



PAPUA NEW GUINEA

STAFF REPORT FOR THE 2015 ARTICLE IV CONSULTATION—DEBT SUSTAINABILITY ANALYSIS

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Approved By
**Hoe Ee Khor and Steven
Barnett (IMF)**
Satu Kahkonen (IDA)

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

This Debt Sustainability Analysis (DSA) indicates that Papua New Guinea's (PNG) risk of debt distress remains low based on an assessment of public and publicly-guaranteed (PPG) external debt, in line with the results of the DSA for the 2014 Article IV consultation.² However, factoring in public domestic and private external debt and contingent liabilities, the overall risk of debt distress remains heightened, and a failure to consolidate the fiscal position would worsen debt dynamics.

¹ This DSA was prepared jointly with the World Bank, in accordance with the Debt Sustainability Framework for low-income countries approved by the Executive Boards of the IMF and the IDA.

² Papua New Guinea is rated as a medium performer for its policies and institutions for the purposes of the IMF-World Bank low-income country DSA framework.

BACKGROUND

1. PNG's public and external debt burdens have fallen significantly over the past decade.

Public debt declined from 62 percent of GDP at end-2004 to about 22 percent of GDP in 2011, but rose to around 42½ percent in 2014.³ Public and publicly guaranteed (PPG) external debt also declined sharply, from a peak of over 50 percent of GDP in 2001 to around 16 percent in 2014. Around 70 percent of current public external debt is owed to the Asian Development Bank and the World Bank. Domestic debt consists of treasury bills (45 percent) and inscribed stocks (55 percent) with an average maturity of 5 years. The main creditors are resident banks and superannuation funds. The government is planning to issue a sovereign bond of around US\$1 billion in 2015.⁴

UNDERLYING ASSUMPTIONS

2. Over the medium term, PNG's growth prospects and current account developments will be heavily influenced by its extractive sector and the LNG price outlook.

Box 1 summarizes the medium-term macroeconomic framework underlying this DSA update. Economic activity is projected to continue to grow in 2015, reflecting the fact that liquefied natural gas (LNG) production reaches full capacity. The current account deficit narrowed in 2014 due to the winding down of the construction of the LNG project. With LNG exports coming on stream this year, the deficit is expected to turn into a surplus in 2015, while the temporary suspension of a major mining operation will dampen mineral exports.

EXTERNAL DSA

3. The baseline scenario indicates that all PPG external debt ratios stay well below the indicative thresholds, while there is a short-lived breach in the external debt service-to-revenue ratio due to the inclusion of a loan which has been moved to a public enterprise. The present value of the external debt stock is expected to rise in the near term because of an Australian \$1.2 billion loan (6.8 percent of GDP) that government took in early 2014, but fall over the medium term as this loan is repaid and with the expectation that new external borrowing will be moderate (Figure 1).⁵ The public external debt service ratios follow a similar profile, with higher debt service initially rising as a result of this loan but subsequently falling to very low levels, reflecting PNG's relatively small external debt stock as well as the fact that most of its public external debt is highly

³ For 2014, this DSA assessment includes the UBS loan in public debt. If the UBS loan is excluded, public debt is 35½ percent of GDP and PPG external debt is around 9 percent of GDP in 2014.

⁴ The terms and conditions have not been disclosed. For the analytical purposes, this DSA assumes 10-year maturity with a 10 percent interest rate and that a sovereign bond will be rolled over when it matures.

⁵ The government contracted this loan from UBS in March 2014 to finance the purchase of a 10 percent stake in the Oil Search Limited, an oil and gas company. It has been moved off the government balance sheet to the National Petroleum Company PNG (NPCP). The terms and conditions of this loan have not been disclosed. For the purpose of this DSA, staff has assumed a two-year loan maturity with 8 percent annual interest and included it as part of publicly guaranteed external debt.

concessional. There is a breach of the external debt service-to-revenue ratio in 2016. However, the breach is short-lived and is mainly due to the inclusion of the UBS loan which has been moved off the government balance sheet to the NPCP. Without this loan, the indicator would remain below the indicative threshold and the risk to debt sustainability therefore appears to be manageable. High levels of private external debt could potentially create balance of payments pressures by competing with the public sector for foreign exchange. Nevertheless, such risks are mitigated by the fact that a large part of the loans are adequately backed by expected cash flows from the LNG project.

4. PNG is vulnerable to certain extreme shocks despite the currently low external debt burden, but these shocks have a low probability of materializing. There is a protracted breach of the PV of the debt-to-GDP ratio under the historical scenario and a near breach under the export shock scenario. Also, there is a near breach of the external debt service-to-revenue ratio under the export shock scenario, when the sovereign bond is rolled over. However, these scenarios could be thought of as circumstances where the LNG project has completely failed or suffered a major delay. In the historical scenario, for instance, when the current account deficit is fixed at the ten-year average of 2005–14, the simulation effectively keeps imports at levels elevated by the LNG project and rules out the expected large increases in LNG exports going forward. Given that LNG production has already commenced and is set to reach a full capacity this year, such an outcome is very unlikely, while there is potential risk of a further commodity price decline and rollover risk stemming from the planned sovereign bond.

PUBLIC DSA

5. The public debt dynamics for PNG remains stable, but there are risks to this outlook.⁶ The public debt burden is expected to decline continuously over the projection period under the baseline (Figure 2). However, failures to consolidate the fiscal position would significantly increase debt burden. There are also risks arising from unfunded superannuation and public enterprise liabilities. The former are estimated to be about 6½ percent of GDP at end-2014 and the latter about 7½ of GDP, but data on the latter are incomplete and not up to date. Once these liabilities are taken into account, there would be a noticeable increase in the public debt burden over the medium term, as shown in the customized scenario (“All other liabilities”) for the public DSA.⁷

AUTHORITIES’ VIEWS

6. The authorities agreed with the DSA findings, noting that the current risk of debt distress is low, but fiscal consolidation is crucial for debt sustainability. The authorities acknowledged that a continuation of the current fiscal stance is not sustainable and that expenditure restraint is needed to keep the debt on a downward path. They also recognized the

⁶ Public debt includes domestic central government debt and external public and publicly guaranteed debt.

⁷ This scenario assumes that the full amount of superannuation arrears is added to the debt stock, and 100 percent of SOEs debt is realized to become actual liabilities and added to the debt stock. The SOEs debt stock is assumed to grow in line with nominal GDP.

importance of more comprehensive data on debt and other liabilities, in particular, off-budget and public enterprise debt, in assessing PNG's overall debt burdens. They will consider an IMF technical assistance mission on the Medium-Term Debt Management Strategy (MTDS) to provide a sound framework for future budgetary financing.

CONCLUSION

7. Papua New Guinea's PPG external debt remains at low risk of debt stress. However, the overall risk of public debt distress has remained heightened, given the rising stock of public domestic debt in recent years. Contingent and non-contingent liabilities significantly increase the public debt burden, and a failure to consolidate the fiscal position would result in unsustainable debt dynamics. The government needs to bring the public debt on a downward trajectory over the medium term, while focusing on improving spending quality to make the most out of a restrained resource envelope in meeting the country's development needs. The terms and conditions of all loans including the UBS loan should also be published to ensure fiscal transparency and debt sustainability. Going forward, a planned debut sovereign bond issuance should be used to improve the debt profile and terms and cover existing commitments rather than finance new projects.

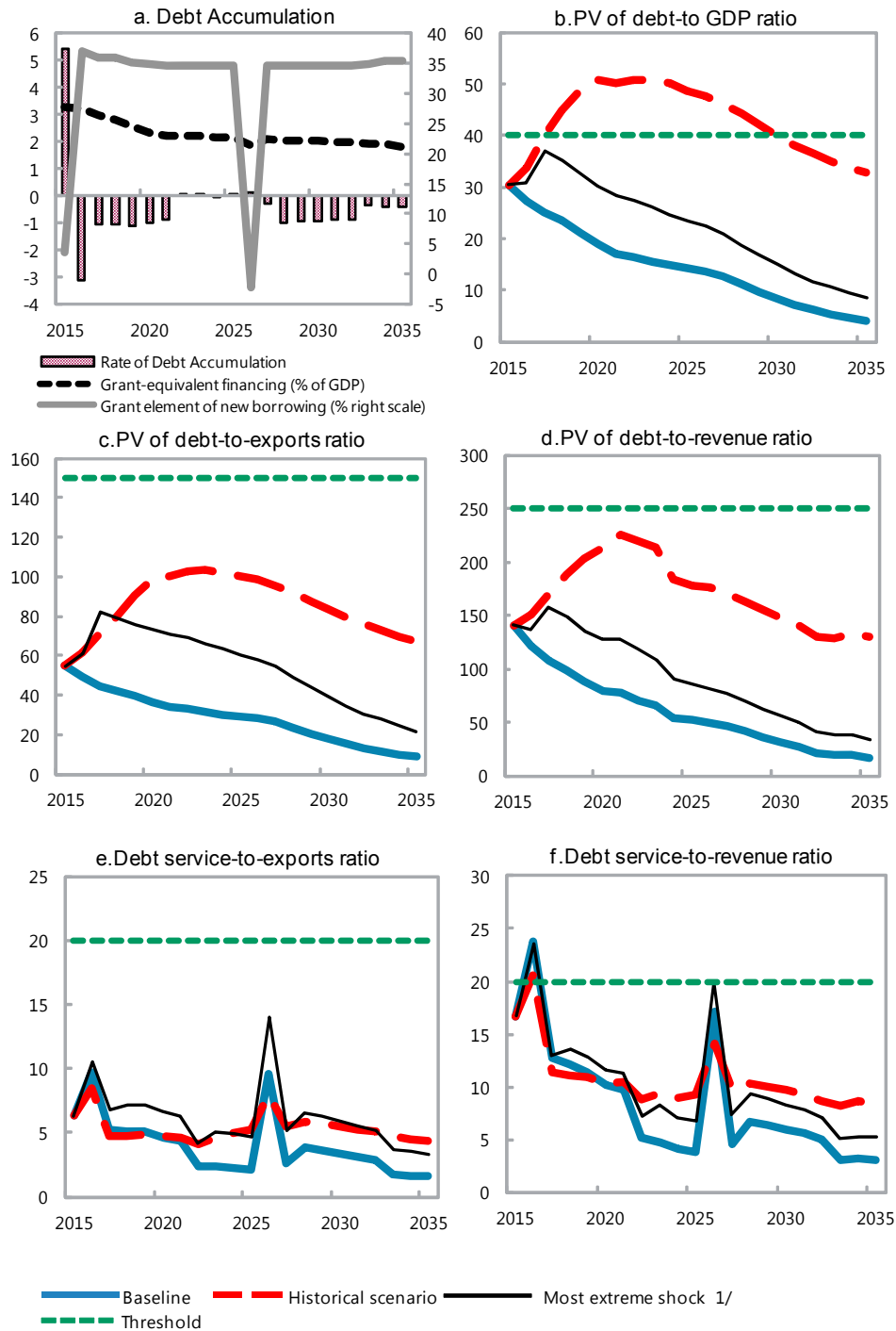
Box 1. Macroeconomic Assumptions Underlying the DSA Update

Macroeconomic assumptions for this DSA are generally more conservative than those for the previous DSA. In particular, projections of GDP growth and external current account are somewhat lower than those for the 2014 DSA, as are projections of the primary fiscal balance. This largely reflects a less favorable outlook for the resource sector owing to lower commodity prices and a temporary mine closure. LNG prices are assumed to decline by about 30 percent in 2015 and by around 5 percent in 2016, reflecting the recent plunge in oil prices.

- **Real GDP growth** is projected at around 4 percent on average over the medium term⁸, and to slow to 3 percent in the long run.
- **Inflation** is expected to be about 3½ percent over the medium term and will stabilize at 5 percent in the long run.
- **The current account** (including grants) will turn into a surplus in 2015 as LNG production comes on stream and imports related to the LNG project subside, and is projected to be 5 percent of GDP on average during 2015-20.
- **The grant element of loans** is expected to average around 35 percent. A sovereign bond reduces the grant element of loans when it is issued and rolled over with a 10-year interval.
- **The primary fiscal balance** is estimated to be in deficit of 5 percent of GDP in 2015. During the current medium-term fiscal strategy period (2013-17), a continuous primary deficit of 4 percent of GDP on average is expected. After 2024, the primary fiscal balance is projected to turn into a surplus, with an average of 0.4 percent of GDP during 2024–34.

⁸ The government plans to spend K 3 billion over 2015-18 on the preparations for APEC 2018. Thus, 2018 will see a winding down of construction activity, with overall growth projected to slow down to 1½ percent in 2018 and stabilize at 3 percent over the longer term.

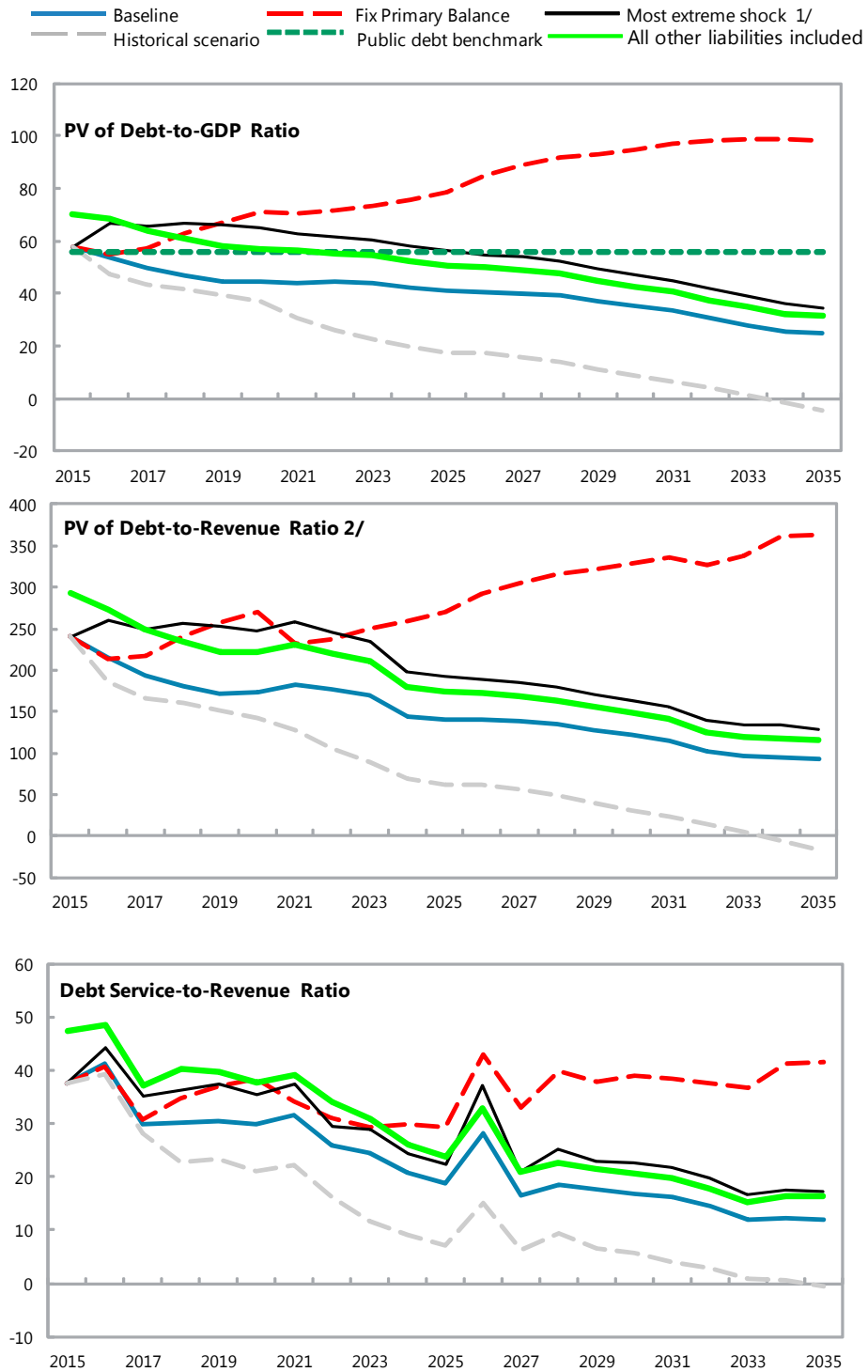
Figure 1. Papua New Guinea: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2015–2035



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio on or before 2025. In figure b. it corresponds to a Exports shock; in c. to a Exports shock; in d. to a Exports shock; in e. to a Exports shock and in figure f. to a Exports shock.

Figure 2. Papua New Guinea: Indicators of Public Debt Under Alternative Scenarios, 2015–2035



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio on or before 2025.

2/ Revenues are defined inclusive of grants.

**Table 1a. Papua New Guinea: External Debt Sustainability Framework,
Baseline Scenario, 2012–2035**
(In percent of GDP, unless otherwise indicated)

	Actual			Historical ^{6/} Average	Standard ^{6/} Deviation	Projections									
	2012	2013	2014			2015	2016	2017	2018	2019	2020	2015-2020 Average		2025	2035	2021-2035 Average
External debt (nominal) 1/	143.4	146.0	135.2			124.2	109.0	94.1	82.1	69.6	57.9			17.6	6.4
<i>of which: public and publicly guaranteed (PPG)</i>	7.4	8.8	15.8			18.8	14.0	11.8	11.3	10.5	9.7			7.4	5.5
Change in external debt	43.1	2.6	-10.8			-11.0	-15.2	-14.8	-12.0	-12.5	-11.8			-4.8	-0.4
Identified net debt-creating flows	24.9	25.7	-13.1			-22.5	-13.4	-15.5	-12.2	-12.6	-11.0			-4.3	0.0
Non-interest current account deficit	51.9	30.3	2.8	11.2	20.6	-6.1	-6.1	-7.9	-7.6	-6.9	-5.6			-0.7	2.4
Deficit in balance of goods and services	38.1	24.9	0.8			-10.6	-9.5	-12.4	-12.1	-10.9	-9.4			-4.3	0.3
Exports	43.8	37.9	46.5			55.6	55.0	56.2	56.1	53.9	51.4			48.6	48.8
Imports	82.0	62.8	47.3			44.9	45.5	43.7	43.9	43.0	42.0			44.3	49.1
Net current transfers (negative = inflow)	-0.8	-1.1	-1.2	-2.8	2.4	-1.1	-0.9	-0.9	-1.1	-1.3	-1.4			-1.1	0.2
<i>of which: official</i>	-2.8	-2.7	-2.2			-2.1	-2.1	-2.2	-2.2	-2.1	-2.1			-2.0	-1.8
Other current account flows (negative = net inflow)	14.5	6.5	3.2			5.6	4.4	5.5	5.6	5.3	5.1			4.7	1.9
Net FDI (negative = inflow)	-12.2	-5.9	-5.1	-6.6	5.1	-6.1	-5.2	-4.5	-4.5	-4.4	-4.2			-3.8	-3.0
Endogenous debt dynamics 2/	-14.7	1.2	-10.7			-10.2	-2.2	-3.1	-0.1	-1.4	-1.1			0.2	0.6
Contribution from nominal interest rate	1.7	1.5	1.4			1.5	1.6	1.4	1.3	1.1	1.0			0.9	0.6
Contribution from real GDP growth	-6.8	-7.9	-11.4			-11.8	-3.8	-4.6	-1.3	-2.5	-2.1			-0.6	0.0
Contribution from price and exchange rate changes	-9.6	7.7	-0.7			...	...	...	...	...	...			...	...
Residual (3-4) 3/	18.1	-23.1	2.3			11.5	-1.8	0.7	0.2	0.2	-0.8			-0.5	-0.3
<i>of which: exceptional financing</i>	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
PV of external debt 4/	...	...	145.5			135.7	122.1	107.5	94.3	80.3	67.0			24.3	5.1
In percent of exports	...	...	312.9			244.2	222.0	191.4	168.2	149.0	130.3			49.9	10.4
PV of PPG external debt	...	...	26.1			30.3	27.1	25.1	23.4	21.1	18.8			14.1	4.1
In percent of exports	...	...	56.1			54.5	49.4	44.7	41.8	39.2	36.6			29.1	8.5
In percent of government revenues	...	...	98.5			140.5	120.2	107.0	98.5	87.8	79.5			51.9	16.5
Debt service-to-exports ratio (in percent)	15.4	10.2	31.7			26.4	27.3	20.7	21.6	19.8	19.9			10.5	1.7
PPG debt service-to-exports ratio (in percent)	1.4	1.4	1.4			6.3	9.7	5.2	5.1	5.0	4.6			2.1	1.6
PPG debt service-to-revenue ratio (in percent)	2.3	2.3	2.7			16.7	23.9	12.8	12.1	11.4	10.1			3.8	3.1
Total gross financing need (Billions of U.S. dollars)	7.1	4.4	2.1			0.4	0.7	-0.1	0.0	-0.1	0.1			0.2	0.1
Non-interest current account deficit that stabilizes debt ratio	8.8	27.7	13.6			4.9	9.2	7.0	4.4	5.6	6.2			4.1	2.7
Key macroeconomic assumptions															
Real GDP growth (in percent)	8.1	5.5	8.5	6.7	2.4	9.0	3.1	4.4	1.4	3.2	3.2	4.1	3.0	0.0	2.8
GDP deflator in US dollar terms (change in percent)	10.6	-5.1	0.5	8.1	8.7	-5.4	-1.8	0.4	1.8	2.8	2.9	0.1	1.9	4.9	2.1
Effective interest rate (percent) 5/	2.0	1.0	1.0	2.8	1.6	1.2	1.3	1.4	1.4	1.4	1.5	1.4	4.0	8.5	7.8
Growth of exports of G&S (US dollar terms, in percent)	-8.0	-13.3	33.8	12.7	20.2	23.1	0.2	7.1	3.1	2.0	1.2	6.1	4.2	6.0	4.6
Growth of imports of G&S (US dollar terms, in percent)	25.3	-23.3	-17.9	14.7	22.5	-2.1	2.4	0.9	3.8	3.7	3.8	2.1	6.0	6.0	6.0
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	3.5	37.0	36.1	36.0	35.3	35.1	30.5	34.6	35.5	32.3
Government revenues (excluding grants, in percent of GDP)	23.1	24.0	26.5			21.6	22.6	23.5	23.8	24.1	23.7			27.2	25.2
Aid flows (in Billions of US dollars) 7/	0.6	0.6	0.6			0.7	0.6	0.6	0.6	0.6	0.5			0.6	0.8
<i>of which: Grants</i>	0.4	0.4	0.3			0.5	0.5	0.5	0.5	0.5	0.5			0.5	0.8
<i>of which: Concessional loans</i>	0.1	0.2	0.3			0.2	0.1	0.1	0.1	0.1	0.1			0.1	0.0
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			3.3	3.2	3.0	2.8	2.6	2.4			2.1	1.8
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			31.0	82.0	82.6	82.6	83.1	83.5			86.8	92.9
Memorandum items:															
Nominal GDP (Billions of US dollars)	15.4	15.4	16.8			17.3	17.5	18.4	19.0	20.1	21.4			27.2	43.9
Nominal dollar GDP growth	19.6	0.1	9.1			3.1	1.2	4.9	3.3	6.1	6.2	4.1	4.9	4.9	4.9
PV of PPG external debt (in Billions of US dollars)	...	...	4.5			5.4	4.9	4.7	4.5	4.3	4.1			3.9	1.8
(Pvt-Pvt-1)/GDPt-1 (in percent)	...	...	...			5.4	-3.1	-1.0	-1.0	-1.1	-1.0	-0.3	0.0	-0.4	-0.5
Gross workers' remittances (Billions of US dollars)	-0.3	-0.2	-0.2			-0.2	-0.2	-0.2	-0.2	-0.2	-0.1			-0.3	-0.9
PV of PPG external debt (in percent of GDP + remittances)	...	...	26.4			30.6	27.5	25.4	23.7	21.3	18.9			14.3	4.2
PV of PPG external debt (in percent of exports + remittances)	...	...	57.4			55.6	50.4	45.7	42.6	39.8	37.1			29.6	8.8
Debt service of PPG external debt (in percent of exports + remittance)	...	...	1.5			6.4	9.9	5.4	5.2	5.1	4.7			2.2	1.7

Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

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

3/ Includes exceptional financing (i.e., changes in arrears and debt relief); changes in gross foreign assets; and valuation adjustments. For projections also includes contribution from price and exchange rate changes.

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

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

6/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

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

8/ Grant-equivalent financing includes grants provided directly to the government and through new borrowing (difference between the face value and the PV of new debt).

Table 1b. Papua New Guinea: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2015–2035
(In percent)

	Projections							
	2015	2016	2017	2018	2019	2020	2025	2035
PV of debt-to GDP ratio								
Baseline	30	27	25	23	21	19	14	4
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	30	34	40	45	49	51	49	33
A2. New public sector loans on less favorable terms in 2015-2035 2	30	28	26	25	23	21	17	8
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	30	27	25	23	21	19	14	4
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	30	31	37	35	33	30	23	8
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	30	27	25	24	21	19	14	4
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	30	31	31	30	27	25	19	6
B5. Combination of B1-B4 using one-half standard deviation shocks	30	25	22	20	18	16	12	4
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	30	40	37	34	31	28	21	6
PV of debt-to-exports ratio								
Baseline	55	49	45	42	39	37	29	8
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	55	62	71	80	91	98	100	67
A2. New public sector loans on less favorable terms in 2015-2035 2	55	51	47	44	42	40	35	17
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	55	51	45	42	40	37	30	9
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	55	61	82	79	76	73	60	22
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	55	51	45	42	40	37	30	9
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	55	56	56	53	50	48	39	13
B5. Combination of B1-B4 using one-half standard deviation shocks	55	48	45	42	39	36	29	8
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	55	51	45	42	40	37	30	9
PV of debt-to-revenue ratio								
Baseline	140	120	107	99	88	79	52	16
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	140	150	170	189	203	214	178	130
A2. New public sector loans on less favorable terms in 2015-2035 2	140	124	112	104	94	88	62	33
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	140	122	108	99	88	80	52	17
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	140	137	157	148	135	127	86	34
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	140	122	108	99	88	81	53	17
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	140	137	133	124	112	105	69	25
B5. Combination of B1-B4 using one-half standard deviation shocks	140	110	93	85	75	69	45	14
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	140	177	157	144	128	117	76	25

Table 1b. Papua New Guinea: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2015-2035 (concluded)

(In percent)

Debt service-to-exports ratio

Baseline	6	10	5	5	5	5	2	2
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	6	8	5	5	5	5	5	4
A2. New public sector loans on less favorable terms in 2015-2035 2	6	10	3	3	3	2	2	1
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	6	10	5	5	5	5	2	2
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	6	10	7	7	7	7	5	3
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	6	10	5	5	5	5	2	2
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	6	10	5	5	5	5	3	2
B5. Combination of B1-B4 using one-half standard deviation shocks	6	9	5	5	5	5	2	2
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	6	10	5	5	5	5	2	2

Debt service-to-revenue ratio

Baseline	17	24	13	12	11	10	4	3
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	17	21	11	11	11	10	9	8
A2. New public sector loans on less favorable terms in 2015-2035 2	17	24	6	6	6	5	3	2
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	17	23	12	12	11	10	4	3
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	17	24	13	14	13	12	7	5
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	17	23	13	12	11	10	4	3
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	17	24	13	13	12	11	5	4
B5. Combination of B1-B4 using one-half standard deviation shocks	17	22	11	10	10	9	3	3
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	17	34	18	17	16	15	6	4
<i>Memorandum item:</i>								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	27	27	27	27	27	27	27	27

Sources: Country authorities; and staff estimates and projections.

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

2/ Assumes that the interest rate on new borrowing is by 2 percentage points higher than in the baseline., while grace and maturity periods are the same as in the baseline.

3/ Exports values are assumed to remain permanently at the lower level, but the current account as a share of GDP is assumed to return to its baseline level after the shock (implicitly assuming an offsetting adjustment in import levels).

4/ Includes official and private transfers and FDI.

5/ Depreciation is defined as percentage decline in dollar/local currency rate, such that it never exceeds 100 percent.

6/ Applies to all stress scenarios except for A2 (less favorable financing) in which the terms on all new financing are as specified in footnote 2.

Table 2a. Papua New Guinea: Public Sector Debt Sustainability Framework, Baseline Scenario, 2012–2035
(In percent of GDP, unless otherwise indicated)

	Actual			Average %	Standard Deviation %	Estimate					Projections			
	2012	2013	2014			2015	2016	2017	2018	2019	2020	2015-20 Average	2025	2035	2021-35 Average
Public sector debt 1/	26.7	34.0	42.4			46.4	41.7	41.2	43.3	44.4	45.0		43.4	35.1
<i>of which: foreign-currency denominated</i>	7.4	8.8	15.8			18.8	14.0	11.8	11.3	10.5	9.7		7.4	5.5
Change in public sector debt	3.8	7.3	8.4			4.0	-4.7	-0.5	2.1	1.1	0.6		-0.4	-0.6
Identified debt-creating flows	-1.3	4.9	3.6			2.8	4.3	2.1	2.2	1.0	-0.6		0.0	5.3
Primary deficit	1.8	6.6	4.9	-1.8	6.6	5.3	2.5	1.2	-0.1	-0.7	-1.2	1.2	-1.1	2.4
Revenue and grants	29.2	28.2	27.3			24.7	25.7	26.3	26.2	26.2	26.3		29.2	26.9
<i>of which: grants</i>	2.9	2.5	2.1			3.1	2.9	2.6	2.5	2.3	2.1		2.0	1.7
Primary (noninterest) expenditure	31.0	34.8	32.2			30.0	28.2	27.5	26.1	25.5	25.0		28.1	29.3
Automatic debt dynamics	-3.1	-1.7	-1.3			0.3	1.8	0.9	2.3	1.7	0.6		1.1	2.9
Contribution from interest rate/growth differential	-1.7	-1.7	-1.8			-0.7	0.9	0.5	2.2	1.7	0.8		1.1	3.2
<i>of which: contribution from average real interest rate</i>	0.0	-0.3	0.9			2.7	2.4	2.3	2.8	3.0	2.2		2.3	3.2
<i>of which: contribution from real GDP growth</i>	-1.7	-1.4	-2.7			-3.5	-1.4	-1.8	-0.6	-1.3	-1.4		-1.3	0.0
Contribution from real exchange rate depreciation	-1.3	0.0	0.5			1.1	0.8	0.3	0.1	0.0	-0.2		...	...
Other identified debt-creating flows	0.0	0.0	0.0			-2.9	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Privatization receipts (negative)	0.0	0.0	0.0			-2.9	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Recognition of implicit or contingent liabilities	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Debt relief (HIPC and other)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Other (specify, e.g. bank recapitalization)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Residual, including asset changes	5.1	2.4	4.8			1.2	-9.0	-2.6	-0.1	0.1	1.2		-0.4	-5.9
Other Sustainability Indicators														
PV of public sector debt			53.8			57.6	53.8	49.8	47.0	44.8	44.4		41.1	24.7
<i>of which: foreign-currency denominated</i>	...	...	26.1			30.3	27.1	25.1	23.4	21.1	18.8		14.1	4.1
<i>of which: external</i>	...	...	26.1			30.3	27.1	25.1	23.4	21.1	18.8		14.1	4.1
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...
Gross financing need 2/	12.1	18.5	20.3			23.4	22.3	18.3	16.8	16.2	15.3		13.6	13.1
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	197.0			233.5	209.5	189.3	179.6	170.9	169.0		141.0	92.0
PV of public sector debt-to-revenue ratio (in percent)	...	...	213.2			266.9	236.1	210.3	198.4	187.5	183.7		151.2	98.3
<i>of which: external 3/</i>	...	...	103.4			140.4	119.0	106.1	99.0	88.5	77.8		51.9	16.5
Debt service-to-revenue and grants ratio (in percent) 4/	19.5	21.3	24.6			37.6	41.3	29.9	30.1	30.5	30.0		18.8	11.9
Debt service-to-revenue ratio (in percent) 4/	21.7	23.4	26.6			43.0	46.5	33.3	33.3	33.4	32.6		20.2	12.7
Primary deficit that stabilizes the debt-to-GDP ratio	-2.0	-0.7	-3.5			1.4	7.2	1.7	-2.2	-1.8	-1.9		-0.7	3.0
Key macroeconomic and fiscal assumptions														
Real GDP growth (in percent)	8.1	5.5	8.5	6.7	2.4	9.0	3.1	4.4	1.4	3.2	3.2	4.1	3.0	0.0
Average nominal interest rate on forex debt (in percent)	1.5	1.3	1.6	2.1	0.7	6.1	5.8	6.5	6.4	6.4	6.4	6.3	11.4	9.5
Average real interest rate on domestic debt (in percent)	-0.1	-1.4	3.7	2.3	6.4	8.7	6.2	6.5	7.8	8.3	5.4	7.1	4.7	8.8
Real exchange rate depreciation (in percent, + indicates depreciation)	-17.6	0.1	6.6	-5.6	8.6	7.0	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	8.5	9.3	5.4	5.7	5.7	0.2	2.8	3.5	3.9	3.9	6.1	3.4	5.0	1.3
Growth of real primary spending (deflated by GDP deflator, in percent)	9.1	10.2	7.0	2.7	4.3	-3.0	-1.3	3.5	-1.7	3.2	1.4	0.3	4.0	5.4
Grant element of new external borrowing (in percent)	...	...	...	...	...	3.5	37.0	36.1	36.0	35.3	35.1	30.5	34.6	35.5

Sources: Country authorities; and staff estimates and projections.

1/ Public debt includes domestic central government debt, external public debt, and the guarantee for the UBS loan.

2/ Gross financing need is defined as the primary deficit plus debt service plus the stock of short-term debt at the end of the last period.

3/ Revenues excluding grants.

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

5/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

Table 2b. Papua New Guinea: Sensitivity Analysis for Key Indicators of Public Debt 2015–2035

	Projections							
	2015	2016	2017	2018	2019	2020	2025	2035
PV of Debt-to-GDP Ratio								
Baseline	58	54	50	47	45	44	41	25
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	58	48	43	41	39	37	17	-4
A2. Primary balance is unchanged from 2015	58	55	57	63	67	71	79	98
A3. Permanently lower GDP growth 1/	58	53	52	54	55	55	53	49
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2016-20	58	52	51	52	52	51	43	21
B2. Primary balance is at historical average minus one standard deviations in 2016-201	58	55	57	58	58	57	49	29
B3. Combination of B1-B2 using one half standard deviation shocks	58	51	50	51	50	49	39	14
B4. One-time 30 percent real depreciation in 2016	58	67	65	67	66	65	56	34
B5. 10 percent of GDP increase in other debt-creating flows in 2016	58	60	59	61	60	59	52	31
PV of Debt-to-Revenue Ratio 2/								
Baseline	240	215	194	181	172	173	141	92
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	240	187	166	160	151	142	61	-17
A2. Primary balance is unchanged from 2015	240	214	218	240	257	271	270	364
A3. Permanently lower GDP growth 1/	240	205	199	208	210	209	179	180
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2016-20	240	201	193	199	197	194	146	79
B2. Primary balance is at historical average minus one standard deviations in 2016-201	240	213	215	222	221	217	169	106
B3. Combination of B1-B2 using one half standard deviation shocks	240	199	190	194	191	186	133	51
B4. One-time 30 percent real depreciation in 2016	240	260	249	256	253	247	193	128
B5. 10 percent of GDP increase in other debt-creating flows in 2016	240	235	226	232	231	226	177	114
Debt Service-to-Revenue Ratio 2/								
Baseline	38	41	30	30	30	30	19	12
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	38	39	28	23	23	21	7	-1
A2. Primary balance is unchanged from 2015	38	41	31	35	37	38	29	42
A3. Permanently lower GDP growth 1/	38	41	31	31	32	31	22	21
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2016-20	38	40	30	30	30	29	18	10
B2. Primary balance is at historical average minus one standard deviations in 2016-201	38	41	31	34	36	31	20	13
B3. Combination of B1-B2 using one half standard deviation shocks	38	40	29	29	30	27	17	7
B4. One-time 30 percent real depreciation in 2016	38	44	35	36	37	35	22	17
B5. 10 percent of GDP increase in other debt-creating flows in 2016	38	41	32	42	33	34	21	14

Sources: Country authorities; and staff estimates and projections.

1/ Assumes that real GDP growth is at baseline minus one standard deviation divided by the square root of the length of the projection period.

2/ Revenues are defined inclusive of grants.