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STAFF REPORT FOR THE 2014 ARTICLE IV CONSULTATION—DEBT SUSTAINABILITY ANALYSIS

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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 2013 Article IV consultation.[2] *However, factoring in public domestic and private external debt and contingent liabilities, the overall risk of debt distress has risen since then, and a failure to consolidate the fiscal position would result in unsustainable debt dynamics. Data on debt and other liabilities, particularly off-budget and public enterprise debt, need much improvement.*

[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. **Papua New Guinea's (PNG) 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 34 percent in 2013.[3] Public and publicly guaranteed (PPG) external debt also declined sharply, from a peak of over 50 percent of GDP in 2001 to around 9 percent in 2013. 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.

UNDERLYING ASSUMPTIONS

2. **Over the medium term, PNG's growth prospects and current account will be heavily influenced by its extractive sector.** Box 1 summarizes the medium-term macroeconomic framework underlying this DSA update. Economic activity is projected to continue to expand in 2014, with real GDP expected to grow at 5.8 percent in 2014 and 19.6 percent in 2015 when LNG production reaches full capacity. The current account deficit narrowed in 2013 due to the winding down of the construction of the LNG project. With LNG exports now coming on stream, the deficit is expected to continue to decline in 2014 and turn into a surplus in 2015.

EXTERNAL DSA

3. **The baseline scenario indicates that all PPG external debt ratios stay well below the indicative thresholds.** The present value (PV) of the external debt stock is expected to rise in the near term because of an A$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.[4] Thereafter, the debt stock remains flat over time (Figure 1). 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 concessional.

[3] Gross national income (GNI) may be a better indicator to normalize PNG's debt burden, given large net outflows of primary income from the country's resource sector. In 2013, public debt was 38 percent of GNI, compared to 34 percent of GDP. However, the use of GNI throughout this DSA does not qualitatively change the results reported here.

[4] The government contracted this loan from the Union Bank of Switzerland (UBS) in March 2014 to finance the purchase of a 10 percent stake in the Oil Search Limited, an oil and gas exploration company. 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 for the time being and included it as part of publicly guaranteed external debt—the same as the government's own accounting. Meanwhile, Abu Dhabi's International Petroleum Investment Company (IPIC) turned its A$1.68 billion convertible bond holding into shareholding in Oil Search in March, 2014.

4. Papua New Guinea 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 debt-to-GDP ratio under the historical and extreme exports shock scenarios and a breach of the PV of public external debt-to-exports ratio under the extreme exports shock scenario.[5] All of these scenarios would be tantamount to a major delay or complete failure of the LNG project. In the historical scenario, for instance, when the current account deficit is fixed at the ten-year average of 2004–13, 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, such an outcome is very unlikely. In a scenario in which LNG production is assumed to be 50 percent lower than the baseline over the medium term (the "LNG shock" scenario), the PV of debt-to-GDP ratio would fall more slowly over time but the debt burden would remain sustainable. While PNG's current account balance is volatile because of its dependence on commodity exports, the large current account deficits in recent years have been exceptional because of the large imports required for the construction of the LNG project. Given this, stress tests based on the recent current account deficits and volatility tend to overstate the risk of debt distress.

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, namely if the government follows through with fiscal consolidation as committed under its Medium-Term Fiscal Strategy (Figure 2). A shock to reduce LNG production by 50 percent over the medium term would slow the decline of the debt burden and keep it at a higher level, but the debt dynamics remains sustainable. However, a failure to consolidate the fiscal position would result in an unsustainable debt burden. There are also risks arising from superannuation arrears and public enterprise liabilities. The former are estimated to be about 6½ percent of GDP at end-2013 and the latter about 7½ of GDP, although data on public enterprise liabilities are incomplete and not up to date. Once these liabilities and contingent 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 included") for the public DSA.[7]

[5] These breaches are larger than shown in the previous DSA largely because revised data show higher trade volatility, which results in larger shocks applied to the analysis based on historical data.

[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.

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 remain committed to achieving the legislated debt targets. They also recognized the 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.

CONCLUSION

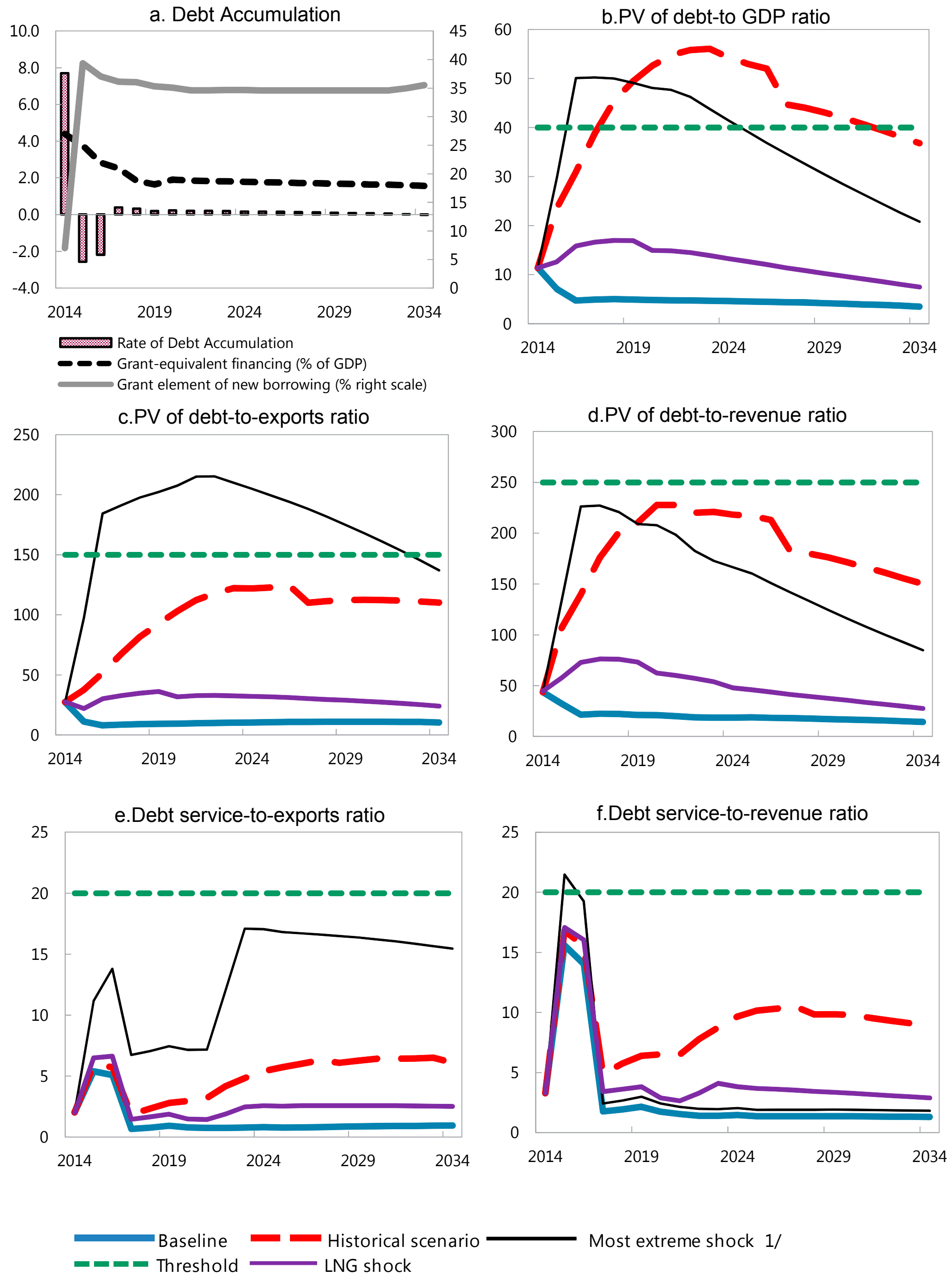
7. **Papua New Guinea's PPG external debt remains at low risk of debt stress.** However, the overall risk of public debt distress has increased, given the rising stock of public domestic debt in recent years. Contingent and non-contingent liabilities significantly increase the public debt burden, and a failure to consolidate the fiscal position would result in unsustainable debt dynamics. The government needs to adhere to its existing debt targets while focusing on improving spending quality to make the most out of a restrained resource envelope in meeting the country's development needs.

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 inflation are somewhat lower than those for the 2013 DSA, as are projections of the long-term external current account balance. This largely reflects a less favorable outlook for the resource sector owing to forecasts of lower commodity prices and volumes.

- **Real GDP growth** is projected at 7 percent on average over the medium term (reflecting the boost of LNG production), and to slow to 3 percent in the long run.
- **Inflation** is expected to stabilize at about 5 percent over the medium and long term.
- **The current account** (including grants) will remain in deficit until 2014, primarily reflecting the strong import growth related to the construction phase of the LNG project. It is expected to turn into a surplus in 2015 as LNG production and exports increase and imports related to the LNG project wind down. The surplus is projected to be 6 percent of GDP on average during 2015–25.
- **The grant element of loans** (excluding the UBS loan) is expected to decline gradually. As per capita income rises, the share of external financing provided on concessional terms is expected to decline over the projection period.
- **The primary fiscal balance** is estimated to be in deficit of 5.4 percent of GDP in 2014. During the current medium-term fiscal strategy period (2013–2017), a continuous primary deficit of 2.4 percent of GDP on average is expected. The primary fiscal balance is projected to turn into surplus in 2021, averaging 0.5 percent of GDP during 2021–34.

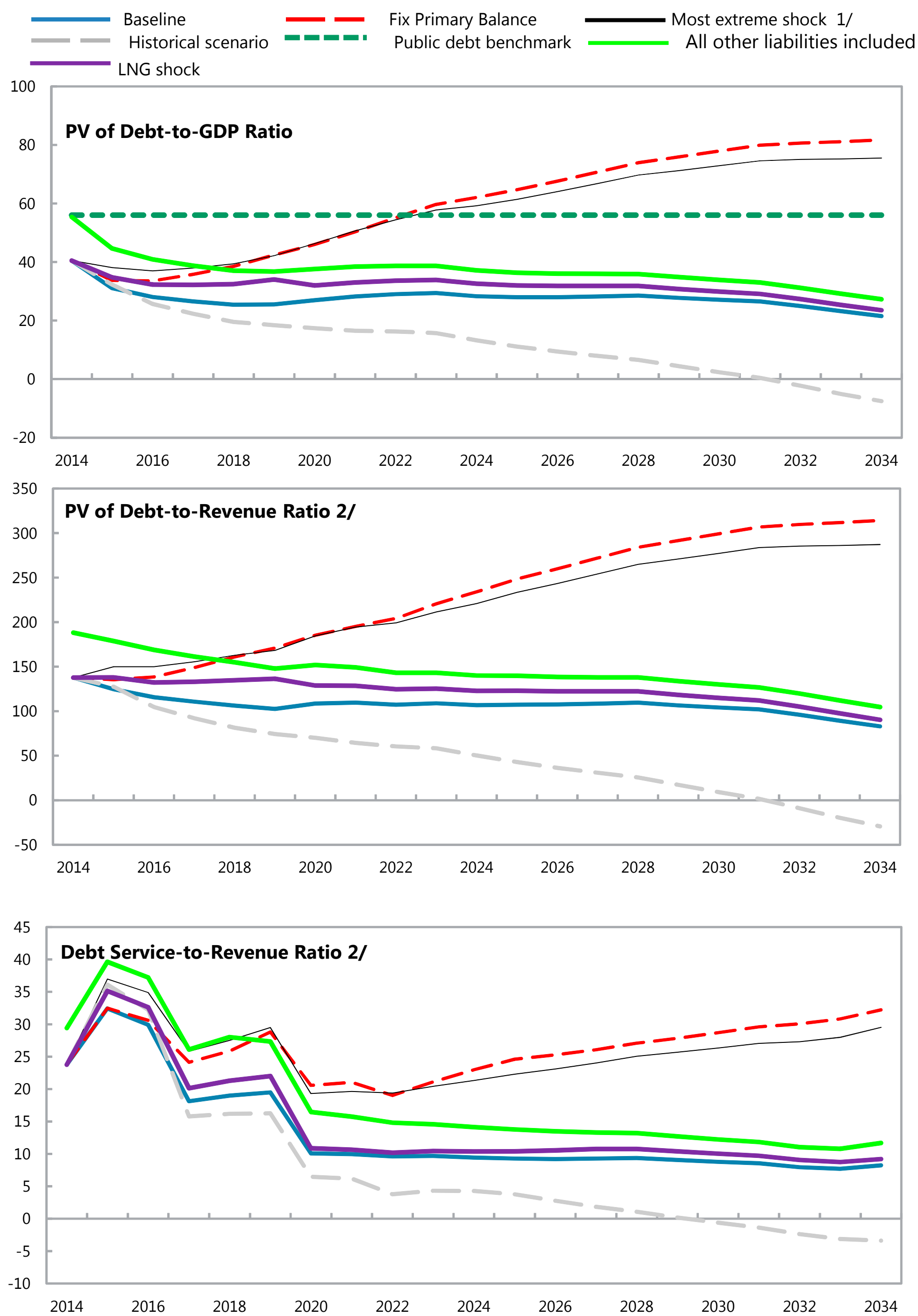
Figure 1. Papua New Guinea: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2014–2034



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 2024. 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 One-time depreciation shock.

Figure 2. Papua New Guinea: Indicators of Public Debt Under Alternative Scenarios, 2014–2034



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 2024.
2/ Revenues are defined inclusive of grants.

Table 1a. Papua New Guinea: External Debt Sustainability Framework, Baseline Scenario, 2011–2034

(In percent of GDP, unless otherwise indicated)

	Actual			Historical 6/	Standard 6/	Projections									
				Average	Deviation							2014-2019			2020-2034
	2011	2012	2013			2014	2015	2016	2017	2018	2019	Average	2024	2034	Average
External debt (nominal) 1/	99.5	143.3	145.3			139.9	100.5	86.3	73.7	66.1	58.3		28.0	4.6	
of which: public and publicly guaranteed (PPG)	8.3	7.3	8.1			15.2	10.7	8.4	8.5	8.5	8.4		6.9	4.6	
Change in external debt	27.6	43.9	2.0			-5.4	-39.5	-14.2	-12.5	-7.7	-7.8		-5.0	-0.3	
Identified net debt-creating flows	-2.0	25.1	24.7			-9.8	-38.3	-15.8	-15.0	-13.4	-10.6		-5.0	-0.8	
Non-interest current account deficit	22.5	51.9	29.4	10.7	20.7	9.7	-14.6	-10.1	-9.6	-8.3	-6.0		-1.7	1.2	-1.6
Deficit in balance of goods and services	21.2	38.1	24.0			7.8	-23.8	-20.8	-20.4	-18.9	-16.0		-10.8	-6.9	
Exports	57.0	43.8	38.9			41.6	63.0	59.8	57.8	55.7	53.4		44.5	33.4	
Imports	78.2	82.0	62.8			49.4	39.2	39.0	37.4	36.8	37.4		33.7	26.5	
Net current transfers (negative = inflow)	-1.9	-0.8	-1.1	-3.1	2.4	-1.3	-0.9	-0.8	-0.8	-0.9	-1.1		-1.1	0.2	-0.6
of which: official	-3.1	-2.8	-2.7			-2.3	-1.8	-1.7	-1.8	-1.8	-1.8		-1.7	-1.5	
Other current account flows (negative = net inflow)	3.2	14.5	6.5			3.2	10.1	11.5	11.6	11.4	11.1		10.2	8.0	
Net FDI (negative = inflow)	-8.0	-12.2	-5.9	-6.1	5.4	-13.0	-3.1	-3.0	-3.0	-2.9	-2.8		-2.5	-2.0	-2.3
Endogenous debt dynamics 2/	-16.5	-14.6	1.2			-6.5	-20.6	-2.6	-2.4	-2.1	-1.8		-0.8	-0.1	
Contribution from nominal interest rate	1.1	1.7	1.4			1.6	1.1	0.6	0.4	0.3	0.4		0.1	0.1	
Contribution from real GDP growth	-5.8	-6.7	-7.9			-8.1	-21.7	-3.2	-2.8	-2.4	-2.2		-0.9	-0.1	
Contribution from price and exchange rate changes	-11.8	-9.5	7.7			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	29.5	18.8	-22.7			4.4	-1.2	1.6	2.5	5.7	2.8		0.1	0.5	
of which: exceptional financing	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
PV of external debt 4/	...	...	141.3			136.1	96.9	82.7	70.2	62.6	54.8		25.7	3.5	
In percent of exports	...	...	363.7			327.5	153.8	138.2	121.5	112.4	102.6		57.8	10.6	
PV of PPG external debt	...	...	4.2			11.4	7.1	4.8	4.9	5.0	5.0		4.6	3.5	
In percent of exports	...	...	10.7			27.4	11.3	8.0	8.5	9.1	9.3		10.4	10.5	
In percent of government revenues	...	...	16.2			43.6	32.1	21.5	22.4	22.3	21.1		18.6	14.3	
Debt service-to-exports ratio (in percent)	16.4	15.4	10.0			37.4	20.7	20.4	17.8	10.0	10.0		9.1	1.1	
PPG debt service-to-exports ratio (in percent)	1.3	1.4	1.4			2.0	5.4	5.1	0.7	0.8	0.9		0.8	1.0	
PPG debt service-to-revenue ratio (in percent)	2.4	2.3	2.3			3.3	15.6	14.0	1.8	1.9	2.1		1.5	1.3	
Total gross financing need (Billions of U.S. dollars)	3.1	7.1	4.2			2.0	-1.0	-0.2	-0.5	-1.3	-0.8		-0.1	-0.2	
Non-interest current account deficit that stabilizes debt ratio	-5.1	8.0	27.4			15.1	24.9	4.1	2.9	-0.7	1.9		3.3	1.5	
Key macroeconomic assumptions															
Real GDP growth (in percent)	10.7	8.1	5.5	5.9	2.9	5.8	19.6	3.3	3.4	3.5	3.5	6.5	3.0	3.0	3.0
GDP deflator in US dollar terms (change in percent)	19.7	10.6	-5.1	9.2	8.3	-1.3	5.6	0.4	0.7	1.2	2.2	1.5	1.8	1.8	1.9
Effective interest rate (percent) 5/	2.1	2.0	1.0	3.0	1.4	1.2	1.0	0.6	0.5	0.5	0.6	0.7	0.3	1.6	0.7
Growth of exports of G&S (US dollar terms, in percent)	18.9	-8.0	-11.2	11.1	18.6	11.7	91.4	-1.5	0.7	0.8	1.6	17.5	1.7	2.1	1.8
Growth of imports of G&S (US dollar terms, in percent)	36.6	25.3	-23.3	18.7	19.4	-17.9	0.2	3.3	-0.1	3.0	7.7	-0.6	7.9	2.8	2.6
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	7.0	39.4	37.0	36.1	36.0	35.3	31.8	34.7	35.5	34.7
Government revenues (excluding grants, in percent of GDP)	27.0	26.3	25.6			26.2	22.1	22.1	22.1	22.6	23.5		24.9	24.5	24.5
Aid flows (in Billions of US dollars) 7/	0.6	0.6	0.6			0.8	0.9	0.6	0.6	0.5	0.4		0.6	0.8	
of which: Grants	0.5	0.4	0.4			0.6	0.6	0.5	0.5	0.4	0.3		0.5	0.8	
of which: Concessional loans	0.1	0.1	0.2			0.2	0.2	0.1	0.1	0.1	0.1		0.1	0.0	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			4.4	3.8	2.8	2.5	1.8	1.6		1.8	1.6	1.7
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			36.3	80.7	82.6	82.7	78.9	78.9		86.2	92.9	87.7
Memorandum items:															
Nominal GDP (Billions of US dollars)	12.9	15.4	15.4			16.1	20.3	21.1	22.0	23.0	24.3		31.4	50.7	
Nominal dollar GDP growth	32.5	19.6	0.1			4.4	26.3	3.7	4.2	4.7	5.8	8.2	4.9	4.9	5.0
PV of PPG external debt (in Billions of US dollars)			0.7			1.9	1.5	1.0	1.1	1.2	1.2		1.5	1.8	
(PVt-PVt-1)/GDPt-1 (in percent)						7.7	-2.6	-2.2	0.4	0.3	0.2	0.6	0.2	0.0	0.1
Gross workers' remittances (Billions of US dollars)	-0.2	-0.3	-0.2			-0.2	-0.2	-0.2	-0.2	-0.2	-0.2		-0.2	-0.9	
PV of PPG external debt (in percent of GDP + remittances)	...	...	4.2			11.5	7.2	4.8	5.0	5.1	5.0		4.7	3.6	
PV of PPG external debt (in percent of exports + remittances)	...	...	11.1			28.1	11.4	8.1	8.7	9.2	9.4		10.5	11.0	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	1.5			2.1	5.5	5.2	0.7	0.8	1.0		0.8	1.0	

Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

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

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

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, 2014–2034

(In percent)

	Projections							
	2014	2015	2016	2017	2018	2019	**2024**	2034
PV of debt-to GDP ratio								
Baseline	11	7	5	5	5	5	**5**	3
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2014-2034 1/	11	24	31	39	45	49	**54**	37
A2. New public sector loans on less favorable terms in 2014-2034 2/	11	8	6	7	7	7	**7**	7
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2015-2016	11	8	6	6	6	6	**5**	4
B2. Export value growth at historical average minus one standard deviation in 2015-2016 3/	11	30	50	50	50	49	**41**	21
B3. US dollar GDP deflator at historical average minus one standard deviation in 2015-2016	11	8	5	5	5	5	**5**	4
B4. Net non-debt creating flows at historical average minus one standard deviation in 2015-2016 4/	11	9	8	9	9	8	**8**	5
B5. Combination of B1-B4 using one-half standard deviation shocks	11	31	47	47	47	46	**39**	20
B6. One-time 30 percent nominal depreciation relative to the baseline in 2015 5/	11	10	7	7	7	7	**7**	5
PV of debt-to-exports ratio								
Baseline	27	11	8	9	9	9	**10**	10
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2014-2034 1/	27	38	52	67	82	93	**122**	110
A2. New public sector loans on less favorable terms in 2014-2034 2/	27	13	10	11	12	13	**16**	20
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2015-2016	27	11	8	9	9	9	**11**	11
B2. Export value growth at historical average minus one standard deviation in 2015-2016 3/	27	98	184	191	198	202	**205**	137
B3. US dollar GDP deflator at historical average minus one standard deviation in 2015-2016	27	11	8	9	9	9	**11**	11
B4. Net non-debt creating flows at historical average minus one standard deviation in 2015-2016 4/	27	14	14	15	15	16	**17**	15
B5. Combination of B1-B4 using one-half standard deviation shocks	27	81	130	135	140	143	**145**	98
B6. One-time 30 percent nominal depreciation relative to the baseline in 2015 5/	27	11	8	9	9	9	**11**	11
PV of debt-to-revenue ratio								
Baseline	44	32	22	22	22	21	**19**	14
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2014-2034 1/	44	107	140	176	201	210	**218**	150
A2. New public sector loans on less favorable terms in 2014-2034 2/	44	36	28	30	30	29	**28**	28
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2015-2016	44	38	25	26	26	25	**22**	17
B2. Export value growth at historical average minus one standard deviation in 2015-2016 3/	44	135	226	227	221	209	**167**	85
B3. US dollar GDP deflator at historical average minus one standard deviation in 2015-2016	44	34	23	24	23	22	**20**	15
B4. Net non-debt creating flows at historical average minus one standard deviation in 2015-2016 4/	44	41	38	38	38	36	**30**	20
B5. Combination of B1-B4 using one-half standard deviation shocks	44	142	211	212	206	195	**155**	80
B6. One-time 30 percent nominal depreciation relative to the baseline in 2015 5/	44	46	31	32	31	30	**26**	20

Table 1b. Papua New Guinea: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2014-2034 (concluded)

(In percent)

Debt service-to-exports ratio								
Baseline	2	5	5	1	1	1	**1**	1
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2014-2034 1/	2	6	6	2	2	3	**5**	6
A2. New public sector loans on less favorable terms in 2014-2034 2/	2	5	1	1	1	1	**1**	1
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2015-2016	2	5	5	1	1	1	**1**	1
B2. Export value growth at historical average minus one standard deviation in 2015-2016 3/	2	11	14	7	7	7	**17**	15
B3. US dollar GDP deflator at historical average minus one standard deviation in 2015-2016	2	5	5	1	1	1	**1**	1
B4. Net non-debt creating flows at historical average minus one standard deviation in 2015-2016 4/	2	5	5	1	1	1	**1**	1
B5. Combination of B1-B4 using one-half standard deviation shocks	2	10	11	5	5	5	**12**	11
B6. One-time 30 percent nominal depreciation relative to the baseline in 2015 5/	2	5	5	1	1	1	**1**	1
Debt service-to-revenue ratio								
Baseline	3	16	14	2	2	2	**1**	1
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2014-2034 1/	3	17	16	5	6	6	**10**	8
A2. New public sector loans on less favorable terms in 2014-2034 2/	3	15	3	3	3	3	**1**	1
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2015-2016	3	18	16	2	2	2	**2**	2
B2. Export value growth at historical average minus one standard deviation in 2015-2016 3/	3	15	17	8	8	8	**14**	10
B3. US dollar GDP deflator at historical average minus one standard deviation in 2015-2016	3	16	14	2	2	2	**2**	1
B4. Net non-debt creating flows at historical average minus one standard deviation in 2015-2016 4/	3	15	14	2	2	3	**2**	2
B5. Combination of B1-B4 using one-half standard deviation shocks	3	18	18	8	8	7	**13**	9
B6. One-time 30 percent nominal depreciation relative to the baseline in 2015 5/	3	21	19	2	3	3	**2**	2
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	31	31	31	31	31	31	**31**	31

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, 2011–2034

(In percent of GDP, unless otherwise indicated)

	Actual			Average 5/	Standard Deviation 5/	Estimate	Projections								
	2011	2012	2013			2014	2015	2016	2017	2018	2019	2014-19 Average	2024	2034	2020-34 Average
Public sector debt 1/	23.0	26.7	34.0			45.3	35.2	31.6	30.1	28.9	28.9		30.6	22.7	
of which: foreign-currency denominated	8.3	7.3	8.1			15.5	10.8	8.4	8.5	8.5	8.4		6.9	4.6	
Change in public sector debt	-2.6	3.8	7.3			11.2	-10.1	-3.5	-1.5	-1.2	0.0		-1.3	-1.8	
Identified debt-creating flows	-7.9	-1.0	6.9			4.0	-7.2	0.2	-0.5	-0.3	-0.7		-1.1	0.0	
Primary deficit	-6.1	2.1	8.6	-2.6	6.6	5.1	0.4	0.0	-0.7	-1.0	-1.3	0.4	-1.0	-0.2	-0.5
Revenue and grants	33.6	28.9	26.1			29.4	25.0	24.2	24.0	23.9	24.8		26.5	26.0	
of which: grants	3.4	2.9	2.5			3.9	3.2	2.5	2.2	1.6	1.4		1.6	1.5	
Primary (noninterest) expenditure	27.6	31.0	34.7			34.4	25.4	24.2	23.3	23.0	23.5		25.5	25.9	
Automatic debt dynamics	-1.8	-3.1	-1.7			0.4	-7.6	0.2	0.2	0.7	0.6		-0.1	0.2	
Contribution from interest rate/growth differential	-1.0	-1.7	-1.7			-0.3	-7.2	0.1	0.1	0.6	0.6		-0.1	0.2	
of which: contribution from average real interest rate	1.5	0.0	-0.3			1.6	0.2	1.2	1.1	1.6	1.6		0.9	0.9	
of which: contribution from real GDP growth	-2.5	-1.7	-1.4			-1.9	-7.4	-1.1	-1.0	-1.0	-1.0		-0.9	-0.7	
Contribution from real exchange rate depreciation	-0.8	-1.3	0.0			0.7	-0.4	0.2	0.1	0.1	0.0		...	...	
Other identified debt-creating flows	0.0	0.0	0.0			-1.5	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	0.0	0.0	0.0			-1.5	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	5.3	4.8	0.4			7.3	-2.9	-3.7	-1.0	-0.9	0.7		-0.2	-1.8	
Other Sustainability Indicators															
PV of public sector debt	...	...	27.0			40.4	31.1	28.0	26.6	25.4	25.5		28.3	21.6	
of which: foreign-currency denominated	...	...	4.2			11.4	7.1	4.8	4.9	5.0	5.0		4.6	3.5	
of which: external	...	...	4.2			11.4	7.1	4.8	4.9	5.0	5.0		4.6	3.5	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	6.3	12.1	18.5			20.4	17.1	16.0	12.0	11.4	10.9		9.8	8.6	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	103.6			137.7	124.5	115.8	110.7	106.3	102.7		106.8	82.9	
PV of public sector debt-to-revenue ratio (in percent)	...	...	114.7			158.7	142.9	129.0	121.9	113.8	108.9		113.9	87.9	
of which: external 3/	...	...	17.6			44.8	32.6	21.9	22.7	22.6	21.2		18.6	14.3	
Debt service-to-revenue and grants ratio (in percent) 4/	15.3	19.5	21.3			23.8	32.4	29.9	18.1	19.0	19.5		9.4	8.2	
Debt service-to-revenue ratio (in percent) 4/	17.2	21.7	23.4			27.3	37.2	33.3	20.0	20.3	20.7		10.0	8.7	
Primary deficit that stabilizes the debt-to-GDP ratio	-3.4	-1.7	1.3			-6.2	10.5	3.5	0.8	0.2	-1.3		0.3	1.6	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	10.7	8.1	5.5	5.9	2.9	5.8	19.6	3.3	3.4	3.5	3.5	6.5	3.0	3.0	3.0
Average nominal interest rate on forex debt (in percent)	1.6	1.5	1.3	2.2	0.7	3.9	3.5	1.5	0.3	0.8	1.4	1.9	0.0	1.5	0.6
Average real interest rate on domestic debt (in percent)	11.1	-0.1	-1.4	2.2	6.4	5.9	-0.2	5.2	5.7	8.0	8.3	5.5	4.1	4.8	4.3
Real exchange rate depreciation (in percent, + indicates depreciation)	-8.5	-17.6	0.1	-7.3	7.6	8.7	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	-2.9	8.5	9.3	5.7	5.7	3.2	8.9	3.4	3.8	3.3	3.3	4.3	5.0	5.0	5.1
Growth of real primary spending (deflated by GDP deflator, in percent)	21.9	9.1	10.2	4.2	7.4	11.0	-11.1	-0.1	-0.3	1.9	6.0	1.2	3.5	2.5	3.7
Grant element of new external borrowing (in percent)	...	...	...	...	...	7.0	39.4	37.0	36.1	36.0	35.3	31.8	34.7	35.5	...

Sources: Country authorities; and staff estimates and projections.

1/ Gross debt of general government.

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 2014–2034

	Projections							
	2014	2015	2016	2017	2018	2019	2024	2034
PV of Debt-to-GDP Ratio								
Baseline	40	31	28	27	25	25	28	22
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	40	32	26	22	20	18	13	-8
A2. Primary balance is unchanged from 2014	40	34	34	36	38	42	62	82
A3. Permanently lower GDP growth 1/	40	31	28	27	26	27	36	47
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2015-2016	40	38	37	38	39	42	59	75
B2. Primary balance is at historical average minus one standard deviations in 2015-2016	40	33	33	31	30	30	33	25
B3. Combination of B1-B2 using one half standard deviation shocks	40	35	32	32	33	36	50	63
B4. One-time 30 percent real depreciation in 2015	40	34	31	29	28	28	30	24
B5. 10 percent of GDP increase in other debt-creating flows in 2015	40	38	35	33	32	31	34	27
PV of Debt-to-Revenue Ratio 2/								
Baseline	138	124	116	111	106	103	107	83
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	138	128	105	92	82	74	50	-29
A2. Primary balance is unchanged from 2014	138	135	138	149	161	171	234	314
A3. Permanently lower GDP growth 1/	138	123	114	111	109	108	133	180
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2015-2016	138	150	150	156	163	168	221	287
B2. Primary balance is at historical average minus one standard deviations in 2015-2016	138	134	137	131	126	121	124	98
B3. Combination of B1-B2 using one half standard deviation shocks	138	139	129	132	138	142	188	238
B4. One-time 30 percent real depreciation in 2015	138	138	126	121	116	111	115	92
B5. 10 percent of GDP increase in other debt-creating flows in 2015	138	153	143	136	132	127	129	102
Debt Service-to-Revenue Ratio 2/								
Baseline	24	32	30	18	19	19	9	8
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	24	36	32	16	16	16	4	-3
A2. Primary balance is unchanged from 2014	24	33	31	24	26	29	23	32
A3. Permanently lower GDP growth 1/	24	33	30	19	20	21	13	18
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2015-2016	24	37	35	26	28	30	21	30
B2. Primary balance is at historical average minus one standard deviations in 2015-2016	24	33	31	24	25	22	11	10
B3. Combination of B1-B2 using one half standard deviation shocks	24	37	34	21	23	26	18	24
B4. One-time 30 percent real depreciation in 2015	24	35	35	20	21	21	11	10
B5. 10 percent of GDP increase in other debt-creating flows in 2015	24	33	32	31	21	24	11	11

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.