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PAPUA NEW GUINEA

JOINT WORLD BANK-IMF DEBT SUSTAINABILITY ANALYSIS

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PAPUA NEW GUINEA: JOINT BANK-FUND DEBT SUSTAINABILITY ANALYSIS	
Risk of external debt distress	High
Overall risk of debt distress	High
Granularity in the risk rating	Sustainable
Application of judgment	No

Papua New Guinea (PNG) remains at high risk of debt distress under the Low-Income Country Debt Sustainability Framework (LIC DSF), with weak debt-carrying capacity.[1, 2] While the planned fiscal consolidation helps address debt vulnerabilities exacerbated by the global COVID-19 shock, the risk of both external and public debt distress continues to be assessed as high. Over the medium-term, public debt enters a downward trend and the projected temporary breaches of sustainability indicators can mostly be addressed by debt management operations as well as improvements in revenue generation. The Debt Sustainability Analysis (DSA) suggests that PNG is susceptible to export related and other shocks, underscoring downside risks to the debt outlook in a global environment of high uncertainty. To lower the risk of debt distress and ensure debt sustainability, gradual fiscal consolidation, including by boosting revenues, and steadfast structural reforms to promote private sector growth would be needed. Conditional on the implementation of the authorities' plans for further fiscal consolidation and conservative financing strategies, PNG's external and overall debt is judged as sustainable.

[1] This Debt Sustainability Analysis has been prepared jointly by the International Monetary Fund and the World Bank, in accordance with the revised Debt Sustainability Framework for low-income countries approved by the Executive Boards of the IMF and the International Development Association.

[2] The Composite Indicator (CI) of 2.58 is based on the latest available CI information—October 2022 IMF World Economic Outlook (WEO) and the World Bank's Country Policy and Institutional Assessment (CPIA) for 2021 indicating a "weak" capacity to carry debt.

PUBLIC SECTOR DEBT COVERAGE

1. **The coverage of public debt in the DSA is unchanged from the previous (May 2022) DSA** (Text Table 1). The segments of the public sector captured in the DSA include the central government, state and local government, and guarantees to other entities in the public and private sector, including parts of state-owned enterprises (SOEs). However, debt numbers do not fully capture implicit government guaranteed debts of SOEs and unfunded superannuation liabilities relating to pensions.[3] For the purposes of this DSA, the coverage of public sector debt remains unchanged from the last DSA, which was prepared in May 2022 in the context of the IMF 2022 Article IV Consultation and review of the Staff Monitored Program (SMP). Given continued difficulties in capturing and assessing SOE risks, a contingent liabilities stress test is included in this DSA, assuming 9 percent of GDP as SOE debt is not captured in official public debt data (the stock of explicit government guarantees is around 1.3 percent of GDP), and 3 percent of GDP for other elements of general government (mainly unfunded superannuation liabilities related to pensions, which are projected to be 2.1 percent of GDP in 2023). Separately, according to the World Bank's PPP database, the PPP capital stock in PNG is zero and, therefore, no default shock is triggered. A financial market shock of 5 percent is added, reflecting the average fiscal cost of financial crisis in low-income countries. With these assumptions, the cumulative shock in the contingent liabilities stress test amounts to 17 percent of GDP—compared to 7 percent under default assumptions. Currency denomination is used to define external debt.

Text Table 1. Papua New Guinea: Coverage of Public Debt

	Subsectors of the public sector	Subsection Covered
1	Central government	X
2	State and local government	X
3	Other elements in the general government	
4	o/w: Social security fund	
5	o/w: Extra budgetary funds (EBFs)	
6	Guarantees (to other entities in the public and private sector, including to SOEs)	X
7	Central bank (borrowed on behalf of the government)	
8	Non-guaranteed SOE debt	

1	The country's coverage of public debt	The central, state, and local governments, government-guaranteed debt		
		Default	Used for the analysis	Reasons for deviations from the default settings
2	Other elements of the general government not captured in 1.	0 percent of GDP	3	Unfunded superannuation liabilities relating to pensions
3	SoE's debt (guaranteed and not guaranteed by the government) 1/	2 percent of GDP	9	SOE sovereign guarantee in dispute
4	PPP	35 percent of PPP stock	0	Default used
5	Financial market (the default value of 5 percent of GDP is the minimum value)	5 percent of GDP	5	Default used
	Total (2+3+4+5) (in percent of GDP)		17	

1/ The default shock of 2% of GDP will be triggered for countries whose government-guaranteed debt is not fully captured under the country's public debt definition (1.). If it is already included in the government debt (1.) and risks associated with SoE's debt not guaranteed by the government is assessed to be negligible, a country team may reduce this to 0%.

[3] Comprehensive data on the debt stock of SOEs in PNG is not publicly available. The ADB have been supporting the authorities with a three-year program (2020-2023) aiming to reform the governance of state-owned enterprises, increase their financial transparency and ensure financial sustainability. This included providing advice on the overarching policy and legal framework for SOEs, leading to the adoption of an amended Kumul Consolidated Holdings Act in 2021.

BACKGROUND ON DEBT

2. **Between 2017 and 2022, the stock of public debt in PNG increased from around 24 billion Kina to 53 billion Kina.** This was mainly due to external loans, while the creditor composition has been gradually shifting away from commercial loans towards official multilateral and bilateral financing (*Text Table 2*). However, expensive commercial loans have generally been replaced with official multilateral and bilateral financing at more favorable conditions. This has helped to improve debt sustainability indicators in the medium-term. Public and Publicly Guaranteed (PPG) external debt figures used for this DSA are consistent with the information in the World Bank's International Debt Statistics.

Text Table 2. Papua New Guinea: Decomposition of Public Debt Service by Creditors[1], 2022-2024

	Debt Stock (end of period)			Debt Service					
	2022			2022	2023	2024	2022	2023	2024
	(In US$ million)	(Percent total debt)	(Percent GDP)	(In US$ million)			(Percent GDP)		
Total	15004	100	47	4356	4771	4943	14	15	15
External	7312	49	23	382	531	752	1	2	2
Multilateral creditors[2,3]	3948	26	12	158	279	376	0	1	1
IMF	738	5	2	1	6	6	0	0	0
World Bank	847	6	3	53	51	68	0	0	0
ADB	2272	15	7	97	215	295	0	1	1
Other Multilaterals	91	1	0	6	7	8	0	0	0
Bilateral Creditors[2]	2802	19	9	165	193	327	1	1	1
Paris Club	1627	11	5	72	78	198	0	0	1
o/w: Australia	1117	7	4	64	63	185	0	0	1
Non-Paris Club	1175	8	4	93	115	129	0	0	0
o/w: China EXIM	1085	7	3	68	90	97	0	0	0
Bonds	500	3	2	42	42	42	0	0	0
Commercial creditors	61	0	0	17	17	7	0	0	0
Other international creditors	0	0	0	0	0	0	0	0	0
Domestic	7693	51	24	3974	4240	4192	12	13	12
Held by residents, total	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Held by non-residents, total	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
T-Bills	3614	24	11	3843	3628	3691	12	11	11
Bonds	3231	22	10	104	485	397	0	1	1
Loans	848	6	3	27	127	104	0	0	0
Memo items:									
Collateralized debt[2,4]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Contingent liabilities	816	5	3	n/a	n/a	n/a	n/a	n/a	n/a
Nominal GDP	31819	n/a	100						

1/As reported by Country authorities according to their classification of creditors, including by official and commercial. Debt coverage is the same as the DSA.

2/Some public debt may not be shown in the table due to confidentiality clauses/capacity constraints.

3/Multilateral creditors" are simply institutions with more than one official shareholder and may not necessarily align with creditor classification under other IMF policies (e.g. Lending Into Arrears)

4/Debt is collateralized when the creditor has rights over an asset or revenue stream that would allow it, if the borrower defaults on its payment obligations, to rely on the asset or revenue stream to secure repayment of the debt. Collateralization entails a borrower granting liens over specific existing assets or future receivables to a lender as security against repayment of the loan. Collateral is "unrelated" when it has no relationship to a project financed by the loan. An example would be borrowing to finance the budget deficit, collateralized by oil revenue receipts. See the joint IMF-World Bank note for the G20 "Collateralized Transactions: Key Considerations for Public Lenders and Borrowers" for a discussion of issues raised by collateral.

3. **The IMF's general allocation of Special Drawing Rights (SDRs) became effective in August 2021, with SDR 252 million (US$ 357 million, or 95.7 percent of quota) allocated to PNG.** The authorities used the full SDR allocation to support the 2021 budget. They used the SDR allocation to replace costly financing, which has helped reduce the budget deficit. For the purpose of this DSA, the SDR

allocation is included in total public debt while the associated debt service for the amount outstanding is also reflected.

4. A new 38-month IMF program will support PNG's reform agenda, help protect the vulnerable and foster inclusive growth. These facilities total SDR 684.3 million under the IMF's Extended Credit Facility (ECF) and the Extended Fund Facility (EFF) arrangements. The program builds on progress under the past SMPs (2020/21 and 2021/22), focusing on addressing structural impediments to growth and poverty reduction. Program objectives will focus on (i) strengthening debt sustainability through a multi-year fiscal consolidation program while making room to meet critical social and development needs, (ii) enhancing the legal and operational framework of the BPNG to alleviate FX shortages and transition to a market-clearing exchange rate, and (iii) build on improvements to governance and the anti-corruption framework.

5. PNG is an IDA blend country, with total IDA20 allocation at SDR 173.7 million. PNG is currently eligible to access the Regional Window, Crisis Response Windows , SUW-SMLs and the Private Sector Window. The IDA decision to graduate a country to IBRD-only status is based on an assessment of the country's macroeconomic prospects, risk of debt distress, vulnerability to shocks, institutional constraints, and levels of poverty and social indicators.

6. The IDA Sustainable Development Finance Policy (SDFP) supports PNG in addressing key debt vulnerabilities. As part of the SDFP, PNG has satisfactorily implemented the Performance and Policy Actions (PPA) for fiscal year 2022. These were aimed at limiting non-concessional borrowing and operationalizing the 2021 State Guarantee Policy. PNG has two further SDFP PPAs for fiscal year 2023: (i) a US$ 1 billion non-concessional PPG borrowing limit for new non-concessional long-term contractual obligations, which applies continuously throughout FY23, and (ii) to improve management of fiscal risks by both approving a revised on-lending policy (which introduces credit risks assessments and strengthens enforcement arrangements, recording and reporting requirements) and refraining from any new on-lending until the revised policy is adopted.

BACKGROUND ON MACROECONOMIC FORECASTS

7. An economic recovery is underway with the reopening of the economy amid favorable commodity prices (Text Table 3). Real GDP in 2022 is estimated to have increased by 4.5 percent as most COVID-related restrictions have been removed, allowing the non-resource sector to rebound. Headline inflation (period-average CPI) is expected to increase to 6.6 percent in 2022, despite fiscal measures introduced by the government to address the cost-of-living impact following Russia's invasion of Ukraine. Following sustained high commodity prices, strong resource sector export revenue is expected to drive a current account surplus of 35 percent of GDP in 2022.[4] This is the most substantial change since the 2022 Article IV and SMP review which projected a smaller surplus, at 23 percent of GDP. The immediate direct impact of this resource sector windfall on the fiscal balance is expected to be minimal. In

[4] The published current account data in PNG are likely overstated due to long-standing challenges in classifying large income account outflows, including external debt service payments related to resource projects, under the financial account rather than the current account. The authorities are receiving Fund technical assistance (TA) in external sector statistics.

2022, goods exports volumes are expected to have increased by 6.5 percent compared to 2021, with widespread increases across mineral resource export volumes, including gold, silver, copper and nickel. In addition, buoyant commodity prices in 2022 were supportive of export values, which increased by 49 percent compared to 2021. Expected lower commodity prices in 2023 underpin assumptions for a fall in nominal export growth in 2023.

Text Table 3. Papua New Guinea: DSA Vintages: Macroeconomic and Fiscal Assumptions, 2022-2027

	DSA Vintage	2022	2023	2024	2025-2027
Real GDP growth y/y (in percent)	**2023 ECF/EFF**	**4.5**	**3.7**	**4.4**	**3.1**
	2022 AIV/SMP	4.2	4.7	3.0	3.0
Resource sector	2023 ECF/EFF	4.7	0.3	5.1	0.1
	2022 AIV/SMP	4.8	5.9	-0.1	0.1
Non-resource sector	2023 ECF/EFF	4.5	4.9	4.2	4.1
	2022 AIV/SMP	4.0	4.3	4.2	4.1
Inflation, annual average (consumer prices, percent)	**2023 ECF/EFF**	**6.6**	**5.4**	**4.9**	**4.5**
	2022 AIV/SMP	6.4	5.4	4.9	4.5
Current account balance (percent of GDP)	**2023 ECF/EFF**	**34.9**	**24.0**	**22.4**	**23.8**
	2022 AIV/SMP	23.1	22.0	20.6	19.0
Growth of exports of G&S (US$, in percent)	2023 ECF/EFF	48.9	-11.2	3.1	2.5
	2022 AIV/SMP	26.6	3.4	0.3	2.1
Growth of imports of G&S (US$, in percent)	2023 ECF/EFF	7.1	3.6	1.5	3.1
	2022 AIV/SMP	9.9	6.3	5.1	3.2
Primary balance (percent of GDP)	**2023 ECF/EFF**	**-3.3**	**-2.2**	**-1.2**	**1.4**
	2022 AIV/SMP	-3.4	-2.5	-1.1	0.8
Government revenues (excluding grants, percent of GDP)	2023 ECF/EFF	14.1	15.3	15.1	15.7
	2022 AIV/SMP	13.1	13.3	13.8	14.6

Source: PNG authorities; IMF staff estimates and projections.

8. **The medium-term baseline macroeconomic forecast is broadly unchanged from the 2022 DSA** (Text Table 3). At around 3 percent, the long-term potential real growth estimate remains little changed from the 2022 DSA.[5] Owing largely to imported inflation from global markets, inflation is projected to remain elevated in the medium term before falling to an annual average of 4.5 percent. As strong global demand for PNG's export goods is expected to persist over the medium-term, the current account surplus is forecast to remain very large at around 24 percent of GDP, in the medium-term.

9. **The medium-term baseline also assumes rapid progress on fiscal consolidation, as envisaged by the authorities.** This is appropriate to strengthen debt sustainability and build a fiscal buffer. While continued primary deficits are anticipated in the short-term (Text Table 3 and Text Table 4), the projection builds in a significant amount of fiscal consolidation and primary surpluses in the second half of the projection period, consistent with the authorities' plans to meet the requirements of the Fiscal Responsibility Act, which specifies government debt should be maintained at no more than 40 percent of GDP over the long term. In the near-term, tax revenue is expected to increase following the Non-Tax

[5] Expected new resource projects are not included in the (authorities' or staff's) baseline, explaining the low resource sector growth in the medium-term. Higher growth in the resource sector due to new projects is therefore a major upside risk to the baseline projection.

Revenue Act (NTRA), which is expected to result in higher dividends from state-owned enterprises (SOEs) in the resource sector. Immediate revenue reform priorities include implementation of the Tax Administration Act (TAA) and introducing amendments to the Income Tax Act (ACT). From 2026 onward, the authorities also project a sharp increase in tax revenues from the PNG LNG project as tax exemptions expire. Further, the authorities see scope for significantly higher dividends after loan amortization for the project is completed but this is not yet included in the baseline in full. Achieving a balanced budget by 2027 would lower the risks from significant debt service obligations on external borrowing coming due in 2028.

Text Table 4. Papua New Guinea: Summary of Fiscal Operations, 2022-2024

	2022	2023	2024
Revenue and grants (percent of GDP)	**15.8**	**17.1**	**16.6**
Taxes	12.6	13.0	13.3
Grants	1.7	1.8	1.5
Other revenue	1.6	2.3	1.9
Expenditure (percent of GDP)	**21.2**	**21.4**	**20.5**
Expense	16.8	17.4	16.8
Compensation of employees	5.8	6.0	5.6
Use of goods and services	6.1	6.0	5.6
Interest	2.1	2.2	2.7
Other	2.8	3.2	2.9
Net acquisition of nonfinancial assets	4.4	4.0	3.7
	0.0	0.0	0.0
Gross operating balance	1.1	1.8	2.5
Net lending (+)/borrowing (-)	-5.4	-4.3	-3.9
Primary balance (percent of GDP)	**-3.3**	**-2.2**	**-1.2**

Source: PNG authorities; IMF staff estimates and projections.

10. **The main downside risks to the baseline projection include: natural disasters, lower global growth, and social or political instability.** PNG is vulnerable to natural disasters (flooding, landslides and earthquakes) as well as the impact of climate change (through droughts and sea level rises). Lower global growth would likely impact PNG through lower commodity prices, with adverse consequences for the balance of payments and budget through lower resource revenue. Although the 2022 general elections were accompanied by several violent disruptions, political and social risks appear to have fallen since then. With limited sources of financing available in an adverse scenario, and continued pressing social and development needs, the room for significant policy adjustment is relatively limited. Engagement with the IMF through the proposed ECF/EFF program provides an important anchor for the authorities to advance their reform agenda. If growth deteriorated significantly compared to the projections, further debt buildup may be needed to finance the budget and maintain government services. Upside risks also exist and include higher-than-expected commodity prices, or start of any of several major projects, including Papua LNG, P'nyang LNG or the Wafi Golpu mining, which are not yet in the baseline scenario.

11. The LIC DSA's realism tools indicate that the government's primary balance adjustment is moderately ambitious. At about 3.0 precent, the three-year cumulative adjustment the primary balance is within the top 17 percent of historical experiences, relative to peers. Much of this adjustment has already taken place during 2022 (Figure 4). Similarly, one-off factors also explain the divergence of GDP growth from the implied path consistent with the range fiscal multipliers. A low base, unwinding of Covid-19 and high commodity prices support activity while the Porgera gold mine is expected to reopen in late 2023, further contributing to strong growth in the resource sector.

12. Financing mix: For domestic financing, the DSA assumes that the composition of T-bills and T-bonds remains unchanged compared to the past six years. For the near-term, the DSA considers all existing commitments. Although the profile of domestic debt, with a high concentration in short-term Treasury bills, raises concerns over rollover risks, short-term liquidity risks and reliance on domestic financing fall throughout the projection horizon because the level of newly issued debt falls markedly as fiscal deficits are replaced by surpluses, particularly after 2027. While the trend in the projection period remains constant, continued development of the domestic debt market is necessary to increase liquidity and transition towards greater reliance upon domestic financing sources, while shifting to longer maturities.

COUNTRY CLASSIFICATION AND DETERMINATION OF SCENARIO STRESS TEST

13. PNG's debt carrying capacity is assessed as weak. According to the October 2022 World Economic Outlook and the 2021 Country Policy and Institutional Assessment (CPIA), PNG's Composite Indicator (CI) is 2.58, indicating weak debt-carrying capacity (Text Table 5).[6] Hence, the applicable thresholds are 30 percent for the present value (PV) of external debt-to-GDP ratio; 140 percent for the PV of the external debt-to-exports ratio; 10 percent for the external debt service-to-exports ratio; 14 percent for the external debt service-to-revenue ratio; and 35 percent for the PV of public debt-to GDP ratio, respectively.

14. Scenario stress tests: As indicated in the section on public debt coverage, a contingent liabilities stress test is included to account for SOE debt not captured in official public debt data.[7] Further, given the size and importance of PNG's resource sector (with a share of commodities in total exports of goods and services of 96 percent), a commodity price shock is included in the DSA. Considering the high price volatility over the past few years, the fuel price shock is set at 35 percent (compared to the default shock of 27 percent), and the shock to non-fuel commodity prices is set to 21 percent—with 20 percent for base metals and precious metals, and 22 percent for agricultural commodities other than grain (price shocks to grain like wheat, corn, and soybeans, are not relevant for PNG and, therefore, not included in the stress test). Mitigating factors are included as well, and at default values (2 percent for fuel, and 27 percent for non-fuel). PNG's single outstanding Eurobond (maturing in 2028) activates the market financing module.

[6] At 2.58 PNG's CI is close to the weak/medium threshold of 2.69.

[7] During the 2021 SMP, the authorities initiated an SOE reform program to reduce the backlog of audited annual financial statements and to strengthen SOE oversight and improve understanding of fiscal risks. This program includes a detailed review of SOE debt and government guarantees and is also expected to improve the reporting of public debt.

Text Table 5. Papua New Guinea: Composite Indicator and Applicable Thresholds

Components	Coefficients (A)	10-year average values (B)	CI Score components (A*B) = (C)	Contribution of components
CPIA	0.385	2.851	1.10	42%
Real growth rate (in percent)	2.719	2.324	0.06	2%
Import coverage of reserves (in percent)	4.052	52.722	2.14	83%
Import coverage of reserves^2 (in percent)	-3.990	27.796	-1.11	-43%
Remittances (in percent)	2.022	0.149	0.00	0%
World economic growth (in percent)	13.520	2.898	0.39	15%
CI Score			2.58	100%
CI rating			Weak	

Final	Classification based on current vintage	Classification based on the previous vintage	Classification based on the two previous vintage
Weak	Weak 2.58	Weak 2.62	Weak 2.63

Applicable thresholds

APPLICABLE	
EXTERNAL debt burden thresholds	
PV of debt in % of	
Exports	140
GDP	30
Debt service in % of	
Exports	10
Revenue	14

APPLICABLE	
TOTAL public debt benchmark	
PV of total public debt in percent of GDP	35

DEBT SUSTAINABILITY

EXTERNAL DEBT SUSTAINABILITY ANALYSIS

15. Under the baseline scenario, the debt-service to revenue indicator is projected to breach its threshold. A, relatively large, breach in 2028 arises due to the bullet payment for the US$500 million Eurobond, which was issued in 2018. Marginal breaches arise in 2026 and 2027 as the debt-service-to-revenue ratio increases to 15, 1pp above the threshold value. Both before and after 2028 the indicator remains close to the threshold, which is falling by 2032. In the baseline scenario, the present value of the debt-to-GDP ratio as well as the debt-to-exports and debt service-to-export ratios remain below their respective thresholds over the entire projection horizon. The solvency indicators are on a downwards trend in the latter half of the projection.

16. Stress tests point to vulnerabilities in PNG's external debt dynamics particularly with respect to exports shocks, which would cause threshold breaches for all four external sustainability indicators. Changes in policy and the structure of the economy manifests in a divergence between the historical scenario and the baseline. The historical scenario reflects large current account deficits associated with the construction phase of PNG LNG and is not considered an appropriate indicator for future risks. The market financing risk module indicates a high risk of heightened liquidity pressures primarily due to an elevated EMBI spread. However, a heightened market stress event would not have a substantial impact of debt burden indicators as few future external debt disbursements are projected on commercial terms (Figure 5). PNG's elevated sovereign spreads likely reflect the perceived risks due to the country's characteristics (small and undiversified export base, small revenue base, vulnerability to shocks).

17. As in the past, the assessment of debt dynamics is hampered by large residuals from external financial flows from money transfer by resource companies via offshore accounts (Table 1 and Figure 3). The published data on the current account surplus in PNG is likely overstated due to long-standing challenges in classifying large income account outflows, including external debt service payments related to resource projects, under the financial account rather than the current account. This over-estimation of the current account manifests as large positive residuals from external financial flows which persist into the projection period as a consistent accounting framework is used. The authorities have received technical assistance from the IMF to help resolve these issues and plan to publish the balance of payments in BPM6 format.

PUBLIC SECTOR DEBT SUSTAINABILITY ANALYSIS

18. Public debt PV ratios have increased substantially in recent years and are currently expected to fall to 43 percent of GDP for 2022. Starting from this level means that the public debt sustainability indicator is in breach of the threshold for countries with weak debt-carrying capacity (that is, 35 percent of GDP) during the first half of the projection horizon. Under the baseline scenario, the public debt to GDP ratio peaks at 47 percent of GDP in 2025, before falling in the second half of the projection. This downward trend in the public debt-to-GDP ratio arises through stronger real GDP growth and a smaller fiscal deficit than over the past 5 years, as growth headwinds wane and gradual fiscal consolidation continues (Figure 3). The profile of domestic debt, with a high concentration in short-term Treasury bills, raises concerns over rollover risks. Diversifying the issuance structure by issuing longer term Treasury bonds would lower these risks, make debt service costs more predictable and help with financial deepening effort (Figure 2). In addition, the fall in the level of short-term debt, from a peak of 15.1bn Kina in 2024 to 11.1bn Kina in 2028, is a mitigating factor of for liquidity risks. The substantial residuals from unidentified debt creating flows, arising largely in 2019, are not anticipated to be repeated (Figure 3) as the government has taken several steps to improve recording and reporting of debt.[8]

19. Stress tests point to several vulnerabilities for public debt (Figure 2 and Table 4). As for external debt, the most extreme shock impacting the PV of public debt is a shock to exports. In this scenario the PV of public debt-to- GDP ratio increases to a peak of 72 percent of GDP by 2025, more than double

[8] This includes the state guarantee policy initiated during the 2021 SMP.

the 35 percent threshold value and substantially above the starting level of 43 percent of GDP in 2022. The tailored stress test for the combined contingent liability shock causes a deterioration in public debt sustainability which is felt most acutely through the total public debt service-to-revenue measure. This analysis suggests contingent liabilities represent an important source of vulnerabilities in PNG. The trajectory of the PV of the public debt-to-revenue ratio is impacted most by the commodity price shock, reflecting the strong reliance upon commodity exports within PNG.

RISK RATING AND VULNERABILITIES

20. PNG remains at "high" risk of external and overall debt distress. The (mechanical) external debt distress rating as well as the overall debt distress rating are "high", owing to the multiple breaches of sustainability thresholds under the baseline scenario, as discussed in the previous section. No staff judgement has been applied to these ratings.

21. Debt service on existing loans, paired with relatively weak revenue generation, are expected to almost double the debt service-to-revenue ratio by 2025. However, as debt service reduces and revenues increase, and barring further shocks to demand growth, the indicator enters a significant downward trend from this peak.

22. Stress tests show that adverse shocks to exports, commodity prices and contingent liabilities constitute the main risks to public debt sustainability. Further, the historical scenario indicates that it will be challenging to reduce debt from current levels and that reforms, including those already implemented during the recent SMPs, are essential for supporting the sustainability of public finances. Market financing risks continue to be relevant, with the EMBI spread and the GFN thresholds breached, pointing to high market financing pressures.

23. Debt dynamics are assessed as sustainable. Public debt is expected not to increase in the near-term and to enter a clear downward path over the medium-term. Also, the projected temporary breaches of sustainability indicators can be prevented by debt management operations as well as by boosting revenue generation. external debt-to-GDP and debt-to-exports ratios are below their thresholds over the entire projection horizon. Public external and overall debt is judged to be sustainable conditional on the implementation of the authorities plans for further fiscal consolidation and conservative financing strategies. This baseline sustainability assessment also relies upon higher future resource revenue as tax exemptions expire from 2026 onwards.

AUTHORITIES' VIEWS

24. The authorities noted the Staff's assessment that PNG remains at high risk of debt distress but remains sustainable under the baseline projection. They also noted that addressing public debt including arrears, which had been increasing prior to the pandemic, rising from K8 billion in 2012 to K34 billion in 2019 is a significant priority. Unfortunately, the COVID-19 pandemic significantly impacted domestic revenues and led to a large financing requirement. This was met in part through support under the IMF's Rapid Credit Facility. The redemption of the US$ 500 million sovereign bond in 2028, issued in

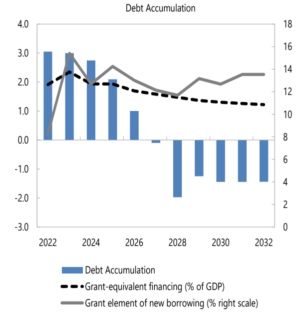
2018, is a key risk. However, the authorities were more optimistic about their debt-carrying capacity and perceived a lower risk of debt distress noting that since COVID-19, PNG has already undertaken major fiscal consolidation, reducing the budget deficit from 8.9 percent of GDP in 2020 to an expected 4.3 percent of GDP in 2023. A 13-year fiscal reform plan has been put in place to reduce budget deficits and public debt ratios, with a target of a budget surplus by 2027. Balancing this, the authorities seek to direct resources to addressing gaps in the delivery of critical social services, closing the infrastructure deficit, enhancing financial development and inclusion and strengthening the business climate to encourage investment and growth. The authorities also pointed to increased revenues by 2027 as debt payments for the PNG LNG project are completed. They highlighted their strategy in recent years to substitute costly financing with concessional financing from multilateral and bilateral partners, which has improved PNG's debt profile and lowered average interest costs. The authorities noted the interest costs of domestic securities has also declined over the past two years and highlighted the importance of more favorable future contract negotiation and the medium-term revenue strategy as key to reducing risks in the medium term. No new resource projects have been built into the analysis even though there are prospects for Final Investment Decisions in late 2023 on major new projects, creating a potential upside to the fiscal projections. The authorities are committed to fiscal consolidation and conservative financing strategies to support the sustainability of PNG's debt going forward.

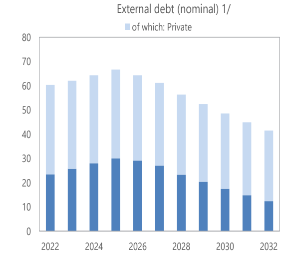
Table 1. Papua New Guinea: External Debt Sustainability Framework, Baseline Scenario, 2019-2042
(In percent of GDP, unless otherwise indicated)

	Actual			Projections									
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
External debt (nominal) 1/	61.7	69.0	67.8	60.4	62.1	64.3	66.7	64.3	61.2	56.4	52.4	48.5
of which: public and publicly guaranteed (PPG)	17.1	21.8	24.8	23.4	25.7	28.0	30.0	29.1	27.0	23.3	20.4	17.5
Change in external debt	-5.4	7.3	-1.2	-7.4	1.7	2.3	2.3	-2.3	-3.2	-4.8	-3.9	-3.9
Identified net debt-creating flows	-21.6	-17.7	-28.5	-37.1	-25.2	-25.5	-26.7	-25.3	-25.4	-26.2	-24.0	-23.1
Non-interest current account deficit	-22.1	-21.5	-22.8	-35.3	-23.4	-23.0	-24.9	-23.4	-24.9	-24.6	-23.6	-22.8
Deficit in balance of goods and services	-24.4	-20.1	-24.4	-36.0	-28.9	-29.4	-29.7	-28.6	-27.5	-26.5	-25.6	-24.7
Exports	47.5	38.8	39.5	49.6	42.4	42.9	43.5	41.9	40.4	39.1	37.9	36.7
Imports	23.0	18.6	15.1	13.6	13.6	13.5	13.7	13.3	13.0	12.6	12.2	11.9
Net current transfers (negative = inflow)	-0.3	-1.3	-1.1	-1.3	-1.2	-1.2	-1.2	-1.1	-1.1	-1.0	-0.9	-0.9
of which: official	-1.4	-1.3	-1.2	-1.4	-1.3	-1.3	-1.3	-1.2	-1.2	-1.1	-1.0	-1.0
Other current account flows (negative = net inflow)	2.6	-0.1	2.7	2.0	6.7	7.6	6.0	6.3	3.6	3.0	2.9	2.8
Net FDI (negative = inflow)	0.1	-0.3	0.1	-0.4	-0.8	-0.9	-0.9	-0.8	-0.8	-1.9	-0.7	-0.6
Endogenous debt dynamics 2/	0.4	4.2	-5.9	-1.4	-1.0	-1.6	-0.9	-1.0	0.3	0.3	0.3	0.3
Contribution from nominal interest rate	2.1	1.8	1.5	1.2	1.1	1.1	1.0	0.9	2.1	2.1	1.9	1.8
Contribution from real GDP growth	-2.9	2.0	0.0	-2.6	-2.2	-2.7	-2.0	-2.0	-1.8	-1.8	-1.6	-1.5
Contribution from price and exchange rate changes	1.2	0.3	-7.3	...	...	...	...	...	...	...	...	...
Residual 3/	16.2	25.0	27.4	29.7	26.9	27.7	29.0	22.9	22.2	21.4	20.1	19.3
of which: exceptional financing	0.0	-1.6	0.0	0.0	-0.5	-0.8	-0.9	-0.3	0.1	0.1	0.1	0.1
Sustainability indicators												
PV of PPG external debt-to-GDP ratio	...	...	18.9	18.5	20.7	23.0	24.9	24.3	22.8	19.6	17.2	14.8
PV of PPG external debt-to-exports ratio	...	...	47.8	37.3	48.8	53.6	57.2	58.1	56.3	50.0	45.5	40.5
PPG debt service-to-exports ratio	1.1	5.3	4.4	2.0	2.9	3.9	4.9	5.7	5.8	9.1	5.9	6.0
PPG debt service-to-revenue ratio	3.8	15.8	13.5	7.1	8.0	11.0	13.7	15.1	14.7	21.8	13.2	12.5
Gross external financing need (Million of U.S. dollars)	-2737.0	-3082.4	-3748.0	-9171.2	-5506.1	-5702.2	-6211.5	-6928.2	-6891.6	-7284.0	-7484.4	-7746.9
Key macroeconomic assumptions												
Real GDP growth (in percent)	4.5	-3.2	0.1	4.5	3.7	4.4	3.1	3.1	3.0	3.0	3.0	3.0
GDP deflator in US dollar terms (change in percent)	-1.7	-0.5	11.9	13.5	0.0	-2.2	-2.1	3.0	3.2	3.2	3.2	3.2
Effective interest rate (percent) 4/	3.3	2.9	2.4	2.1	1.9	1.8	1.6	1.5	3.5	3.6	3.5	3.6
Growth of exports of G&S (US dollar terms, in percent)	16.6	-21.3	14.2	48.9	-11.2	3.1	2.3	2.5	2.6	2.9	2.9	3.0
Growth of imports of G&S (US dollar terms, in percent)	42.9	-22.2	-9.3	7.1	3.6	1.5	2.6	3.2	3.3	3.4	3.4	3.5
Grant element of new public sector borrowing (in percent)	...	...	...	8.2	15.4	12.7	14.2	13.0	12.1	11.7	13.2	12.7
Government revenues (excluding grants, in percent of GDP)	14.2	12.9	12.7	14.1	15.3	15.1	15.6	15.7	15.9	16.4	17.0	17.6
Aid flows (in Million of US dollars) 5/	1258.7	1736.2	1419.8	544.1	824.6	576.9	552.6	543.9	603.7	590.6	586.0	601.1
Grant-equivalent financing (in percent of GDP) 6/	...	...	...	1.9	2.3	1.9	1.9	1.7	1.6	1.5	1.4	1.3
Grant-equivalent financing (in percent of external financing) 6/	...	...	...	40.5	42.2	36.7	38.6	44.1	59.2	69.4	89.9	98.0
Nominal GDP (Million of US dollars)	24,751	23,848	26,706	31,689	32,861	33,543	33,859	35,973	38,267	40,706	43,301	46,062
Nominal dollar GDP growth	2.7	-3.6	12.0	18.7	3.7	2.1	0.9	6.2	6.4	6.4	6.4	6.4
Memorandum items:												
PV of external debt 7/	...	...	61.9	55.4	57.1	59.3	61.6	59.6	56.9	52.6	49.3	45.9
In percent of exports	...	...	156.6	111.8	134.4	138.4	141.6	142.1	140.7	134.5	130.1	125.1
Total external debt service-to-exports ratio	23.1	23.0	21.8	13.7	17.5	16.0	17.1	11.8	19.0	22.0	18.5	18.0
PV of PPG external debt (in Million of US dollars)			5045.1	5859.8	6809.2	7712.2	8415.6	8755.4	8719.4	7964.9	7456.5	6830.3
(PVt-PVt-1)/GDPt-1 (in percent)				3.1	3.0	2.7	2.1	1.0	-0.1	-2.0	-1.2	-1.4
Non-interest current account deficit that stabilizes debt ratio	-16.7	-28.8	-21.6	-27.9	-25.1	-25.3	-27.2	-21.1	-21.8	-19.8	-19.7	-18.9

	Projections												Average 8/	
	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	Historical	Projections
External debt (nominal) 1/	44.9	41.5	38.5	35.8	33.4	31.5	29.8	28.3	26.8	25.4	23.5	21.8	77.5	56.6
of which: public and publicly guaranteed (PPG)	14.9	12.4	10.3	8.5	7.0	5.9	5.0	4.2	3.5	2.9	2.3	1.9	11.5	22.9
Change in external debt	-3.6	-3.4	-3.0	-2.7	-2.3	-1.9	-1.7	-1.6	-1.5	-1.4	-1.9	-1.7		
Identified net debt-creating flows	-22.3	-21.4	-20.7	-19.9	-19.2	-18.5	-17.8	-17.2	-16.6	-16.0	-15.5	-14.9	-13.5	-25.7
Non-interest current account deficit	-22.0	-21.2	-20.4	-19.7	-19.0	-18.3	-17.7	-17.1	-16.5	-15.9	-15.4	-14.8	-13.3	-24.5
Deficit in balance of goods and services	-23.9	-23.1	-22.3	-21.5	-20.8	-20.1	-19.4	-18.7	-18.1	-17.5	-16.9	-16.3	-13.5	-27.6
Exports	35.5	34.4	33.3	32.2	31.2	30.2	29.3	28.4	27.5	26.7	25.9	25.1		
Imports	11.6	11.3	11.0	10.7	10.4	10.2	9.9	9.7	9.4	9.2	9.0	8.8		
Net current transfers (negative = inflow)	-0.8	-0.8	-0.7	-0.7	-0.6	-0.6	-0.6	-0.5	-0.5	-0.5	-0.4	-0.4	-0.9	-1.1
of which: official	-0.9	-0.9	-0.8	-0.8	-0.7	-0.7	-0.6	-0.6	-0.6	-0.5	-0.5	-0.5		
Other current account flows (negative = net inflow)	2.8	2.7	2.6	2.5	2.5	2.4	2.3	2.2	2.1	2.0	2.0	1.9	1.0	4.2
Net FDI (negative = inflow)	-0.6	-0.6	-0.5	-0.5	-0.5	-0.4	-0.4	-0.4	-0.4	-0.3	-0.3	-0.3	0.6	-0.8
Endogenous debt dynamics 2/	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2		
Contribution from nominal interest rate	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.1	1.0	0.9	0.9		
Contribution from real GDP growth	-1.4	-1.3	-1.2	-1.1	-1.0	-1.0	-0.9	-0.9	-0.8	-0.8	-0.7	-0.7		
Contribution from price and exchange rate changes	...	...	...	...	...	...	...	...	...	...	...	...		
Residual 3/	18.6	18.0	17.6	17.2	16.8	16.6	16.1	15.6	15.2	14.7	13.6	13.2	12.4	23.3
of which: exceptional financing	0.3	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Sustainability indicators														
PV of PPG external debt-to-GDP ratio	12.6	10.5	8.6	7.1	5.8	4.8	4.1	3.4	2.8	2.2	1.7	1.3		
PV of PPG external debt-to-exports ratio	35.5	30.5	26.0	21.9	18.5	16.0	13.8	11.8	10.0	8.3	6.7	5.3		
PPG debt service-to-exports ratio	5.9	5.7	5.2	4.6	3.9	2.9	2.4	2.2	2.0	1.9	1.8	1.5		
PPG debt service-to-revenue ratio	11.4	10.8	9.5	8.2	6.8	4.9	4.0	3.6	3.2	2.9	2.6	2.1		
Gross external financing need (Million of U.S. dollars)	-8013.0	-8304.2	-8551.4	-8919.8	-9321.6	-9807.5	-10190.9	-10536.3	-10885.3	-11247.8	-11629.4	-12055.5		
Key macroeconomic assumptions														
Real GDP growth (in percent)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.9	3.4
GDP deflator in US dollar terms (change in percent)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	0.6	2.9
Effective interest rate (percent) 4/	3.6	3.7	3.7	3.8	3.9	3.9	3.9	3.9	4.0	4.0	3.9	3.9	2.7	2.8
Growth of exports of G&S (US dollar terms, in percent)	3.0	3.0	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.2	3.2	3.2	5.4	5.7
Growth of imports of G&S (US dollar terms, in percent)	3.5	3.6	3.6	3.6	3.7	3.7	3.8	3.8	3.8	3.9	3.9	3.9	-4.6	3.5
Grant element of new public sector borrowing (in percent)	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	...	12.8
Government revenues (excluding grants, in percent of GDP)	18.2	18.1	18.1	18.0	18.0	17.9	17.8	17.8	17.7	17.6	17.6	17.5	15.7	16.3
Aid flows (in Million of US dollars) 5/	619.4	638.2	657.6	677.6	697.0	717.6	739.1	761.5	784.6	808.5	833.2	858.6		
Grant-equivalent financing (in percent of GDP) 6/	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	...	1.6
Grant-equivalent financing (in percent of external financing) 6/	98.3	98.4	98.4	98.5	99.3	99.6	99.8	99.9	100.0	100.0	100.0	100.0	...	65.0
Nominal GDP (Million of US dollars)	48,998	52,122	55,445	58,980	62,740	66,740	70,995	75,521	80,335	85,457	90,905	96,701		
Nominal dollar GDP growth	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	4.3	6.4
Memorandum items:														
PV of external debt 7/	42.6	39.6	36.8	34.4	32.2	30.5	28.9	27.4	26.1	24.8	23.0	21.3		
In percent of exports	120.2	115.3	110.8	106.7	103.3	100.8	98.6	96.6	94.7	92.8	88.6	84.7		
Total external debt service-to-exports ratio	17.5	16.8	16.5	15.6	14.7	13.4	12.7	12.3	12.0	11.6	11.2	10.6		
PV of PPG external debt (in Million of US dollars)	6165.1	5459.3	4786.9	4166.9	3618.8	3221.7	2877.3	2542.0	2216.5	1890.5	1571.3	1291.7		
(PVt-PVt-1)/GDPt-1 (in percent)	-1.4	-1.4	-1.3	-1.1	-0.9	-0.6	-0.5	-0.5	-0.4	-0.4	-0.4	-0.3		
Non-interest current account deficit that stabilizes debt ratio	-18.3	-17.8	-17.4	-17.0	-16.6	-16.4	-16.0	-15.5	-15.0	-14.6	-13.5	-13.1		

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 - ρ(1+g) + Ɛα (1+r)]/(1+g+ρ+gρ) times previous period debt ratio, with r = nominal interest rate; g = real GDP growth rate, ρ = growth rate of GDP deflator in U.S. dollar terms, Ɛ=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.

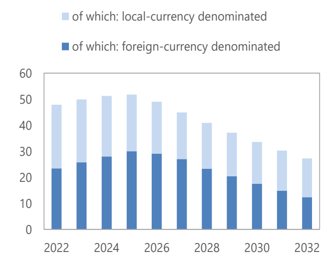
8/ Historical averages are generally derived over the past 10 years, subject to data availability, whereas projections averages are over the first year of projection and the next 10 years.

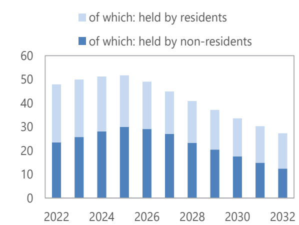
Table 2. Papua New Guinea: Public Sector Debt Sustainability Framework, Baseline Scenario, 2019-2042
(In percent of GDP, unless otherwise indicated)

	Actual			Projections								Average 6/	
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2032	2042	Historical	Projections
Public sector debt 1/	40.6	48.7	52.1	47.9	49.9	51.2	51.8	49.1	44.9	27.3	7.7	33.9	42.2
of which: external debt	17.1	21.8	24.8	23.4	25.7	28.0	30.0	29.1	27.0	12.4	1.9	11.5	22.9
Change in public sector debt	8.2	8.1	3.5	-4.2	2.0	1.3	0.5	-2.7	-4.1	-3.0	-1.3		
Identified debt-creating flows	0.5	8.2	0.0	-2.8	1.0	-0.4	-1.1	-2.4	-3.5	-2.6	-1.3	2.2	-2.2
Primary deficit	1.9	6.2	4.4	3.3	2.2	1.2	-0.3	-1.4	-2.6	-2.1	-1.2	2.9	-0.8
Revenue and grants	16.3	14.7	15.0	15.8	17.1	16.6	17.0	17.1	17.3	19.4	18.4	17.7	17.7
of which: grants	2.1	1.7	2.3	1.7	1.8	1.5	1.4	1.4	1.4	1.2	0.9		
Primary (noninterest) expenditure	18.2	20.9	19.4	19.1	19.2	17.8	16.7	15.7	14.7	17.2	17.2	20.6	16.9
Automatic debt dynamics	-1.4	2.0	-4.4	-6.1	-1.2	-1.6	-0.8	-1.0	-0.9	-0.4	-0.1		
Contribution from interest rate/growth differential	-1.6	1.5	-2.9	-6.1	-1.2	-1.6	-0.8	-1.0	-0.9	-0.4	-0.1		
of which: contribution from average real interest rate	-0.2	0.2	-2.9	-3.8	0.5	0.5	0.7	0.5	0.5	0.5	0.2		
of which: contribution from real GDP growth	-1.4	1.3	0.0	-2.3	-1.7	-2.1	-1.5	-1.6	-1.5	-0.9	-0.3		
Contribution from real exchange rate depreciation	0.2	0.5	-1.5	...	...	...	...	...	...	...	...		
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	7.7	-0.1	3.5	-1.5	1.1	1.7	1.7	-0.3	-0.6	-0.5	-0.1	2.5	-0.1
Sustainability indicators													
PV of public debt-to-GDP ratio 2/	...	...	46.5	43.3	45.2	46.5	47.0	44.7	41.0	25.5	7.2		
PV of public debt-to-revenue and grants ratio	...	...	309.9	273.9	265.2	280.5	276.3	261.9	237.2	131.7	39.0		
Debt service-to-revenue and grants ratio 3/	72.0	114.4	110.4	86.7	85.1	88.8	86.7	80.0	70.3	39.5	5.4		
Gross financing need 4/	13.6	23.0	20.9	17.0	16.7	16.0	14.4	12.2	9.6	5.5	-0.2		
Key macroeconomic and fiscal assumptions													
Real GDP growth (in percent)	4.5	-3.2	0.1	4.5	3.7	4.4	3.1	3.1	3.0	3.0	3.0	3.9	3.4
Average nominal interest rate on external debt (in percent)	0.6	2.8	2.3	2.1	2.4	2.5	2.7	2.8	2.9	2.9	3.0	0.9	2.7
Average real interest rate on domestic debt (in percent)	-0.3	-0.4	-9.2	-11.2	2.7	2.0	2.4	1.4	1.3	2.1	2.6	2.7	0.7
Real exchange rate depreciation (in percent, + indicates depreciation)	1.9	2.5	-6.9	...	...	...	...	...	...	...	...	3.1	...
Inflation rate (GDP deflator, in percent)	1.1	1.6	11.9	14.0	0.6	1.8	2.0	3.0	3.2	3.2	3.2	4.2	3.7
Growth of real primary spending (deflated by GDP deflator, in percent)	5.8	11.1	-7.3	3.3	4.2	-3.1	-3.4	-3.3	-3.1	3.0	3.0	3.3	2.4
Primary deficit that stabilizes the debt-to-GDP ratio 5/	-6.3	-1.9	0.9	7.6	0.1	-0.1	-0.8	1.3	1.6	0.9	0.1	-2.4	1.4
PV of contingent liabilities (not included in public sector debt)	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0		

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

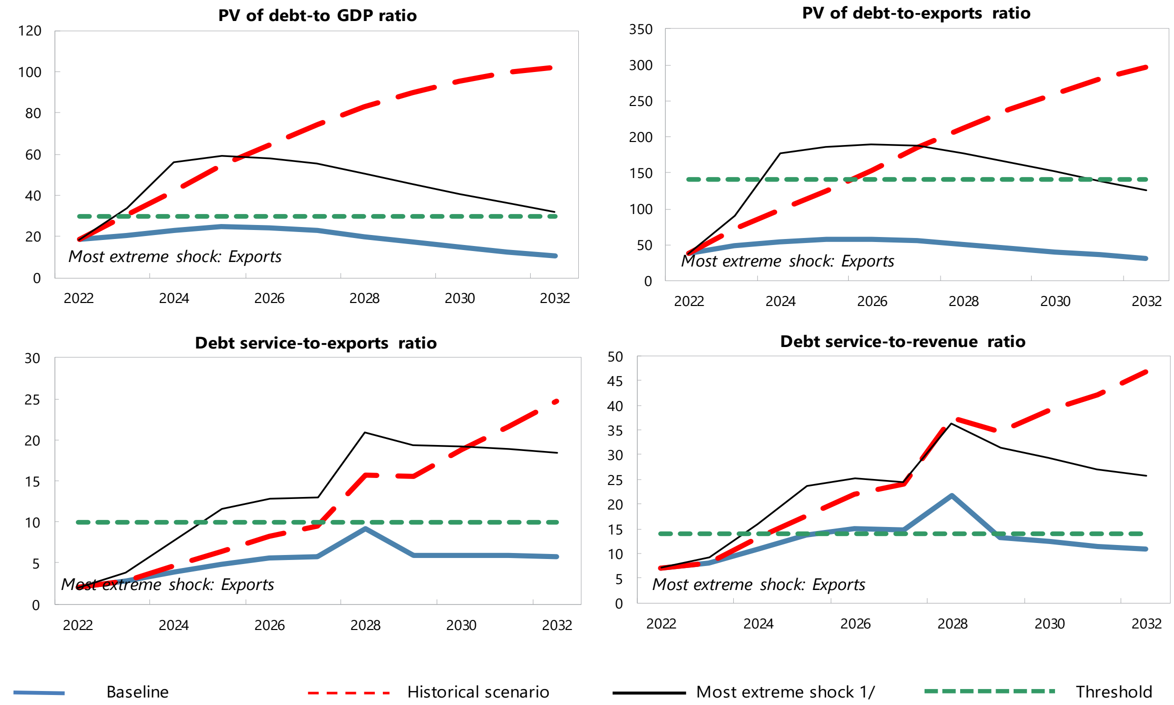
Public sector debt 1/





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.

Figure 1. Papua New Guinea: Indicators of Public and Publicly Guaranteed External Debt Under Alternative Scenarios, 2022-2032



Customization of Default Settings		
	Size	Interactions
Tailored Stress		
Combined CL	Yes	
Natural disaster	n.a.	n.a.
Commodity price	Yes	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.

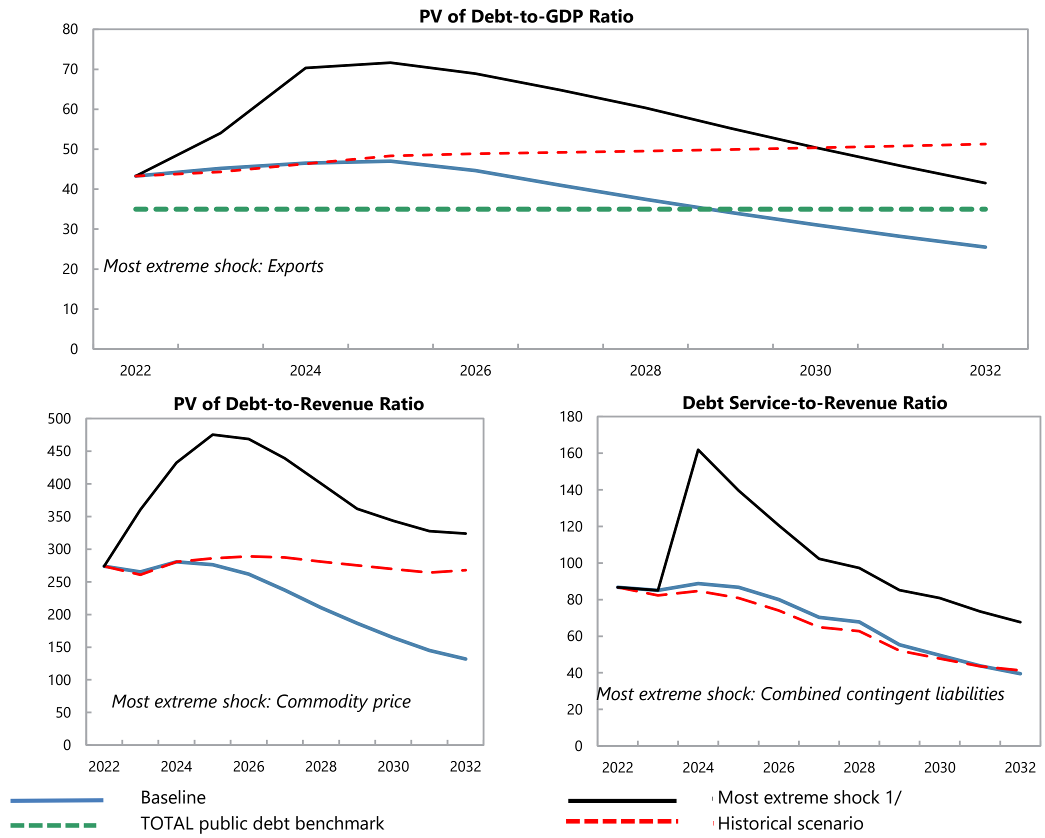
Borrowing assumptions on additional financing needs resulting from the stress tests*		
	Default	User defined
Shares of marginal debt		
External PPG MLT debt	100%	
Terms of marginal debt		
Avg. nominal interest rate on new borrowing in USD	3.5%	3.5%
USD Discount rate	5.0%	5.0%
Avg. maturity (incl. grace period)	19	19
Avg. grace period	4	4

* 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 2032. 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.

Figure 2. Papua New Guinea: Indicators of Public Debt Under Alternative Scenarios, 2022-2032



Borrowing assumptions on additional financing needs resulting from the stress tests*	Default	User defined
Shares of marginal debt		
External PPG medium and long-term	12%	12%
Domestic medium and long-term	16%	16%
Domestic short-term	72%	72%
Terms of marginal debt		
External MLT debt		
Avg. nominal interest rate on new borrowing in USD	3.5%	3.5%
Avg. maturity (incl. grace period)	19	19
Avg. grace period	4	4
Domestic MLT debt		
Avg. real interest rate on new borrowing	3.8%	3.8%
Avg. maturity (incl. grace period)	7	7
Avg. grace period	4	4
Domestic short-term debt		
Avg. real interest rate	1.5%	1.5%

* 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 2032. 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 3. Papua New Guinea: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2022-2032
(In percent)

	Projections 1/										
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
PV of debt-to GDP ratio											
Baseline	18	21	23	25	24	23	20	17	15	13	10
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2032 2/	18	**31**	**42**	**54**	**64**	**75**	**83**	**90**	**95**	**99**	**102**
B. Bound Tests											
B1. Real GDP growth	18	22	27	29	28	26	23	20	17	15	12
B2. Primary balance	18	21	24	27	26	25	22	20	17	15	13
B3. Exports	18	**34**	**56**	**59**	**58**	**56**	**51**	**46**	**41**	**36**	**32**
B4. Other flows 3/	18	24	29	**31**	**31**	29	26	23	20	17	15
B5. Depreciation	18	26	**33**	**36**	**35**	**33**	29	25	22	19	16
B6. Combination of B1-B5	18	**31**	**40**	**43**	**42**	**40**	**36**	**32**	28	24	21
C. Tailored Tests											
C1. Combined contingent liabilities	18	23	26	29	29	28	25	23	21	19	17
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	18	28	**37**	**42**	**44**	**45**	**43**	**41**	**39**	**38**	**36**
C4. Market Financing	18	23	26	28	27	25	22	19	17	14	12
Threshold	30	30	30	30	30	30	30	30	30	30	30
PV of debt-to-exports ratio											
Baseline	37	49	54	57	58	56	50	45	40	35	30
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2032 2/	37	72	98	125	**153**	**184**	**212**	**238**	**260**	**280**	**297**
B. Bound Tests											
B1. Real GDP growth	37	49	54	57	58	56	50	45	40	35	30
B2. Primary balance	37	50	57	61	63	62	56	52	47	43	38
B3. Exports	37	91	**178**	**185**	**189**	**188**	**176**	**164**	**151**	138	125
B4. Other flows 3/	37	56	68	72	73	72	65	60	54	48	43
B5. Depreciation	37	49	61	65	66	64	58	53	47	42	37
B6. Combination of B1-B5	37	73	79	105	107	106	97	89	81	73	65
C. Tailored Tests											
C1. Combined contingent liabilities	37	53	61	66	69	68	63	60	56	53	49
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	37	78	100	108	114	117	113	112	111	109	107
C4. Market Financing	37	49	54	57	58	56	50	45	40	35	30
Threshold	140	140	140	140	140	140	140	140	140	140	140
Debt service-to-exports ratio											
Baseline	2	3	4	5	6	6	9	6	6	6	6
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2032 2/	2	3	5	6	8	9	**16**	**16**	**19**	**22**	**25**
B. Bound Tests											
B1. Real GDP growth	2	3	4	5	6	6	9	6	6	6	6
B2. Primary balance	2	3	4	5	6	6	9	6	7	6	6
B3. Exports	2	4	8	**12**	**13**	**13**	**21**	**19**	**19**	**19**	**18**
B4. Other flows 3/	2	3	4	5	6	6	**10**	7	8	7	7
B5. Depreciation	2	3	4	5	6	6	9	7	7	7	6
B6. Combination of B1-B5	2	3	6	7	8	9	**14**	**11**	**11**	**11**	**10**
C. Tailored Tests											
C1. Combined contingent liabilities	2	3	4	5	6	6	10	6	7	6	6
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	2	3	5	7	8	8	**13**	**11**	**12**	**12**	**12**
C4. Market Financing	2	3	4	5	6	6	9	6	6	6	6
Threshold	10	10	10	10	10	10	10	10	10	10	10
Debt service-to-revenue ratio											
Baseline	7	8	11	14	**15**	**15**	**22**	13	12	11	11
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2032 2/	7	8	13	**18**	**22**	**24**	**37**	**35**	**39**	**42**	**47**
B. Bound Tests											
B1. Real GDP growth	7	9	13	**16**	**17**	**17**	**25**	**15**	**14**	13	13
B2. Primary balance	7	8	11	**14**	**16**	**15**	**23**	**14**	14	13	12
B3. Exports	7	9	**16**	**24**	**25**	**24**	**36**	**31**	**29**	**27**	**26**
B4. Other flows 3/	7	8	12	**15**	**17**	**16**	**24**	**17**	**16**	**14**	14
B5. Depreciation	7	10	14	**18**	**20**	**20**	**28**	**19**	**18**	**16**	**15**
B6. Combination of B1-B5	7	9	**15**	**20**	**21**	**20**	**32**	**23**	**21**	**20**	**19**
C. Tailored Tests											
C1. Combined contingent liabilities	7	8	11	**14**	**16**	**16**	**23**	**14**	14	13	12
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	10	**17**	**23**	**24**	**22**	**33**	**24**	**23**	**23**	**23**
C4. Market Financing	7	8	11	14	**15**	**15**	**22**	13	12	11	11
Threshold	14	14	14	14	14	14	14	14	14	14	14

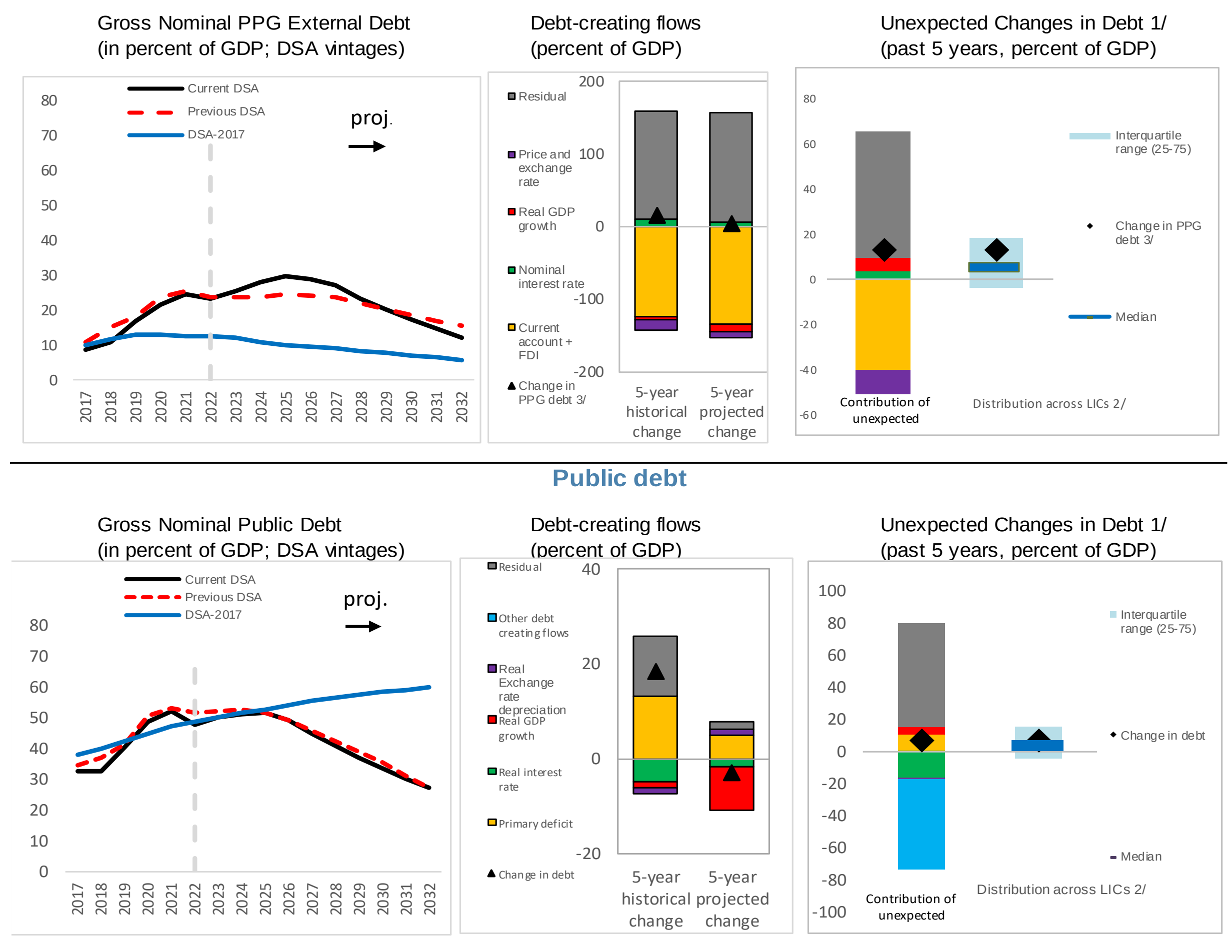
Sources: Country authorities; and staff estimates and projections.
1/ A bold value indicates a breach of the threshold.
2/ Variables include real GDP growth, GDP deflator (in U.S. dollar terms), non-interest current account in percent of GDP, and non-debt creating flows.
3/ Includes official and private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

Table 4. Papua New Guinea: Sensitivity Analysis for Key Indicators of Public Debt, 2022-2032

	Projections 1/										
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
PV of Debt-to-GDP Ratio											
Baseline	**43**	**45**	**47**	**47**	**45**	**41**	**37**	34	31	28	25
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2032 2/	**43**	**44**	**46**	**48**	**49**	**49**	**50**	**50**	**50**	**51**	**51**
B. Bound Tests											
B1. Real GDP growth	**43**	**50**	**57**	**60**	**60**	**58**	**56**	**55**	**53**	**53**	**52**
B2. Primary balance	**43**	**48**	**54**	**54**	**52**	**48**	**44**	**41**	**38**	35	32
B3. Exports	**43**	**54**	**70**	**72**	**69**	**65**	**60**	**55**	**50**	**46**	**42**
B4. Other flows 3/	**43**	**48**	**53**	**54**	**51**	**47**	**44**	**40**	**36**	33	30
B5. Depreciation	**43**	**48**	**48**	**47**	**44**	**39**	35	31	27	23	19
B6. Combination of B1-B5	**43**	**46**	**51**	**52**	**50**	**47**	**44**	**41**	**38**	**35**	33
C. Tailored Tests											
C1. Combined contingent liabilities	**43**	**62**	**63**	**63**	**61**	**57**	**53**	**50**	**46**	**43**	**40**
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**	**50**	**58**	**66**	**69**	**70**	**69**	**67**	**65**	**64**	**63**
C4. Market Financing	**43**	**45**	**47**	**47**	**45**	**41**	**37**	34	31	28	25
TOTAL public debt benchmark	35	35	35	35	35	35	35	35	35	35	35
PV of Debt-to-Revenue Ratio											
Baseline	274	265	281	276	262	237	211	186	165	145	132
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2032 2/	274	261	281	286	289	287	281	275	269	264	268
B. Bound Tests											
B1. Real GDP growth	274	289	340	349	345	330	311	294	280	268	266
B2. Primary balance	274	283	324	319	303	278	249	224	201	180	166
B3. Exports	274	317	424	421	404	375	339	301	267	236	215
B4. Other flows 3/	274	283	319	315	300	274	244	217	192	169	154
B5. Depreciation	274	282	290	280	259	229	197	169	143	119	101
B6. Combination of B1-B5	274	270	308	307	294	271	245	222	200	180	168
C. Tailored Tests											
C1. Combined contingent liabilities	274	363	378	371	355	328	298	270	245	222	208
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	274	361	432	475	468	439	400	362	343	328	324
C4. Market Financing	274	265	281	276	262	237	211	186	165	145	132
Debt Service-to-Revenue Ratio											
Baseline	87	85	89	87	80	70	68	55	50	44	40
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2032 2/	87	82	85	81	74	65	63	52	48	44	41
B. Bound Tests											
B1. Real GDP growth	87	91	106	113	112	106	107	97	94	92	93
B2. Primary balance	87	85	102	114	101	87	82	69	64	58	54
B3. Exports	87	85	91	92	85	75	76	67	61	54	49
B4. Other flows 3/	87	85	90	88	81	72	70	58	53	47	42
B5. Depreciation	87	80	86	84	79	70	70	55	49	43	39
B6. Combination of B1-B5	87	83	91	91	85	76	74	62	56	51	47
C. Tailored Tests											
C1. Combined contingent liabilities	87	85	162	140	121	102	97	85	81	74	68
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	87	107	116	118	126	118	113	95	88	84	84
C4. Market Financing	87	85	89	87	80	70	68	55	50	44	39

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



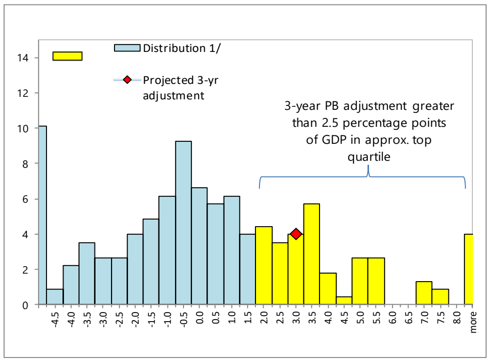
1/ Difference between anticipated and actual contributions on debt ratios.

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.

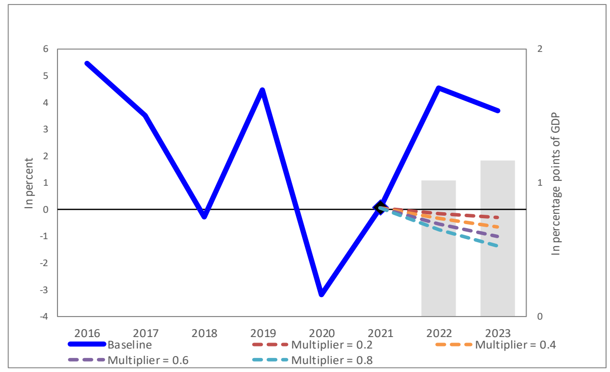
Figure 4. Papua New Guinea: Realism Tools

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



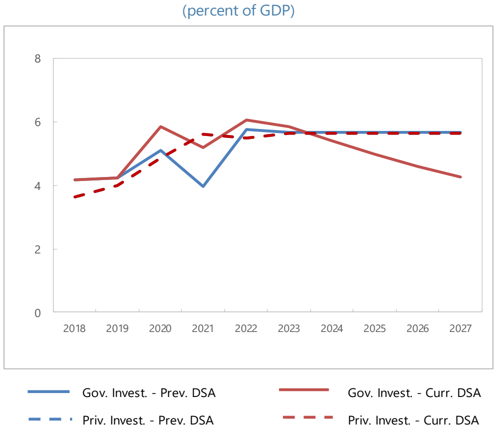
1/ Data cover Fund-supported programs for LICs (excluding emergency financing) approved since 1990. The size of 3-year adjustment from program inception is found on the horizontal axis; the percent of sample is found on the vertical axis.

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)



Contribution to Real GDP growth
(percent, 5-year average)

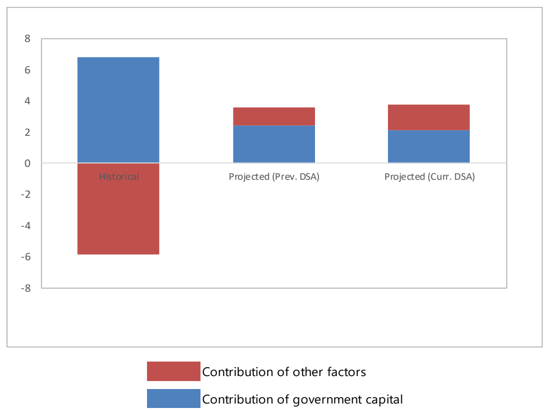
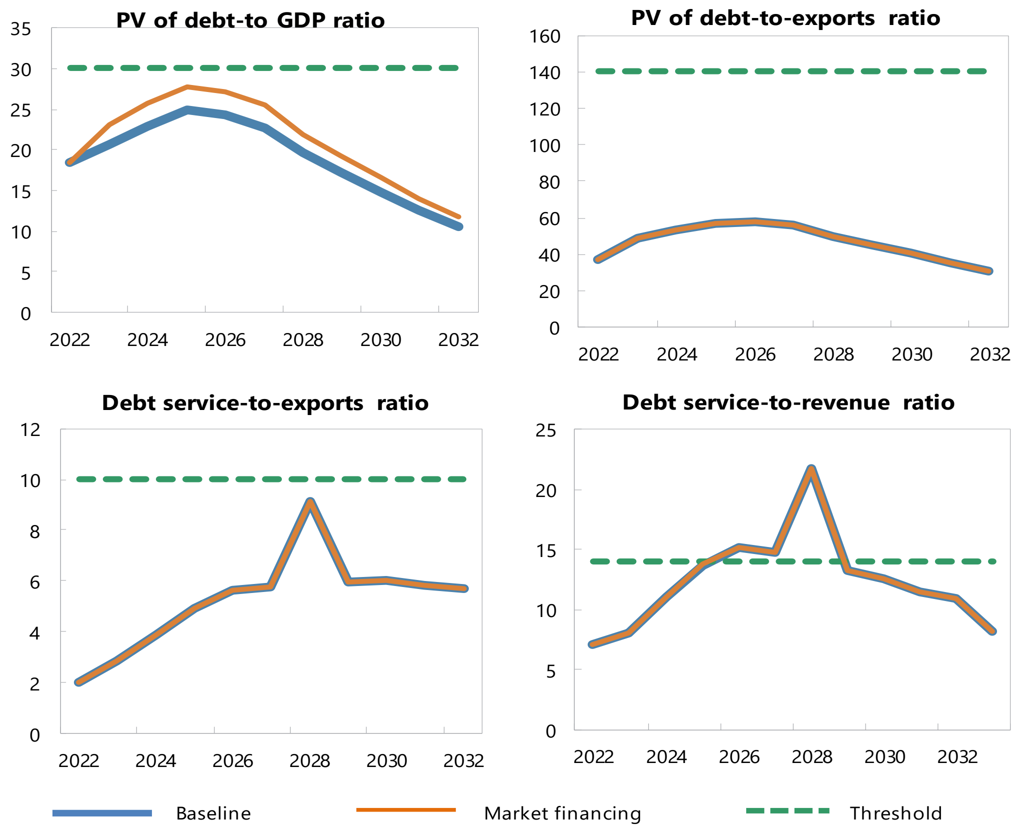


Figure 5. Papua New Guinea: Market-Financing Risk Indicators

	GFN 1/	EMBI 2/
Benchmarks	14	570
Values	17	672
Breach of benchmark	Yes	Yes
Potential heightened liquidity needs	High	

1/ Maximum gross financing needs (GFN) over 3-year baseline projection horizon.
2/ EMBI spreads correspond to the latest available data.



Sources: Country authorities; and staff estimates and projections.