INTERNATIONAL MONETARY FUND

FEDERATED STATES OF MICRONESIA

August 4, 2017

STAFF REPORT FOR THE 2017 ARTICLE IV CONSULTATION—DEBT SUSTAINABILITY ANALYSIS

Approved By
Alison Stuart and Zuzana Murgasova (IMF), and John Panzer (IDA)

Prepared by the staffs of the International Monetary Fund (IMF) and the International Development Association (IDA)[1]

The 2017 Debt Sustainability Analysis (DSA) assesses that the Federated States of Micronesia (FSM) remains at high risk of debt distress. Currently, the ratios of the present value (PV) of external public and publicly-guaranteed debt to GDP and exports are below their respective policy-dependent thresholds. However, they are expected to exceed the thresholds over the projection horizon. Moreover, for most indicators of external debt, thresholds would be breached under stress test scenarios. Although the FSM does not currently face any debt servicing risks due to the concessionality of debt obligations and access to stable flow of funds from Compact grants until FY2023, vulnerability to natural disasters and climate change call for a prudent debt management strategy. Containing the risk of debt distress requires continuation of grants to support the country's large development needs, and implementation of fiscal and further structural reforms to promote fiscal sustainability and growth.

[1] This DSA was prepared jointly with the World Bank, in accordance with the standard Debt Sustainability Framework for Low-income Countries approved by the Executive Boards of the IMF and the IDA. Debt sustainability is assessed in relation to policy-dependent debt burden thresholds. The FSM, with an average Country Policy and Institutional Assessment (CPIA) score of 2.7 over the last three years, is considered to have weak policy and institutional capacity for the purposes of the DSA framework, and assessed against relatively lower debt thresholds. Thus, the external debt burden thresholds for the FSM are (i) PV of debt-to-GDP ratio: 30 percent; (ii) PV of debt-to-exports ratio: 100 percent; (iii) PV of debt-to-revenue ratio: 200 percent; (iv) debt service-to-exports ratio: 15 percent: and (v) debt service-to-revenue ratio: 18 percent.

BACKGROUND

1. The FSM is a small state in the North Pacific with a total population of around 100,000. It is dependent on external grants and fishing license fees to finance public spending. The loosely federated structure of the country makes policy decisions difficult.

2. The FSM faces a long-term fiscal challenge as U.S. grants provided under the Compact of Free Association (Compact grants) will expire FY2024 onward, while the private sector is yet to become the engine of growth. Part of the Compact grants has been disbursed into the Compact Trust Fund (CTF), jointly managed by the U.S. and the FSM, with the goal that returns from the trust fund would contribute to the FSM's fiscal sustainability after FY2023. The FSM has also been accumulating assets in its own trust fund (FSM Trust Fund), especially in recent years. The current trajectory of the CTF is not on track to compensate for expiring Compact grants in FY2023. The FSM Trust Fund can only partially offset the shortfall.

3. The FSM's debt management has been relatively prudent. The FSM's external public and publicly guaranteed (PPG) debt has been declining gradually from a peak of 31 percent of GDP in FY2009 to 25 percent in FY2016 (21 percent on present value terms). Most of the debt is concessional and is contracted with official lenders. About two-thirds is from the Asian Development Bank (ADB) and thirty percent from the U.S. Department of Agriculture (Rural Utilities Services). The rest of the debt (4 percent of the total) is from the European Investment Bank (EIB) and a commercial lender (telecom vendor). All loans, except for the EIB loan, are denominated in U.S. dollars, the legal tender and official currency in the FSM. At 25 percent of GDP, FSM's total public debt remains below the relevant benchmark of 38 percent, but stress tests suggest the benchmark could be breached with extreme shocks (see paragraph 9).

UNDERLYING ASSUMPTIONS

4. The key assumptions are consistent with the macroeconomic framework set out in Box 1. The baseline scenario assumes a long-run real GDP growth rate of 0.6 percent, based on the historical track record of the FSM since FY2000. This reflects the impact of natural disasters, as the FSM experienced seven natural disasters during this period. The fiscal surplus is projected to decline gradually and turn into deficit of 4 percent of GDP in FY2024, when Compact grants expire. On the revenue side, Compact grants are projected to decrease in real terms until FY2023, as scheduled, while grants from other donors are expected to remain stable as a percentage of GDP. The tax-to-GDP ratio is assumed to remain unchanged, as the baseline scenario does not assume tax reforms. Fishing licenses fees are assumed to remain stable in nominal terms.[2] The wage bill is assumed to grow in line with the Compact current grants until FY2023 and then in line with the nominal GDP. Concessional loans from bilateral and multilateral sources are expected

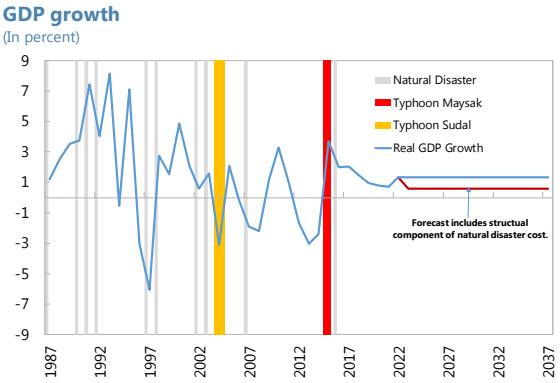
[2] Fishing license fees have stabilized in the range of US$60-65 million (about 20 percent of GDP) over the last three years (FY2015-17). The Parties to the Nauru Agreement (PNA), a regional agreement that sets minimum benchmark fees for fishing companies operating in the region, is not requiring further increases in the minimum rates.

to finance one-third of public investment starting in FY2024 to safeguard priority development spending.[3]

INCORPORATING THE IMPACT OF NATURAL DISASTERS

5. The FSM is vulnerable to natural disasters and the adverse effects of climate change. In 2015, Typhoon Maysak struck Chuuk and Yap resulting in 5 deaths and losses of US$11 million (4 percent of GDP). In 2004, Typhoon Sudan caused extensive damages to public and private properties, food crops and private homes. In July 2002, Tropical Storm Chata'an severely affected Chuuk state, causing floods and landslides that killed 47 and injured over 100. The Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) estimates that the FSM is expected to incur a severe tropical typhoon every 20 years resulting in losses and damages of 10 percent of GDP.

6. These major long-term costs and risks are incorporated into the DSA to assess how they impact FSM's fiscal position and debt sustainability. Accordingly, the baseline scenario considers the impact of future natural disasters, in line with the 2016 IMF Board Paper on "Small States' Resilience to Natural Disasters and Climate Change."[4] From 2017–2021, staff's projections assume no natural disasters, in line with the guidance from the Board Paper. This ensures that adjustments for natural disasters do not complicate the near-term policy discussions. However, for a realistic assumption over the longer horizon, the baseline projections after 2021 take into account the average annual impact of natural disasters by adjusting downward the average growth rate. In particular, long-term growth is adjusted down by 0.5 percentage points (to 0.6 percent, compared with a non-disaster potential growth rate of 1.1 percent). This approach is illustrated in the text figure.[5] In addition, occurrences of natural disasters are incorporated in the DSA through the standard contingent liability shock scenario, given PCRAFI estimates that the FSM is expected to incur a typhoon that would lead to losses and damages of 10 percent of GDP over 20 years.[6]



Sources: Country authorities; and IMF staff calculations.

[3] This is in line with the FSM's Policy for Overseas Development Assistance ("ODA Policy"), adopted in 2013, which specifies that loans shall only be considered if concessional and estimated economic returns outweigh the costs.

[4] The 2016 Board Paper is available at: https://www.imf.org/en/News/Articles/2016/12/12/PR16550-IMF-Discusses-Small-States-Resilience-to-Natural-Disasters-and-Climate-Change-and-IMF-Role

[5] The baseline scenario projects long-term growth at 0.6 percent, based on the historical track record of the FSM since FY2000 (see Box 1). This reflects the impact of natural disasters, as the as the FSM experienced seven natural disasters during this period. Excluding disasters years, the historical growth average was 1.1 percent.

[6] The debt sustainability framework includes a standard contingent liability shock scenario—a 10-percent-of-GDP increase in debt creating flows—that is modelled after a generic contingent liability shock (IMF, 2013). The impact of the shock is shown in Tables 2 and 4 under bound tests 6 and 5, respectively.

EXTERNAL DEBT SUSTAINABILITY ANALYSIS

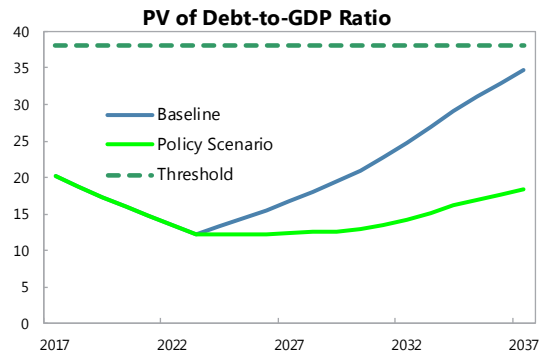
7. Under the baseline scenario, FSM's breaches indicative external debt thresholds over the projection horizon. The PV of external debt-to-GDP ratio is expected to exceed the threshold of 30 percent in FY2035, while the ratio of PV of external debt-to-exports is expected to exceed the threshold of 100 percent in FY2034.[7] However, as the bulk of external debt is on concessional terms, the debt service to export ratio will remain below the relevant threshold.

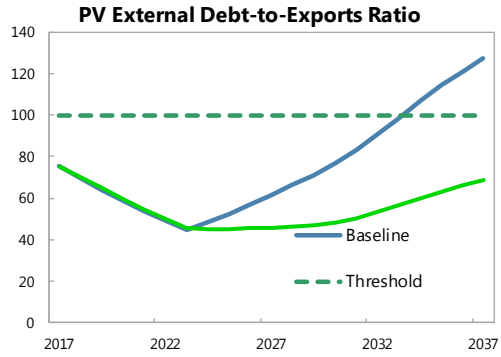
8. Stress tests confirm the vulnerability of the debt position, particularly to natural disasters. The most extreme shock scenarios reflect the effect of natural disasters, incorporated in the DSA through the standard contingent liability shock scenario. Under this scenario, the PV of the external debt-to-GDP ratio would exceed the threshold earlier than in the baseline, particularly in FY2032. The PV of the external debt-to-exports ratio would exceed the threshold in FY2030. In a scenario under which key macroeconomic variables follow their historical averages, the thresholds would also be breached. [8]

PUBLIC DEBT SUSTAINABILITY ANALYSIS

9. Public debt follows very closely the dynamic of external debt. Under the baseline scenario, the PV of public debt-to-GDP ratio is projected to increase from 21 percent of GDP in FY2016 to 35 percent of GDP in FY2037, but remain below the benchmark of 38 percent.[9] Debt dynamics are particularly sensitive to growth shocks. Under the most extreme shock, the PV of debt-to-GDP and debt-to-revenue would remain on an upward trend. Under a shock to the primary balance, the debt service-to-revenue ratio would also keep growing throughout the projection period.

10. Policy action including fiscal and structural reforms would greatly reduce the risk of debt distress. Under the alternative scenario with policy actions, potential GDP growth is assumed to be higher than the baseline by ½ percentage points. Furthermore, the implementation of fiscal reforms including





[7] In the 2015 DSA, the PV of external debt-to-GDP ratio was projected to exceed the threshold of 30 percent in FY2030, while the PV of external debt-to-export ratio was projected to exceed threshold of 100 percent in FY2027.

[8] The historical scenario holds the set of key variables related to debt dynamics at ten-year averages. This does not appear to provide a relevant comparator to the baseline, given the recent structural changes in fiscal and current account balances due to higher fishing license fees obtained under the Parties to the Nauru Agreement (PNA).

[9] In the 2015 DSA, the PV of PPG debt-to-GDP ratio was projected to increase gradually from 22 percent of GDP in FY2014 to reach 32 percent of GDP in FY2034, but still below the threshold of 38 percent.

domestic revenue mobilization and expenditure reforms would eliminate the financing gap in the post-FY2023 period, resulting in less borrowing. Under this alternative scenario with policy actions, the debt indicators remain well below the threshold throughout the projection period.

AUTHORITIES' VIEW

11. The authorities agreed with the DSA findings, noting that the current risk of debt distress is high. They saw the need for fiscal adjustment and improvements in public financial management (PFM) to prepare for the scheduled expiration of Compact grants, as called for in their Action Plan 2023. However, they emphasized that these efforts, particularly tax reform, require broad support from states. They noted that a PFM roadmap is being developed, building on the Public Expenditure and Financial Accountability (PEFA) self-assessment in November 2016. Finally, they noted that a Debt Management bill is currently with Congress to further strengthen the institutional capacity to manage public debt.

CONCLUSION

12. The standard DSA framework for LICs assesses the FSM to remain at high risk of debt distress. The baseline scenario indicates that the PV of external debt-to-exports ratios could breach the threshold in FY2034, while the PV of external debt to GDP crosses threshold in the following year. Stress tests confirm the vulnerability of the debt position to export shocks. However, FSM's vulnerability to debt distress is partly alleviated by several factors. Most debt is on concessional terms from development partners, and the authorities are building up trust funds that can provide a source of funding to partly offset expiring Compact grants after FY2023.

Box 1. Baseline Macroeconomic Assumptions

The key assumptions of the 2017 DSA are consistent with the macroeconomic framework outlined in the 2017 Article IV Report. Relative to the previous DSA, short-term indicators have improved somewhat mainly due to the upward revision of fiscal revenues, notably from fishing license fees, but the long-term dynamics remain broadly unchanged.

GDP growth in the long-run is projected at around 0.6 percent, which is based on historical experience (including years with natural disasters).[1]

The GDP deflator is expected to remain 1 percentage points below CPI inflation, consistent with historical trends. CPI inflation is projected to follow the U.S. rate of inflation.

The overall fiscal surplus will decline gradually and turn into deficit of 4 percent of GDP in FY2024, when Compact grants expire. On the revenue side, Compact grants in real terms are projected to decrease as scheduled, while grants from other donors are expected to remain stable as a percent of GDP. The tax revenues-to-GDP ratio is assumed to remain broadly unchanged, as the baseline scenario does not assume tax reforms. Fishing licenses fees are assumed to remain stable in nominal terms. The wage bill is assumed to grow in line with the Compact current grants until FY2023 and then in line with the nominal GDP.

External financing: In the absence of access to the international capital market and a very limited domestic market, the financing gap is assumed to be financed by a combination of grants from development partners and bilateral concessional lending. Concessional loans from bilateral and multilateral sources are expected to finance one-third of public investment starting in FY2024 to safeguard priority development spending.

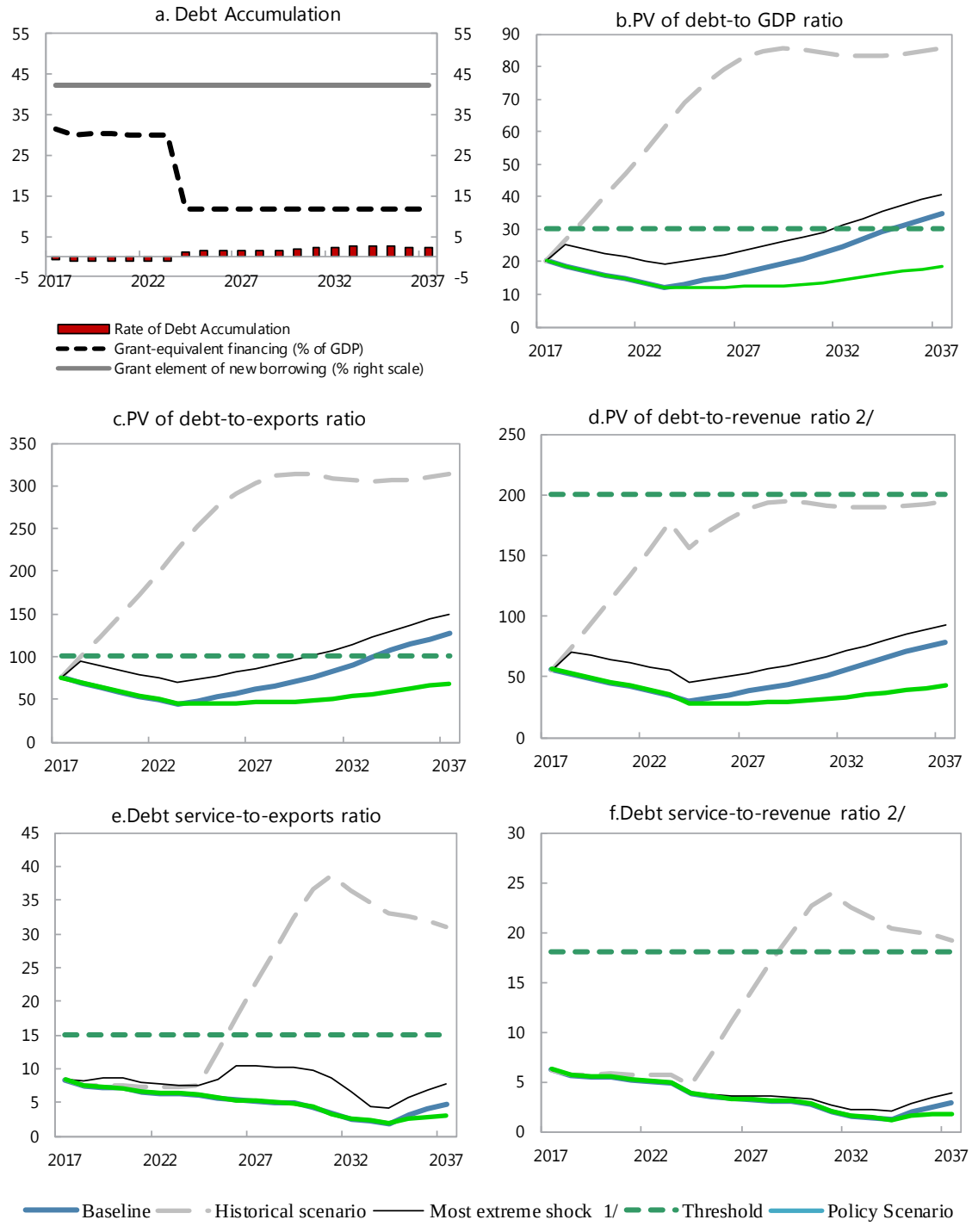
The Compact Trust Fund and the FSM Trust Fund are projected to yield an average nominal return of 5 percent.[2] Drawdowns from the trust funds will start from FY2024 onward. The baseline scenario assumes that the real balance of the combined trust funds is kept intact.

The **current account balance (including official transfers)** is expected to worsen gradually from a surplus of 3 percent of GDP in FY2016 to a deficit of 4 percent of GDP by FY2024. The deficit is assumed to be financed by bilateral and multilateral concessional loans.

[1]Average GDP growth between FY2000 and FY2015 was 0.6 percent (excluding FY2013 when growth took a severe hit with the suspension of Compact infrastructure grants). The FSM experienced seven natural disasters during this period. Excluding disasters years, the historical growth average was 1.1 percent. Hence, the impact of natural disasters is assessed to be 0.5 percentage points on impact.

[2]The 2015 Article IV report assumed a 6 percent nominal return on trust fund assets, which appears somewhat high in the current low interest environment and considering FSM's historical experience. The Compact Trust Fund's compound average annual return has been 5.4 percent, net of fees, while that of FSM Trust Fund has been 5.9 percent, as of end-FY2016.

Figure 1. Federated States of Micronesia: Indicators of Public and Publicly Guaranteed External Debt Baseline Scenario, 2017–37 1/

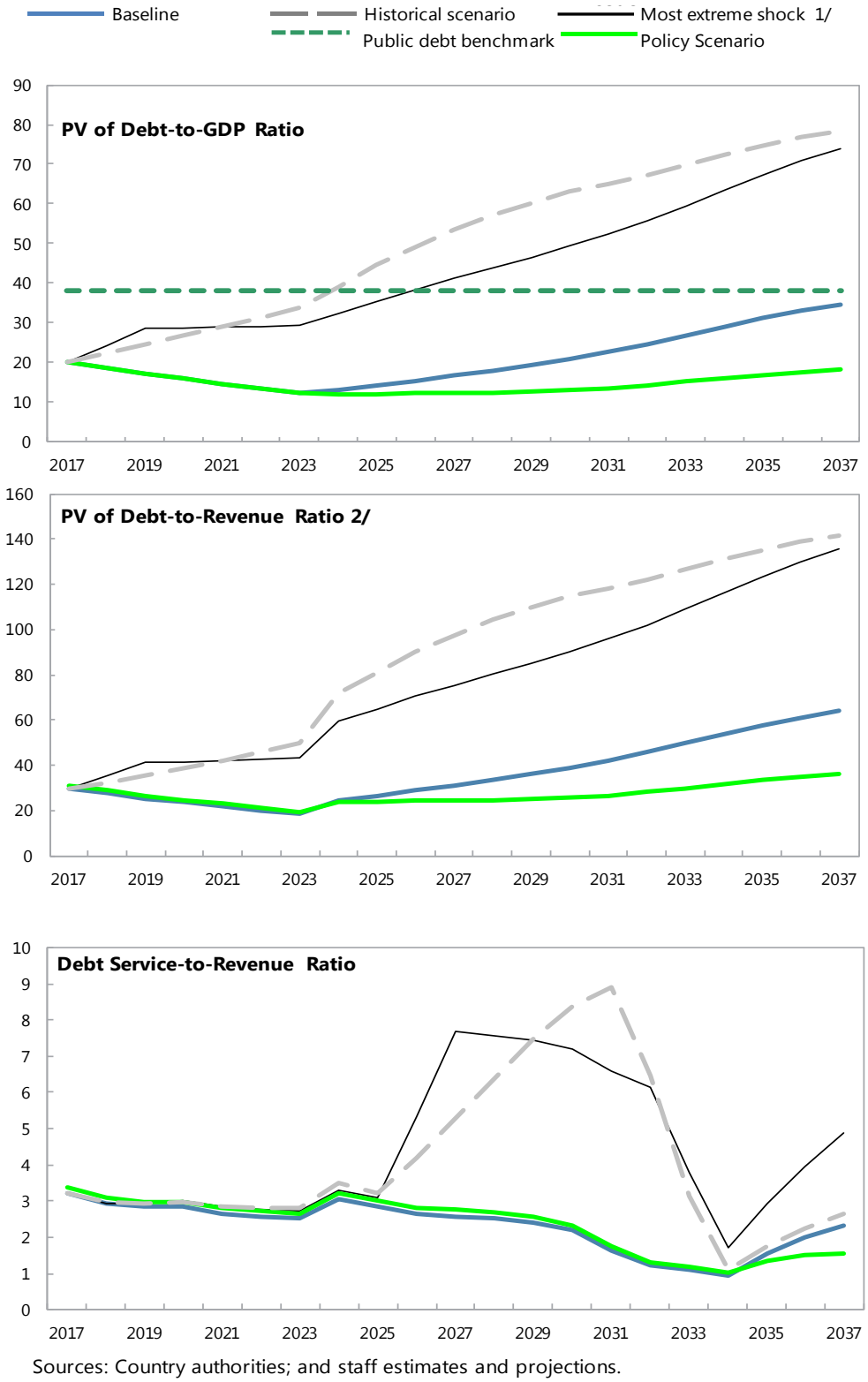


Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio on or before 2027. In figure b. it corresponds to a Contingent Liability shock; in c. to a Contingent Liability shock; in d. to a Contingent Liability shock; in e. to a Exports shock and in figure f. to a Exports shock

2/ Revenues are defined exclusive of grants. Revenues increase in FY2024 due to annual distributions from the Compact Trust Fund (CTF) and FSM Trust Fund starting that year.

Figure 2. Federated States of Micronesia: Indicators of Public Debt, Baseline Scenario, 2017–37 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 2027.
2/ Revenues are defined inclusive of grants.

Table 1. Federated States of Micronesia: External Debt Sustainability Framework, Baseline Scenario, 2014–37 1/

(In percent of GDP, unless otherwise indicated)

	Actual			Historical 6/ Average	Standard 6/ Deviation	Projections									
	2014	2015	2016			2017	2018	2019	2020	2021	2022	2017-2022 Average	2027	2037	2023-2037 Average
External debt (nominal) 1/	**28.2**	**25.8**	**25.3**			**24.3**	**22.3**	**20.4**	**18.6**	**16.9**	**15.3**		**23.5**	**48.7**	
of which: public and publicly guaranteed (PPG)	28.2	25.8	25.3			24.3	22.3	20.4	18.6	16.9	15.3		23.5	48.7	
Change in external debt	0.5	-2.5	-0.5			-0.9	-2.0	-1.9	-1.8	-1.7	-1.6		2.4	2.0	
Identified net debt-creating flows	-1.3	-3.9	-3.8			-3.8	-3.2	-3.1	-2.9	-2.9	-3.0		5.2	5.1	
Non-interest current account deficit	**-2.3**	**-5.4**	**-4.0**	**8.6**	**9.2**	**-4.0**	**-3.5**	**-3.4**	**-3.3**	**-3.3**	**-3.3**		**5.1**	**5.3**	4.6
Deficit in balance of goods and services	47.0	48.9	52.5			51.3	51.4	51.3	51.3	51.2	51.2		51.0	50.4	
Exports	26.2	26.5	26.5			26.8	27.0	27.0	27.1	27.2	27.2		27.2	27.2	
Imports	73.3	75.4	79.0			78.1	78.3	78.3	78.4	78.5	78.5		78.2	77.7	
Net current transfers (negative = inflow)	-40.6	-35.4	-37.0	-37.3	2.7	-36.2	-36.2	-36.2	-36.3	-36.4	-36.5		-19.1	-19.7	-20.5
of which: official	-29.3	-31.6	-33.0			-32.0	-31.6	-31.3	-31.1	-30.8	-30.7		-12.7	-12.8	
Other current account flows (negative = net inflow)	-8.8	-18.9	-19.6			-19.0	-18.7	-18.5	-18.3	-18.1	-18.0		-26.8	-25.5	
Net FDI (negative = inflow)	**0.1**	**0.1**	**0.1**	**-0.1**	**0.7**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**		**0.1**	**0.1**	0.1
Endogenous debt dynamics 2/	**1.0**	**1.5**	**0.2**			**0.1**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**		**0.1**	**-0.3**	
Contribution from nominal interest rate	1.1	1.2	0.8			0.6	0.5	0.5	0.5	0.4	0.4		0.2	0.0	
Contribution from real GDP growth	0.7	-1.1	-0.8			-0.5	-0.3	-0.2	-0.1	-0.1	-0.1		-0.1	-0.3	
Contribution from price and exchange rate changes	-0.8	1.3	0.1			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	**1.7**	**1.4**	**3.3**			**2.9**	**1.2**	**1.2**	**1.1**	**1.2**	**1.4**		**-2.8**	**-3.0**	
of which: exceptional financing	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
PV of external debt 4/	...	...	21.3			20.2	18.7	17.3	16.0	14.7	13.4		16.7	34.6	
In percent of exports	...	...	80.4			75.6	69.4	64.1	58.8	53.9	49.4		61.5	127.1	
PV of PPG external debt	**...**	**...**	**21.3**			**20.2**	**18.7**	**17.3**	**16.0**	**14.7**	**13.4**		**16.7**	**34.6**	
In percent of exports	**...**	**...**	**80.4**			**75.6**	**69.4**	**64.1**	**58.8**	**53.9**	**49.4**		**61.5**	**127.1**	
In percent of government revenues (excluding grants)	**...**	**...**	**57.6**			**55.8**	**52.3**	**48.7**	**45.2**	**41.9**	**38.5**		**38.1**	**78.7**	
Debt service-to-exports ratio (in percent)	**4.3**	**4.4**	**3.0**			**8.3**	**7.5**	**7.2**	**7.1**	**6.6**	**6.4**		**5.1**	**4.6**	
PPG debt service-to-exports ratio (in percent)	**4.3**	**4.4**	**3.0**			**8.3**	**7.5**	**7.2**	**7.1**	**6.6**	**6.4**		**5.1**	**4.6**	
PPG debt service-to-revenue ratio (in percent)	**3.1**	**3.2**	**2.1**			**6.2**	**5.6**	**5.5**	**5.4**	**5.1**	**5.0**		**3.2**	**2.9**	
Total gross financing need (Millions of U.S. dollars)	-3.5	-13.1	-10.2			-5.5	-4.9	-4.8	-4.6	-5.0	-5.4		25.3	29.3	
Non-interest current account deficit that stabilizes debt ratio	-2.8	-2.9	-3.5			-3.0	-1.5	-1.5	-1.5	-1.6	-1.7		2.7	3.2	
Key macroeconomic assumptions															
Real GDP growth (in percent)	-2.4	3.7	3.0	0.1	2.6	2.0	1.4	0.9	0.7	0.7	0.6	1.1	0.6	0.6	0.6
GDP deflator in US dollar terms (change in percent)	3.1	-4.5	-0.5	2.4	3.3	-0.1	1.0	1.0	1.0	1.0	0.8	0.8	0.8	0.8	0.8
Effective interest rate (percent) 5/	4.1	4.1	3.1	3.2	0.5	2.3	2.3	2.3	2.3	2.3	2.3	2.3	0.9	0.0	0.7
Growth of exports of G&S (US dollar terms, in percent)	-11.0	0.0	2.4	7.0	12.3	3.2	3.1	2.2	2.1	2.1	1.4	2.3	1.4	1.4	1.4
Growth of imports of G&S (US dollar terms, in percent)	-10.3	1.9	7.3	3.0	6.7	0.8	2.7	1.9	1.8	1.8	1.4	1.7	1.3	1.3	1.3
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3
Government revenues (excluding grants, in percent of GDP)	36.9	37.1	36.9			36.2	35.8	35.6	35.3	35.0	34.9		44.0	44.0	43.4
Aid flows (in Millions of US dollars) 7/	178.5	172.2	189.1			187.7	185.1	183.0	179.0	175.3	171.6		130.0	261.4	
of which: Grants	88.8	91.1	107.5			107.6	110.0	112.8	114.0	115.1	116.3		39.4	45.2	
of which: Concessional loans	89.7	81.1	81.6			80.1	75.2	70.2	65.1	60.2	55.3		90.6	216.2	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			31.4	30.1	30.4	30.2	30.0	29.9		11.8	11.8	13.0
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			92.5	92.4	92.6	92.6	92.7	92.8		84.0	84.0	84.6
Memorandum items:															
Nominal GDP (Millions of US dollars)	318.1	315.0	322.8			329.2	337.0	343.5	349.4	355.4	360.4		386.4	444.2	
Nominal dollar GDP growth	0.6	-1.0	2.5			2.0	2.4	1.9	1.7	1.7	1.4	1.8	1.4	1.4	1.4
PV of PPG external debt (in Millions of US dollars)			68.6			66.6	63.1	59.5	55.7	52.1	48.5		64.7	153.8	
(PVt-PVt-1)/GDPt-1 (in percent)						-0.6	-1.1	-1.1	-1.1	-1.0	-1.0	-1.0	1.5	2.2	1.7
Gross workers' remittances (Millions of US dollars)	14.3	14.3	14.6			14.9	15.3	15.8	15.8	15.8	15.8		15.8	15.8	
PV of PPG external debt (in percent of GDP + remittances)	...	...	20.3			19.3	17.9	16.6	15.3	14.0	12.9		16.1	33.4	
PV of PPG external debt (in percent of exports + remittances)	...	...	68.6			64.6	59.4	54.8	50.4	46.3	42.5		53.5	112.5	
Debt service of PPG external debt (in percent of exports + remittanc	...	...	2.5			7.1	6.4	6.2	6.1	5.7	5.5		4.5	4.1	

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. This line item also reflects projected capital transfers for investment projects.

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. Federated States of Micronesia: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2017–37

(In percent)

	Projections							
	2017	2018	2019	2020	2021	2022	**2027**	2037
PV of debt-to GDP ratio								
Baseline	20	19	17	16	15	13	**17**	35
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	20	27	33	40	47	54	**83**	86
A2. New public sector loans on less favorable terms in 2016-2036 2/	20	19	17	16	15	13	**20**	48
A3. Alternative Scenario : Policy Scenario	20	19	17	16	15	13	12	18
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	20	19	19	17	16	14	**18**	37
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	20	20	21	20	19	18	**20**	35
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	20	19	18	17	15	14	**17**	36
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	20	20	20	19	18	17	**19**	35
B5. Combination of B1-B4 using one-half standard deviation shocks	20	21	22	21	19	18	**21**	37
B6. 10 percent of GDP increase in other debt-creating flows in 2018	20	25	24	23	21	20	**23**	41
PV of debt-to-exports ratio								
Baseline	76	69	64	59	54	49	**61**	127
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	76	99	123	147	172	199	**304**	314
A2. New public sector loans on less favorable terms in 2016-2036 2/	76	69	64	59	54	49	**75**	177
A3. Alternative Scenario : Policy Scenario	75	70	65	59	55	50	46	69
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	76	69	64	59	54	49	**61**	127
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	76	81	93	88	82	78	**87**	150
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	76	69	64	59	54	49	**61**	127
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	76	75	75	70	65	61	**70**	127
B5. Combination of B1-B4 using one-half standard deviation shocks	76	76	80	75	70	66	**75**	132
B6. 10 percent of GDP increase in other debt-creating flows in 2018	76	94	89	84	79	74	**86**	149
PV of debt-to-revenue ratio								
Baseline	56	52	49	45	42	39	**38**	79
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	56	75	94	113	134	155	**188**	194
A2. New public sector loans on less favorable terms in 2016-2036 2/	56	52	49	45	42	39	**46**	110
A3. Alternative Scenario : Policy Scenario	57	53	50	46	43	39	29	43
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	56	54	52	49	45	42	**41**	85
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	56	56	60	57	54	52	**46**	79
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	56	53	51	47	43	40	**40**	82
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	56	56	57	54	50	47	**43**	79
B5. Combination of B1-B4 using one-half standard deviation shocks	56	58	62	58	55	52	**47**	83
B6. 10 percent of GDP increase in other debt-creating flows in 2018	56	71	67	64	61	58	**53**	93

Table 2. Federated States of Micronesia: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2017–37 (concluded)

(In percent)

	Projections							
	2017	2018	2019	2020	2021	2022	**2027**	2037
Debt service-to-exports ratio								
Baseline	8	7	7	7	7	6	**5**	5
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	8	8	7	8	7	7	**23**	31
A2. New public sector loans on less favorable terms in 2016-2036 2/	8	8	7	7	7	6	**6**	11
A3. Alternative Scenario : Policy Scenario	8	8	7	7	7	6	5	3
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	8	8	7	7	7	6	**6**	6
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	8	8	9	9	8	8	**10**	8
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	8	8	7	7	7	6	**6**	6
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	8	8	7	7	7	6	**8**	7
B5. Combination of B1-B4 using one-half standard deviation shocks	8	8	8	7	7	7	**9**	7
B6. 10 percent of GDP increase in other debt-creating flows in 2018	8	8	7	7	7	6	**6**	6
Debt service-to-revenue ratio								
Baseline	6	6	5	5	5	5	3	3
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	6	6	6	6	6	6	**14**	19
A2. New public sector loans on less favorable terms in 2016-2036 2/	6	6	5	5	5	5	**4**	7
A3. Alternative Scenario : Policy Scenario	6	6	6	6	5	5	3	2
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	6	6	6	6	6	5	**4**	4
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	6	6	6	6	5	5	**5**	4
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	6	6	6	6	5	5	**4**	4
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	6	6	6	6	5	5	**5**	4
B5. Combination of B1-B4 using one-half standard deviation shocks	6	6	6	6	6	5	**5**	4
B6. 10 percent of GDP increase in other debt-creating flows in 2018	6	6	6	6	5	5	**4**	4
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 5/	33	33	33	33	33	33	**33**	33

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/ 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. Federated States of Micronesia: Public Sector Debt Sustainability Framework, Baseline Scenario, 2014–37

(In percent of GDP, unless otherwise indicated)

	Actual					Estimate	Projections								
	2014	2015	2016	Average 5/	Standard Deviation 5/	2017	2018	2019	2020	2021	2022	2017-22 Average	2027	2037	2023-37 Average
Public sector debt 1/	28.2	25.8	25.3			24.3	22.3	20.4	18.6	16.9	15.3		23.5	48.7	
of which: foreign-currency denominated	28.2	25.8	25.3			24.3	22.3	20.4	18.6	16.9	15.3		23.5	48.7	
Change in public sector debt	0.5	-2.5	-0.5			-0.9	-2.0	-1.9	-1.8	-1.7	-1.6		2.4	2.0	
Identified debt-creating flows	-11.3	-10.1	-9.6			-9.2	-9.2	-8.9	-8.7	-8.4	-8.2		4.2	3.8	
Primary deficit	-12.3	-11.6	-9.8	-4.0	5.4	-9.3	-9.1	-9.0	-8.8	-8.5	-8.4	-8.9	4.3	4.4	3.5
Revenue and grants	64.8	66.0	70.2			68.9	68.4	68.4	67.9	67.4	67.2		54.2	54.2	
of which: grants	27.9	28.9	33.3			32.7	32.6	32.8	32.6	32.4	32.3		10.2	10.2	
Primary (noninterest) expenditure	52.5	54.4	60.4			59.7	59.3	59.4	59.1	58.9	58.8		58.4	58.6	
Automatic debt dynamics	1.0	1.5	0.2			0.1	0.0	0.1	0.1	0.1	0.1		-0.1	-0.6	
Contribution from interest rate/growth differential	1.3	-0.2	-0.3			-0.5	-0.3	-0.2	-0.1	-0.1	-0.1		-0.4	-1.2	
of which: contribution from average real interest rate	0.7	0.8	0.4			0.0	0.0	0.0	0.1	0.0	0.0		-0.2	-0.9	
of which: contribution from real GDP growth	0.7	-1.0	-0.8			-0.5	-0.3	-0.2	-0.1	-0.1	-0.1		-0.1	-0.3	
Contribution from real exchange rate depreciation	-0.4	1.6	0.5			0.6	0.3	0.3	0.2	0.2	0.2		...	...	
Other identified debt-creating flows	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	0.0	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	11.8	7.7	9.2			8.2	7.1	7.1	6.9	6.7	6.6		-1.7	-1.8	
Other Sustainability Indicators															
PV of public sector debt	...	...	21.3			20.2	18.7	17.3	16.0	14.7	13.4		16.7	34.6	
of which: foreign-currency denominated	...	...	21.3			20.2	18.7	17.3	16.0	14.7	13.4		16.7	34.6	
of which: external	...	...	21.3			20.2	18.7	17.3	16.0	14.7	13.4		16.7	34.6	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	-11.2	-10.4	-9.0			-7.0	-7.1	-7.1	-6.9	-6.7	-6.6		5.7	5.7	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	30.3			29.3	27.4	25.3	23.5	21.8	20.0		30.9	63.9	
PV of public sector debt-to-revenue ratio (in percent)	...	...	57.6			55.8	52.3	48.7	45.2	41.9	38.5		38.1	78.7	
of which: external 3/	...	...	57.6			55.8	52.3	48.7	45.2	41.9	38.5		38.1	78.7	
Debt service-to-revenue and grants ratio (in percent) 4/	1.8	1.8	1.1			3.2	3.0	2.8	2.8	2.7	2.6		2.6	2.3	
Debt service-to-revenue ratio (in percent) 4/	3.1	3.2	2.1			6.2	5.6	5.5	5.4	5.1	5.0		3.2	2.9	
Primary deficit that stabilizes the debt-to-GDP ratio	-12.8	-9.1	-9.3			-8.3	-7.1	-7.1	-7.0	-6.8	-6.8		1.8	2.4	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	-2.4	3.7	3.0	0.1	2.6	2.0	1.4	0.9	0.7	0.7	0.6	1.1	0.6	0.6	0.6
Average nominal interest rate on forex debt (in percent)	4.1	4.1	3.1	3.2	0.5	2.3	2.3	2.3	2.3	2.3	2.3	2.3	0.9	0.0	0.7
Average real interest rate on domestic debt (in percent)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Real exchange rate depreciation (in percent, + indicates depreciation	-1.2	5.8	1.8	-0.7	3.1	2.3	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	3.1	-4.5	-0.5	2.4	3.3	-0.1	1.0	1.0	1.0	1.0	0.8	0.8	0.8	0.8	0.8
Growth of real primary spending (deflated by GDP deflator, in percer	-12.2	7.5	14.3	1.0	6.7	0.8	0.7	1.1	0.2	0.4	0.4	0.6	0.7	0.6	0.6
Grant element of new external borrowing (in percent)	...	...	...	...	...	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	...

Sources: Country authorities; and staff estimates and projections.

1/ Public sector is defined as general government. Debt is defined as gross debt.

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. Federated States of Micronesia: Sensitivity Analysis for Key Indicators of Public Debt, 2017–37

	Projections							
	2017	2018	2019	2020	2021	2022	2027	2037
PV of Debt-to-GDP Ratio								
Baseline	20	19	17	16	15	13	17	35
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	20	22	25	27	29	31	53	78
A2. Primary balance is unchanged from 2017	20	19	17	15	14	12	-22	-106
A3. Permanently lower GDP growth 1/	20	19	18	17	16	16	27	79
A4. Alternative Scenario :Policy Scenario	20	19	17	16	15	13	12	18
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2018-2019	20	20	21	22	22	23	39	82
B2. Primary balance is at historical average minus one standard deviations in 2018-2019	20	25	31	30	29	28	33	49
B3. Combination of B1-B2 using one half standard deviation shocks	20	24	29	29	29	29	41	74
B4. One-time 30 percent real depreciation in 2018	20	28	26	25	23	22	23	36
B5. 10 percent of GDP increase in other debt-creating flows in 2018	20	25	24	23	22	21	24	42
PV of Debt-to-Revenue Ratio 2/								
Baseline	29	27	25	23	22	20	31	64
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	29	32	36	39	42	46	97	142
A2. Primary balance is unchanged from 2017	29	27	25	23	20	18	-41	-195
A3. Permanently lower GDP growth 1/	29	28	26	25	24	23	49	142
A4. Alternative Scenario :Policy Scenario	31	29	27	25	23	21	24	36
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2018-2019	29	29	30	31	32	33	70	149
B2. Primary balance is at historical average minus one standard deviations in 2018-2019	29	37	45	44	43	42	60	91
B3. Combination of B1-B2 using one half standard deviation shocks	29	35	41	41	42	42	75	136
B4. One-time 30 percent real depreciation in 2018	29	40	38	36	35	33	42	67
B5. 10 percent of GDP increase in other debt-creating flows in 2018	29	37	35	33	32	31	45	77
Debt Service-to-Revenue Ratio 2/								
Baseline	3	3	3	3	3	3	3	2
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	3	3	3	3	3	3	5	3
A2. Primary balance is unchanged from 2017	3	3	3	3	3	3	2	-19
A3. Permanently lower GDP growth 1/	3	3	3	3	3	3	3	7
A4. Alternative Scenario :Policy Scenario	3	3	3	3	3	3	3	2
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2018-2019	3	3	3	3	3	3	4	9
B2. Primary balance is at historical average minus one standard deviations in 2018-2019	3	3	3	3	3	3	8	5
B3. Combination of B1-B2 using one half standard deviation shocks	3	3	3	3	3	3	7	8
B4. One-time 30 percent real depreciation in 2018	3	4	4	4	4	4	4	5
B5. 10 percent of GDP increase in other debt-creating flows in 2018	3	3	3	3	3	3	5	4

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.