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FIRST REVIEW UNDER THE POLICY SUPPORT INSTRUMENT AND REQUEST FOR MODIFICATION OF ASSESSMENT CRITERIA—DEBT SUSTAINABILITY ANALYSIS UPDATE

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Senegal remains at low risk of debt distress, consistent with the Staff Report of December 2014 (Country Report No. 15/2) and the last Debt Sustainability Analysis (DSA) update in June 2015 (Country Report No. 15/273).[1] All debt burden indicators are well below their respective thresholds and only the debt service-to-revenue ratio shows two spikes that breach the threshold under stress scenarios, due to Eurobond rollover. However, these breaches are small and temporary reflecting the bullet payments, and the debt service ratio follows afterwards a stable path, even considering additional non-concessional borrowing to reimburse the Eurobonds. The public DSA does not point out significant weaknesses, but it highlights the critical role for fiscal consolidation and reforms to break with the past to generate the sustained growth required to preserve debt sustainability.

[1] Senegal's public debt statistics cover external and domestic debt issued by the central government (including debt guaranteed by the government). External debt is defined as debt borrowed or serviced in a currency other than the CFA franc, regardless of the residency of the creditor. The baseline DSA incorporates remittances, as they represent

BACKGROUND

1. **Public debt ratios have been revised upwards in 2015, but they remain on a declining path over the medium term.** Historical figures on the composition of the stock of external debt remain as published in the last DSA update (Country Report No. 15/273). Concerning the projections for 2015, external public debt in Senegal is estimated at 39.3 percent of GDP, compared to 35.7 percent projected in the previous DSA. The main reason for this difference is the exchange rate depreciation in 2015. Commercial debt stood at 20 percent of the stock of total external public debt in 2014 and, in the first seven months of 2015, there have not been new non-concessional loans. Domestic debt increased from FCFA 1,065.5 billion at end-2014 to FCFA 1,151.5 billion in July 2015 and it is projected at 15.0 percent of GDP, lower than 19.2 percent projected in the latest DSA. As a result, total public debt reaches US$7.52 billion or 54.4 percent of GDP, 0.6 percentage point less than what estimated in the previous DSA.

2. **The authorities are committed to reduce debt ratios over the medium term, by means of fiscal consolidation, improvements in the current account and a strengthening of debt management policies.** In particular, the authorities are increasingly financing government needs on the internal and regional markets, to mitigate exchange rate risks and the vulnerability to the volatility of external capital flows. Senegal has been able to lengthen the maturities and reduce borrowing costs on domestic debt. Medium and long term domestic financing has increased from 34.2 percent of total domestic debt in 2011 to 75 percent in 2014. Also, new instruments such as Islamic bonds have been introduced with FCFA 100 billion issued in 2014. Consequently, the implicit interest rate on domestic financing decreased from 3.6 to 3.3 percent between 2011 and 2014. The medium term debt management strategy is also aimed at preserving the predominance of concessional borrowing and at resorting to semi-concessional borrowing only in exceptional cases and for specific projects. Eurobond issuances will be considered if financing terms are favorable and if it is not possible to obtain non-concessional financing from development partners, particularly the African Development Bank and the World Bank.

UNDERLYING ASSUMPTIONS AND BORROWING PLAN

3. **The DSA is consistent with the macroeconomic framework outlined in the Staff Report and updates the previous DSA produced in Country Report No. 15/273, for the request for a three-year Policy Support Instrument (PSI).** In line with the previous DSA, the baseline scenario assumes the implementation of sound macroeconomic policies, structural reforms, and an ambitious investment plan, as outlined in the Plan Senegal Emergent (PSE). This scenario is expected to deliver strong and sustained economic growth and a narrowing fiscal deficit over the long term.

4. **Notwithstanding the downward correction of the output growth rate compared to the previous DSA, the average future growth rates are substantially higher than the historical rate (3.8 percent).** This higher growth rate represents the growth dividend of the planned structural reforms and ambitious investment program outlined in the PSE. In this update we do not explicitly present alternative scenarios. However, a staff review concludes that there are no changes to the alternative scenario which was explicitly modeled in the full DSA of December 2014 (Country Report No. 15/2). Under that scenario debt indicators remain below their policy-dependent thresholds, even though debt dynamics

depends on expected growth dividends to materialize. However, the historical scenario, which assumes historical low growth rates, highlights the importance of continuous reforms to unlock the high, sustained and inclusive growth targeted by the PSE and required to preserve debt sustainability.

5. The main assumptions are as follows:

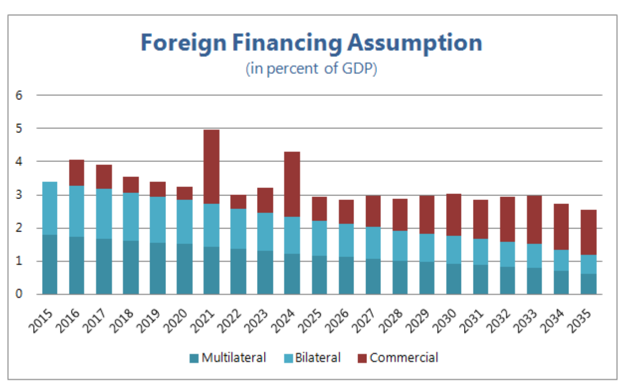
- **Real GDP growth** is estimated at 5.1 percent in 2015 and it will increase to 7.2 percent in 2020 to reflect the effects of investment and reforms under the PSE. Over the long run, real GDP growth has been revised downwards to 5.8 percent over the period 2021–35, from 7.8 percent estimated in the previous DSA. This is in line with the international experience that suggests that over a long period as economies converge to middle income status; a 6 percent growth rate is more achievable than continuing with the 7 to 8 percent achievable in the first part of a growth spurt.

- **Fiscal deficit**. The overall fiscal deficit in 2015 is projected at 4.8 percent of GDP in 2015 and 4.2 percent in 2016, and it will gradually decline to 2.6 percent in 2020. The primary balance is estimated at 2.9 percent in 2015 and is projected to decline to 1.3 percent in the long-term.

- **Current account deficit**. The current account deficit in 2015 has been revised from 8.0 to 8.2 percent of GDP, and it will worsen to 8.7 percent in 2016 mainly because of changes in oil and commodity prices. In the medium term the current account is projected to gradually improve following the fiscal consolidation plan and the impact of reforms in diversifying exports based on globally competitive production. The deficit is projected at 7.8 percent of GDP in 2020 and over the long-term the average current account deficit should stabilize at about 7½ percent of GDP. Remittances remain a significant component of the current account but they are estimated to decline over the coming years, reaching about 10 percent of GDP in 2020.

- **Inflation**. Inflation has been revised downwards following the decline in commodity prices. The GDP deflator is projected at 0.2 percent in 2015 and to 1.8 percent in 2020, down from 2.3 percent in the previous DSA.

- **External financing mix and terms**. The DSA assumes that the financing mix will be consistent with a prudent borrowing strategy. Even though the non-concessional borrowing limit in Senegal will be unconstrained under the PSI, the authorities are engaged in pursuing a borrowing strategy that prioritizes concessional over non-concessional financing to reduce borrowing costs and extend maturities. Consistently, the DSA projects a moderate substitution between concessional and commercial borrowing—with two exceptions in 2021 and 2024 to rollover the outstanding 10-year Eurobonds issued in 2011 and 2014 with semi-concessional borrowing–



–and, as a result, only a gradual decline in the grant element of new disbursements (see Figure 1, first panel).[2] The average maturity of new debt is above 18 years, with 4.5 years of grace period. The average cost of new borrowing is assumed at 2.6 percent.

- **Domestic borrowing.** The composition between external and domestic debt assumes the latter to account for 30 percent of total public debt, 7.5 percent of which with maturity below one year. New medium and long term domestic debt is assumed to carry a real interest rate of 4 percent with average maturity of four years.
- **Discount rate**. The discount rate for this DSA is set at 5 percent.

Evolution of Selected Macroeconomic Indicators

	2012	2013	2014	2015	Long term 1/
Real GDP growth					
Current DSA	4.4	3.6	4.7	5.1	5.8
Previous DSA	4.4	3.6	4.7	5.1	7.8
Overall fiscal deficit (percent of GDP)					
Current DSA	5.2	5.5	4.9	4.8	2.6
Previous DSA	5.2	5.5	4.9	4.7	2.6
Current account deficit (percent of GDP)					
Current DSA	10.8	10.4	8.8	8.2	7.4
Previous DSA	10.9	10.4	8.8	8.0	6.1

1/ Defined as the last 15 years of the projection period. For the current DSA update, the long term covers the years 2021-2035.

EXTERNAL DSA

6. **External debt indicators are below the thresholds under the baseline scenarios and even under stress tests, with the exception of the ratio of debt service to revenue, which shows two spikes that marginally breach the threshold in two years (Figure 1).** The PV of public and publicly guaranteed (PPG) external debt is projected at 31.1 percent of GDP in 2015 and it is estimated to decline to 27.9 percent in 2020 and 18.8 percent in 2035. The ratios of the PV of PPG external debt show a declining trend under the baseline scenario and they are comfortably below the thresholds, which take remittances into account, even under the most extreme scenarios. Debt service ratios show two spikes that reflect the bullet repayment of the 2011 and 2014 Eurobonds, which are due, respectively, in 2021 and 2024. The financing plan assumed in the DSA already incorporates higher than usual semi-concessional borrowing in those years to rollover the Eurobonds. These two spikes do not breach the thresholds under the baseline

[2] Staff conducted an exercise under different assumptions consistent with a more rapid decline of the grant element, consistent with stronger shift from concessional to semi-concessional and commercial borrowing. The dynamics of total and external public debt is similar and conclusions are the same as the ones discussed below

scenario, but exclusively under the stress scenarios and when considering the ratio of debt service over revenue. In particular, there is one very minor breach of the threshold under the historical scenario and two moderate breaches under the assumption of 30 percent depreciation of the exchange rate. In both cases, the breaches are temporary and in the long term the debt service-to-revenue ratio remains below the thresholds under any scenario.

7. **Notwithstanding the breaches of the debt service-to-revenue ratio under stress scenarios, there are several reasons suggesting that the requirements for a low risk of debt distress are met**. First, the breaches in the debt service-to-revenue thresholds are moderate and temporary, as they are due exclusively to the bullet repayment of the Eurobonds. The rollover is assumed to be financed through semi-concessional borrowing and the re-financing plan does not point out any additional vulnerability, given that the debt service ratios will remain under the respective threshold in the long term. Assuming a more conservative borrowing plan—with a steeper decline in the grant element of new financing compared to what is assumed in the baseline—does not translate in any adverse debt dynamic or any additional breach of debt thresholds. In addition, the temporary breaches are observed under a currency depreciation scenario which may overstate the risk of debt distress in Senegal where external debt is denominated mostly in euro (41 percent of external public debt in 2014)—the pegged currency—or in US dollar (36 percent). However, the depreciation of the CFA franc remains a factor to be carefully taken into account going forward for debt management purposes. Authorities are engaged on this issue and a recent TA mission (July 2015) discussed measures and mechanisms to manage exchange rate risk, suggesting a strengthening of monitoring mechanisms and an improvement of the swap portfolio risk management. Finally, the share of non-resident holding of domestic debt is relatively low and stable at around 5–6 percent of GDP – mostly concentrated in the WAEMU – and, given the difference between the current debt ratios and the thresholds, it does not represent a significant source of risk, even though it is an element to consider and assess on a regular basis, especially in times of uncertainty on global financial markets.

PUBLIC DSA

8. **Total (external and domestic) public debt indicators are projected to gradually decline, while the debt service-to-revenue ratio is projected to remain below 20 percent**, with two moderate and temporary increases in 2021 and 2024, in correspondence with the repayments of the Eurobonds. Under the baseline scenario, the PV of total public debt is projected to moderately increase from 46.1 percent of GDP in 2015 to 47.3 percent in 2017 and then to decline to 44.5 percent of GDP in 2020 (see Figure 2 and Table 3). Over time, the ratio is projected to further decrease to get closer to 40 percent. Under the most extreme scenario of a 30 percent depreciation of the currency in 2016, debt ratios increase more than under the other scenarios until 2020, but in the long term the evolution of total public debt is similar to what is projected under the baseline scenario. The public debt outlook looks worse, as would be expected, in absence of further fiscal consolidation, but is still well below the public debt benchmark for strong performers. In fact, assuming that the primary balance will not improve compared to the value projected for 2015 implies a less favorable dynamics but with the PV of public debt-to-GDP ratio remaining well below the benchmark of 74 percent.

9. The debt outlook projected keeping real GDP growth and the primary deficit constant at their historical levels highlights the importance of fiscal consolidation and structural reforms to support strong growth and preserve debt sustainability. Under the historical scenario (which keeps real GDP growth and the primary balance at their historical levels), the PV of total public debt is on a growing path and in 2026 is projected to be above the benchmark of 74 percent of GDP. Similarly, the historical scenario is the one showing the most unfavorable patterns in relation to the PV of public debt-to-revenue ratio and the debt service ratio. A worsening of public debt sustainability under the historical scenario is expected and underscores the main goal of the PSE, namely to orchestrate a break with the past underperformance of the past 30 years. More mechanically, in the case of Senegal, the current baseline scenario has to be very different from historical averages given this necessity of moving to inclusive growth at rates that enable Senegal to transform into a middle income emerging economy over the next 30 years. Accordingly, freezing real GDP growth and the primary balance at their historical averages implies a decline in the capacity to repay together with an increase in indebtedness. This highlights why Senegal needs the PSE to move forward why historical scenarios may be too conservative. Whilst risks remain, it is encouraging that reforms have begun moving Senegal from the 3½ percent growth rates of the past to about 5 percent. With continued reform continued growth acceleration can be expected to reach the 7 to 8 percent PSE target within the next few years. To be conservative, the primary deficit is set at 3.3 percent, even if it is projected at 2.9 percent of GDP in 2015 and at 1.3 percent on average over the period 2016–20. Real GDP growth is also set at a value (3.8 percent) which is already well below the current projected growth rate of 5.1 percent and almost 3 percentage points lower than the average over the period 2016–21 projected under the baseline scenario consistent with PSE. Overall, risks for public debt sustainability remain low, but stress tests underline the importance of making continuous efforts to improve the fiscal stance and of strengthening economic growth. In turn this requires implementing structural reforms required for the PSE to succeed as highlighted in the staff report.

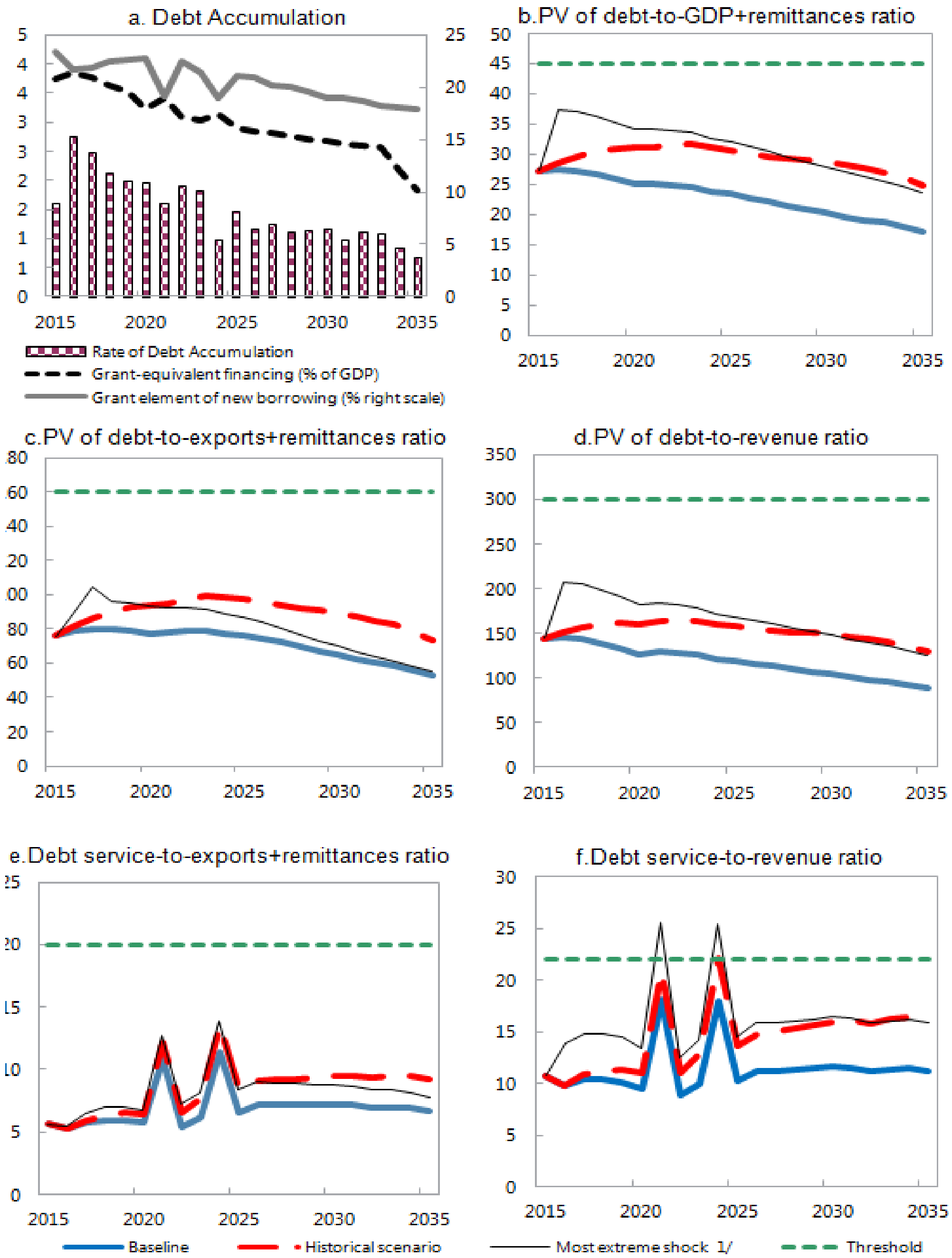
CONCLUSION

10. According to staff's assessment, Senegal continues to face a low risk of debt distress. The minor and temporary breaches of the debt service-to-revenue thresholds are exclusively related to bullet payments for the Eurobond issuances and the overall debt dynamic is under control under the baseline and stress scenarios. However, the stress tests conducted under the external and public debt sustainability analysis indicate that debt sustainability hinges on continuing and strengthening fiscal consolidation and on achieving high and sustained growth, as envisaged in the PSE. By contrast, given current debt levels and the strong debt management capacity, standard macroeconomic shocks seem to be of second order importance for external debt sustainability in Senegal. Thus, safeguarding debt sustainability will require a deepening and acceleration of the reforms as discussed in the staff report.

11. Preserving debt sustainability also requires a cautious approach to semi-concessional and commercial borrowing, also in light of the removal of the non-concessional borrowing limit. To this purpose, the staff recommends a careful and continuous monitoring of financing needs and of borrowing plans, since a rapid accumulation of commercial debt may undermine the low risk of debt distress. Moreover, to minimize exchange risks, debt strategy should focus on the costs and benefits of borrowing in Euro or from the regional market in CFAF.

12. The authorities concur with the analysis in this DSA. The conclusions of the DSA were shared with the authorities who broadly concurred with the assessment and with maintaining a "low" debt risk rating. They stressed that Senegal's strong debt management capacity, but reiterated the need for reinforcement of capacity in view of the country's gradual transition to market sources.

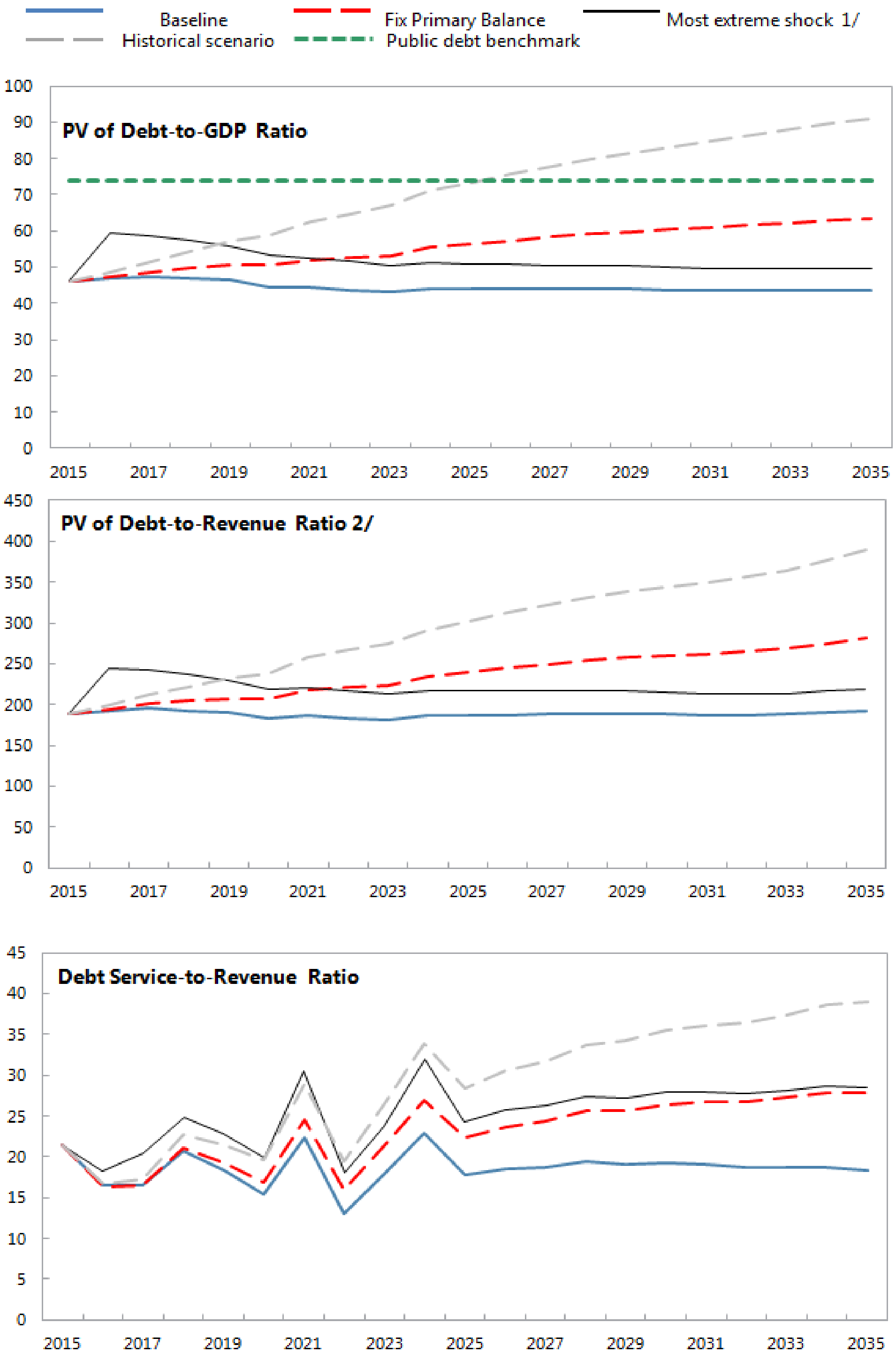
Figure 1. Senegal: Indicators of Public and Publicly Guaranteed External Debt under Alternative Scenarios, 2015–35[1/]



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio on or before 2025. In figure b. it corresponds to a One-time depreciation shock; in c. to a Combination 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 the Alternative Scenarios, 2015–35[1/]



Sources: Country authorities; and staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio on or before 2025.
2/ Revenues are defined inclusive of grants.

Table 1. Senegal: External Debt Sustainability Framework, Baseline Scenario, 2012–35[1/]

(In percent of GDP, unless otherwise indicated)

	Actual			Historical [6/]	Standard [6/]	Projections									
				Average	Deviation							2015-2020			2021-2035
	2012	2013	2014			2015	2016	2017	2018	2019	2020	Average	2025	2035	Average
External debt (nominal) 1/	**59.2**	**66.0**	**66.9**			**70.0**	**71.2**	**71.5**	**71.2**	**70.2**	**71.2**		**74.7**	**69.6**	
of which: public and publicly guaranteed (PPG)	30.6	32.4	39.5			39.3	39.3	38.9	37.9	36.8	35.6		31.9	23.1	
Change in external debt	4.7	6.9	0.8			3.1	1.3	0.3	-0.3	-1.0	1.0		0.4	-0.4	
Identified net debt-creating flows	9.5	5.5	3.6			2.0	2.5	1.9	1.4	1.5	1.5		2.0	2.8	
Non-interest current account deficit	**9.9**	**9.4**	**7.8**	**8.3**	**2.8**	**7.0**	**7.6**	**7.1**	**7.0**	**6.9**	**6.7**		**7.1**	**7.2**	6.7
Deficit in balance of goods and services	21.0	20.7	18.8			18.2	18.3	17.8	17.2	16.8	15.8		13.5	14.7	
Exports	27.9	28.1	27.7			27.0	25.9	25.7	25.3	24.7	24.5		24.8	26.1	
Imports	48.9	48.8	46.5			45.2	44.2	43.5	42.5	41.5	40.3		38.3	40.8	
Net current transfers (negative = inflow)	-12.4	-12.5	-12.5	-11.5	1.5	-12.5	-12.2	-12.0	-11.5	-11.2	-10.8		-7.8	-8.4	-8.3
of which: official	-1.0	-0.6	-0.7			-0.7	-0.9	-0.9	-0.8	-0.7	-0.7		-0.5	-0.4	
Other current account flows (negative = net inflow)	1.3	1.2	1.5			1.4	1.5	1.3	1.3	1.3	1.8		1.4	0.9	
Net FDI (negative = inflow)	**-1.9**	**-2.1**	**-2.1**	**-2.0**	**0.5**	**-2.4**	**-2.5**	**-2.2**	**-2.2**	**-1.8**	**-1.7**		**-1.7**	**-1.7**	-1.7
Endogenous debt dynamics 2/	**1.5**	**-1.9**	**-2.1**			**-2.6**	**-2.6**	**-3.0**	**-3.4**	**-3.5**	**-3.5**		**-3.3**	**-2.7**	
Contribution from nominal interest rate	1.0	0.9	1.0			1.3	1.2	1.2	1.1	1.1	1.1		0.8	0.6	
Contribution from real GDP growth	-2.4	-2.0	-3.0			-3.9	-3.8	-4.2	-4.5	-4.6	-4.6		-4.1	-3.3	
Contribution from price and exchange rate changes	3.0	-0.8	-0.1			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	**-4.8**	**1.4**	**-2.7**			**1.1**	**-1.2**	**-1.6**	**-1.7**	**-2.5**	**-0.5**		**-1.7**	**-3.1**	
of which: exceptional financing	-1.4	-0.1	1.5			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
PV of external debt 4/	...	...	55.2			61.7	63.0	63.4	63.3	62.5	63.5		68.2	65.3	
In percent of exports	...	...	199.3			228.7	243.0	246.8	250.6	252.5	259.5		274.6	249.8	
PV of PPG external debt	**...**	**...**	**27.8**			**31.1**	**31.1**	**30.7**	**30.0**	**29.0**	**27.9**		**25.4**	**18.8**	
In percent of exports	**...**	**...**	**100.3**			**115.3**	**119.9**	**119.8**	**118.7**	**117.2**	**113.8**		**102.1**	**72.0**	
In percent of government revenues	**...**	**...**	**132.5**			**144.9**	**145.7**	**144.1**	**139.6**	**134.1**	**127.2**		**119.2**	**88.7**	
Debt service-to-exports ratio (in percent)	**16.9**	**10.0**	**15.5**			**16.9**	**13.4**	**16.3**	**14.4**	**16.2**	**13.6**		**13.6**	**13.3**	
PPG debt service-to-exports ratio (in percent)	**7.0**	**6.5**	**8.0**			**8.5**	**8.0**	**8.7**	**8.9**	**8.9**	**8.5**		**8.8**	**9.1**	
PPG debt service-to-revenue ratio (in percent)	**9.5**	**9.2**	**10.6**			**10.7**	**9.8**	**10.4**	**10.4**	**10.2**	**9.4**		**10.3**	**11.2**	
Total gross financing need (Billions of U.S. dollars)	1.8	1.5	1.6			1.3	1.3	1.5	1.5	1.8	1.8		2.8	6.0	
Non-interest current account deficit that stabilizes debt ratio	5.2	2.6	6.9			4.0	6.3	6.9	7.3	7.8	5.7		6.7	7.5	
Key macroeconomic assumptions															
Real GDP growth (in percent)	4.4	3.6	4.7	3.8	1.2	5.1	5.9	6.5	7.0	7.1	7.2	6.5	6.0	5.1	5.8
GDP deflator in US dollar terms (change in percent)	-5.2	1.4	0.1	3.3	7.7	-16.1	2.0	2.6	2.6	2.4	3.4	-0.5	1.8	2.5	1.9
Effective interest rate (percent) 5/	1.7	1.6	1.5	1.8	0.4	1.7	1.8	1.8	1.8	1.7	1.7	1.7	1.2	1.0	1.2
Growth of exports of G&S (US dollar terms, in percent)	4.7	6.0	3.2	7.5	10.0	-14.1	3.8	8.0	8.0	7.5	9.8	3.9	8.2	8.4	8.2
Growth of imports of G&S (US dollar terms, in percent)	8.2	5.0	-0.1	9.9	17.3	-14.3	5.7	7.3	7.3	7.3	7.5	3.5	7.3	9.0	7.9
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	23.4	21.7	21.9	22.5	22.6	22.8	22.5	21.1	17.9	19.7
Government revenues (excluding grants, in percent of GDP)	20.5	19.9	21.0			21.5	21.4	21.3	21.5	21.6	21.9		21.3	21.2	21.2
Aid flows (in Billions of US dollars) 7/	0.4	0.8	0.7			0.5	0.5	0.5	0.6	0.6	0.6		0.8	1.0	
of which: Grants	0.4	0.4	0.5			0.4	0.4	0.5	0.5	0.5	0.5		0.7	0.9	
of which: Concessional loans	0.0	0.4	0.2			0.0	0.1	0.1	0.1	0.1	0.1		0.1	0.1	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			3.7	3.9	3.8	3.6	3.5	3.2		2.9	1.8	2.7
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			59.0	54.8	55.3	57.0	57.3	56.2		55.5	46.7	52.2
Memorandum items:															
Nominal GDP (Billions of US dollars)	14.2	15.0	15.7			13.8	14.9	16.3	17.9	19.6	21.8		31.7	66.9	
Nominal dollar GDP growth	-1.1	5.1	4.9			-11.8	8.0	9.2	9.8	9.7	10.9	6.0	7.9	7.7	7.8
PV of PPG external debt (in Billions of US dollars)			4.0			4.3	4.7	5.0	5.4	5.7	6.1		8.0	12.6	
(PVt-PVt-1)/GDPt-1 (in percent)						1.6	2.7	2.5	2.1	2.0	1.9	2.1	1.4	0.7	1.2
Gross workers' remittances (Billions of US dollars)	1.9	2.1	2.2			1.9	2.0	2.1	2.2	2.4	2.5		2.6	6.1	
PV of PPG external debt (in percent of GDP + remittances)	...	...	24.4			27.3	27.5	27.2	26.7	25.9	25.0		23.4	17.3	
PV of PPG external debt (in percent of exports + remittances)	...	...	66.6			76.1	79.4	79.8	79.6	79.0	77.4		76.5	53.4	
Debt service of PPG external debt (in percent of exports + remittanc	...	...	5.3			5.6	5.3	5.8	5.9	6.0	5.8		6.6	6.7	

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/ 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 2. Senegal: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2015–35

(In percent)

	Projections							
	2015	2016	2017	2018	2019	2020	**2025**	2035
PV of debt-to GDP ratio								
Baseline	31	31	31	30	29	28	**25**	19
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	31	32	34	35	35	35	**34**	27
A2. New public sector loans on less favorable terms in 2015-2035 2	31	32	32	32	32	31	**31**	27
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	31	32	33	32	31	30	**27**	20
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	31	33	35	34	33	32	**28**	19
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	31	33	35	34	33	32	**29**	22
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	31	34	36	35	34	32	**28**	19
B5. Combination of B1-B4 using one-half standard deviation shocks	31	36	42	40	39	37	**32**	21
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	31	44	44	43	41	40	**36**	27
PV of debt-to-exports ratio								
Baseline	115	120	120	119	117	114	**102**	72
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	115	125	131	137	141	143	**136**	105
A2. New public sector loans on less favorable terms in 2015-2035 2	115	123	126	127	129	128	**125**	105
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	115	121	120	119	118	115	**102**	72
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	115	133	162	160	158	153	**131**	86
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	115	121	120	119	118	115	**102**	72
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	115	131	139	137	135	131	**111**	73
B5. Combination of B1-B4 using one-half standard deviation shocks	115	132	154	152	150	145	**122**	78
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	115	121	120	119	118	115	**102**	72
PV of debt-to-revenue ratio								
Baseline	145	146	144	140	134	127	**119**	89
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	145	151	157	161	161	160	**158**	129
A2. New public sector loans on less favorable terms in 2015-2035 2	145	150	152	150	147	143	**146**	129
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	145	151	155	150	145	137	**128**	95
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	145	152	165	159	153	145	**129**	90
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	145	156	166	160	155	147	**137**	102
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	145	159	167	161	155	147	**130**	90
B5. Combination of B1-B4 using one-half standard deviation shocks	145	167	195	188	181	171	**150**	101
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	145	207	205	198	191	182	**169**	126

Table 2. Senegal: Sensitivity Analysis for Key Indicators of Public Guaranteed External Debt, 2015–35 (continued)

(In percent)

Debt service-to-exports ratio								
Baseline	9	8	9	9	9	8	**9**	9
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	9	8	9	10	10	10	**12**	13
A2. New public sector loans on less favorable terms in 2015-2035 2	9	8	8	9	9	8	**11**	13
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	9	8	9	9	9	8	**9**	9
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	9	9	10	11	11	10	**12**	11
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	9	8	9	9	9	8	**9**	9
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	9	8	9	9	9	9	**10**	9
B5. Combination of B1-B4 using one-half standard deviation shocks	9	8	10	10	10	10	**11**	10
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	9	8	9	9	9	8	**9**	9
Debt service-to-revenue ratio								
Baseline	11	10	10	10	10	9	**10**	11
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	11	10	11	11	11	11	**14**	16
A2. New public sector loans on less favorable terms in 2015-2035 2	11	10	10	10	10	9	**12**	16
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	11	10	11	11	11	10	**11**	12
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	11	10	11	11	11	10	**12**	11
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	11	10	12	12	12	11	**12**	13
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	11	10	11	11	11	10	**12**	11
B5. Combination of B1-B4 using one-half standard deviation shocks	11	10	12	13	12	11	**14**	13
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	11	14	15	15	14	13	**15**	16
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	19	19	19	19	19	19	**19**	19

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 an offsetting adjustment in import levels).
4/ Includes official and private transfers and FDI.
5/ Depreciation is defined as percentage decline in dollar/local currency rate, such that it never exceeds 100 percent.
6/ Applies to all stress scenarios except for A2 (less favorable financing) in which the terms on all new financing are as specified in footnote 2.

Table 3. Senegal: Public Sector Debt Sustainability Framework, Baseline Scenario, 2012–35

(In percent of GDP, unless otherwise indicated)

	Actual					Estimate				Projections					
	2012	2013	2014	Average 5/	Standard Deviation 5/	2015	2016	2017	2018	2019	2020	2015-20 Average	2025	2035	2021-35 Average
Public sector debt 1/	42.8	46.6	53.2			54.4	55.1	55.4	54.8	54.1	52.2		50.5	47.9	
of which: foreign-currency denominated	30.6	32.4	39.5			39.3	39.3	38.9	37.9	36.8	35.6		31.9	23.1	
Change in public sector debt	2.1	3.8	6.6			1.1	0.8	0.3	-0.6	-0.7	-1.9		-0.5	-0.2	
Identified debt-creating flows	2.1	3.5	6.3			6.2	0.0	-0.9	-1.7	-2.1	-2.5		-0.8	-0.4	
Primary deficit	3.7	4.0	3.2	3.3	1.4	2.9	2.3	1.7	1.1	1.0	0.6	1.6	1.1	1.3	1.1
Revenue and grants	23.3	22.5	24.2			24.4	24.3	24.3	24.3	24.4	24.4		23.6	22.6	
of which: grants	2.8	2.5	3.3			2.9	3.0	2.9	2.8	2.8	2.5		2.3	1.4	
Primary (noninterest) expenditure	27.0	26.4	27.5			27.3	26.7	26.0	25.5	25.4	25.0		24.6	23.9	
Automatic debt dynamics	-1.1	-0.5	3.1			3.4	-2.4	-2.6	-2.8	-3.1	-3.1		-1.8	-1.6	
Contribution from interest rate/growth differential	-1.2	0.8	-0.5			-0.9	-2.0	-2.2	-2.5	-2.7	-2.6		-1.8	-1.6	
of which: contribution from average real interest rate	0.5	2.3	1.6			1.7	1.0	1.2	1.1	1.0	1.1		1.1	0.7	
of which: contribution from real GDP growth	-1.7	-1.5	-2.1			-2.6	-3.0	-3.3	-3.6	-3.7	-3.6		-2.9	-2.4	
Contribution from real exchange rate depreciation	0.1	-1.3	3.5			4.3	-0.4	-0.4	-0.3	-0.4	-0.5		...	...	
Other identified debt-creating flows	-0.5	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	-0.5	0.0	0.0			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)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Other (specify, e.g. bank recapitalization)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Residual, including asset changes	0.1	0.4	0.3			-5.1	0.8	1.2	1.1	1.4	0.7		0.2	0.2	
Other Sustainability Indicators															
PV of public sector debt	...	...	41.6			46.1	46.9	47.3	46.9	46.3	44.5		44.0	43.6	
of which: foreign-currency denominated	...	...	27.8			31.1	31.1	30.7	30.0	29.0	27.9		25.4	18.8	
of which: external	...	...	27.8			31.1	31.1	30.7	30.0	29.0	27.9		25.4	18.8	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	11.5	12.1	12.9			11.6	12.8	7.7	8.0	6.7	5.5		6.0	5.7	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	171.4			189.0	192.8	194.8	192.7	190.0	182.5		186.7	193.0	
PV of public sector debt-to-revenue ratio (in percent)	...	...	198.1			214.9	219.7	221.5	218.2	214.2	203.1		206.7	205.5	
of which: external 3/	...	...	132.5			144.9	145.7	144.1	139.6	134.1	127.2		119.2	88.7	
Debt service-to-revenue and grants ratio (in percent) 4/	16.1	17.0	20.3			21.4	16.4	16.4	20.7	18.4	15.4		17.8	18.2	
Debt service-to-revenue ratio (in percent) 4/	18.4	19.2	23.5			24.3	18.7	18.7	23.4	20.7	17.1		19.7	19.4	
Primary deficit that stabilizes the debt-to-GDP ratio	1.6	0.1	-3.4			1.8	1.5	1.4	1.7	1.7	2.5		1.6	1.5	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	4.4	3.6	4.7	3.8	1.2	5.1	5.9	6.5	7.0	7.1	7.2	6.5	6.0	5.1	5.8
Average nominal interest rate on forex debt (in percent)	2.5	2.5	2.5	2.5	0.6	2.4	2.8	2.8	2.8	2.9	2.9	2.8	2.4	2.6	2.5
Average real interest rate on domestic debt (in percent)	4.5	8.5	6.4	3.6	3.9	6.7	4.5	4.6	4.1	3.7	4.4	4.7	5.1	3.0	4.6
Real exchange rate depreciation (in percent, + indicates depreciatior	0.5	-4.3	11.1	1.2	8.8	11.2	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	2.6	-1.9	0.1	2.4	2.9	0.2	1.8	1.5	1.6	1.7	1.8	1.4	1.8	2.5	1.9
Growth of real primary spending (deflated by GDP deflator, in percer	3.5	1.2	8.9	1.4	2.9	4.4	3.5	3.6	4.9	6.8	5.7	4.8	5.6	4.1	5.5
Grant element of new external borrowing (in percent)	...	...	...	...	...	23.4	21.7	21.9	22.5	22.6	22.8	22.5	21.1	17.9	...

Sources: Country authorities; and staff estimates and projections.

1/ [Indicate coverage of public sector, e.g., general government or nonfinancial public sector. Also whether net or gross debt is used.]

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

3/ 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 4. Senegal: Sensitivity Analysis for Key Indicators of Public Debt, 2015–35

	Projections							
	2015	2016	2017	2018	2019	2020	2025	2035
PV of Debt-to-GDP Ratio								
Baseline	46	47	47	47	46	45	44	44
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	46	49	52	54	57	59	73	91
A2. Primary balance is unchanged from 2015	46	47	49	50	51	50	56	64
A3. Permanently lower GDP growth 1/	46	47	48	48	47	46	47	54
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2016-20	46	49	53	53	54	53	58	64
B2. Primary balance is at historical average minus one standard deviations in 2016-201	46	49	52	51	50	48	47	46
B3. Combination of B1-B2 using one half standard deviation shocks	46	50	53	54	54	53	56	61
B4. One-time 30 percent real depreciation in 2016	46	59	59	57	56	53	51	49
B5. 10 percent of GDP increase in other debt-creating flows in 2016	46	56	55	55	53	51	49	47
PV of Debt-to-Revenue Ratio 2/								
Baseline	189	193	195	193	190	182	187	193
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	189	200	211	222	232	238	302	389
A2. Primary balance is unchanged from 2015	189	195	201	204	208	207	239	281
A3. Permanently lower GDP growth 1/	189	193	196	195	194	187	201	237
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2016-20	189	201	215	218	219	216	242	284
B2. Primary balance is at historical average minus one standard deviations in 2016-201	189	201	214	211	207	198	200	202
B3. Combination of B1-B2 using one half standard deviation shocks	189	203	218	220	220	216	237	271
B4. One-time 30 percent real depreciation in 2016	189	244	242	236	230	218	216	219
B5. 10 percent of GDP increase in other debt-creating flows in 2016	189	228	228	224	220	210	210	208
Debt Service-to-Revenue Ratio 2/								
Baseline	21	16	16	21	18	15	18	18
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	21	17	17	23	21	20	28	39
A2. Primary balance is unchanged from 2015	21	16	16	21	19	17	22	28
A3. Permanently lower GDP growth 1/	21	16	17	21	19	16	19	22
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2016-20	21	17	18	22	21	18	23	28
B2. Primary balance is at historical average minus one standard deviations in 2016-201	21	16	17	22	20	17	19	19
B3. Combination of B1-B2 using one half standard deviation shocks	21	17	17	23	21	18	22	27
B4. One-time 30 percent real depreciation in 2016	21	18	20	25	23	20	24	28
B5. 10 percent of GDP increase in other debt-creating flows in 2016	21	16	18	24	22	19	20	20

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.