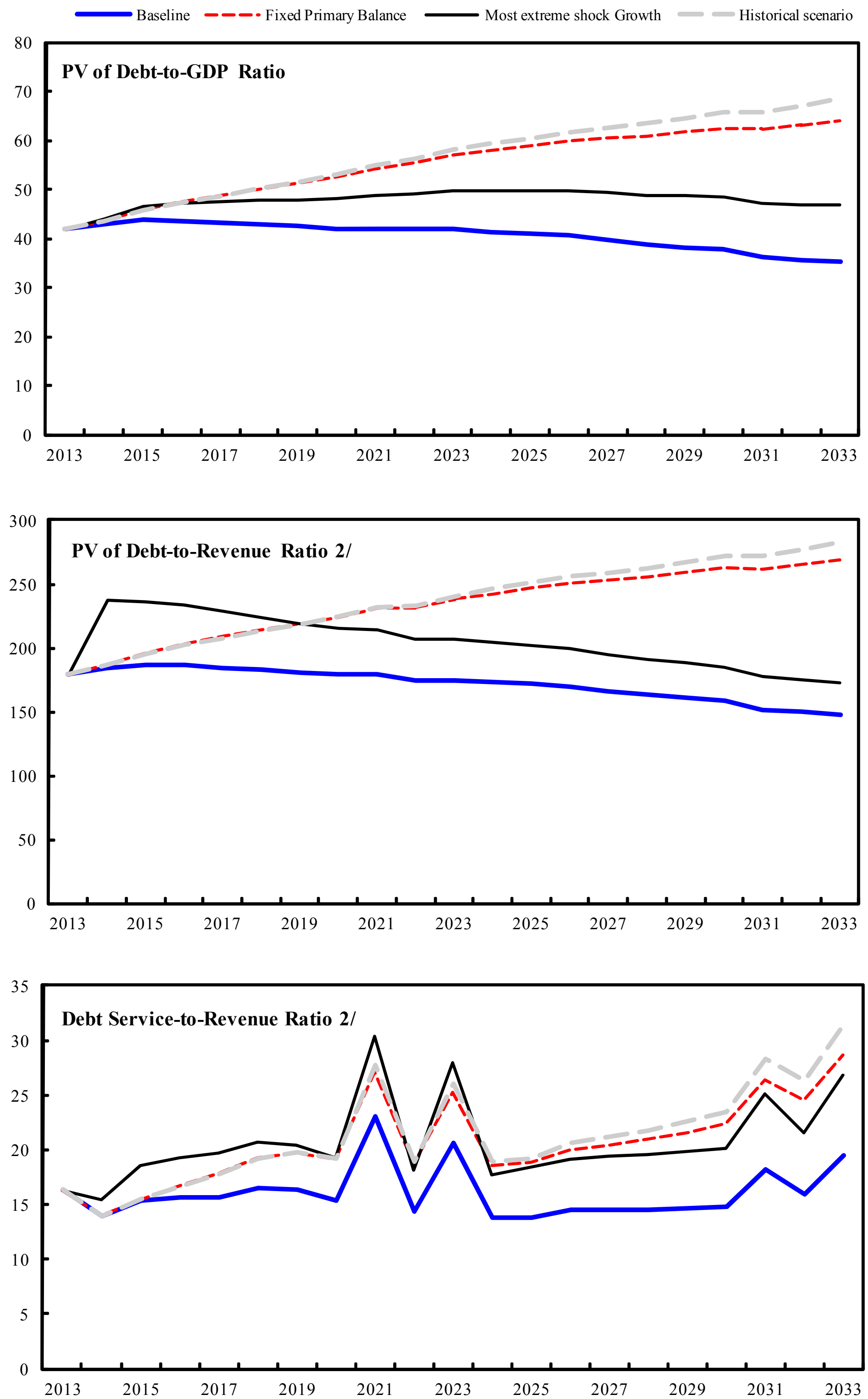
Figure 1a. Senegal: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios (with Remittances), 2013-2033 1/



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2023. In figure b. it corresponds to a One-time depreciation shock; in c. to a Terms shock; in d. to a One-time depreciation shock; in e. to a Exports shock and in figure f. to a One-time depreciation shock

Figure 2. Senegal: Indicators of Public Debt Under Alternative Scenarios, 2013-2032 1/



Sources: Country authorities; and staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio in 2023.
2/ Revenues are defined inclusive of grants.

Table 1a.: External Debt Sustainability Framework, Baseline Scenario, 2013-2033 1/
(In percent of GDP, unless otherwise indicated)

	Actual			Historical 0 Average	Standard 0 Deviation	Projections									
	2010	2011	2012			2013	2014	2015	2016	2017	2018	2013-2018 Average	2023	2033	2019-2033 Average
External debt (nominal) 1/	**53.4**	**53.8**	**57.6**			**60.5**	**61.6**	**61.9**	**62.5**	**62.6**	**62.6**		**61.5**	**53.5**	
o/w public and publicly guaranteed (PPG)	27.5	28.8	30.5			33.9	34.5	34.8	35.4	35.9	36.4		36.5	29.0	
Change in external debt	2.7	0.4	3.7			2.9	1.1	0.3	0.6	0.1	0.0		-0.2	-1.7	
Identified net debt-creating flows	2.0	0.0	9.7			5.0	4.1	3.7	3.4	3.1	2.8		2.8	3.1	
Non-interest current account deficit	**3.9**	**7.1**	**9.7**	**8.2**	**2.9**	**8.6**	**8.0**	**7.6**	**7.4**	**7.0**	**6.8**		**6.9**	**7.2**	7.0
Deficit in balance of goods and services	15.5	18.2	21.1			19.5	18.9	18.5	17.8	17.2	16.9		17.0	17.2	
Exports	25.0	26.2	26.2			26.1	25.4	24.8	24.3	23.9	24.1		24.8	26.2	
Imports	40.5	44.4	47.3			45.5	44.3	43.2	42.2	41.1	41.0		41.8	43.4	
Net current transfers (negative = inflow)	-12.1	-12.2	-12.4	-10.4	2.2	-11.9	-11.6	-11.3	-10.8	-10.4	-10.4		-10.3	-10.2	-10.3
o/w official	-0.5	-0.9	-0.9			-0.5	-0.5	-0.5	-0.5	-0.5	-0.5		-0.4	-0.3	
Other current account flows (negative = net inflow)	0.5	1.1	1.0			1.0	0.7	0.4	0.4	0.2	0.2		0.2	0.2	
Net FDI (negative = inflow)	**-2.1**	**-2.0**	**-2.1**	**-1.7**	**0.7**	**-2.1**	**-2.0**	**-1.9**	**-1.8**	**-1.7**	**-1.7**		**-1.7**	**-1.7**	-1.7
Endogenous debt dynamics 2/	**0.1**	**-5.0**	**2.1**			**-1.4**	**-1.9**	**-2.0**	**-2.1**	**-2.2**	**-2.3**		**-2.3**	**-2.4**	
Contribution from nominal interest rate	0.5	0.8	0.7			0.7	0.7	0.7	0.7	0.7	0.7		0.7	0.5	
Contribution from real GDP growth	-2.2	-1.2	-2.0			-2.1	-2.6	-2.7	-2.9	-3.0	-3.0		-3.0	-2.9	
Contribution from price and exchange rate changes	1.8	-4.6	3.4			…	…	…	…	…	…		…	…	
Residual (3-4) 3/	**0.7**	**0.4**	**-6.0**			**-2.1**	**-3.0**	**-3.4**	**-2.8**	**-3.1**	**-2.8**		**-3.0**	**-4.7**	
o/w exceptional financing	1.6	-0.9	-1.7			-0.2	-0.2	-0.2	-0.2	-0.2	-0.2		-0.1	0.0	
PV of external debt 4/	...	...	53.7			56.9	57.2	56.8	56.9	56.6	56.3		55.7	49.8	
In percent of exports	...	...	204.8			218.3	225.1	229.6	233.9	236.5	233.8		225.1	190.3	
PV of PPG external debt	**...**	**...**	**26.6**			**30.3**	**30.1**	**29.7**	**29.9**	**29.9**	**30.1**		**30.8**	**25.3**	
In percent of exports	**...**	**...**	**101.6**			**116.2**	**118.6**	**120.1**	**122.7**	**125.2**	**124.8**		**124.2**	**96.5**	
In percent of government revenues	**...**	**...**	**130.6**			**146.5**	**146.5**	**143.3**	**145.0**	**144.7**	**144.1**		**142.6**	**115.2**	
Debt service-to-exports ratio (in percent)	**19.1**	**17.0**	**10.6**			**10.0**	**9.5**	**9.1**	**8.3**	**7.8**	**7.7**		**11.8**	**8.6**	
PPG debt service-to-exports ratio (in percent)	**5.7**	**13.2**	**7.2**			**6.9**	**6.3**	**6.9**	**6.9**	**6.8**	**6.7**		**11.5**	**8.9**	
PPG debt service-to-revenue ratio (in percent)	**7.4**	**17.2**	**9.3**			**8.7**	**7.8**	**8.2**	**8.1**	**7.9**	**7.7**		**13.2**	**10.6**	
Total gross financing need (Billions of U.S. dollars)	0.9	1.4	1.5			1.4	1.4	1.4	1.4	1.4	1.5		2.5	5.1	
Non-interest current account deficit that stabilizes debt ratio	1.2	6.7	5.9			5.7	6.9	7.3	6.8	7.0	6.7		7.1	8.8	
Key macroeconomic assumptions															
Real GDP growth (in percent)	4.3	2.6	3.5	4.2	1.6	4.0	4.6	4.7	4.9	5.1	5.1	4.7	5.2	5.6	5.3
GDP deflator in US dollar terms (change in percent)	-3.5	9.4	-6.0	6.1	9.5	5.6	1.5	1.7	1.6	1.7	1.5	2.3	2.3	2.5	2.4
Effective interest rate (percent) 5/	0.9	1.7	1.2	0.9	0.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.0	1.1
Growth of exports of G&S (US dollar terms, in percent)	3.1	17.7	-2.7	9.8	11.6	9.2	3.5	3.7	4.8	5.0	7.4	5.6	8.3	8.7	8.4
Growth of imports of G&S (US dollar terms, in percent)	-1.4	23.2	3.6	13.7	17.8	5.7	3.4	3.9	4.0	4.1	6.4	4.6	8.2	8.7	8.3
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	0.6	29.2	31.6	23.7	22.5	21.4	21.5	2.0	9.9	11.6
Government revenues (excluding grants, in percent of GDP)	19.4	20.2	20.4			20.7	20.6	20.8	20.6	20.7	20.9		21.6	21.9	21.6
Aid flows (in Billions of US dollars) 6/	0.7	0.6	0.7			0.7	0.7	0.8	0.9	0.9	0.9		0.9	1.3	
o/w Grants	0.3	0.3	0.4			0.4	0.4	0.5	0.5	0.5	0.5		0.7	1.3	
o/w Concessional loans	0.4	0.2	0.3			0.2	0.3	0.4	0.4	0.3	0.3		0.2	0.0	
Grant-equivalent financing (in percent of GDP) 7/	...	...	...			2.8	3.7	3.8	3.5	3.4	3.3		2.4	2.1	2.6
Grant-equivalent financing (in percent of external financing) 7/	...	...	...			30.7	60.7	62.5	55.8	55.2	54.5		34.3	48.2	47.9
Memorandum items:															
Nominal GDP (Billions of US dollars)	12.9	14.5	14.1			15.5	16.4	17.5	18.6	19.9	21.2		30.7	66.0	
Nominal dollar GDP growth	0.6	12.3	-2.6			9.8	6.1	6.5	6.6	6.8	6.7	7.1	7.7	8.3	7.8
PV of PPG external debt (in Billions of US dollars)			3.8			4.7	4.9	5.2	5.5	5.9	6.4		9.4	16.7	
(PVt-PVt-1)/GDPt-1 (in percent)						5.8	1.7	1.5	2.1	2.1	2.1	2.6	2.8	0.8	2.0
Gross workers' remittances (Billions of US dollars)	1.8	1.9	1.9			2.0	2.1	2.2	2.2	2.2	2.4		3.5	7.5	
PV of PPG external debt (in percent of GDP + remittances)	...	...	23.5			26.7	26.7	26.5	26.7	26.9	27.0		27.6	22.7	
PV of PPG external debt (in percent of exports + remittances)	...	...	67.1			77.1	78.8	80.2	82.6	85.0	84.9		85.3	67.4	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	4.8			4.6	4.2	4.6	4.6	4.6	4.6		7.9	6.2	

Sources: Country authorities; and 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 equivalent to its face value.
5/ Current-year interest payments divided by previous period debt stock.
6/ Defined as grants, concessional loans, and debt relief.
7/ 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.Senegal: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt (with Remittances), 2013-2033
(In percent)

	Projections							
	2013	2014	2015	2016	2017	2018	**2023**	2033
PV of debt-to-GDP+remittances ratio								
Baseline	27	27	26	27	27	27	**28**	23
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2013-2033 1/	27	26	26	26	27	28	**32**	32
A2. New public sector loans on less favorable terms in 2013-2033 2	27	28	29	30	31	32	**36**	34
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	27	27	27	28	28	28	**29**	23
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	27	28	29	30	30	30	**30**	23
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	27	28	29	29	29	29	**30**	25
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	27	31	34	33	33	33	**32**	24
B5. Combination of B1-B4 using one-half standard deviation shocks	27	30	32	32	32	32	**32**	24
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	27	36	36	36	37	37	**38**	31
PV of debt-to-exports+remittances ratio								
Baseline	77	79	80	83	85	85	**85**	67
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2013-2033 1/	77	78	80	84	88	91	**105**	103
A2. New public sector loans on less favorable terms in 2013-2033 2	77	84	88	93	99	101	**111**	100
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	77	79	80	82	85	85	**85**	67
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	77	85	96	98	101	100	**99**	74
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	77	79	80	82	85	85	**85**	67
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	77	99	110	102	104	104	**100**	71
B5. Combination of B1-B4 using one-half standard deviation shocks	77	92	99	94	97	96	**94**	69
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	77	79	80	82	85	85	**85**	67
PV of debt-to-revenue ratio								
Baseline	146	146	143	145	145	144	**143**	115
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2013-2033 1/	146	143	139	142	143	145	**161**	153
A2. New public sector loans on less favorable terms in 2013-2033 2	146	156	157	163	168	172	**185**	170
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	146	149	148	150	150	149	**148**	120
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	146	152	159	161	160	158	**154**	118
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	146	153	158	160	159	159	**157**	127
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	146	166	179	180	178	176	**167**	121
B5. Combination of B1-B4 using one-half standard deviation shocks	146	161	172	173	172	170	**164**	123
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	146	207	203	205	205	204	**202**	164

Table 1b.Senegal: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt (with Remittances), 2013-2033 (concluded)
(In percent)

				Debt service-to-exports+remittances ratio				
Baseline	5	4	5	5	5	5	**8**	6
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2013-2033 1/	5	4	4	4	4	4	**7**	7
A2. New public sector loans on less favorable terms in 2013-2033 2	5	4	4	5	5	5	**5**	6
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	5	4	5	5	5	5	**8**	6
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	5	4	5	5	5	5	**9**	7
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	5	4	5	5	5	5	**8**	6
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	5	5	5	5	5	5	**8**	7
B5. Combination of B1-B4 using one-half standard deviation shocks	5	5	5	5	5	5	**8**	7
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	5	4	5	5	5	5	**8**	6
				Debt service-to-revenue ratio				
Baseline	9	8	8	8	8	8	**13**	11
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2013-2033 1/	9	8	8	7	7	7	**11**	10
A2. New public sector loans on less favorable terms in 2013-2033 2	9	8	8	8	8	8	**8**	11
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	9	8	9	8	8	8	**14**	11
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	9	8	8	9	8	8	**13**	11
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	9	8	9	9	9	9	**15**	12
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	9	8	9	9	9	8	**14**	12
B5. Combination of B1-B4 using one-half standard deviation shocks	9	8	9	9	9	8	**14**	12
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	9	11	12	12	11	11	**19**	15
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	10	10	10	10	10	10	**10**	10

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
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.Senegal: Public Sector Debt Sustainability Framework, Baseline Scenario, 2013-2033
(In percent of GDP, unless otherwise indicated)

	Actual			Average	Standard Deviation	Estimate	Projections								
	2010	2011	2012			2013	2014	2015	2016	2017	2018	2013-18 Average	2023	2033	2019-33 Average
Public sector debt 1/	35.7	40.0	41.6			45.4	47.2	48.8	49.0	49.0	49.1		47.6	38.9	
o/w foreign-currency denominated	27.5	28.8	30.5			33.9	34.5	34.8	35.4	35.9	36.4		36.5	28.3	
Change in public sector debt	1.5	4.3	1.6			3.8	1.8	1.6	0.3	0.0	0.1		-0.4	-0.7	
Identified debt-creating flows	5.7	4.3	2.9			2.8	1.9	1.0	0.6	0.3	0.3		-0.4	-0.6	
Primary deficit	4.2	5.2	4.4	3.5	1.5	3.8	3.0	2.2	2.0	1.8	1.8	2.4	1.6	0.9	1.3
Revenue and grants	22.0	22.4	23.3			23.4	23.3	23.5	23.3	23.3	23.4		23.9	23.8	
of which: grants	2.5	2.2	2.9			2.7	2.7	2.7	2.7	2.6	2.6		2.3	1.9	
Primary (noninterest) expenditure	26.2	27.5	27.6			27.2	26.3	25.7	25.3	25.1	25.2		25.5	24.7	
Automatic debt dynamics	1.8	-0.7	-0.6			-1.0	-1.1	-1.2	-1.4	-1.5	-1.5		-2.0	-1.6	
Contribution from interest rate/growth differential	-0.9	-0.8	-0.5			-0.9	-1.3	-1.5	-1.7	-1.8	-1.7		-2.0	-1.6	
of which: contribution from average real interest rate	0.5	0.1	0.8			0.7	0.7	0.7	0.6	0.6	0.6		0.4	0.6	
of which: contribution from real GDP growth	-1.4	-0.9	-1.4			-1.6	-2.0	-2.1	-2.3	-2.4	-2.4		-2.4	-2.1	
Contribution from real exchange rate depreciation	2.7	0.1	0.0			-0.1	0.2	0.2	0.2	0.2	0.2		...	...	
Other identified debt-creating flows	-0.3	-0.2	-0.9			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	0.0	0.0	-0.6			0.0	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)	-0.3	-0.2	-0.3			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	-4.2	0.1	-1.3			1.0	-0.1	0.6	-0.3	-0.3	-0.2		-0.1	0.0	
Other Sustainability Indicators															
PV of public sector debt	...	...	37.7			41.8	42.9	43.7	43.4	43.1	42.8		41.8	35.2	
o/w foreign-currency denominated	...	...	26.6			30.3	30.1	29.7	29.9	29.9	30.1		30.8	24.6	
o/w external	...	...	26.6			30.3	30.1	29.7	29.9	29.9	30.1		30.8	25.3	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	8.2	12.3	12.1			11.6	8.2	9.1	9.3	9.0	9.0		9.2	7.6	
PV of public sector debt-to-revenue and grants ratio (in percent)	…	…	162.3			178.9	183.9	186.2	186.8	184.7	182.6		174.9	147.7	
PV of public sector debt-to-revenue ratio (in percent)	…	…	185.1			202.4	208.3	210.6	211.1	208.1	205.1		193.7	160.5	
o/w external 3/	…	…	130.6			146.5	146.5	143.3	145.0	144.7	144.1		142.6	115.2	
Debt service-to-revenue and grants ratio (in percent) 4/	9.8	19.9	15.7			16.3	14.0	15.4	15.6	15.7	16.6		20.7	19.4	
Debt service-to-revenue ratio (in percent) 4/	11.1	22.1	17.9			18.5	15.8	17.4	17.7	17.7	18.6		22.9	21.1	
Primary deficit that stabilizes the debt-to-GDP ratio	2.7	0.8	2.8			0.0	1.2	0.6	1.8	1.8	1.7		2.0	1.6	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	4.3	2.6	3.5	4.2	1.6	4.0	4.6	4.7	4.9	5.1	5.1	4.7	5.2	5.6	5.3
Average nominal interest rate on forex debt (in percent)	2.1	3.7	2.6	2.4	0.6	2.8	2.6	2.5	2.4	2.4	2.3	2.5	2.1	1.9	2.1
Average real interest rate on domestic debt (in percent)	3.7	3.6	5.4	2.6	3.4	4.6	5.3	5.4	4.5	4.7	4.9	4.9	4.6	8.2	5.0
Real exchange rate depreciation (in percent, + indicates depreciation)	10.4	0.3	-0.1	-2.1	9.9	-0.3	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	1.3	4.3	1.7	2.6	2.6	2.2	2.3	2.4	2.4	2.4	2.3	2.3	2.3	2.5	2.4
Growth of real primary spending (deflated by GDP deflator, in percent)	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1
Grant element of new external borrowing (in percent)	...	...	...	…	…	0.6	29.2	31.6	23.7	22.5	21.4	21.5	2.0	9.9	...

Sources: Country authorities; and staff estimates and projections.
1/ The public sector refers to the central government.
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.Senegal: Sensitivity Analysis for Key Indicators of Public Debt 2013-2033

	Projections							
	2013	2014	2015	2016	2017	2018	2023	2033
PV of Debt-to-GDP Ratio								
Baseline	42	43	44	43	43	43	42	35
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	42	44	46	47	49	50	58	68
A2. Primary balance is unchanged from 2013	42	44	46	47	49	50	57	64
A3. Permanently lower GDP growth 1/	42	43	44	44	44	44	46	48
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2014-2015	42	44	47	47	47	48	50	47
B2. Primary balance is at historical average minus one standard deviations in 2014-2015	42	45	48	48	47	47	45	37
B3. Combination of B1-B2 using one half standard deviation shocks	42	45	48	48	48	48	48	43
B4. One-time 30 percent real depreciation in 2014	42	55	55	54	53	52	49	41
B5. 10 percent of GDP increase in other debt-creating flows in 2014	42	52	53	52	51	51	48	39
PV of Debt-to-Revenue Ratio 2/								
Baseline	179	184	186	187	185	183	175	148
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	179	187	195	202	208	213	241	282
A2. Primary balance is unchanged from 2013	179	187	196	203	209	214	238	269
A3. Permanently lower GDP growth 1/	179	185	188	190	189	189	193	202
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2014-2015	179	189	197	201	202	203	207	196
B2. Primary balance is at historical average minus one standard deviations in 2014-2015	179	192	206	206	203	200	188	156
B3. Combination of B1-B2 using one half standard deviation shocks	179	191	203	205	205	204	201	181
B4. One-time 30 percent real depreciation in 2014	179	238	236	234	228	224	207	173
B5. 10 percent of GDP increase in other debt-creating flows in 2014	179	224	224	224	220	216	201	163
Debt Service-to-Revenue Ratio 2/								
Baseline	16	14	15	16	16	17	21	19
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	16	14	16	17	18	19	26	31
A2. Primary balance is unchanged from 2013	16	14	15	17	18	19	25	29
A3. Permanently lower GDP growth 1/	16	14	15	16	16	17	22	24
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2014-2015	16	14	16	17	17	18	23	23
B2. Primary balance is at historical average minus one standard deviations in 2014-2015	16	14	16	18	19	18	21	20
B3. Combination of B1-B2 using one half standard deviation shocks	16	14	16	18	18	18	22	22
B4. One-time 30 percent real depreciation in 2014	16	15	19	19	20	21	28	27
B5. 10 percent of GDP increase in other debt-creating flows in 2014	16	14	17	26	17	20	22	21

Sources: Country authorities; and 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/ Revenues are defined inclusive of grants.