

**EXECUTIVE  
BOARD  
MEETING**

EBS/20/109  
Supplement 1

June 1, 2020

To: Members of the Executive Board

From: The Secretary

Subject: **Papua New Guinea—Request for Disbursement Under the Rapid Credit Facility—Debt Sustainability Analysis**

|  |  |
|--|--|
| Board Action:  | Executive Directors' <b>consideration</b> (Formal)                         |
| Prepared By:   | The staffs of the Fund and the International Development Association       |
| Tentative Board Date:  | <b>Friday, June 5, 2020</b>  |
| Publication:   | Yes*   |
| Questions:   | Mr. Roger, APD (ext. 37314)  |
| Document Transmittal<br>in the Absence of<br>an Objection and in<br>accordance with<br>Board policy: | After Board Consideration—Asian Development Bank, World Trade Organization |

\*The authorities have indicated that they consent to the Fund's publication of this paper.





# PAPUA NEW GUINEA

## REQUEST FOR DISBURSEMENT UNDER THE RAPID CREDIT FACILITY—DEBT SUSTAINABILITY ANALYSIS

June 1, 2020

Approved By  
**Jonathan D. Ostry and  
Johannes Wiegand (IMF);  
and Marcello Estevão (IDA)**

Prepared by the staffs of the International Monetary Fund (IMF) and the International Development Association (IDA)<sup>1 2</sup>

|  |   |
|--|---|
| <b>Risk of external debt distress</b>                | High <sup>3</sup>   |
| <b>Overall risk of debt distress</b>                 | High  |
| <b>Granularity in the risk rating</b>                | Sustainable   |
| <b>Application of judgment</b>                       | No  |
| <b>Macroeconomic projections</b>                     | GDP growth forecast reduced by 3.7 percentage points to -1.7 percent in 2020, and terms-of-trade shocks are incorporated. |
| <b>Financing strategy</b>                            | Limited room to draw down reserves. Reliance on concessional loans from international community.                          |
| <b>Mechanical risk rating under the external DSA</b> | High  |
| <b>Mechanical risk rating under the public DSA</b>   | High  |

<sup>1</sup> 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.

<sup>2</sup> 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.

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

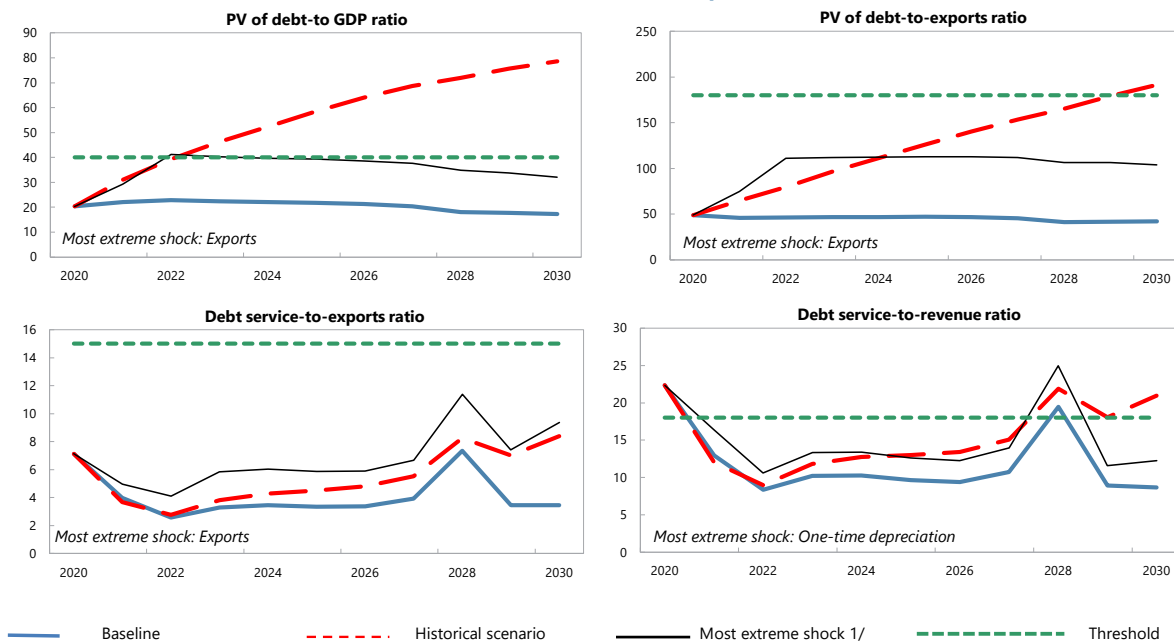
*External and overall debt are at high risk of debt distress. The shocks from COVID-19 pandemic, including the terms-of-trade shocks to the main exports (for instance, LNG and metals) are expected to reduce the current account surplus and exacerbate fiscal deficits resulting in a higher debt path compared 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 <sup>2/</sup>    | 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 |
| <b>Shares of marginal debt</b>   |         |              |
| External PPG MLT debt  | 100%    |              |
| <b>Terms of marginal debt</b>  |         |              |
| 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            |

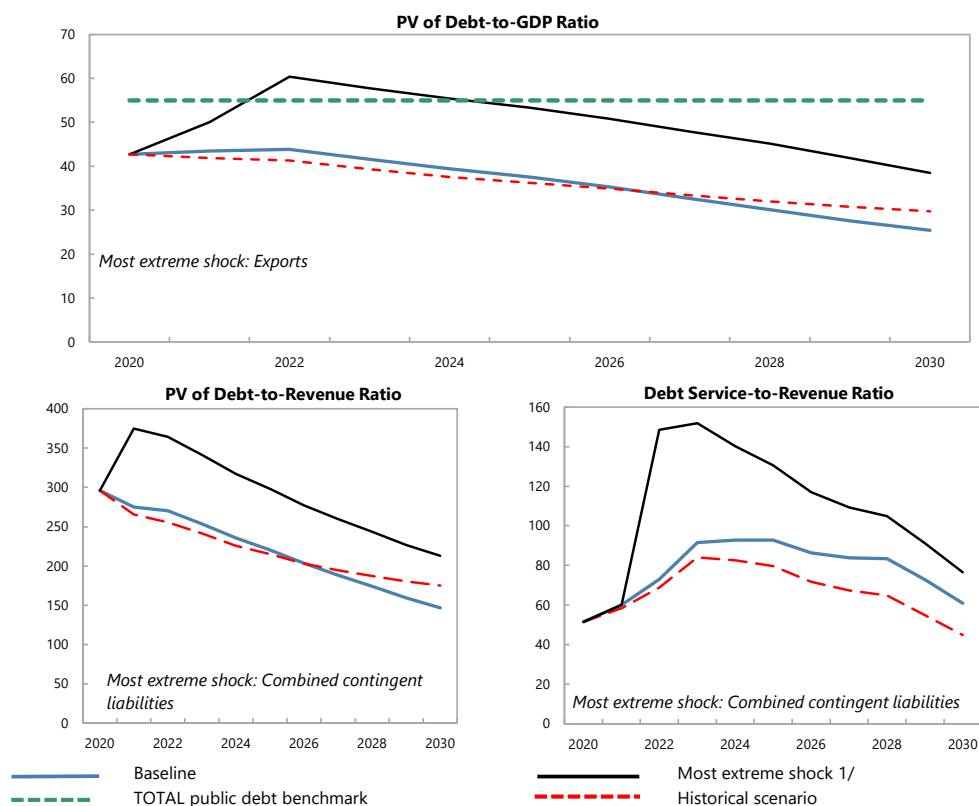
\* Note: All the additional financing needs generated by the shocks under the stress tests are assumed to be covered by PPG external MLT debt in the external DSA. Default terms of marginal debt are based on baseline 10-year projections.

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 extreme 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 |
|--|---------|--------------|
| <b>Shares of marginal debt</b>   |         |              |
| External PPG medium and long-term  | 22%     | 22%          |
| Domestic medium and long-term  | 8%      | 8%           |
| Domestic short-term  | 70%     | 70%          |
| <b>Terms of marginal debt</b>  |         |              |
| 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 extreme 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/<br>Historical Projections |              |
|--|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------------------------------|--------------|
|  | 2017        | 2018         | 2019         | 2020         | 2021         | 2022         | 2023         | 2024         | 2025         | 2030         | 2040         | Historical                           | Projections  |
| External debt (nominal) 1/<br>of which: public and publicly guaranteed (PPG) | 72.8<br>8.8 | 71.3<br>15.2 | 60.5<br>16.5 | 54.9<br>21.4 | 57.6<br>24.3 | 59.1<br>26.1 | 57.7<br>26.6 | 56.5<br>27.0 | 55.1<br>27.1 | 45.5<br>22.3 | 29.1<br>16.2 | 77.0<br>8.6                          | 53.8<br>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          |                                      |              |
| <b>Sustainability indicators</b>   |             |              |              |              |              |              |              |              |              |              |              |                                      |              |
| 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      |                                      |              |
| <b>Key macroeconomic assumptions</b>   |             |              |              |              |              |              |              |              |              |              |              |                                      |              |
| 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         | 46.4         | 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        | 796.9        |                                      |              |
| 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          |
| <b>Memorandum items:</b>   |             |              |              |              |              |              |              |              |              |              |              |                                      |              |
| 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          | 0.7          | 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         |                                      |              |

Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

2/ Derived as  $[r - g - p(1+g) + E\alpha(1+r)] / (1+g+p+g\alpha)$  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;  $E\alpha$  = nominal appreciation of the local currency, and  $\alpha$  = 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.

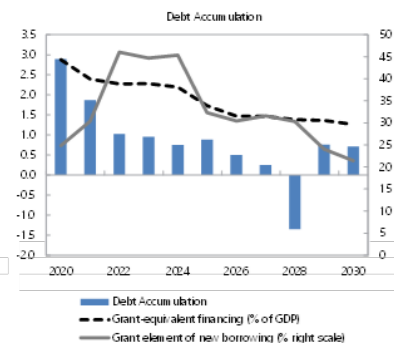
5/ Defined as grants, concessional loans, and debt relief.

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.

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



**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 |
| <b>Public sector debt 1/</b>   | 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 |            |             |
| <b>Identified debt-creating flows</b>                                  | -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        |
| <b>Automatic debt dynamics</b>   | -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   | ...         | ...   | ...   | ...   | ...   | ...   | ...   | ...  |            |             |
| <b>Other identified debt-creating flows</b>                            | 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  |            |             |
| <b>Residual</b>  | -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         |
| <b>Sustainability indicators</b>                                       |        |       |       |             |       |       |       |       |       |       |      |            |             |
| <b>PV of public debt-to-GDP ratio 2/</b>                               | ...    | ...   | 39.3  | 42.7        | 43.5  | 43.9  | 41.6  | 39.4  | 37.5  | 25.4  | 15.7 |            |             |
| <b>PV of public debt-to-revenue and grants ratio</b>                   | ...    | ...   | 253.0 | 296.1       | 275.0 | 270.3 | 253.6 | 235.4 | 220.4 | 146.9 | 85.8 |            |             |
| <b>Debt service-to-revenue and grants ratio 3/</b>                     | 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  |            |             |
| <b>Key macroeconomic and fiscal assumptions</b>                        |        |       |       |             |       |       |       |       |       |       |      |            |             |
| 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  |            |             |

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.

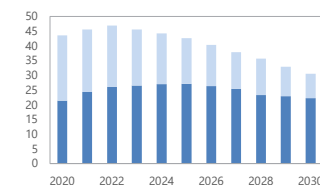
5/ Defined as a primary deficit minus a change in the public debt-to-GDP ratio (i.e., a primary surplus), which would stabilize the debt ratio only in the year in question.

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.

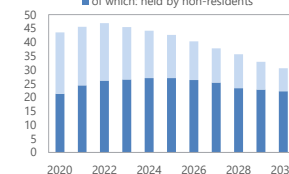
| Definition of external/domestic debt                     | Residency-based |
|--|-----------------|
| Is there a material difference between the two criteria? | No              |

Public sector debt 1/

■ of which: local-currency denominated  
■ of which: foreign-currency denominated



■ of which: held by residents  
■ of which: held by non-residents





**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 |
| <b>PV of debt-to GDP ratio</b>                                 |                |      |      |      |      |      |      |      |      |      |      |
| <b>Baseline</b>  | 20             | 22   | 23   | 22   | 22   | 22   | 21   | 20   | 18   | 18   | 17   |
| <b>A. Alternative Scenarios</b>                                |                |      |      |      |      |      |      |      |      |      |      |
| A1. Key variables at their historical averages in 2020-2030 2/ | 20             | 31   | 39   | 46   | 52   | 58   | 64   | 69   | 72   | 76   | 79   |
|  | CHS%           | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% |
| <b>B. Bound Tests</b>  |                |      |      |      |      |      |      |      |      |      |      |
| 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   |
| <b>C. Tailored Tests</b>                                       |                |      |      |      |      |      |      |      |      |      |      |
| 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   |
| <b>Threshold</b>   | 40             | 40   | 40   | 40   | 40   | 40   | 40   | 40   | 40   | 40   | 40   |
| <b>PV of debt-to-exports ratio</b>                             |                |      |      |      |      |      |      |      |      |      |      |
| <b>Baseline</b>  | 49             | 46   | 47   | 47   | 47   | 47   | 47   | 46   | 41   | 42   | 42   |
| <b>A. Alternative Scenarios</b>                                |                |      |      |      |      |      |      |      |      |      |      |
| A1. Key variables at their historical averages in 2020-2030 2/ | 49             | 65   | 80   | 96   | 112  | 126  | 141  | 153  | 165  | 179  | 192  |
|  | CHS%           | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% |
| <b>B. Bound Tests</b>  |                |      |      |      |      |      |      |      |      |      |      |
| 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   |
| <b>C. Tailored Tests</b>                                       |                |      |      |      |      |      |      |      |      |      |      |
| 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   |
| <b>Threshold</b>   | 180            | 180  | 180  | 180  | 180  | 180  | 180  | 180  | 180  | 180  | 180  |
| <b>Debt service-to-exports ratio</b>                           |                |      |      |      |      |      |      |      |      |      |      |
| <b>Baseline</b>  | 7              | 4    | 3    | 3    | 3    | 3    | 3    | 4    | 7    | 3    | 3    |
| <b>A. Alternative Scenarios</b>                                |                |      |      |      |      |      |      |      |      |      |      |
| A1. Key variables at their historical averages in 2020-2030 2/ | 7              | 4    | 3    | 4    | 4    | 4    | 5    | 6    | 8    | 7    | 8    |
|  | CHS%           | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% |
| <b>B. Bound Tests</b>  |                |      |      |      |      |      |      |      |      |      |      |
| 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    |
| <b>C. Tailored Tests</b>                                       |                |      |      |      |      |      |      |      |      |      |      |
| 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    |
| <b>Threshold</b>   | 15             | 15   | 15   | 15   | 15   | 15   | 15   | 15   | 15   | 15   | 15   |
| <b>Debt service-to-revenue ratio</b>                           |                |      |      |      |      |      |      |      |      |      |      |
| <b>Baseline</b>  | 22             | 13   | 8    | 10   | 10   | 10   | 9    | 11   | 19   | 9    | 9    |
| <b>A. Alternative Scenarios</b>                                |                |      |      |      |      |      |      |      |      |      |      |
| A1. Key variables at their historical averages in 2020-2030 2/ | 22             | 12   | 9    | 12   | 13   | 13   | 13   | 15   | 22   | 18   | 21   |
|  | CHS%           | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% | CHS% |
| <b>B. Bound Tests</b>  |                |      |      |      |      |      |      |      |      |      |      |
| 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   |
| <b>C. Tailored Tests</b>                                       |                |      |      |      |      |      |      |      |      |      |      |
| 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    |
| <b>Threshold</b>   | 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.

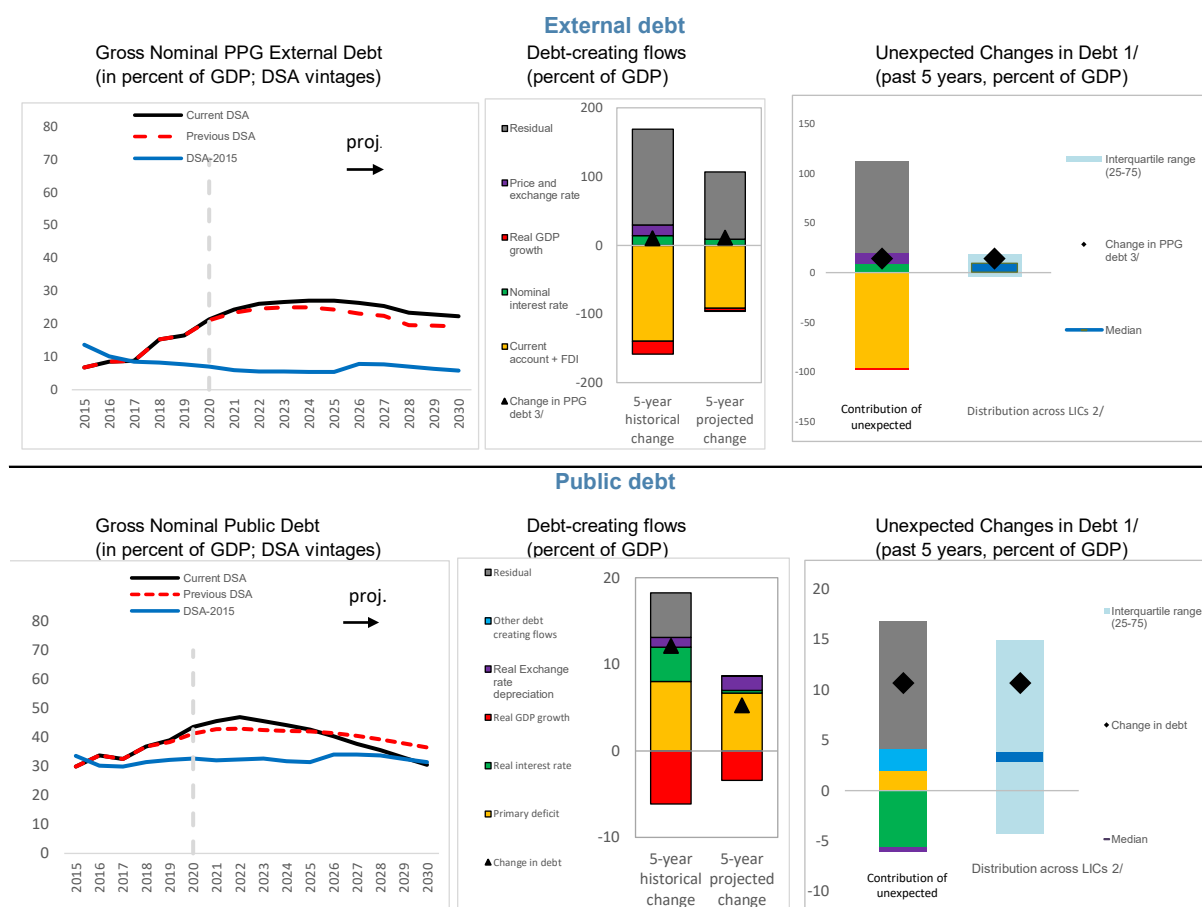
2/ Variables include real GDP growth, GDP deflator (in U.S. dollar terms), non-interest current account in percent of GDP, and non-debt creating flows.

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**