INTERNATIONAL MONETARY FUND AND
INTERNATIONAL DEVELOPMENT ASSOCIATION

UNION OF THE COMOROS

Joint IMF/World Bank Debt Sustainability Analysis 2009

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

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August 28, 2009

Comoros is in debt distress. *The low-income country debt sustainability analysis (LIC DSA) shows that Comoros remains in debt distress under the baseline. For illustrative purposes, the alternative scenario assumes a hypothetical access to HIPC/MDRI debt relief within the next 3 years. Under such circumstances, debt becomes manageable*[5]

[5] This is an update of the December 2008 DSA prepared for Comoros using the debt sustainability framework for low-income countries developed jointly by the IMF and the World Bank. The 2008 DSA was prepared at the time of the last IMF Article IV consultation with Comoros (Country Report No. 09/42). The 2009 DSA is based on external and public debt data from the Comorian authorities, and on IMF and World Bank staff estimates; it was produced jointly by Fund and Bank staffs following "Staff Guidance Note on the Application of the Joint Fund-Bank Debt Sustainability Framework for Low-Income Countries (LICs)," October 06, 2008 – http://www-int.imf.org/depts/pdr/Debt/Debt-Sustainability/Low-Income-Country-DSA/SM08317andCorr1.pdf and http://siteresources.worldbank.org/INTDEBTDEPT/PolicyPapers/21952151/39748MainExt.pdf

1. **Macroeconomic assumptions underlying this LIC-DSA update are broadly unchanged from those in the December 2008**. The update assumes a somewhat stronger export performance, a more modest rate of increase in remittances, and a slower rate of improvement in the domestic primary balance.

2. **The main results of the updated DSA are similar to those of the end-2008 exercise**. The analysis shows in particular that Comoros remains in debt distress, as evidenced by recurrent arrears accumulation and prolonged breaches of the NPV of debt and debt service thresholds. As in the previous DSA, under the baseline scenario the NPV of external debt-to-exports ratio is above country-specific indicative thresholds for most of 2009–24.

3. **An alternative scenario that assumes HIPC/ MDRI debt relief points to a significant improvement of the debt outlook.** The debt dynamics under the HIPC/ MDRI debt relief scenario would be sustainable under a variety of stress tests. Under the most extreme test[6], the PV of debt-to-GDP, debt-to-exports, and debt-to-revenues ratios are breached, but the trajectories revert to below the thresholds much faster compared to the baseline without debt relief. After the shock, the NPV of debt would decline to 59 percent of exports after 2029; and the debt service ratios would remain below relevant thresholds throughout the horizon.

4. **The public DSA does not change the above assessment.** However, under the alternative scenario, higher revenues and spending restraint will permit achievement of a small primary fiscal surplus, anchoring fiscal consolidation and permitting a gradual reduction of domestic arrears. Both the NPV and debt service ratios recede faster towards the end of the projection period than at the beginning, reflecting the combined impact of primary budget surpluses in the later years as well as repayment of the bulk of principal obligations becoming due to larger creditors (IDA and AfDB).

5. **The debt dynamics are vulnerable to lower real GDP growth and lower export growth.** Figures 4 shows that even under a HIPC/MDRI scenario, the continuation of the historical growth trend (average annual GDP growth of 2 percent versus an average of close to 4 percent projected for the next two decades) would result in a steady convergence of debt indicators back to current levels. These vulnerabilities underscore the importance of export diversification and continued reform efforts.

[6] One standard deviation shock to the historical average of net transfers and net FDIs (i.e. net non-debt creating flows).

Appendix II Box 1. Macroeconomic Assumptions

Real GDP growth: GDP growth in 2009 is projected to stagnate at 1 percent, with a sustained recovery projected to start in 2010 from a growth rate of 1.5 percent, accelerating gradually to a peak of 4 percent in 2013. For the period of 2014–28, real GDP growth rate averages 4 percent, close to the rate registered in 2005 following the previous secessionist crisis. Growth during the recovery phase through 2012 would be underpinned by a good agricultural supply response to higher food prices, renewed consumer and investor confidence and enhanced political stability; stable terms of trade; and new FDI-led investments, especially in tourism and public infrastructure. Longer-term growth would be driven by enhanced investment in key sectors and by structural reforms under the PRGF aimed at enhancing competitiveness.

Inflation: end-2009 inflation is projected to decline to 2.3 percent from a high 7.4 percent in 2008, as pressures on oil and food prices recede. In the absence of significant second round effects, inflation will settle at about 3 percent over the longer-term horizon.

Real exchange rate and terms of trade: After a modest appreciation in 2008-2009, the real effective exchange rate is projected to be broadly stable throughout the remainder of the projection period; the terms of trade are expected to recover from the 2008 deterioration, and are projected to remain broadly stable thereafter.

Remittances: remittances, on average, are projected to converge to the historical norm of 14.5 percent of GDP during 2013-2029 from 19 percent of GDP in 2009, following an unusually strong growth in 2008.

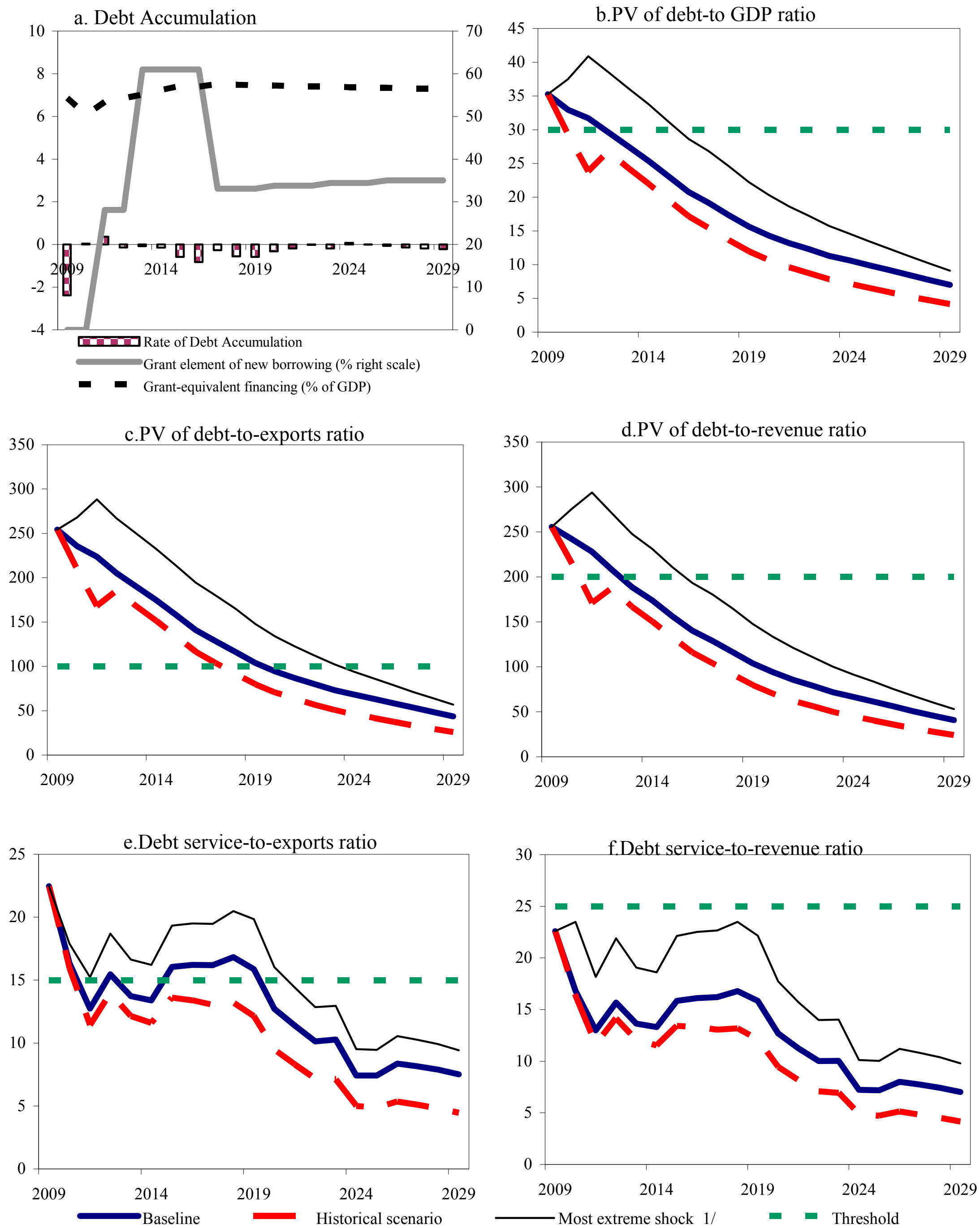
Current account balance: The current account deficit (including official transfers) is projected to narrow from 11.3 percent of GDP in 2008 to 8 percent in 2009 as the terms of trade improve slightly. For the next seven year (2010-2016), the current account balance would average about 10 percent of GDP due mainly to strong import growth (especially for investment) outpacing exports, before improving to an average of about 6 percent over the reminder of the projection period. Service export is expected to pick up steadily at an annual average of 10 percent, in response to improved hotel infrastructure when the Galawa and other tourism resorts are completed, compared with 5 percent during 1998–2007.

Government balance: The primary balance (total revenue and grants less non-interest expenditure) is projected to improve -1.6 percent of GDP in 2009 from a deficit of 2.7 percent in 2008, and to gradually move into surplus beginning in 2016, as revenue collection improves and more efforts are made to maintain spending under control.

External assistance, scaling up and concessionality: The framework assumes that up to 2012 external assistance will be mostly in the form of grants, averaging about 7 percent of GDP. Over the long-term (2012–29) further assistance will be available, in adequate terms, including from IDA and AfDB.

Domestic borrowing: The scenario assumes no new medium to long-term domestic borrowing beyond Central Bank's short-term cash advances to the treasury.

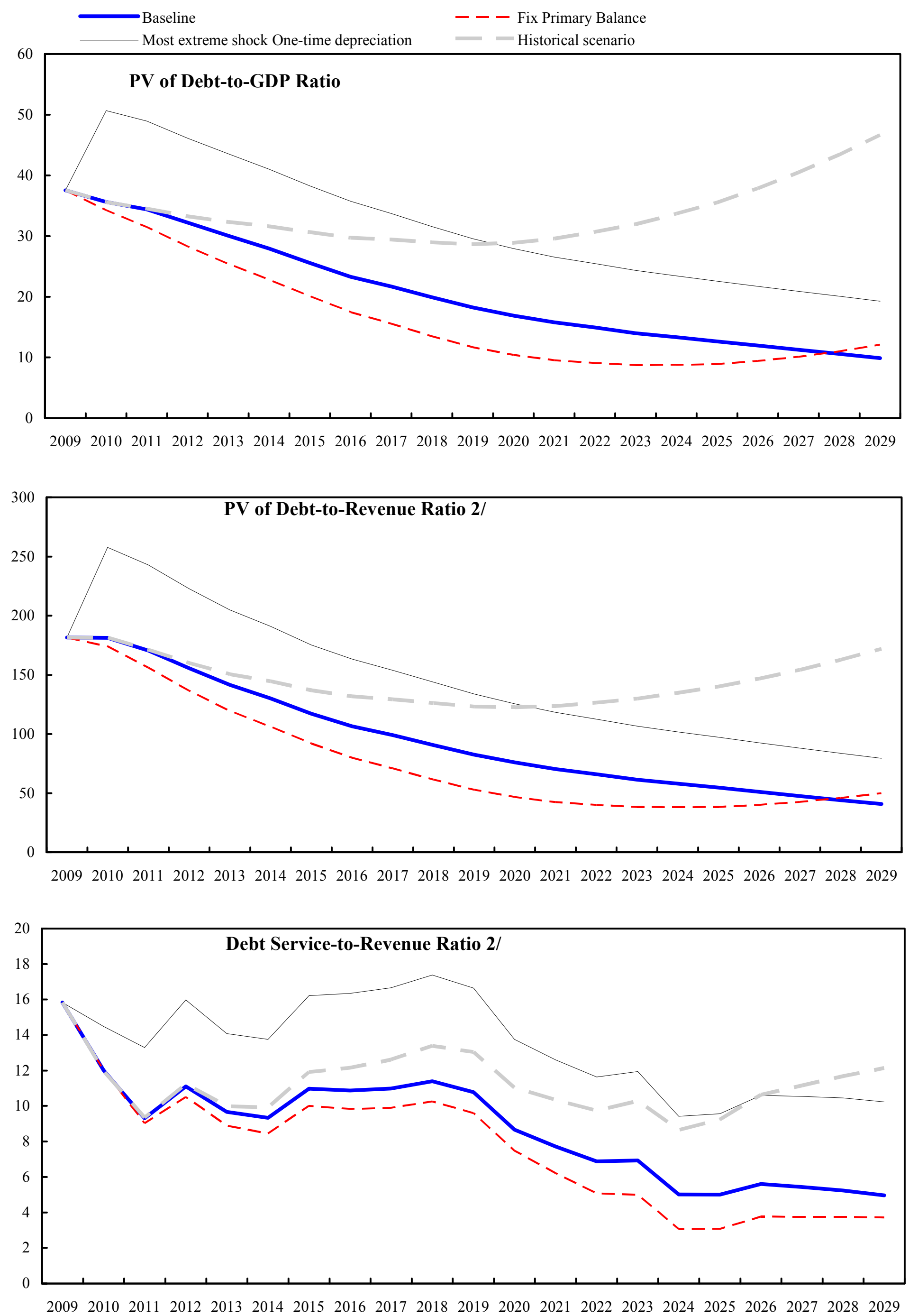
Appendix II Figure 1. Comoros: Indicators of Public and Publicly Guaranteed External Debt, Baseline with PRGF only (152.5 percent of quota) Scenario, 2009-2029 1/



Source: Staff projections and simulations.

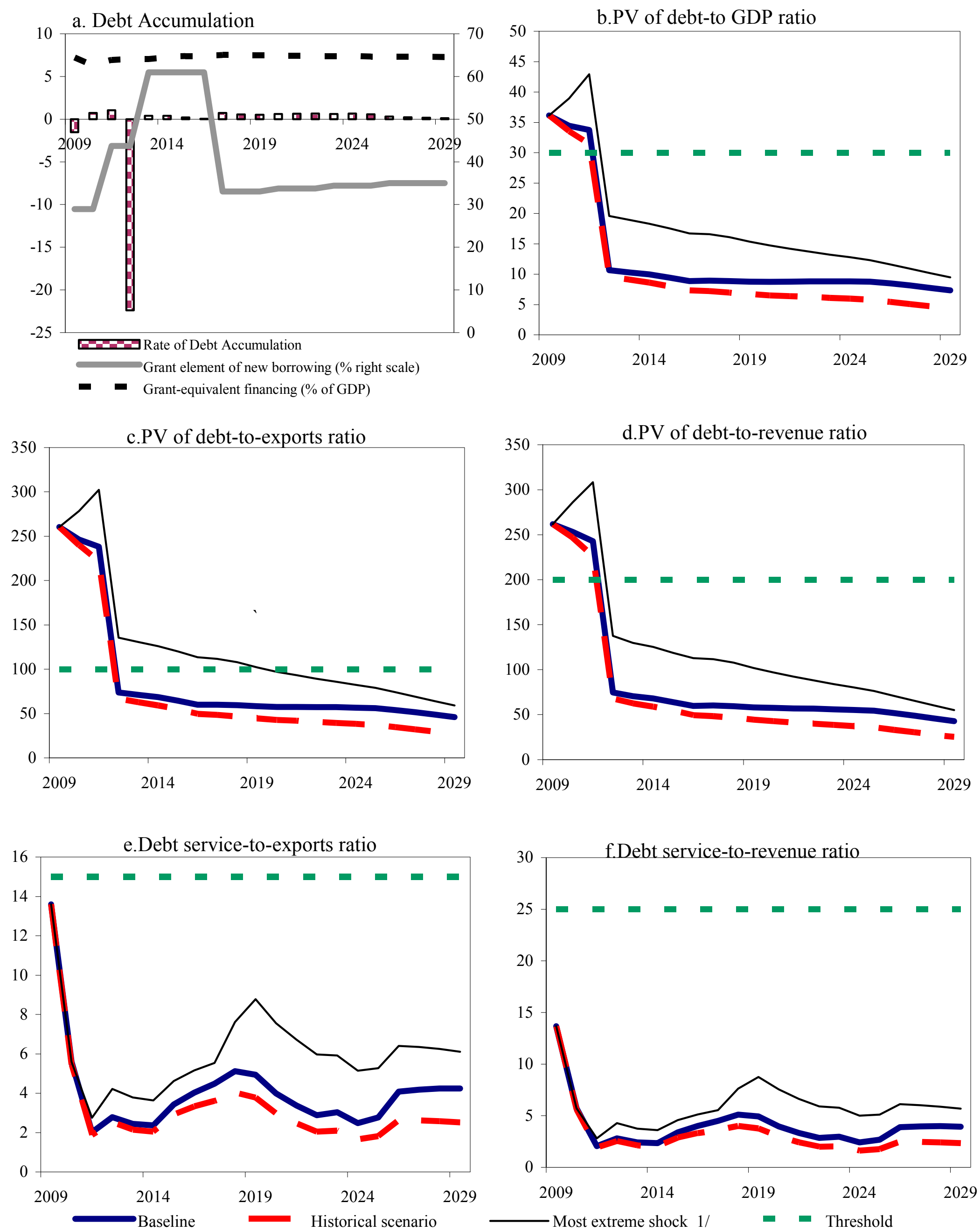
1/ The most extreme stress test is the test that yields the highest ratio in 2019. In figure b. it corresponds to a Non-debt flows shock; in c. to a Non-debt flows shock; in d. to a Non-debt flows shock; in e. to a Exports shock and in picture f. to a One-time depreciation shock

Appendix II Figure 2. Comoros: Indicators of Public Debt, Baseline with PRGF only (152.5 percent of quota) Scenario, 2009-2029 1/



Sources: Country authorities; and Fund staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio in 2019.
2/ Revenues are defined inclusive of grants.

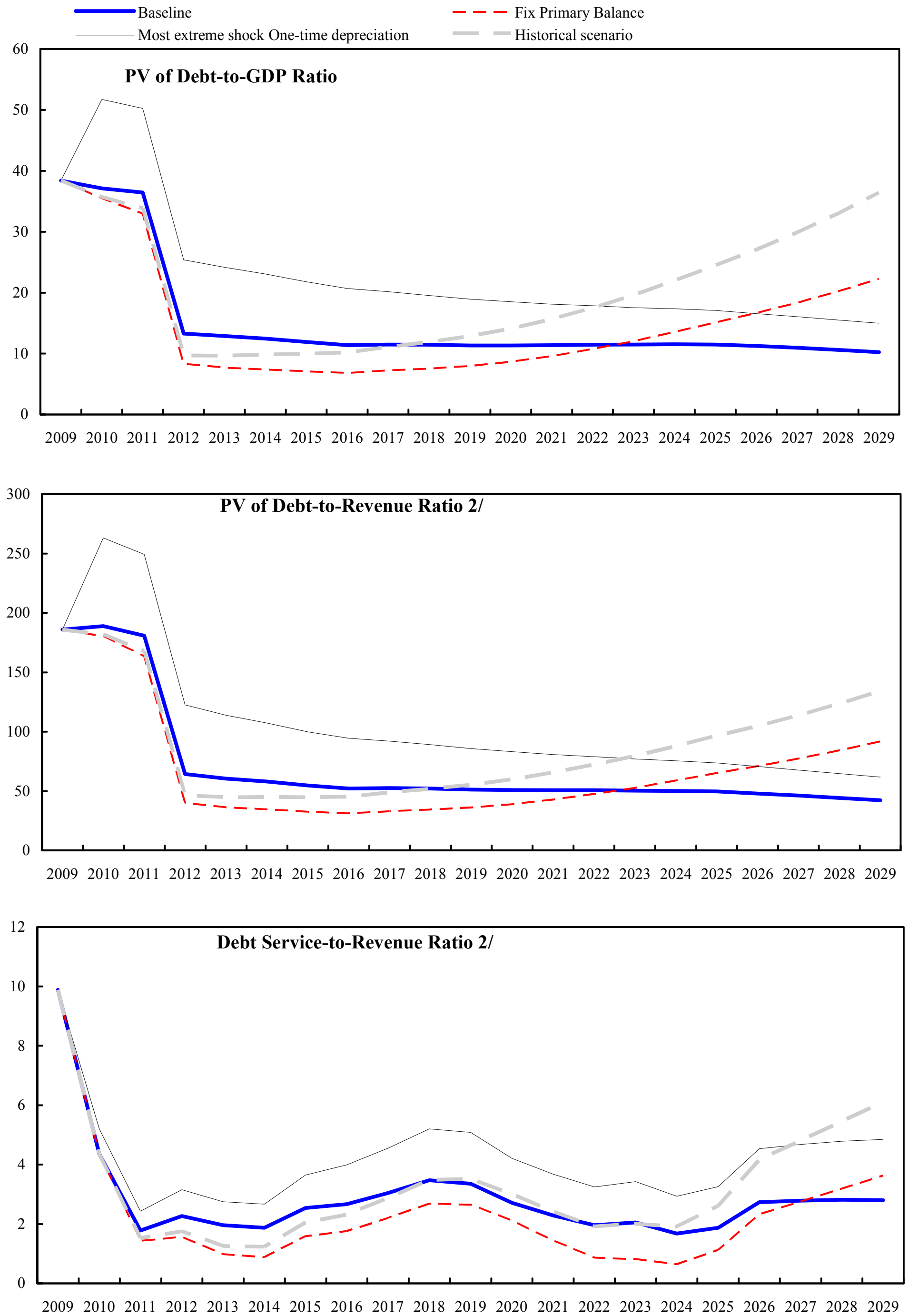
Appendix II Figure 3. Comoros: Indicators of Public and Publicly Guaranteed External Debt under the Alternative PRGF (152.5 percent of quota) and HIPC/MDRI Scenarios, 2009-2029 1/



Source: Staff projections and simulations.

1/ The most extreme stress test is the test that yields the highest ratio in 2019. In figure b. it corresponds to a Non-debt flows shock; in c. to a Non-debt flows shock; in d. to a Non-debt flows shock; in e. to a Non-debt flows shock and in picture f. to a Non-debt flows shock

Appendix II Figure 4. Comoros: Indicators of Public Debt Under the Alternative PRGF (152.5 percent of quota) and HIPC/MDR Scenarios, 2009-2029 1/



Sources: Country authorities; and Fund staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio in 2019.
2/ Revenues are defined inclusive of grants.

Appendix II Table 1a.: External Debt Sustainability Framework, Baseline with PRGF only (152.5 percent of quota) Scenario, 2006-2029 1/
(In percent of GDP, unless otherwise indicated)

	Actual			Historical 0 Average 0	Standard Deviation	**Projections**									
	2006	2007	2008			2009	2010	2011	2012	2013	2014	2009-2014 Average	2019	2029	2015-2029 Average
External debt (nominal) 1/	**69.8**	**57.6**	**54.3**			**48.5**	**45.7**	**43.8**	**41.0**	**37.5**	**34.1**		**20.4**	**9.6**	
o/w public and publicly guaranteed (PPG)	69.8	57.6	54.3			48.5	45.7	43.8	41.0	37.5	34.1		20.4	9.6	
Change in external debt	-1.4	-12.2	-3.3			-5.7	-2.9	-1.9	-2.8	-3.5	-3.3		-2.2	-0.8	
Identified net debt-creating flows	3.1	-4.2	2.6			5.9	8.1	7.4	7.0	6.8	7.1		6.3	5.6	
Non-interest current account deficit	**5.5**	**6.3**	**10.7**	**3.5**	**4.3**	**6.1**	**9.3**	**9.8**	**9.5**	**10.2**	**10.3**		**8.4**	**5.9**	7.7
Deficit in balance of goods and services	24.4	26.9	33.7			28.7	28.8	29.0	28.5	28.7	27.8		23.2	16.9	
Exports	14.2	14.8	14.0			13.9	14.0	14.2	14.4	14.5	14.5		15.0	16.0	
Imports	38.6	41.6	47.7			42.6	42.7	43.2	42.9	43.2	42.4		38.2	32.9	
Net current transfers (negative = inflow)	-18.3	-19.8	-22.2	-16.3	3.2	-21.1	-18.7	-18.7	-18.4	-18.0	-17.2		-14.6	-11.0	-13.5
o/w official	-1.6	-2.8	-2.8			-2.0	-0.5	-0.5	-0.6	-0.6	-0.6		-0.6	-0.6	
Other current account flows (negative = net inflow)	-0.7	-0.8	-0.8			-1.5	-0.8	-0.5	-0.6	-0.5	-0.4		-0.2	0.1	
Net FDI (negative = inflow)	**-0.2**	**-1.6**	**-1.4**	**-0.5**	**0.5**	**-1.7**	**-1.7**	**-1.9**	**-1.8**	**-2.5**	**-2.4**		**-1.7**	**-0.4**	-1.3
Endogenous debt dynamics 2/	**-2.2**	**-8.9**	**-6.7**			**1.5**	**0.4**	**-0.5**	**-0.7**	**-0.8**	**-0.8**		**-0.3**	**0.0**	
Contribution from nominal interest rate	0.6	0.4	0.5			2.1	1.1	0.6	0.8	0.7	0.6		0.5	0.4	
Contribution from real GDP growth	-0.8	-0.3	-0.5			-0.6	-0.7	-1.1	-1.4	-1.5	-1.4		-0.8	-0.4	
Contribution from price and exchange rate changes	-1.9	-9.0	-6.7			…	…	…	…	…	…		…	…	
Residual (3-4) 3/	**-4.5**	**-8.0**	**-5.9**			**-11.6**	**-10.9**	**-9.3**	**-9.8**	**-10.4**	**-10.5**		**-8.5**	**-6.4**	
o/w exceptional financing	0.0	-4.6	-0.2			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
PV of external debt 4/	...	...	36.7			35.2	33.0	31.7	29.6	27.5	25.4		15.6	7.0	
In percent of exports	...	...	262.9			254.1	235.7	223.6	205.1	189.9	174.8		104.1	43.7	
PV of PPG external debt	**...**	**...**	**36.7**			**35.2**	**33.0**	**31.7**	**29.6**	**27.5**	**25.4**		**15.6**	**7.0**	
In percent of exports	**...**	**...**	**262.9**			**254.1**	**235.7**	**223.6**	**205.1**	**189.9**	**174.8**		**104.1**	**43.7**	
In percent of government revenues	**...**	**...**	**279.5**			**255.4**	**242.3**	**228.1**	**207.8**	**188.5**	**173.8**		**104.0**	**40.7**	
Debt service-to-exports ratio (in percent)	**13.1**	**11.4**	**12.8**			**22.5**	**16.3**	**12.7**	**15.5**	**13.7**	**13.4**		**15.9**	**7.5**	
PPG debt service-to-exports ratio (in percent)	**13.1**	**11.4**	**12.8**			**22.5**	**16.3**	**12.7**	**15.5**	**13.7**	**13.4**		**15.9**	**7.5**	
PPG debt service-to-revenue ratio (in percent)	**13.7**	**13.3**	**13.6**			**22.6**	**16.8**	**13.0**	**15.7**	**13.6**	**13.3**		**15.8**	**7.0**	
Total gross financing need (Billions of U.S. dollars)	0.0	0.0	0.1			0.0	0.1	0.1	0.1	0.1	0.1		0.1	0.1	
Non-interest current account deficit that stabilizes debt ratio	6.9	18.5	14.0			11.8	12.2	11.7	12.3	13.7	13.6		10.5	6.7	
Key macroeconomic assumptions															
Real GDP growth (in percent)	1.2	0.5	1.0	2.0	1.5	1.0	1.5	2.5	3.5	4.0	4.0	2.8	4.0	4.0	4.0
GDP deflator in US dollar terms (change in percent)	2.8	14.8	13.2	7.7	9.8	-3.6	5.5	2.5	3.1	3.3	3.5	2.4	3.0	3.0	3.0
Effective interest rate (percent) 5/	0.9	0.6	1.0	1.0	0.2	3.8	2.4	1.4	1.9	1.8	1.8	2.2	2.4	4.3	3.0
Growth of exports of G&S (US dollar terms, in percent)	3.6	20.0	8.1	12.5	13.9	-3.3	7.9	6.6	8.6	7.8	8.0	5.9	8.1	7.8	7.8
Growth of imports of G&S (US dollar terms, in percent)	12.4	24.5	30.9	13.1	14.6	-13.1	7.4	6.1	6.1	7.9	5.7	3.4	5.1	6.0	5.4
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	0.0	0.0	28.1	28.1	61.0	61.0	29.7	33.1	35.0	37.7
Government revenues (excluding grants, in percent of GDP)	13.6	12.7	13.1			13.8	13.6	13.9	14.3	14.6	14.6		15.0	17.2	15.7
Aid flows (in Billions of US dollars) 7/	0.0	0.0	0.1			0.0	0.0	0.0	0.0	0.0	0.1		0.1	0.1	
o/w Grants	0.0	0.0	0.1			0.0	0.0	0.0	0.0	0.0	0.0		0.1	0.1	
o/w Concessional loans	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			6.9	6.1	6.7	6.9	7.0	7.2		7.5	7.3	7.4
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			84.7	87.7	86.1	87.2	96.8	96.8		90.3	94.5	92.7
Memorandum items:															
Nominal GDP (Billions of US dollars)	0.4	0.5	0.5			0.5	0.6	0.6	0.6	0.7	0.7		1.0	2.0	
Nominal dollar GDP growth	4.1	15.4	14.3			-2.6	7.0	5.1	6.7	7.4	7.6	5.2	7.1	7.1	7.2
PV of PPG external debt (in Billions of US dollars)			0.2			0.2	0.2	0.2	0.2	0.2	0.2		0.2	0.1	
(PVt-PVt-1)/GDPt-1 (in percent)						-2.4	0.0	0.4	-0.1	-0.1	-0.1	-0.4	-0.6	-0.2	-0.3

Source: Staff simulations.

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

Appendix II Table 1b.Comoros: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2009-2029
(In percent)

											Projections										
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	**2019**	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
PV of debt-to GDP ratio																					
Baseline	35	33	32	30	28	25	23	21	19	17	**16**	14	13	12	11	11	10	9	8	8	7
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2009-2029 1/	35	29	24	27	24	22	20	17	15	14	**12**	11	10	9	8	7	7	6	5	5	4
A2. New public sector loans on less favorable terms in 2009-2029 2	35	34	33	32	30	28	26	24	22	21	**19**	18	17	16	15	15	14	14	13	12	12
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2010-2011	35	33	33	31	28	26	24	21	20	18	**16**	15	14	13	12	11	10	9	9	8	7
B2. Export value growth at historical average minus one standard deviation in 2010-2011 3/	35	34	34	32	30	27	25	23	21	19	**17**	16	14	13	12	12	11	10	9	8	7
B3. US dollar GDP deflator at historical average minus one standard deviation in 2010-2011	35	35	36	33	31	29	26	23	22	20	**18**	16	15	14	13	12	11	10	10	9	8
B4. Net non-debt creating flows at historical average minus one standard deviation in 2010-2011 4/	35	37	41	39	36	34	31	29	27	25	**22**	20	19	17	16	15	13	12	11	10	9
B5. Combination of B1-B4 using one-half standard deviation shocks	35	38	41	39	36	34	31	29	27	24	**22**	20	19	17	16	15	13	12	11	10	9
B6. One-time 30 percent nominal depreciation relative to the baseline in 2010 5/	35	46	44	41	38	36	32	29	27	24	**22**	20	18	17	16	15	14	13	12	11	10
PV of debt-to-exports ratio																					
Baseline	254	236	224	205	190	175	158	141	129	116	**104**	94	87	80	73	68	63	58	53	49	44
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2009-2029 1/	254	209	168	185	168	151	134	117	104	91	**80**	70	63	57	51	46	42	37	33	30	26
A2. New public sector loans on less favorable terms in 2009-2029 2	254	241	236	223	208	194	178	161	148	138	**127**	118	112	106	100	96	92	87	82	78	73
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2010-2011	254	236	224	205	190	175	158	141	129	117	**104**	94	87	80	73	68	63	59	54	49	44
B2. Export value growth at historical average minus one standard deviation in 2010-2011 3/	254	264	282	260	241	223	202	182	166	151	**135**	123	113	104	95	88	81	75	68	62	55
B3. US dollar GDP deflator at historical average minus one standard deviation in 2010-2011	254	236	224	205	190	175	158	141	129	117	**104**	94	87	80	73	68	63	59	54	49	44
B4. Net non-debt creating flows at historical average minus one standard deviation in 2010-2011 4/	254	268	288	267	250	232	214	194	180	165	**148**	134	123	112	102	94	86	79	71	64	57
B5. Combination of B1-B4 using one-half standard deviation shocks	254	269	288	267	249	232	213	193	179	164	**147**	133	121	111	101	93	86	78	71	64	57
B6. One-time 30 percent nominal depreciation relative to the baseline in 2010 5/	254	236	224	205	190	175	158	141	129	117	**104**	94	87	80	73	68	63	59	54	49	44
PV of debt-to-revenue ratio																					
Baseline	255	242	228	208	188	174	156	140	129	116	**104**	94	86	79	72	67	61	56	51	46	41
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2009-2029 1/	255	215	171	188	167	150	132	116	104	91	**80**	70	62	56	50	45	40	36	32	28	24
A2. New public sector loans on less favorable terms in 2009-2029 2	255	248	241	226	207	193	176	160	148	138	**127**	118	111	105	98	93	89	83	78	73	68
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2010-2011	255	245	235	214	194	179	161	145	133	120	**107**	97	88	81	74	69	63	58	52	47	42
B2. Export value growth at historical average minus one standard deviation in 2010-2011 3/	255	248	243	222	202	187	169	153	141	128	**114**	103	94	86	78	72	67	61	55	49	44
B3. US dollar GDP deflator at historical average minus one standard deviation in 2010-2011	255	261	257	234	212	196	176	158	145	131	**117**	106	97	89	81	75	69	63	57	51	46
B4. Net non-debt creating flows at historical average minus one standard deviation in 2010-2011 4/	255	275	294	270	248	231	211	193	180	165	**148**	134	121	111	100	91	84	75	67	60	53
B5. Combination of B1-B4 using one-half standard deviation shocks	255	278	295	272	249	232	211	193	180	164	**147**	133	121	110	100	91	84	75	68	60	53
B6. One-time 30 percent nominal depreciation relative to the baseline in 2010 5/	255	339	319	291	264	243	218	196	180	163	**145**	132	120	110	100	93	86	78	71	64	57

Appendix II Table 1b.Comoros: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2009-2029 (continued)

(In percent)

									Debt service-to-exports ratio												
Baseline	22	16	13	15	14	13	16	16	16	17	**16**	13	11	10	10	7	7	8	8	8	8
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2009-2029 1/	22	16	11	14	12	12	14	13	13	13	**12**	9	8	7	7	5	5	5	5	5	4
A2. New public sector loans on less favorable terms in 2009-2029 2	22	16	13	16	14	14	16	17	16	16	**16**	13	12	11	11	8	8	9	9	9	9
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2010-2011	22	16	13	15	14	13	16	16	16	17	**16**	13	11	10	10	7	7	8	8	8	8
B2. Export value growth at historical average minus one standard deviation in 2010-2011 3/	22	18	15	19	17	16	19	19	19	20	**20**	16	14	13	13	10	9	11	10	10	9
B3. US dollar GDP deflator at historical average minus one standard deviation in 2010-2011	22	16	13	15	14	13	16	16	16	17	**16**	13	11	10	10	7	7	8	8	8	8
B4. Net non-debt creating flows at historical average minus one standard deviation in 2010-2011 4/	22	16	13	17	15	15	17	17	17	19	**20**	16	15	13	13	10	10	11	10	10	9
B5. Combination of B1-B4 using one-half standard deviation shocks	22	17	14	17	15	15	18	18	18	20	**20**	16	15	13	13	10	10	11	10	10	9
B6. One-time 30 percent nominal depreciation relative to the baseline in 2010 5/	22	16	13	15	14	13	16	16	16	17	**16**	13	11	10	10	7	7	8	8	8	8
									Debt service-to-revenue ratio												
Baseline	23	17	13	16	14	13	16	16	16	17	**16**	13	11	10	10	7	7	8	8	7	7
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2009-2029 1/	23	16	12	14	12	12	13	13	13	13	**12**	9	8	7	7	5	5	5	5	5	4
A2. New public sector loans on less favorable terms in 2009-2029 2	23	17	13	16	14	14	16	17	16	16	**16**	13	11	11	11	8	8	9	9	8	8
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2010-2011	23	17	13	16	14	14	16	17	17	17	**16**	13	12	10	10	7	7	8	8	8	7
B2. Export value growth at historical average minus one standard deviation in 2010-2011 3/	23	17	13	16	14	14	16	16	16	17	**17**	14	12	11	11	8	8	9	8	8	7
B3. US dollar GDP deflator at historical average minus one standard deviation in 2010-2011	23	18	15	18	15	15	18	18	18	19	**18**	14	13	11	11	8	8	9	9	8	8
B4. Net non-debt creating flows at historical average minus one standard deviation in 2010-2011 4/	23	17	14	17	15	15	17	17	17	19	**20**	16	15	13	13	10	10	10	10	9	9
B5. Combination of B1-B4 using one-half standard deviation shocks	23	17	14	18	15	15	17	18	18	20	**20**	16	15	13	13	10	10	10	10	9	9
B6. One-time 30 percent nominal depreciation relative to the baseline in 2010 5/	23	23	18	22	19	19	22	23	23	23	**22**	18	16	14	14	10	10	11	11	10	10
Memorandum item:																					
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	38	38	38	38	38	38	38	38	38	38	**38**	38	38	38	38	38	38	38	38	38	38

Source: Staff projections and simulations.

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.

Appendix II Table 2a. The Comoros: External Debt Sustainability Framework, Under the Alternative PRGF (152.5 percent of quota) and HIPC/MDRI Scenario, 2006-2029 1/

(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average	Standard Deviation	Projections									
	2006	2007	2008			2009	2010	2011	2012	2013	2014	2009-2014 Average	2019	2029	2015-2029 Average
External debt (nominal) 1/	**69.8**	**57.6**	**54.3**			**48.5**	**45.7**	**43.8**	**21.0**	**19.8**	**18.7**		**15.0**	**10.7**	
o/w public and publicly guaranteed (PPG)	69.8	57.6	54.3			48.5	45.7	43.8	21.0	19.8	18.7		15.0	10.7	
Change in external debt	-1.4	-12.2	-3.3			-5.7	-2.9	-1.9	-22.8	-1.2	-1.1		-0.5	-0.6	
Identified net debt-creating flows	3.1	-4.2	2.6			5.8	8.1	7.4	7.0	7.6	7.8		6.6	5.5	
Non-interest current account deficit	**5.5**	**6.3**	**10.7**	**3.5**	**4.3**	**7.3**	**10.8**	**11.4**	**11.3**	**10.8**	**10.9**		**8.8**	**6.2**	8.0
Deficit in balance of goods and services	24.4	26.9	33.7			28.7	28.8	29.0	28.5	28.7	27.8		23.2	16.9	
Exports	14.2	14.8	14.0			13.9	14.0	14.2	14.4	14.5	14.5		15.0	16.0	
Imports	38.6	41.6	47.7			42.6	42.7	43.2	42.9	43.2	42.4		38.2	32.9	
Net current transfers (negative = inflow)	-18.3	-19.8	-22.2	-16.3	3.2	-21.1	-18.7	-18.7	-18.4	-18.0	-17.2		-14.6	-11.0	-13.5
o/w official	-1.6	-2.8	-2.8			-2.0	-0.5	-0.5	-0.6	-0.6	-0.6		-0.6	-0.6	
Other current account flows (negative = net inflow)	-0.7	-0.8	-0.8			-0.3	0.7	1.1	1.2	0.1	0.2		0.2	0.4	
Net FDI (negative = inflow)	**-0.2**	**-1.6**	**-1.4**	**-0.5**	**0.5**	**-1.7**	**-1.7**	**-1.9**	**-1.8**	**-2.5**	**-2.4**		**-1.7**	**-0.4**	-1.3
Endogenous debt dynamics 2/	**-2.2**	**-8.9**	**-6.7**			**0.2**	**-1.1**	**-2.0**	**-2.5**	**-0.8**	**-0.7**		**-0.5**	**-0.3**	
Contribution from nominal interest rate	0.6	0.4	0.5			0.8	-0.4	-0.9	-1.1	0.0	0.0		0.1	0.1	
Contribution from real GDP growth	-0.8	-0.3	-0.5			-0.6	-0.7	-1.1	-1.4	-0.8	-0.7		-0.6	-0.4	
Contribution from price and exchange rate changes	-1.9	-9.0	-6.7			…	…	…	…	…	…		…	…	
Residual (3-4) 3/	**-4.5**	**-8.0**	**-5.9**			**-11.5**	**-11.0**	**-9.3**	**-29.8**	**-8.8**	**-8.9**		**-7.1**	**-6.2**	
o/w exceptional financing	0.0	-4.6	-0.2			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
PV of external debt 4/	...	...	36.7			36.1	34.4	33.8	10.7	10.3	9.9		8.7	7.3	
In percent of exports	...	...	262.9			260.4	246.2	238.0	73.8	71.1	68.4		58.2	45.9	
PV of PPG external debt	**...**	**...**	**36.7**			**36.1**	**34.4**	**33.8**	**10.7**	**10.3**	**9.9**		**8.7**	**7.3**	
In percent of exports	**...**	**...**	**262.9**			**260.4**	**246.2**	**238.0**	**73.8**	**71.1**	**68.4**		**58.2**	**45.9**	
In percent of government revenues	**...**	**...**	**279.5**			**261.8**	**253.1**	**242.7**	**74.8**	**70.6**	**68.0**		**58.1**	**42.7**	
Debt service-to-exports ratio (in percent)	**13.1**	**11.4**	**12.8**			**13.6**	**5.6**	**2.0**	**2.8**	**2.4**	**2.4**		**4.9**	**4.2**	
PPG debt service-to-exports ratio (in percent)	**13.1**	**11.4**	**12.8**			**13.6**	**5.6**	**2.0**	**2.8**	**2.4**	**2.4**		**4.9**	**4.2**	
PPG debt service-to-revenue ratio (in percent)	**13.7**	**13.3**	**13.6**			**13.7**	**5.7**	**2.1**	**2.8**	**2.4**	**2.3**		**4.9**	**3.9**	
Total gross financing need (Billions of U.S. dollars)	0.0	0.0	0.1			0.0	0.1	0.1	0.1	0.1	0.1		0.1	0.1	
Non-interest current account deficit that stabilizes debt ratio	6.9	18.5	14.0			13.0	13.7	13.3	34.1	12.0	12.0		9.3	6.8	
Key macroeconomic assumptions															
Real GDP growth (in percent)	1.2	0.5	1.0	2.0	1.5	1.0	1.5	2.5	3.5	4.0	4.0	2.8	4.0	4.0	4.0
GDP deflator in US dollar terms (change in percent)	2.8	14.8	13.2	7.7	9.8	-3.6	5.5	2.5	3.1	3.3	3.5	2.4	3.0	3.0	3.0
Effective interest rate (percent) 5/	0.9	0.6	1.0	1.0	0.2	1.4	-0.8	-2.1	-2.6	0.1	0.1	-0.7	0.5	1.3	0.8
Growth of exports of G&S (US dollar terms, in percent)	3.6	20.0	8.1	12.5	13.9	-3.3	7.9	6.6	8.6	7.8	8.0	5.9	8.1	7.8	7.8
Growth of imports of G&S (US dollar terms, in percent)	12.4	24.5	30.9	13.1	14.6	-13.1	7.4	6.1	6.1	7.9	5.7	3.4	5.1	6.0	5.4
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	28.9	28.9	43.7	43.7	61.0	61.0	44.5	33.1	35.0	37.7
Government revenues (excluding grants, in percent of GDP)	13.6	12.7	13.1			13.8	13.6	13.9	14.3	14.6	14.6		15.0	17.2	15.7
Aid flows (in Billions of US dollars) 7/	0.0	0.0	0.1			0.0	0.0	0.0	0.0	0.0	0.1		0.1	0.1	
o/w Grants	0.0	0.0	0.1			0.0	0.0	0.0	0.0	0.0	0.0		0.1	0.1	
o/w Concessional loans	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			7.2	6.3	6.9	7.1	7.0	7.2		7.5	7.3	7.4
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			89.1	91.3	89.1	89.9	96.8	96.8		90.3	94.5	92.7
Memorandum items:															
Nominal GDP (Billions of US dollars)	0.4	0.5	0.5			0.5	0.6	0.6	0.6	0.7	0.7		1.0	2.0	
Nominal dollar GDP growth	4.1	15.4	14.3			-2.6	7.0	5.1	6.7	7.4	7.6	5.2	7.1	7.1	7.2
PV of PPG external debt (in Billions of US dollars)			0.2			0.2	0.2	0.2	0.1	0.1	0.1		0.1	0.1	
(PVt-PVt-1)/GDPt-1 (in percent)						-1.5	0.7	1.0	-22.4	0.4	0.4	-3.6	0.5	0.1	0.4

Source: Staff simulations.

1/ Includes both public and private sector external debt.

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

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).

Appendix II Table 2b.Comoros: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2009-2029
(In percent)

	Projections																				
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	**2019**	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
PV of debt-to GDP ratio																					
Baseline	36	34	34	11	10	10	9	9	9	9	**9**	9	9	9	9	9	9	8	8	8	7
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2009-2029 1/	36	34	31	10	9	9	8	7	7	7	**7**	7	6	6	6	6	6	5	5	5	4
A2. New public sector loans on less favorable terms in 2009-2029 2	36	35	34	11	11	11	11	10	10	11	**11**	11	11	11	12	12	12	12	11	11	11
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2010-2011	36	35	35	11	11	10	10	9	9	9	**9**	9	9	9	9	9	9	9	8	8	8
B2. Export value growth at historical average minus one standard deviation in 2010-2011 3/	36	35	36	13	12	12	11	11	11	11	**10**	10	10	10	10	10	10	9	9	8	8
B3. US dollar GDP deflator at historical average minus one standard deviation in 2010-2011	36	37	38	12	12	11	11	10	10	10	**10**	10	10	10	10	10	10	10	9	9	8
B4. Net non-debt creating flows at historical average minus one standard deviation in 2010-2011 4/	36	39	43	20	19	18	18	17	17	16	**15**	15	14	14	13	13	12	12	11	10	9
B5. Combination of B1-B4 using one-half standard deviation shocks	36	39	43	19	18	18	17	16	16	16	**15**	14	14	14	13	13	12	12	11	10	10
B6. One-time 30 percent nominal depreciation relative to the baseline in 2010 5/	36	48	47	15	14	14	13	12	12	12	**12**	12	12	12	12	12	12	12	11	11	10
PV of debt-to-exports ratio																					
Baseline	260	246	238	74	71	68	65	60	60	59	**58**	58	58	57	57	57	56	54	51	49	46
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2009-2029 1/	260	240	222	67	63	59	55	50	48	47	**45**	43	42	41	39	38	37	35	32	30	27
A2. New public sector loans on less favorable terms in 2009-2029 2	260	247	242	80	78	76	73	70	69	71	**71**	72	74	74	75	76	76	74	73	70	68
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2010-2011	260	246	238	74	71	68	65	60	60	59	**58**	58	58	57	57	57	56	54	51	49	46
B2. Export value growth at historical average minus one standard deviation in 2010-2011 3/	260	275	299	104	100	97	91	86	85	84	**81**	79	78	77	76	74	73	69	66	62	58
B3. US dollar GDP deflator at historical average minus one standard deviation in 2010-2011	260	246	238	74	71	68	65	60	60	59	**58**	58	58	57	57	57	56	54	51	49	46
B4. Net non-debt creating flows at historical average minus one standard deviation in 2010-2011 4/	260	278	302	136	131	126	120	113	111	108	**102**	97	93	89	86	82	79	74	69	64	59
B5. Combination of B1-B4 using one-half standard deviation shocks	260	279	303	131	127	122	116	110	108	105	**99**	95	91	88	85	81	78	74	69	64	59
B6. One-time 30 percent nominal depreciation relative to the baseline in 2010 5/	260	246	238	74	71	68	65	60	60	59	**58**	58	58	57	57	57	56	54	51	49	46
PV of debt-to-revenue ratio																					
Baseline	262	253	243	75	71	68	64	60	60	59	**58**	57	57	57	56	55	54	52	49	46	43
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2009-2029 1/	262	247	226	68	62	59	54	49	48	47	**44**	43	41	40	39	37	36	33	30	28	25
A2. New public sector loans on less favorable terms in 2009-2029 2	262	254	247	81	78	76	73	69	70	71	**71**	72	73	73	74	74	74	71	69	66	63
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2010-2011	262	256	250	77	73	70	66	62	62	61	**60**	59	59	58	58	57	56	53	50	47	44
B2. Export value growth at historical average minus one standard deviation in 2010-2011 3/	262	259	258	89	84	81	76	72	72	71	**68**	67	65	64	62	61	60	56	53	49	46
B3. US dollar GDP deflator at historical average minus one standard deviation in 2010-2011	262	272	273	84	79	77	72	67	68	67	**65**	65	64	64	63	62	61	58	55	52	48
B4. Net non-debt creating flows at historical average minus one standard deviation in 2010-2011 4/	262	286	308	137	130	125	118	113	112	108	**102**	97	92	88	84	80	76	71	65	60	55
B5. Combination of B1-B4 using one-half standard deviation shocks	262	289	311	134	126	122	115	109	108	105	**99**	95	91	87	83	80	76	71	66	60	55
B6. One-time 30 percent nominal depreciation relative to the baseline in 2010 5/	262	354	339	104	99	95	89	83	84	83	**81**	80	80	79	78	77	76	72	68	64	60

Appendix II Table 2b.Comoros: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2009-2029 (continued)

(In percent)

Debt service-to-exports ratio

Baseline	14	6	2	3	2	2	3	4	4	5	**5**	4	3	3	3	2	3	4	4	4	4
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2009-2029 1/	14	5	2	3	2	2	3	3	4	4	**4**	3	2	2	2	2	2	3	3	3	3
A2. New public sector loans on less favorable terms in 2009-2029 2	14	6	2	3	3	3	4	5	5	5	**5**	5	4	4	4	3	4	5	5	5	5
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2010-2011	14	6	2	3	2	2	3	4	4	5	**5**	4	3	3	3	2	3	4	4	4	4
B2. Export value growth at historical average minus one standard deviation in 2010-2011 3/	14	6	3	4	3	3	4	5	6	7	**7**	6	5	4	4	4	4	5	6	6	6
B3. US dollar GDP deflator at historical average minus one standard deviation in 2010-2011	14	6	2	3	2	2	3	4	4	5	**5**	4	3	3	3	2	3	4	4	4	4
B4. Net non-debt creating flows at historical average minus one standard deviation in 2010-2011 4/	14	6	3	4	4	4	5	5	6	8	**9**	8	7	6	6	5	5	6	6	6	6
B5. Combination of B1-B4 using one-half standard deviation shocks	14	6	3	4	4	4	5	5	6	7	**9**	7	6	6	6	5	5	6	6	6	6
B6. One-time 30 percent nominal depreciation relative to the baseline in 2010 5/	14	6	2	3	2	2	3	4	4	5	**5**	4	3	3	3	2	3	4	4	4	4

Debt service-to-revenue ratio

Baseline	14	6	2	3	2	2	3	4	4	5	**5**	4	3	3	3	2	3	4	4	4	4
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2009-2029 1/	14	6	2	3	2	2	3	3	4	4	**4**	3	2	2	2	2	2	3	2	2	2
A2. New public sector loans on less favorable terms in 2009-2029 2	14	6	2	3	3	3	4	5	5	5	**5**	5	4	4	4	3	4	5	5	5	5
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2010-2011	14	6	2	3	2	2	3	4	5	5	**5**	4	3	3	3	2	3	4	4	4	4
B2. Export value growth at historical average minus one standard deviation in 2010-2011 3/	14	6	2	3	3	3	4	4	5	6	**6**	5	4	4	4	3	3	4	4	4	4
B3. US dollar GDP deflator at historical average minus one standard deviation in 2010-2011	14	6	2	3	3	3	4	5	5	6	**6**	4	4	3	3	3	3	4	4	4	4
B4. Net non-debt creating flows at historical average minus one standard deviation in 2010-2011 4/	14	6	3	4	4	4	5	5	6	8	**9**	8	7	6	6	5	5	6	6	6	6
B5. Combination of B1-B4 using one-half standard deviation shocks	14	6	3	4	4	4	5	5	6	8	**9**	7	6	6	6	5	5	6	6	6	6
B6. One-time 30 percent nominal depreciation relative to the baseline in 2010 5/	14	8	3	4	3	3	5	6	6	7	**7**	6	5	4	4	3	4	5	6	6	6
Memorandum item:																					
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	38	38	38	38	38	38	38	38	38	38	**38**	38	38	38	38	38	38	38	38	38	38

Source: Staff projections and simulations.

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.