INTERNATIONAL DEVELOPMENT ASSOCIATION

INTERNATIONAL MONETARY FUND

PAPUA NEW GUINEA

Joint World Bank-IMF Debt Sustainability analysis

June 2020

Prepared jointly by the staffs of the International Development Association (IDA)[1 2]

and the International Monetary Fund (IMF)

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Papua New Guinea: Joint Bank-Fund Debt Sustainability Analysis	
Risk of external debt distress	High[3]
Overall risk of debt distress	High
Granularity in the risk rating	Sustainable
Application of judgment	No
Macroeconomic projections	GDP growth forecast reduced by 3.7 percentage points to -1.7 percent in 2020, and terms-of-trade shocks are incorporated.
Financing strategy	Limited room to draw down reserves. Reliance on concessional loans from international community.
Mechanical risk rating under the external DSA	High
Mechanical risk rating under the public DSA	High

[1] This joint World Bank/IMF Debt Sustainability Analysis (DSA) has been prepared in the context of the 2020 request for emergency financing from the IMF Rapid Credit Facility (RCF). The macro framework underlying this DSA has been updated from the 2019 Article IV staff report to reflect recent global and domestic developments. Both assessments on the overall risk and the risk of external debts have changed from moderate to high risk of distress as a result.

[2] The debt coverage of this DSA is the same as in the most recent DSA (published on April 7, 2020). It mainly includes the central government and local government debt. The debt figure does not fully capture implicit government guaranteed debts of state-owned enterprises (SOEs) and unfunded superannuation liabilities relating to pensions.

[3] PNG's Composite Indicator score based on the October World Economic Outlook and 2019 CPIA measure indicates that the debt-carrying capacity is 'medium'.

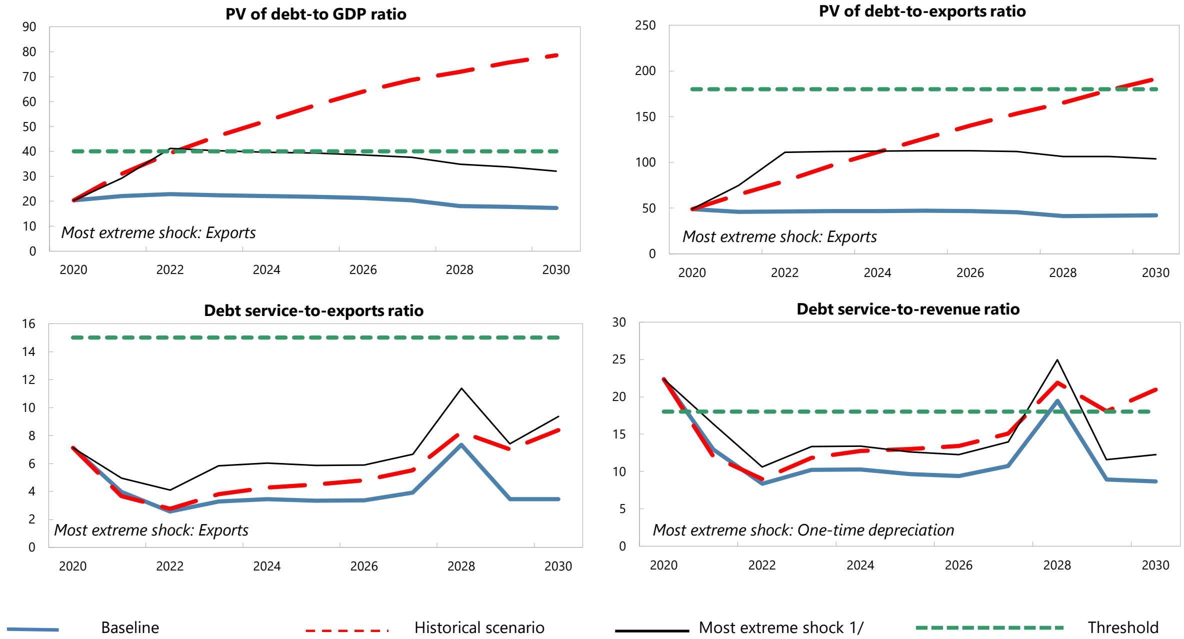
External and overall debt are at high risk of debt distress. The shocks from COVID-19 pandemic, including the terms-of-trade shocks to the main exports (for instance, LNG and metals) are expected to reduce the current account surplus and exacerbate fiscal deficits resulting in a higher debt path compared to the 2019 Article IV DSA. However, the public debt is assessed to be on a sustainable path, conditional on the implementation of prudent fiscal policies following the commitments of the staff-monitored program.

The COVID-19 pandemic crisis is expected to heavily affect the prices of main exports, including LNG (-30.4%) and copper (-17%). Combined with weak external demands, the country is expected to experience a current account surplus reduction equivalent to 8.6 percent of GDP and larger fiscal deficits. The baseline scenario assumes that concessional loans from multilateral institutions and bilateral official creditors will help cover some of the health costs and financing needs triggered by the global health crisis. However, debt sustainability is subject to considerable downside risks, including from a more severe or prolonged impact of the COVID-19 shock.

The present value (PV) of public debt-to-GDP ratio remains high at over 40 percent, as fiscal deficits continue over the medium term on top of the elevated level of outstanding local debt. The PV of public and publicly-guaranteed (PPG) external debt-to-GDP ratio does not breach the threshold under the baseline scenario, but debt service-to-revenue ratio shows two short-lived breaches in 2020 and 2028, as bullet payments for private creditors and bond payments are due. The country is particularly vulnerable to export growth shocks under alternative scenario.

However, they are both projected to gradually decline as the forecast horizon advances. The PV of the public debt-to-GDP falls below 45 percent from 2024 and onwards. The first breach of the external debt service-to-revenue ratio is expected to be refinanced by other loans with concessional terms, but it is not certain to eliminate roll-over risks given the reduced external financing forecasts and a larger financing gap in 2020. Baseline projections also assume the authorities' continued efforts to boost revenue mobilization, including by achieving the structural benchmark of the staff-monitored program on medium-term revenue strategy (MTRS). Based on overall debt dynamics and policy perspectives, PPG external and public debts are deemed sustainable going forward.

Figure 1. Papua New Guinea: Indicators of Public and Publicly Guaranteed External Debt Under Alternative Scenarios, 2020-2030



Customization of Default Settings	Size	Interactions
Standardized Tests	Yes	
Tailored Stress		
Combined CL	Yes	
Natural disaster	n.a.	n.a.
Commodity Prices [2/]	No	No
Market financing	No	No

Note: "Yes" indicates any change to the size or interactions of the default settings for the stress tests. "n.a." indicates that the stress test does not apply.

Borrowing assumptions on additional financing needs resulting from the stress tests*	Default	User defined
Shares of marginal debt		
External PPG MLT debt	100%	
Terms of marginal debt		
Avg. nominal interest rate on new borrowing in USD	1.9%	1.9%
USD Discount rate	5.0%	5.0%
Avg. maturity (incl. grace period)	22	22
Avg. grace period	7	7

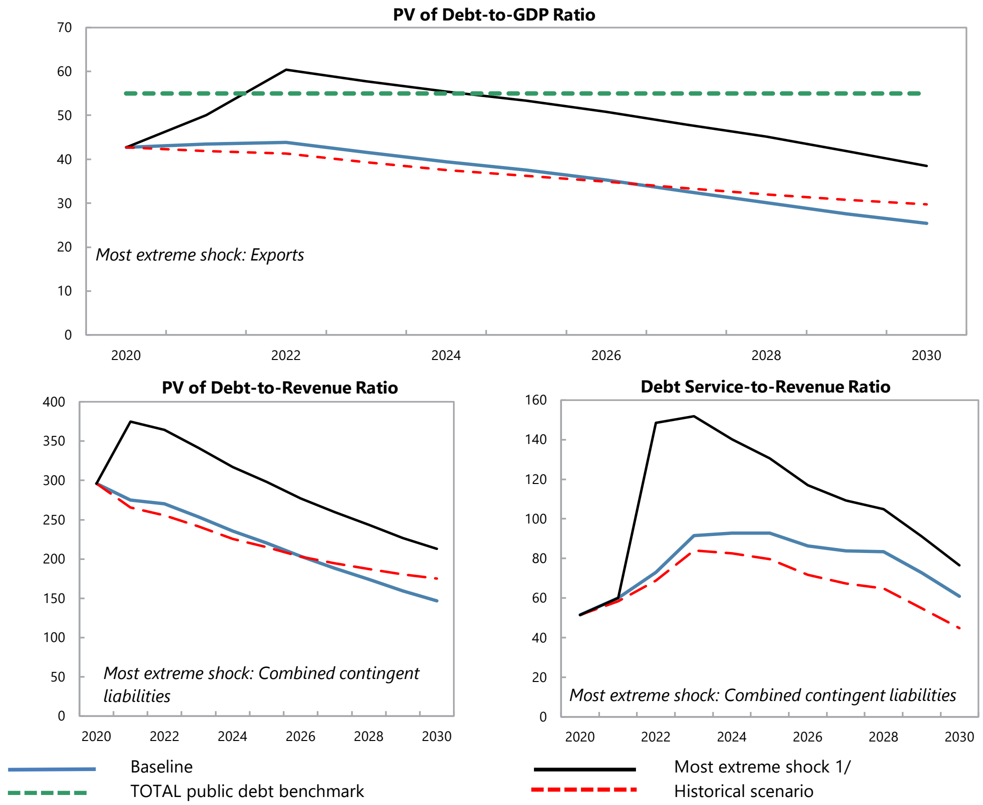
* Note: All the additional financing needs generated by the shocks under the stress tests are assumed to be covered by PPG external MLT debt in the external DSA. Default terms of marginal debt are based on baseline 10-year projections.

Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in or before 2030. The stress test with a one-off breach is also presented (if any), while the one-off breach is deemed away for mechanical signals. When a stress test with a one-off breach happens to be the most exterme shock even after disregarding the one-off breach, only that stress test (with a one-off breach) would be presented.

2/ The magnitude of shocks used for the commodity price shock stress test are based on the commodity prices outlook prepared by the IMF research department.

Figure 2. Papua New Guinea: Indicators of Public Debt Under Alternative Scenarios, 2020-2030



Borrowing assumptions on additional financing needs resulting from the stress tests*	Default	User defined
Shares of marginal debt		
External PPG medium and long-term	22%	22%
Domestic medium and long-term	8%	8%
Domestic short-term	70%	70%
Terms of marginal debt		
External MLT debt		
Avg. nominal interest rate on new borrowing in USD	1.9%	1.9%
Avg. maturity (incl. grace period)	22	22
Avg. grace period	7	7
Domestic MLT debt		
Avg. real interest rate on new borrowing	3.0%	3.0%
Avg. maturity (incl. grace period)	2	2
Avg. grace period	1	1
Domestic short-term debt		
Avg. real interest rate	2.6%	2.6%

* Note: The public DSA allows for domestic financing to cover the additional financing needs generated by the shocks under the stress tests in the public DSA. Default terms of marginal debt are based on baseline 10-year projections.

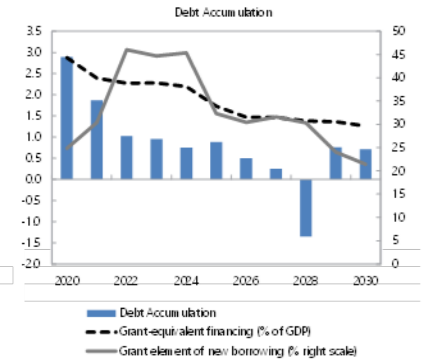
Sources: Country authorities; and staff estimates and projections.

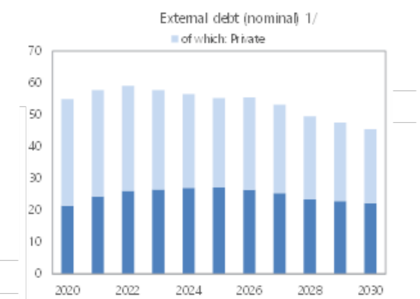
1/ The most extreme stress test is the test that yields the highest ratio in or before 2030. The stress test with a one-off breach is also presented (if any), while the one-off breach is deemed away for mechanical signals. When a stress test with a one-off breach happens to be the most exterme shock even after disregarding the one-off breach, only that stress test (with a one-off breach) would be presented.

Table 1. Papua New Guinea: External Debt Sustainability Framework, Baseline Scenario, 2017-2040
(In percent of GDP, unless otherwise indicated)

	Actual			Projections								Average 8/	
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030	2040	Historical	Projections
External debt (nominal) 1/	72.8	71.3	60.5	54.9	57.6	59.1	57.7	56.5	55.1	45.5	29.1	77.0	53.8
of which: public and publicly guaranteed (PPG)	8.8	15.2	16.5	21.4	24.3	26.1	26.6	27.0	27.1	22.3	16.2	8.6	24.8
Change in external debt	-14.8	-1.5	-10.9	-5.5	2.7	1.5	-1.5	-1.1	-1.4	-2.0	-1.4		
Identified net debt-creating flows	-33.4	-31.3	-25.4	-13.6	-18.7	-18.2	-18.5	-18.2	-18.3	-16.5	-12.0	-7.2	-17.5
Non-interest current account deficit	-30.2	-28.6	-26.9	-16.5	-20.7	-19.1	-17.8	-17.3	-17.3	-15.5	-11.3	-4.8	-17.3
Deficit in balance of goods and services	-27.5	-26.7	-24.9	-19.0	-23.4	-22.7	-21.7	-21.2	-21.4	-19.5	-14.0	-5.2	-21.1
Exports	44.0	43.2	44.1	41.6	47.9	49.3	47.9	46.9	46.3	41.0	29.6		
Imports	16.5	16.5	19.3	22.6	24.5	26.6	26.2	25.7	24.9	21.6	15.7		
Net current transfers (negative = inflow)	-1.1	-1.5	-2.4	-1.3	-1.3	-1.3	-1.2	-1.2	-1.2	-0.9	-0.5	-1.1	-1.2
of which: official	-0.5	-0.5	-1.5	-0.9	-1.0	-1.1	-1.0	-1.0	-1.0	-0.8	-0.4		
Other current account flows (negative = net inflow)	-1.6	-0.4	0.3	3.8	4.0	4.9	5.1	5.1	5.3	4.9	3.3	1.5	4.9
Net FDI (negative = inflow)	1.5	-1.2	1.4	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	-0.1	-0.1	-0.7	-0.1
Endogenous debt dynamics 2/	-4.6	-1.5	0.1	2.9	2.0	1.0	-0.6	-0.8	-0.9	-1.0	-0.6		
Contribution from nominal interest rate	3.0	2.7	2.6	1.9	2.2	1.8	1.5	1.3	1.0	0.4	0.3		
Contribution from real GDP growth	-2.8	0.6	-3.5	1.1	-0.2	-0.8	-2.1	-2.1	-1.8	-1.4	-0.9		
Contribution from price and exchange rate changes	-4.8	-4.8	1.0	...	...	...	...	...	...	...	...		
Residual 3/	18.6	29.8	14.5	8.1	21.4	19.7	17.0	17.0	17.0	14.5	10.6	10.7	16.1
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		
Sustainability indicators													
PV of PPG external debt-to-GDP ratio	...	...	16.5	20.4	22.1	22.9	22.5	22.0	21.8	17.4	12.8		
PV of PPG external debt-to-exports ratio	...	...	37.5	49.0	46.1	46.5	46.9	47.0	47.1	42.3	43.1		
PPG debt service-to-exports ratio	2.2	2.1	3.5	7.1	4.0	2.6	3.3	3.4	3.3	3.5	6.0		
PPG debt service-to-revenue ratio	6.9	5.9	10.8	22.3	13.0	8.4	10.2	10.3	9.7	8.7	10.2		
Gross external financing need (Million of U.S. dollars)	-3574.1	-4487.2	-3414.3	-1596.5	-2966.7	-2848.7	-2784.7	-2912.6	-3203.6	-4002.2	-5032.2		
Key macroeconomic assumptions													
Real GDP growth (in percent)	3.5	-0.8	5.0	-1.7	0.3	1.4	3.7	3.8	3.4	3.1	3.3	5.5	2.4
GDP deflator in US dollar terms (change in percent)	5.8	7.1	-1.4	-3.0	0.4	-0.5	2.4	1.5	1.6	3.0	2.6	3.0	1.4
Effective interest rate (percent) 4/	3.8	3.9	3.8	3.0	4.0	3.1	2.7	2.3	1.8	0.9	1.2	3.6	2.2
Growth of exports of G&S (US dollar terms, in percent)	21.6	4.1	5.8	-10.1	15.9	3.7	3.2	3.3	3.7	3.1	2.9	10.4	3.2
Growth of imports of G&S (US dollar terms, in percent)	34.4	6.4	20.6	11.9	9.3	9.4	4.5	3.5	1.7	2.7	2.7	5.5	4.9
Grant element of new public sector borrowing (in percent)	...	...	...	24.8	30.4	46.1	44.7	45.4	32.3	21.5	17.0	...	32.9
Government revenues (excluding grants, in percent of GDP)	13.9	15.5	14.4	13.3	14.7	15.1	15.4	15.7	16.0	16.4	17.4	13.2	15.7
Aid flows (in Million of US dollars) 5/	861.0	1051.7	1121.5	682.7	840.1	678.8	738.4	762.7	532.8	481.0	798.9		
Grant-equivalent financing (in percent of GDP) 6/	...	...	...	2.9	2.4	2.3	2.3	2.2	1.7	1.3	1.2	...	1.9
Grant-equivalent financing (in percent of external financing) 6/	...	...	...	35.1	45.1	62.7	59.5	60.9	53.8	48.0	45.0	...	53.0
Nominal GDP (Million of US dollars)	22,743	24,141	25,005	23,842	24,014	24,214	25,725	27,100	28,481	37,535	67,590		
Nominal dollar GDP growth	9.6	6.1	3.6	-4.7	0.7	0.8	6.2	5.3	5.1	6.1	6.0	8.5	3.8
Memorandum items:													
PV of external debt 7/	...	...	60.5	53.9	55.4	56.0	53.6	51.6	49.9	40.6	25.7		
In percent of exports	...	...	137.1	129.6	115.6	113.6	111.9	109.8	107.8	98.8	86.6		
Total external debt service-to-exports ratio	29.6	25.9	26.8	23.8	17.6	15.1	14.8	14.1	13.4	11.9	13.2		
PV of PPG external debt (in Million of US dollars)			4135.8	4859.1	5304.8	5550.1	5781.9	5974.4	6214.4	6513.1	8628.7		
(PVt-PVt-1)/GDPt-1 (in percent)				2.9	1.9	1.0	1.0	0.7	0.9	0.7	0.3		
Non-interest current account deficit that stabilizes debt ratio	-15.5	-27.1	-16.0	-11.0	-23.4	-20.5	-16.3	-16.2	-16.0	-13.4	-9.9		

Definition of external/domestic debt	Residency-based
Is there a material difference between the two criteria?	No





Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

2/ Derived as [r - g - p(1+g) + εα (1+r)]/(1+g+p+gp) times previous period debt ratio, with r = nominal interest rate; g = real GDP growth rate, p = growth rate of GDP deflator in U.S. dollar terms, ε=nominal appreciation of the local currency, and α= share of local currency-denominated external debt in total external debt.

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/ Current-year interest payments divided by previous period debt stock.

5/ Defined as grants, concessional loans, and debt relief.

6/ 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).

7/ Assumes that PV of private sector debt is equivalent to its face value.

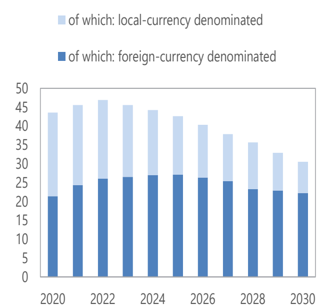
8/ Historical averages are generally derived over the past 10 years, subject to data availability, whereas projections averages are over the first year of projection and the next 10 years.

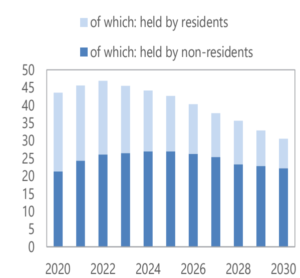
Table 2. Papua New Guinea: Public Sector Debt Sustainability Framework, Baseline Scenario, 2017-2040
(In percent of GDP unless otherwise indicated)

	Actual			Projections								Average 6/	
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030	2040	Historical	Projections
Public sector debt 1/	32.5	36.8	39.0	43.5	45.6	46.9	45.6	44.2	42.6	30.5	19.4	25.5	40.5
of which: external debt	8.8	15.2	16.5	21.4	24.3	26.1	26.6	27.0	27.1	22.3	16.2	8.6	24.8
Change in public sector debt	-1.3	4.3	2.2	4.6	2.0	1.3	-1.3	-1.3	-1.6	-2.4	-1.4		
Identified debt-creating flows	-0.9	0.2	0.6	3.9	1.7	0.7	-1.2	-1.5	-1.7	-2.0	-0.9	1.2	-0.7
Primary deficit	0.4	0.2	1.7	3.4	2.2	1.4	0.0	-0.4	-0.8	-1.1	-0.7	1.9	0.0
Revenue and grants	15.9	17.8	15.5	14.4	15.8	16.2	16.4	16.7	17.0	17.3	18.4	14.6	16.7
of which: grants	2.0	2.3	1.1	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9		
Primary (noninterest) expenditure	16.3	18.0	17.2	17.8	18.1	17.7	16.5	16.3	16.2	16.2	17.6	16.5	16.6
Automatic debt dynamics	-1.3	0.0	-1.1	0.5	-0.5	-0.8	-1.3	-1.0	-0.9	-0.8	-0.2		
Contribution from interest rate/growth differential	-1.0	0.3	-1.5	0.5	-0.5	-0.8	-1.3	-1.0	-0.9	-0.8	-0.2		
of which: contribution from average real interest rate	0.2	0.0	0.3	-0.2	-0.4	-0.1	0.4	0.6	0.6	0.2	0.4		
of which: contribution from real GDP growth	-1.2	0.3	-1.8	0.7	-0.1	-0.6	-1.7	-1.7	-1.5	-1.0	-0.7		
Contribution from real exchange rate depreciation	-0.3	-0.3	0.4	...	...	...	...	...	...	...	...		
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	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 contingent liabilities (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		
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 debt creating or reducing flow (please specify)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Residual	-0.4	4.1	1.6	0.7	0.3	0.6	-0.1	0.1	0.1	-0.5	-0.4	1.8	0.0
Sustainability indicators													
PV of public debt-to-GDP ratio 2/	...	...	39.3	42.7	43.5	43.9	41.6	39.4	37.5	25.4	15.7		
PV of public debt-to-revenue and grants ratio	...	...	253.0	296.1	275.0	270.3	253.6	235.4	220.4	146.9	85.8		
Debt service-to-revenue and grants ratio 3/	120.1	104.5	34.4	51.5	60.2	73.1	91.6	92.9	92.7	61.0	29.1		
Gross financing need 4/	19.5	18.8	7.0	10.8	11.8	13.3	15.1	15.1	15.0	9.4	4.6		
Key macroeconomic and fiscal assumptions													
Real GDP growth (in percent)	3.5	-0.8	5.0	-1.7	0.3	1.4	3.7	3.8	3.4	3.1	3.3	5.5	2.4
Average nominal interest rate on external debt (in percent)	2.8	3.2	3.8	0.7	3.8	2.9	3.1	3.2	2.8	1.9	2.1	2.2	2.8
Average real interest rate on domestic debt (in percent)	0.5	-0.5	0.1	0.2	-3.6	-1.6	0.7	1.8	2.1	2.0	2.3	3.1	0.8
Real exchange rate depreciation (in percent, + indicates depreciation)	-3.7	-3.6	2.4	...	...	...	...	...	...	...	...	0.3	...
Inflation rate (GDP deflator, in percent)	7.7	10.1	0.9	0.8	6.5	5.4	3.5	2.5	2.6	3.0	2.6	4.6	3.3
Growth of real primary spending (deflated by GDP deflator, in percent)	-11.1	10.0	0.3	1.4	1.9	-0.8	-3.3	2.9	2.8	4.9	3.3	3.0	1.8
Primary deficit that stabilizes the debt-to-GDP ratio 5/	1.6	-4.1	-0.5	-1.2	0.2	0.1	1.4	0.9	0.8	1.3	0.7	-1.0	0.7
PV of contingent liabilities (not included in public sector debt)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Definition of external/domestic debt	**Residency-based**
Is there a material difference between the two criteria?	**No**

Public sector debt 1/





Sources: Country authorities; and staff estimates and projections.

1/ Coverage of debt: The central, state, and local governments, government-guaranteed debt . Definition of external debt is Residency-based.

2/ The underlying PV of external debt-to-GDP ratio under the public DSA differs from the external DSA with the size of differences depending on exchange rates projections.

3/ Debt service is defined as the sum of interest and amortization of medium and long-term, and short-term debt.

4/ 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 and other debt creating/reducing flows.

5/ Defined as a primary deficit minus a change in the public debt-to-GDP ratio ((-): a primary surplus), which would stabilizes the debt ratio only in the year in question.

6/ Historical averages are generally derived over the past 10 years, subject to data availability, whereas projections averages are over the first year of projection and the next 10 years.

Table 3. Papua New Guinea: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2020-2030 (In percent)

	Projections 1/										
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
PV of debt-to GDP ratio											
Baseline	20	22	23	22	22	22	21	20	18	18	17
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2020-2030 2/	20	31	39	**46**	**52**	**58**	**64**	**69**	**72**	**76**	**79**
B. Bound Tests											
B1. Real GDP growth	20	24	26	26	25	25	24	24	21	20	20
B2. Primary balance	20	22	24	24	24	24	24	23	21	20	20
B3. Exports	20	29	**41**	**40**	40	39	39	38	35	34	32
B4. Other flows 3/	20	24	27	26	26	25	25	24	21	21	20
B5. Depreciation	20	28	32	31	30	30	29	28	25	25	24
B6. Combination of B1-B5	20	29	33	32	32	31	31	30	27	26	25
C. Tailored Tests											
C1. Combined contingent liabilities	20	25	27	28	29	29	30	29	27	27	27
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	20	28	35	35	36	37	37	37	35	35	34
C4. Market Financing	20	25	26	25	25	24	24	23	20	20	19
Threshold	40	40	40	40	40	40	40	40	40	40	40
PV of debt-to-exports ratio											
Baseline	49	46	47	47	47	47	47	46	41	42	42
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2020-2030 2/	49	65	80	96	112	126	141	153	165	179	**192**
B. Bound Tests											
B1. Real GDP growth	49	46	47	47	47	47	47	46	41	42	42
B2. Primary balance	49	47	49	51	51	52	52	51	47	48	48
B3. Exports	49	75	111	112	113	113	113	112	106	106	104
B4. Other flows 3/	49	50	54	55	55	55	54	53	49	50	50
B5. Depreciation	49	46	51	51	51	51	51	50	46	46	46
B6. Combination of B1-B5	49	65	61	71	71	72	71	70	66	65	65
C. Tailored Tests											
C1. Combined contingent liabilities	49	52	56	59	62	64	65	65	62	64	65
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	49	70	82	83	84	84	84	85	83	85	86
C4. Market Financing	49	46	47	47	47	47	47	46	41	42	42
Threshold	180	180	180	180	180	180	180	180	180	180	180
Debt service-to-exports ratio											
Baseline	7	4	3	3	3	3	3	4	7	3	3
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2020-2030 2/	7	4	3	4	4	4	5	6	8	7	8
B. Bound Tests											
B1. Real GDP growth	7	4	3	3	3	3	3	4	7	3	3
B2. Primary balance	7	4	3	3	4	4	4	4	8	4	4
B3. Exports	7	5	4	6	6	6	6	7	11	7	9
B4. Other flows 3/	7	4	3	3	4	4	4	4	8	4	4
B5. Depreciation	7	4	3	3	4	3	3	4	7	4	4
B6. Combination of B1-B5	7	5	3	4	4	4	4	5	9	5	6
C. Tailored Tests											
C1. Combined contingent liabilities	7	4	3	4	4	4	4	4	8	4	4
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	7	5	3	5	5	4	4	5	9	6	7
C4. Market Financing	7	4	3	3	3	3	3	4	7	3	3
Threshold	15	15	15	15	15	15	15	15	15	15	15
Debt service-to-revenue ratio											
Baseline	**22**	13	8	10	10	10	9	11	**19**	9	9
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2020-2030 2/	**22**	12	9	12	13	13	13	15	**22**	**18**	**21**
B. Bound Tests											
B1. Real GDP growth	**22**	14	10	12	12	11	11	12	**22**	10	10
B2. Primary balance	**22**	13	9	11	11	10	10	11	**20**	10	10
B3. Exports	**22**	13	10	14	14	13	12	14	**23**	14	18
B4. Other flows 3/	**22**	13	9	11	11	10	10	11	**20**	10	11
B5. Depreciation	**22**	16	11	13	13	13	12	14	**25**	12	12
B6. Combination of B1-B5	**22**	14	10	13	13	12	12	13	**23**	13	13
C. Tailored Tests											
C1. Combined contingent liabilities	**22**	13	9	11	11	11	11	12	**21**	10	10
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	**22**	15	11	14	14	13	12	14	**23**	14	16
C4. Market Financing	**22**	13	8	10	10	10	10	11	**19**	9	9
Threshold	18	18	18	18	18	18	18	18	18	18	18

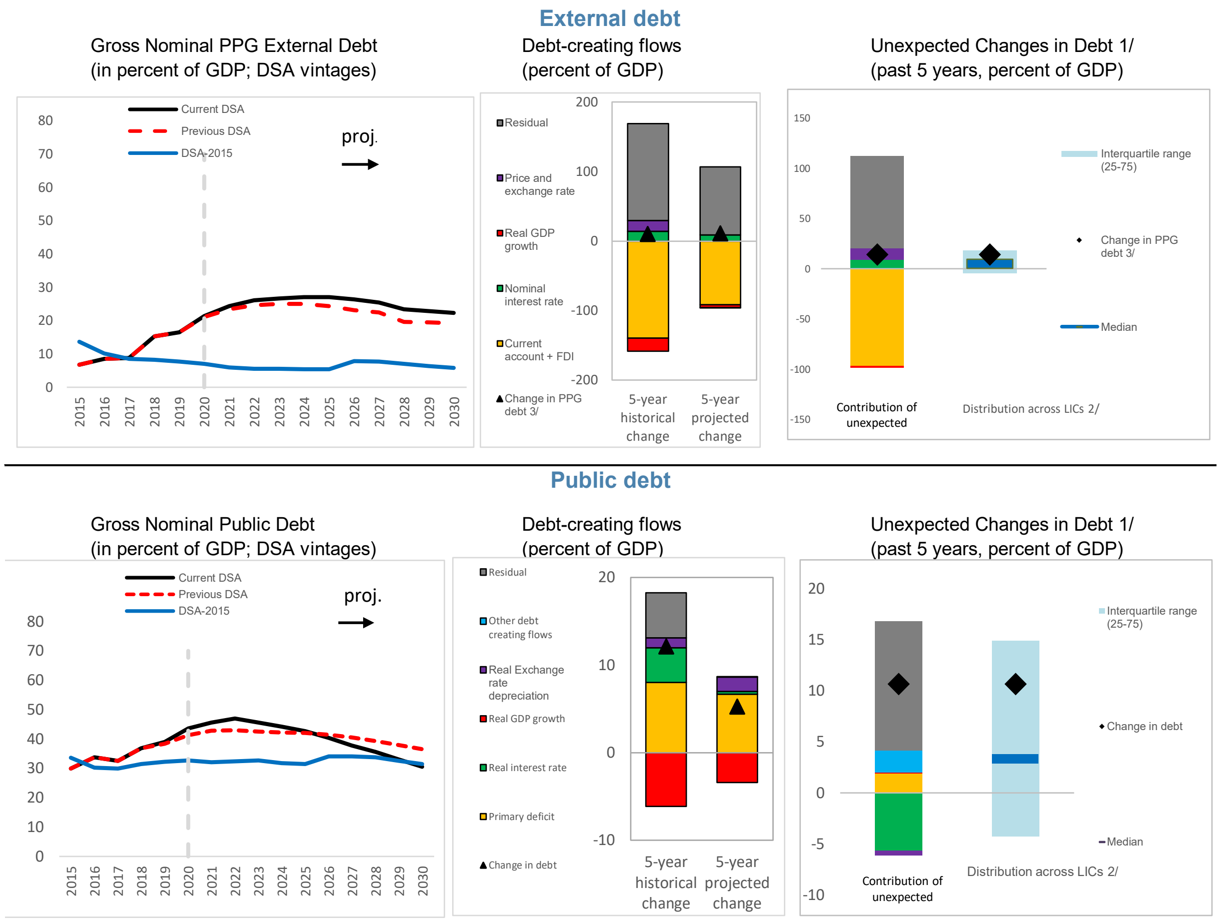
Sources: Country authorities; and staff estimates and projections.
1/ A bold value indicates a breach of the threshold.
2/ Variables include real GDP growth, GDP deflator (in U.S. dollar terms), non-interest current account in percent of GDP, and non-debt creating flows.
3/ Includes official and private transfers and FDI.

Table 4. Papua New Guinea: Sensitivity Analysis for Key Indicators of Public Debt, 2020-2030 (In percent)

	Projections 1/										
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
PV of Debt-to-GDP Ratio											
Baseline	43	43	44	42	39	38	35	33	30	28	25
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2020-2030 2/	43	42	41	39	38	36	35	33	32	31	30
B. Bound Tests											
B1. Real GDP growth	43	48	53	53	52	52	51	50	49	47	47
B2. Primary balance	43	45	48	46	43	41	39	36	34	31	29
B3. Exports	43	50	**60**	**58**	**55**	53	51	48	45	42	38
B4. Other flows 3/	43	45	48	45	43	41	39	36	34	31	28
B5. Depreciation	43	46	45	42	39	36	33	29	26	22	20
B6. Combination of B1-B5	43	43	46	44	42	40	38	36	34	31	29
C. Tailored Tests											
C1. Combined contingent liabilities	43	**59**	**59**	**56**	53	51	48	45	42	39	37
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	43	47	51	53	54	**55**	**55**	54	53	51	51
C4. Market Financing	43	43	44	42	39	38	35	33	30	28	25
TOTAL public debt benchmark	55	55	55	55	55	55	55	55	55	55	55
PV of Debt-to-Revenue Ratio											
Baseline	296	275	270	254	235	220	203	188	174	159	147
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2020-2030 2/	296	265	255	241	226	215	203	195	187	180	175
B. Bound Tests											
B1. Real GDP growth	296	299	326	319	309	302	292	286	279	272	268
B2. Primary balance	296	287	297	279	259	243	224	209	194	179	166
B3. Exports	296	317	372	352	331	313	293	276	261	242	222
B4. Other flows 3/	296	287	293	276	257	241	224	208	193	178	164
B5. Depreciation	296	292	280	256	231	211	189	169	149	130	114
B6. Combination of B1-B5	296	275	281	267	250	237	221	207	194	180	169
C. Tailored Tests											
C1. Combined contingent liabilities	296	375	364	341	317	298	277	260	243	227	213
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	296	336	355	365	354	343	326	310	304	297	292
C4. Market Financing	296	275	270	254	235	220	203	188	174	159	147
Debt Service-to-Revenue Ratio											
Baseline	51	60	73	92	93	93	86	84	83	73	61
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2020-2030 2/	51	58	69	84	83	80	72	67	65	55	45
B. Bound Tests											
B1. Real GDP growth	51	64	88	118	126	131	129	130	133	124	113
B2. Primary balance	51	60	83	109	107	104	96	92	90	79	67
B3. Exports	51	60	74	94	95	95	89	86	86	77	69
B4. Other flows 3/	51	60	73	92	93	93	87	84	84	74	63
B5. Depreciation	51	57	70	88	89	88	82	80	82	69	58
B6. Combination of B1-B5	51	59	75	94	97	98	93	91	91	81	69
C. Tailored Tests											
C1. Combined contingent liabilities	51	60	148	152	140	131	117	109	105	91	77
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	51	70	86	109	127	137	135	133	135	126	117
C4. Market Financing	51	60	73	92	93	93	87	84	83	73	61

Sources: Country authorities; and staff estimates and projections.
1/ A bold value indicates a breach of the benchmark.
2/ Variables include real GDP growth, GDP deflator and primary deficit in percent of GDP.
3/ Includes official and private transfers and FDI.

Figure 3. Papua New Guinea: Drivers of Debt Dynamics – Baseline Scenario External Debt



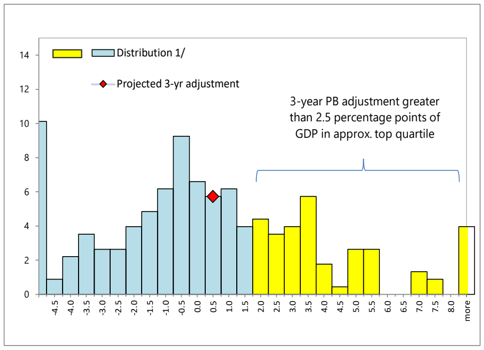
1/ Difference between anticipated and actual contributions on debt ratios.

2/ Distribution across LICs for which LIC DSAs were produced.

3/ Given the relatively low private external debt for average low-income countries, a ppt change in PPG external debt should be largely explained by the drivers of the external debt dynamics equation.

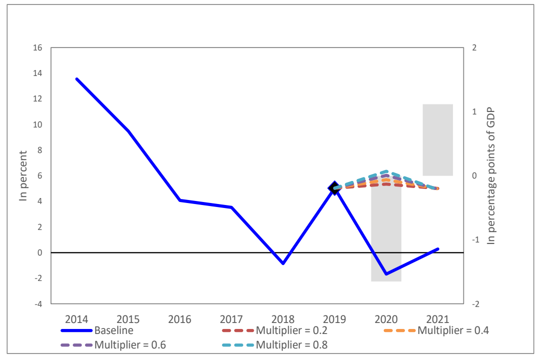
Figure 4. Papua New Guinea: Realism Tools

3-Year Adjustment in Primary Balance
(Percentage points of GDP)



1/ Data cover Fund-supported programs for LICs (excluding emergency financing) approved since 1990. The size of 3-year adjustment from program inception is found on the horizontal axis; the percent of sample is found on the vertical axis.

Fiscal Adjustment and Possible Growth Paths 1/



1/ Bars refer to annual projected fiscal adjustment (right-hand side scale) and lines show possible real GDP growth paths under different fiscal multipliers (left-hand side scale).

Public and Private Investment Rates
(percent of GDP)