

INTERNATIONAL DEVELOPMENT ASSOCIATION  
AND INTERNATIONAL MONETARY FUND

SENEGAL

Joint World Bank/IMF Debt Sustainability Analysis 2011

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

Approved by Marcelo Giugale and Jeffrey Lewis (IDA)  
and Roger Nord and Thomas Dorsey (IMF)

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*Senegal remains at low risk of debt distress.<sup>1</sup> This debt sustainability analysis (DSA) updates the joint IMF/IDA DSA from November 12, 2010, to integrate the authorities' recently completed restructuring plan for the energy sector, which entails additional fiscal costs. Under the baseline scenario, which includes the issuance of the US\$500 million eurobond in early May, all the debt burden indicators remain below their policy-dependent indicative thresholds. However, debt vulnerabilities may increase as suggested by the high level of debt service in the longer term associated with the repayment of nonconcessional borrowing and as evidenced by standardized stress tests. This calls for a cautious approach to such borrowing and stresses the importance of improving debt management. The inclusion of domestic debt does not alter the overall assessment of Senegal's risk of debt distress*

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<sup>1</sup> The DSA presented in this document is based on the standard low-income countries (LIC) DSA framework. 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, Policy Implications".

## I. UNDERLYING ASSUMPTIONS

1. **This DSA is consistent with the macroeconomic framework outlined in the IMF's First Review Under the Policy Support Instrument.** Compared to the previous DSA<sup>2</sup>, this analysis includes:

- a. Additional government spending related to emergency measures in the energy sector. Part of this additional spending is expected to be financed by nonconcessional resources. This DSA includes the US\$ 500 million 10-year Eurobond, which was placed on May 6, 2011 with an 8.75 percent coupon (bi-annual frequency), priced to yield 9.125 percent. Over 75 percent of investors holding some US\$155 million of the US\$200 million 5-year bond issued in 2009 accepted the offer to exchange the existing bond for the new 10-year bond. Notwithstanding the exchange, the program ceiling on new non concessional external financing (USD 500 million) is expected to be used entirely during 2011-13, and the DSA assumes that the actual exchanged or redeemed amount will be borrowed in 2012 at similar conditions<sup>3,4, 5</sup>
- b. A revised macroeconomic framework, including slightly higher real GDP growth, larger fiscal deficits and lower current account deficits over the medium term. Larger fiscal deficits over the medium term (compared to the previous DSA) reflect a temporarily high level of energy-related expenditures. Over the long term, the resolution of the energy sector problems is expected to eliminate a serious binding constraint to growth in Senegal, leading to an upward revision to potential GDP growth. The current account deficit is expected to be lower than in the previous DSA reflecting historical revisions and the recent strength of exports – the long-term non-interest current account deficit is expected to be in line with the historical average (excluding the years 2007–08, which were affected by the food and fuel crisis).

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<sup>2</sup>See Senegal—Sixth Review Under the Policy Support Instrument, Request for a Three-Year Policy Support Instrument and Cancellation of Current Policy Support Instrument—Debt Sustainability Analysis.

<sup>3</sup> The borrowing profile is somewhat more frontloaded than the one assumed in the previous DSA, where infrastructure spending to be financed with nonconcessional resources (extension of the toll road to the new Blaise-Diagne airport, Mbour, and Thies) was expected to amount to 1.4 percent of GDP in 2011, 1.6 percent of GDP in 2012, and 0.2 percent of GDP in 2013.

<sup>4</sup> In addition, Senegal is considering contracting in 2011 a maximum of CFAF30 billion in nonconcessional loans with a grant element of between 15 percent and 35 percent, which is included in this DSA.

<sup>5</sup> In line with the Fund's revised Debt Limits Policy, this DSA includes additional realistic assumptions for nonconcessional financing beyond the period for which a nonzero limit is proposed. In particular, beyond the program period, Senegal is expected to borrow 0.5 percent of GDP per year on nonconcessional terms. In addition, the net USD500 million in nonconcessional borrowing in 2011 and 2012 are assumed to be rolled-over at maturity.

Evolution of selected macroeconomic indicators					
	2009	2010	2011	2012	2013
Real GDP growth					
Previous DSA	2.2	4.0	4.4	4.7	4.8
Current DSA	2.2	4.2	4.5	4.8	5.0
Primary fiscal deficit (percent of GDP)					
Previous DSA	4.1	3.9	4.7	3.9	2.5
Current DSA	4.1	4.3	5.7	4.3	3.3
Overall fiscal deficit (percent of GDP)					
Previous DSA	4.9	4.8	5.8	5.3	3.9
Current DSA	4.8	5.2	6.9	5.6	4.6
Current account deficit (percent of GDP)					
Previous DSA	7.7	8.2	9.0	9.5	9.1
Current DSA	6.7	5.9	8.4	8.0	7.5

- c. Revised debt data. The authorities have recently undertaken a major review of their debt database following the recent joint World Bank-IMF mission on designing a Medium-Term Debt Strategy (MTDS).<sup>6</sup>

## II. EXTERNAL DSA

**External PPG debt burden indicators under the baseline scenario remain well below their policy-dependent thresholds** (Figure 1, Table 1a).<sup>7</sup> However, while issuance of the 10-year Eurobond with large acceptance of the exchange offer for the outstanding bond maturing in 2014 has reduced roll-over risk in the medium-term, large increases in debt service associated with the roll-over of nonconcessional debt in the longer term highlight the need for Senegal to be cautious about this type of financing and improve its debt management capacity. Stress tests reveal that Senegal's external debt sustainability is vulnerable to an unlikely one-time depreciation of the exchange rate and a worsening of its borrowing terms (Figure 1, Table 1b). In stress tests, the npv of debt-to-export ratio temporarily and marginally exceeds its threshold.

## III. PUBLIC DSA

2. **Indicators of overall public debt (external plus domestic debt) and debt service follow a similar pattern as those for external public debt alone** (Figure 2, Table 2a, 2b). Public debt sustainability hinges on containing the fiscal deficit in the medium and long term. The public debt position is also vulnerable to shocks to real GDP growth, highlighting the need for the authorities to continue pursuing their goal of raising potential output growth.

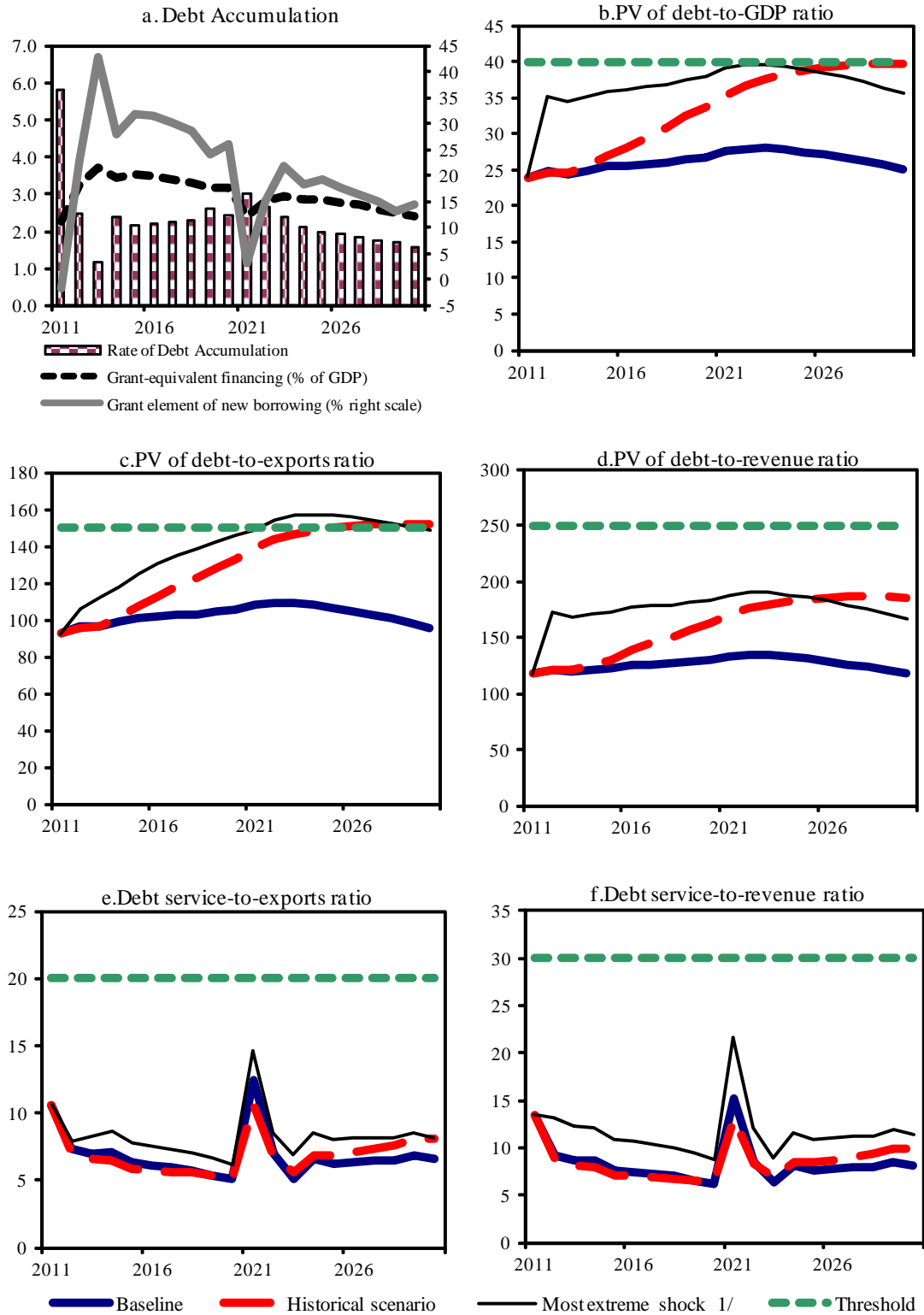
<sup>6</sup> Revisions to the database also include the elimination of some passive debts that were included in past DSAs.

<sup>7</sup> The indicative external debt burden thresholds for Senegal are shown in Figure 1. They are based on Senegal's classification as a "medium" performer given its (three-year average) score of 3.67 on the World Bank's Country Policy and Institutional Assessment index (CPIA). The CPIA measures the quality of policies and institutions; weak performers score below 3.25, strong performers above 3.75.

#### IV. CONCLUSION

3. **Senegal's external debt burden is subject to a low risk of debt distress even after the inclusion of nonconcessional debt.** The sustainability of Senegal's external PPG debt appears vulnerable to roll-over risks. This highlights the need for prudent debt management by Senegal, especially as it seeks to gain greater access to external resources on nonconcessional terms. Adding domestic debt, while raising the debt burden indicators, does not change the overall assessment of Senegal's debt vulnerabilities but highlights the need for fiscal consolidation.

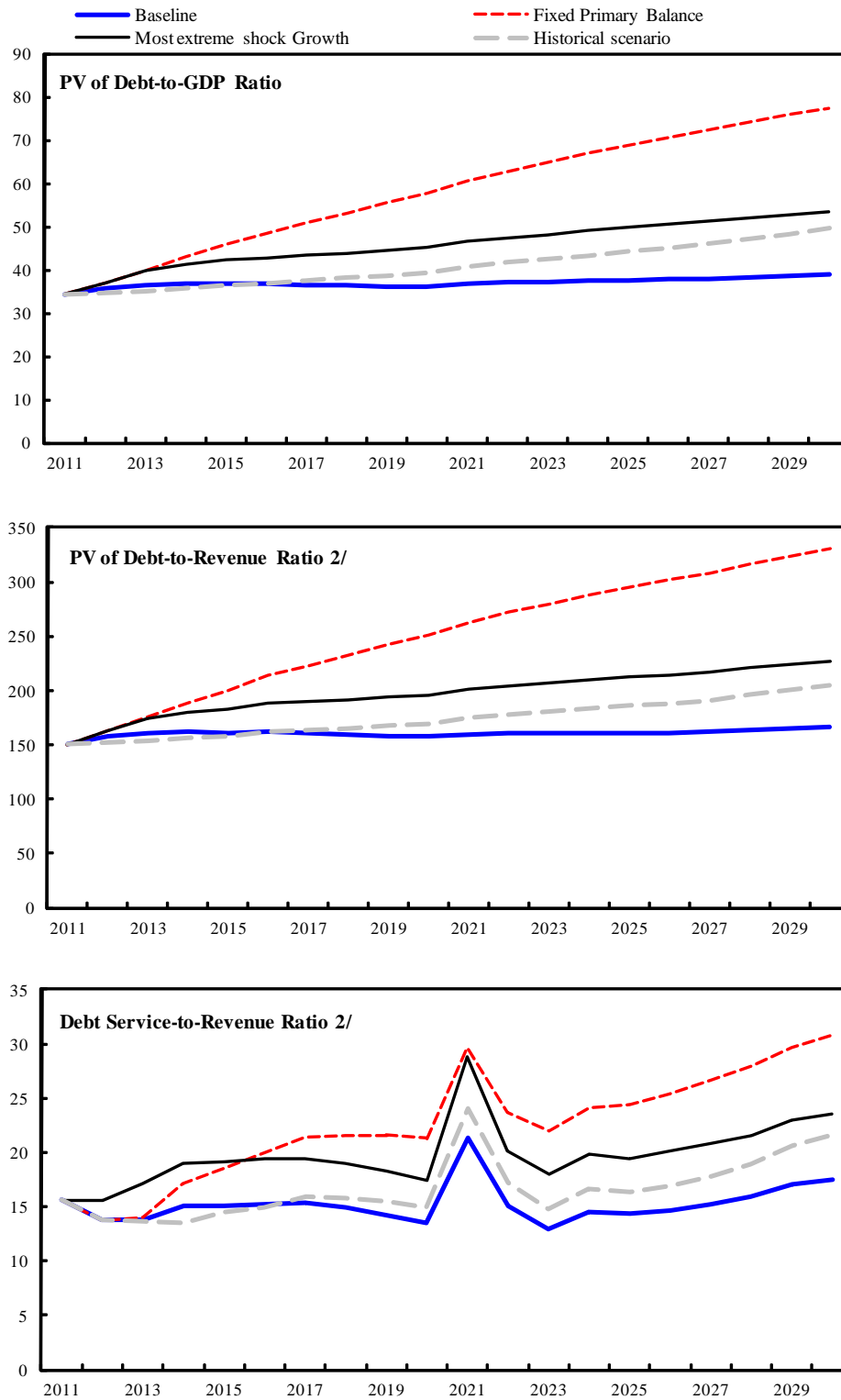
Figure 1. Senegal: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2011-2030 1/



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2021. 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, 2011-2030 1/



Sources: Country authorities; and staff estimates and projections.  
 1/ The most extreme stress test is the test that yields the highest ratio in 2021.  
 2/ Revenues are defined inclusive of grants.

Table 1a.: External Debt Sustainability Framework, Baseline Scenario, 2008-2030 1/  
(In percent of GDP, unless otherwise indicated)

	Actual		Projections										2017-2030 Average			
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2030	2017-2030 Average
<b>External debt (nominal) 1/</b>	43.1	48.5	52.1	52.6	53.4	52.9	53.4	53.7	53.4	53.4	53.2	53.2	52.9	52.5	44.1	
o/w public and publicly guaranteed (PPG)	19.7	27.0	27.5	30.8	32.1	32.4	33.5	34.5	35.0	35.5	35.8	36.4	36.7	36.7	31.4	
Change in external debt	5.7	5.4	3.6	0.5	0.8	-0.5	0.5	0.4	-0.3	0.0	-0.2	0.0	-0.2	-0.5	-1.2	
Identified net debt-creating flows	6.4	6.6	3.5	4.1	3.6	3.1	2.9	2.4	2.2	2.1	2.2	2.1	2.0	2.0	2.0	
<b>Non-interest current account deficit</b>	14.0	6.5	5.5	7.7	7.4	6.9	6.8	6.5	6.4	6.4	6.4	6.4	6.4	6.4	6.4	
Deficit in balance of goods and services	26.5	16.9	15.7	18.1	17.2	16.1	15.6	15.1	14.9	14.9	14.9	14.8	14.8	14.8	14.7	
Exports	26.3	24.4	24.2	26.0	25.8	25.3	25.1	25.1	25.0	25.1	25.2	25.3	25.4	25.5	26.1	
Imports	-12.7	-11.5	-11.1	-11.1	-10.5	-9.9	-9.5	-9.3	-9.3	-9.2	-9.2	-9.1	-9.1	-9.1	-9.0	
o/w official	-0.5	-0.4	-0.2	-0.6	-0.5	-0.5	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	
Other current account flows (negative = net in flow)	0.2	1.2	0.8	0.8	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
<b>Net FDI (negative = inflow)</b>	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-1.9	-2.0	-2.1	-2.1	-2.2	-2.2	-2.3	-2.3	-2.3	
<b>Endogenous debt dynamics 2/</b>	-5.5	2.1	0.1	-1.7	-1.7	-1.9	-1.9	-2.1	-2.1	-2.1	-2.1	-2.1	-2.1	-2.1	-1.9	
Contribution from nominal interest rate	0.2	0.2	0.4	0.4	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
Contribution from real GDP growth	-1.0	-1.0	-2.0	-2.1	-2.4	-2.5	-2.6	-2.7	-2.7	-2.7	-2.7	-2.8	-2.8	-2.8	-2.6	
Contribution from price and exchange rate changes	-4.7	2.9	1.7	-2.1	-2.4	-2.5	-2.6	-2.7	-2.7	-2.7	-2.7	-2.8	-2.8	-2.8	-2.6	
<b>Residual (3-4) 3/</b>	-0.7	-1.2	0.1	-3.6	-2.8	-3.6	-2.4	-2.0	-2.5	-2.2	-2.3	-2.1	-2.3	-2.5	-3.2	
o/w exceptional financing	-1.9	0.1	1.6	-0.5	-0.5	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
PV of external debt 4/	...	...	44.6	45.7	46.1	44.8	44.8	44.6	43.9	43.6	43.3	43.2	43.0	43.3	37.7	
In percent of exports	...	...	184.3	176.1	179.0	177.0	178.3	177.9	175.6	174.1	171.9	171.2	169.6	170.0	144.3	
<b>PV of PPG external debt</b>	...	...	20.0	24.0	24.8	24.3	24.9	25.4	25.5	25.7	25.9	26.5	26.8	27.5	25.1	
In percent of exports	...	...	82.6	92.4	96.3	95.9	99.2	101.3	102.0	102.6	103.1	104.8	105.5	108.0	95.9	
<b>Debt service-to-exports ratio (in percent)</b>	13.8	19.1	18.7	11.6	12.1	11.9	12.3	12.6	12.5	12.5	12.6	12.8	12.9	13.2	11.7	
<b>PPG debt service-to-exports ratio (in percent)</b>	4.3	5.0	5.9	20.6	7.3	7.0	7.0	6.3	6.1	5.9	5.8	5.4	5.0	12.4	6.6	
<b>PPG debt service-to-revenue ratio (in percent)</b>	5.9	6.5	7.4	13.5	9.2	8.7	8.6	7.6	7.5	7.3	7.0	6.6	6.2	15.2	8.1	
Total gross financing need (Billions of U.S. dollars)	2.1	1.2	1.0	1.7	1.6	1.6	1.6	1.6	1.7	1.8	2.0	2.1	2.2	2.9	5.1	
Non-interest current account deficit that stabilizes debt ratio	8.3	1.1	1.8	7.3	6.6	7.4	6.3	6.1	6.7	6.4	6.6	6.4	6.6	6.9	7.6	
<b>Key macroeconomic assumptions</b>																
Real GDP growth (in percent)	3.2	2.2	4.2	4.5	4.8	5.0	5.2	5.5	5.5	5.5	5.5	5.6	5.6	5.7	6.2	5.8
GDP deflator in US dollar terms (change in percent)	14.4	-6.3	-3.4	3.6	1.9	1.7	1.7	1.5	2.0	2.1	2.2	2.2	2.3	2.3	2.4	2.3
Effective interest rate (percent) 5/	0.6	0.4	0.9	0.7	0.2	0.9	1.2	1.3	1.3	1.3	1.3	1.4	1.4	1.5	1.6	1.5
Growth of exports of G&S (US dollar terms, in percent)	22.1	-11.1	-0.3	9.5	10.8	16.2	5.8	5.0	6.2	7.4	7.9	8.1	8.3	8.5	9.0	8.6
Growth of imports of G&S (US dollar terms, in percent)	30.4	-25.0	-2.9	12.8	17.6	19.7	4.0	3.0	5.1	5.6	7.0	7.4	8.0	8.2	8.4	8.5
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Government revenues (excluding grants, in percent of GDP)	19.4	18.6	19.4	20.4	20.4	20.4	20.6	20.7	20.4	20.5	20.6	20.6	20.7	20.8	21.4	20.9
Aid flows (in Billions of US dollars) 7/	0.7	0.9	0.7	0.6	0.6	0.7	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	1.2	
o/w Grants	0.3	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.7	1.2	
o/w Concessional loans	0.3	0.5	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.0	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...	2.3	3.3	3.7	3.5	3.5	3.5	3.4	3.3	3.2	3.2	2.4	2.4	2.9
Grant-equivalent financing (in percent of external financing) 8/	...	...	...	23.3	49.7	65.7	52.9	56.8	56.8	56.4	56.0	52.7	55.3	32.8	52.1	51.7
<b>Memoandum items:</b>																
Nominal GDP (Billions of US dollars)	13.3	12.8	12.9	13.9	14.9	15.9	17.0	18.2	19.6	21.1	22.8	24.6	26.6	28.7	59.6	
Nominal dollar GDP growth	18.1	-4.2	0.7	8.2	6.7	6.8	7.0	7.1	7.6	7.2	7.9	7.9	8.0	8.0	8.1	8.8
PV of PPG external debt (in Billions of US dollars)	...	...	2.6	3.3	3.7	3.8	4.2	4.6	5.0	5.4	5.9	6.5	7.1	7.9	14.9	
(PV-PV-1)/(GDP-1) (in percent)	1.9	1.7	1.6	1.7	1.7	1.7	1.7	1.8	1.9	2.1	2.2	2.4	2.6	2.8	5.7	2.2
Gross workers' remittances (Billions of US dollars)	...	...	17.8	21.4	22.3	22.0	22.6	23.1	23.2	23.4	23.6	24.1	24.4	25.1	22.9	
PV of PPG external debt (in percent of GDP + remittances)	...	...	54.6	63.3	66.9	67.6	70.6	72.6	73.1	73.7	74.2	75.5	76.2	78.2	70.2	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	3.9	7.3	5.1	4.9	5.0	4.5	4.4	4.3	4.1	3.9	3.6	9.0	4.8	

Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

2/ Derived as  $[r - g - \rho(1 - \tau)] / (1 + \tau - \rho)$  times previous period debt ratio, with  $r$  = nominal interest rate;  $g$  = real GDP growth rate, and  $\rho$  = 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/ 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 1b. Senegal: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2011-2030  
(In percent)

	Projections								
	2011	2012	2013	2014	2015	2016	2021	2026	2030
<b>PV of debt-to-GDP ratio</b>									
<b>Baseline</b>	24	25	24	25	25	26	<b>28</b>	27	25
<b>A. Alternative Scenarios</b>									
A1. Key variables at their historical averages in 2011-2031 1/	24	25	25	26	27	28	<b>35</b>	39	40
A2. New public sector loans on less favorable terms in 2011-2031 2	24	27	28	30	31	33	<b>38</b>	40	39
<b>B. Bound Tests</b>									
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	24	25	26	26	27	27	<b>29</b>	29	26
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	24	26	28	29	29	29	<b>31</b>	29	26
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	24	26	26	27	27	28	<b>30</b>	29	27
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	24	29	32	33	33	33	<b>33</b>	31	27
B5. Combination of B1-B4 using one-half standard deviation shocks	24	29	31	32	32	32	<b>33</b>	31	27
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	24	35	34	35	36	36	<b>39</b>	38	36
<b>PV of debt-to-exports ratio</b>									
<b>Baseline</b>	92	96	96	99	101	102	<b>108</b>	105	96
<b>A. Alternative Scenarios</b>									
A1. Key variables at their historical averages in 2011-2031 1/	92	96	97	102	107	113	<b>139</b>	151	152
A2. New public sector loans on less favorable terms in 2011-2031 2	92	106	112	118	125	131	<b>148</b>	156	148
<b>B. Bound Tests</b>									
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	92	96	96	99	101	102	<b>108</b>	105	96
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	92	109	128	131	133	133	<b>137</b>	128	114
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	92	96	96	99	101	102	<b>108</b>	105	96
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	92	113	127	129	130	130	<b>131</b>	118	103
B5. Combination of B1-B4 using one-half standard deviation shocks	92	111	124	127	128	129	<b>130</b>	118	105
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	92	96	96	99	101	102	<b>108</b>	105	96
<b>PV of debt-to-revenue ratio</b>									
<b>Baseline</b>	118	121	119	121	123	125	<b>133</b>	129	117
<b>A. Alternative Scenarios</b>									
A1. Key variables at their historical averages in 2011-2031 1/	118	121	120	125	130	138	<b>170</b>	185	185
A2. New public sector loans on less favorable terms in 2011-2031 2	118	133	139	144	151	160	<b>182</b>	191	181
<b>B. Bound Tests</b>									
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	118	124	125	128	128	132	<b>140</b>	135	124
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	118	128	139	141	141	143	<b>147</b>	137	122
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	118	126	128	131	132	135	<b>143</b>	139	127
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	118	142	158	158	158	160	<b>160</b>	145	126
B5. Combination of B1-B4 using one-half standard deviation shocks	118	140	154	155	155	157	<b>159</b>	145	128
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	118	172	168	172	173	177	<b>188</b>	182	166

Table 1b. Senegal: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2011-2030 (continued)  
(In percent)

	Projections								
	2011	2012	2013	2014	2015	2016	2021	2026	2030
<b>Debt service-to-exports ratio</b>									
<b>Baseline</b>	11	7	7	7	6	6	<b>12</b>	6	7
<b>A. Alternative Scenarios</b>									
A1. Key variables at their historical averages in 2011-2031 1/	11	7	7	7	6	6	<b>11</b>	7	8
A2. New public sector loans on less favorable terms in 2011-2031 2	11	7	6	7	6	6	<b>7</b>	8	9
<b>B. Bound Tests</b>									
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	11	7	7	7	6	6	<b>12</b>	6	7
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	11	8	8	9	8	8	<b>15</b>	8	8
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	11	7	7	7	6	6	<b>12</b>	6	7
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	11	7	8	8	7	7	<b>13</b>	8	8
B5. Combination of B1-B4 using one-half standard deviation shocks	11	7	8	8	7	7	<b>13</b>	8	8
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	11	7	7	7	6	6	<b>12</b>	6	7
<b>Debt service-to-revenue ratio</b>									
<b>Baseline</b>	13	9	9	9	8	8	<b>15</b>	8	8
<b>A. Alternative Scenarios</b>									
A1. Key variables at their historical averages in 2011-2031 1/	13	9	8	8	7	7	<b>13</b>	9	10
A2. New public sector loans on less favorable terms in 2011-2031 2	13	9	8	8	7	8	<b>8</b>	10	11
<b>B. Bound Tests</b>									
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	13	9	9	9	8	8	<b>16</b>	8	9
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	13	9	9	9	8	8	<b>16</b>	9	9
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	13	10	9	9	8	8	<b>16</b>	8	9
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	13	9	9	10	9	9	<b>16</b>	10	9
B5. Combination of B1-B4 using one-half standard deviation shocks	13	9	9	10	9	9	<b>16</b>	9	9
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	13	13	12	12	11	11	<b>22</b>	11	11
<i>Memorandum item:</i>									
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	14	14	14	14	14	14	<b>14</b>	14	14

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 2b. Senegal: Sensitivity Analysis for Key Indicators of Public Debt 2011-2030

	Projections							
	2011	2012	2013	2014	2015	2016	2021	2030
<b>PV of Debt-to-GDP Ratio</b>								
<b>Baseline</b>	34	36	36	37	37	37	37	39
<b>A. Alternative scenarios</b>								
A1. Real GDP growth and primary balance are at historical averages	34	34	35	36	36	37	41	50
A2. Primary balance is unchanged from 2011	34	37	40	43	46	48	61	77
A3. Permanently lower GDP growth 1/	34	36	37	38	38	38	42	53
<b>B. Bound tests</b>								
B1. Real GDP growth is at historical average minus one standard deviations in 2012-2013	34	37	40	41	42	43	47	53
B2. Primary balance is at historical average minus one standard deviations in 2012-2013	34	36	38	38	38	38	38	40
B3. Combination of B1-B2 using one half standard deviation shocks	34	36	37	38	39	39	42	48
B4. One-time 30 percent real depreciation in 2012	34	46	45	45	44	44	42	44
B5. 10 percent of GDP increase in other debt-creating flows in 2012	34	45	45	45	45	44	43	43
<b>PV of Debt-to-Revenue Ratio 2/</b>								
<b>Baseline</b>	150	157	160	162	161	162	160	166
<b>A. Alternative scenarios</b>								
A1. Real GDP growth and primary balance are at historical averages	150	152	154	156	158	162	175	206
A2. Primary balance is unchanged from 2011	150	164	176	189	200	214	263	330
A3. Permanently lower GDP growth 1/	150	158	162	165	166	170	181	225
<b>B. Bound tests</b>								
B1. Real GDP growth is at historical average minus one standard deviations in 2012-2013	150	163	174	180	183	188	201	227
B2. Primary balance is at historical average minus one standard deviations in 2012-2013	150	158	166	167	166	167	164	169
B3. Combination of B1-B2 using one half standard deviation shocks	150	157	163	168	169	173	182	203
B4. One-time 30 percent real depreciation in 2012	150	201	200	198	194	192	182	186
B5. 10 percent of GDP increase in other debt-creating flows in 2012	150	197	199	198	195	196	187	183
<b>Debt Service-to-Revenue Ratio 2/</b>								
<b>Baseline</b>	16	14	14	15	15	15	21	17
<b>A. Alternative scenarios</b>								
A1. Real GDP growth and primary balance are at historical averages	16	14	14	13	14	15	24	22
A2. Primary balance is unchanged from 2011	16	14	14	17	19	20	30	31
A3. Permanently lower GDP growth 1/	16	14	14	15	16	16	23	22
<b>B. Bound tests</b>								
B1. Real GDP growth is at historical average minus one standard deviations in 2012-2013	16	14	14	17	17	18	25	23
B2. Primary balance is at historical average minus one standard deviations in 2012-2013	16	14	14	16	16	16	22	18
B3. Combination of B1-B2 using one half standard deviation shocks	16	14	14	15	16	16	24	20
B4. One-time 30 percent real depreciation in 2012	16	16	17	19	19	19	29	23
B5. 10 percent of GDP increase in other debt-creating flows in 2012	16	14	15	26	17	19	23	19

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.