INTERNATIONAL MONETARY FUND

MYANMAR

STAFF REPORT FOR THE 2011 ARTICLE IV CONSULTATION—DEBT SUSTAINABILITY ANALYSIS[1]

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Although the debt indicators show a moderate risk of debt distress based on a forward-looking analysis, the presence of substantial arrears and uncertainty about timing and modality of their resolution pose substantial risks to the debt outlook. Thus, Myanmar remains classified as in debt distress.[2] The projected path of Myanmar's external and public debt burden indicators improves significantly in the medium and long term compared to last year's DSA, primarily due to increasing fiscal revenues with the planned adoption of a market-determined exchange rate and a better outlook for the economy. While external debt burden indicators do not breach the relevant indicative thresholds under the baseline scenario, the debt level is sensitive to shocks such as shortfalls in exports as indicated in standard bound tests. Myanmar's overall public sector debt indicators are high in the short term, but are expected to show a decreasing trend over the longer term. Under an alternative scenario with a fixed higher primary deficit or permanently lower growth over the medium and long term, Myanmar's public debt sustainability would deteriorate. These vulnerabilities underscore the importance of sound macroeconomic policies to improve Myanmar's growth potential on a sustained basis, including by strengthening public financial management and export diversification.

[1] This DSA has been prepared by IMF staff only, since IDA has suspended its financial relationship with Myanmar due to arrears.

[2] External public and publicly guaranteed (PPG) debt and public domestic debt dynamics are assessed using the Low-Income Country Debt Sustainability Analysis (LIC-DSA) framework, which recognizes that better policies and institutions allow countries to manage higher levels of debt, and thus the threshold levels are policy-dependent. The quality of a country's policies and institutions are normally measured by the World Bank's Country Policy and Institutional Assessment (CPIA). Since Myanmar does not currently have a CPIA rating, the most conservative thresholds are applied for the purposes of this DSA. The thresholds, which apply to external PPG debt, are: 30 percent for the NPV of debt-to-GDP ratio, 100 percent for the NPV of debt-to-exports ratio, 200 percent for the NPV of debt-to-revenue ratio, 15 percent for the debt service-to-exports ratio, and 25 percent for the debt service-to-revenue ratio.

BACKGROUND

1. **The external and public debt sustainability analyses are based on the standard LIC DSA framework.** The DSA framework presents the projected path of Myanmar's external and public sector debt burden indicators, and draws some conclusions on the forward-looking sustainability of debt.

2. **Myanmar's DSA builds on the baseline scenario assumptions presented in Box 1.** Compared to last year's DSA (2010) baseline macroeconomic scenario, the economic outlook under the baseline has improved due to planned economic reforms and improved business confidence (Box 1). In particular, the current DSA assumes going forward that the planned adoption of a market-based exchange rate would result in a smaller fiscal deficit in the medium term, and broadly balanced budget in the long term as opposed to a deficit of 3½ percent of GDP in the previous DSA.

3. **Myanmar's total public sector debt stock is high at over 45 percent of GDP.** Total public debt is estimated at 47½ percent of GDP in 2010—of which more than half was foreign currency denominated (Table 1a)—slightly lower from 48½ percent of GDP in 2009. However, the outlook on debt indicators improved primarily owing to projected smaller deficits and robust real GDP growth.

4. **Accelerating economic growth and real exchange rate appreciation have contributed to a decline in debt ratios over the past years.** At the end of 2010, Myanmar's external public and publicly guaranteed (PPG) debt stock was 24½ percent of GDP in nominal terms and 17¾ percent in net present value (NPV) terms. For 2011, the debt stock in PV terms as a share of GDP, as a share of exports of goods and nonfactor services, and of government revenues is projected to further decline to 15½ percent, 77½ percent and 138½ percent, respectively. Myanmar's net nonconcessional new borrowings started to increase from FY2008/09, reaching 5 percent of total external debt in FY2010/11. China is the largest emerging creditor accounting for about 30 percent of the net increase in nonconcessional loans in 2010.

Myanmar: External PPG Debt Indicators at end-2010

	Indicative Thresholds	End-2010
NPV of debt, as a percent of:		
GDP	30	17.8
Exports	100	84.8
Revenue	200	151.5
Debt service, as a percent of:		
Exports	15	3.1
Revenue	25	5.6

Sources: IMF and World Bank.

Myanmar: Net Nonconcessional New External Borrowings 2007/08–2010/11
(In millions of U.S. dollars)

	2007/08	2008/09	2009/10	2010/11
Nonconcessional New Borrowings	-30.9	315.8	288.4	645.8
(in percent of total external debt)	-0.3	2.8	2.4	5.0

Sources: Myanmar authorities and IMF staff estimates.

5. **Myanmar has accumulated substantial external arrears over many years.** At the end of 2010, external arrears stood at US$5.4 billion, accounting for 48 percent of total PPG external

Box 1. Myanmar: Key Macroeconomic Assumptions Underlying the DSA for the Baseline Scenario (2011–31)

- **Real GDP growth** is assumed at 6 percent, driven by commodity exports and higher investment supported by robust credit growth and improved business confidence.
- **Inflation**, projected on average at 5.5 percent y/y in the medium term, is expected to continue trending down and stabilize around 3.5 percent in the long term. This is based on the assumption of smaller fiscal deficits and substituting deficit monetization with bond financing.
- The overall fiscal deficit in terms of GDP is expected to narrow from about 5½ percent in 2011 to 1¼ percent in 2017, before gradually reaching a broadly balanced budget by 2031. **Revenue** would be the main driver of consolidation and is expected to rise to over 20 percent of GDP in the medium term owing to the positive budgetary impact of exchange rate unification and substantial increase in gas export revenues with the completion of Shwe and Zawtika projects. Revenue is expected to stay over 19½ percent of GDP over the long term, implying modest improvement in non-resource based tax revenues. Compared with previous DSAs, revenue, defined as consolidated nonfinancial public sector revenue, is revised to reflect the non-zero balance of SEEs and include all revenue receipts of SEEs instead of only net SEE transfers. Correspondingly, consolidated current expenditure includes current expenditure of union government and SEEs after netting out the net transfers to the union budget. **Public expenditure** would remain mostly at around 20 percent through the medium term, and be kept below 19½ percent up to 2031.
- The growth of **exports** averages around 9 percent, in the medium term reflecting new natural gas projects coming on stream. Over the longer term, export growth remains robust, averaging around 11 percent, driven by export diversification beyond commodity exports supported by higher investment, including foreign direct investment.
- The growth of **imports** averages around 10¼ percent in the medium term given the authorities' plan to gradually remove exchange restrictions on current international payments and transfers. Over the longer term, import growth would stay around 10 percent, reflecting the need for imported capital goods to support development.
- The **current account** (including official transfers), which in 2011 was in deficit, is expected to remain in deficit over the medium and longer term.
- As of end-FY2010/11, around 20 percent of **public domestic debt** is in the form of treasury bonds, with the rest in the form of treasury bills (bearing a nominal interest rate of 4 percent). Treasury bonds are issued in maturities of two, three, and five years, bearing nominal interest at rates of 8.75, 9, and 9.5 percent, respectively. **Average real interest rates** on domestic public debt was negative in 2010 due to rising inflation and fixed low nominal interest rates on treasury bills, the majority of debt. However, they turned positive in 2011 due to subsiding inflation and increasing share of deficit financing through higher interest-paying treasury bonds. They are projected to remain positive in the medium and longer term in line with government's plan to totally shift toward bond financing of the deficit.
- The new **financing** needs are assumed to be met in half by foreign exchange debt with the remainder financed by domestic medium and long-term debt. The new external debt is assumed to be 20 year loans with five-year grace period and 4 percent interest rate in line with recent actual borrowing. Average maturity of three years is assumed for new domestic borrowings.
- **Arrears** to foreign creditors constitute a significant part of the stock of foreign debt (Table 3). Given the very early stage of reconciling arrears with creditors, the DSA, as in the past, assumes no rescheduling of arrears or resumption on repayments. For similar reasons, aid flows are also assumed to remain at their current levels. Given the suspension of financial relationship between Myanmar and its Paris Club and multilateral creditors, debt numbers reported by authorities may be lower than the numbers on creditors' books, which imposes an **upside risk** on Myanmar's debt burden indicators.

Box 1. Myanmar: Key Macroeconomic Assumptions Underlying the DSA for the Baseline Scenario (2011–31) (concluded)

Myanmar: Key Macroeconomic Assumptions

	2011 DSA Baseline		Historical	2010 DSA Baseline		Historical
	2011/12–2016/17	2017/18–2031/32	Average	2010/11–2015/16	2016/17–2029/30	Average
Real GDP growth	5.9	6.0	10.4	5.5	5.7	11.2
Inflation (GDP deflator growth; in U.S. dollar terms)	4.6	3.2	9.4	7.8	7.6	6.3
Overall fiscal deficit (in percent of GDP)	-2.9	-0.3	-4.4	-4.2	-4.0	-4.7
Exchange rate, end of period	796.8	919.0	889.5	935.0	2571.0	845.0
Non-interest current account	-2.6	-2.8	1.0	-0.4	6.9	1.3
Revenue (nonfinancial public sector; in percent of GDP)	19.6	19.6	12.6	6.9	6.9	6.1

Source: IMF staff estimates.

debt.[3] About 80 percent of external debt in arrears is owed to bilateral creditors with the remainder split between multilateral and private creditors (Table 3). Recently, the authorities began the reconciliation of their arrears number with Japan and expect to extend this process to other creditors.

EXTERNAL DEBT SUSTAINABILITY ANALYSIS

6. **All external debt indicators remain below the debt burden thresholds under the baseline scenario, and are expected to decline further over the projection period** (Figure 1 and Table 1a). During the projection period, the PV of the debt-to-GDP ratio decreases from about 16 percent in 2011 to about 6 percent in 2031 (compared to an indicative threshold of 30 percent), while the PV of the debt-to-exports ratio decreases from about 78 percent in 2011 to about 24 percent in 2031 (compared to an indicative threshold of 100 percent). The PV of the-debt-to-revenue ratio declines from about 139 percent in 2011 to about 32 percent in 2031 (indicative threshold: 200 percent). The debt service-to-exports and debt service-to-revenue ratios stay below the indicative thresholds throughout the entire projection period despite the projected high debt service burden during 2011–21.

7. **The standard stress tests do not reveal any significant vulnerability with the exception of NPV of debt-to-exports ratio** (Figure 1 and Table 2b). A one-standard-deviation shortfall in export growth in 2012–13 compared with historical average would push the NPV of debt-to-exports ratio to 109 percent, highlighting the need for export diversification and addressing structural impediments to external competitiveness.

[3] Data on external debt and arrears are provided by the Myanmar authorities and may be different from those reported by individual creditors.

PUBLIC DEBT SUSTAINABILITY ANALYSIS

8. The nominal debt stock would increase modestly to 47.9 percent of GDP (42½ percent of GDP in NPV terms) by end-2012 before it declines steadily thereafter. This reflects the smaller fiscal deficits and better economic outlook envisaged under the baseline over the medium term (Table 2a). The PV of public debt-to-GDP ratio and the PV of public debt-to-revenue ratio would decline gradually over the long term to 12½ percent and 64¼ percent, respectively. The debt service-to-revenue ratio remains low for the entire projection period and will reach 3¼ percent by 2031 under the baseline.

9. Stress tests indicate that vulnerabilities remain throughout the projection period. Under a permanent growth shock, the level of public debt (as a share of GDP) stays high and would be at 43 percent of GDP (in PV terms) in 2031. If the primary balance remains unchanged at its 2011 level, the PV of public debt-to-GDP continues to rise to 71 percent by 2031 (Table 2b).

STAFF ASSESSMENT

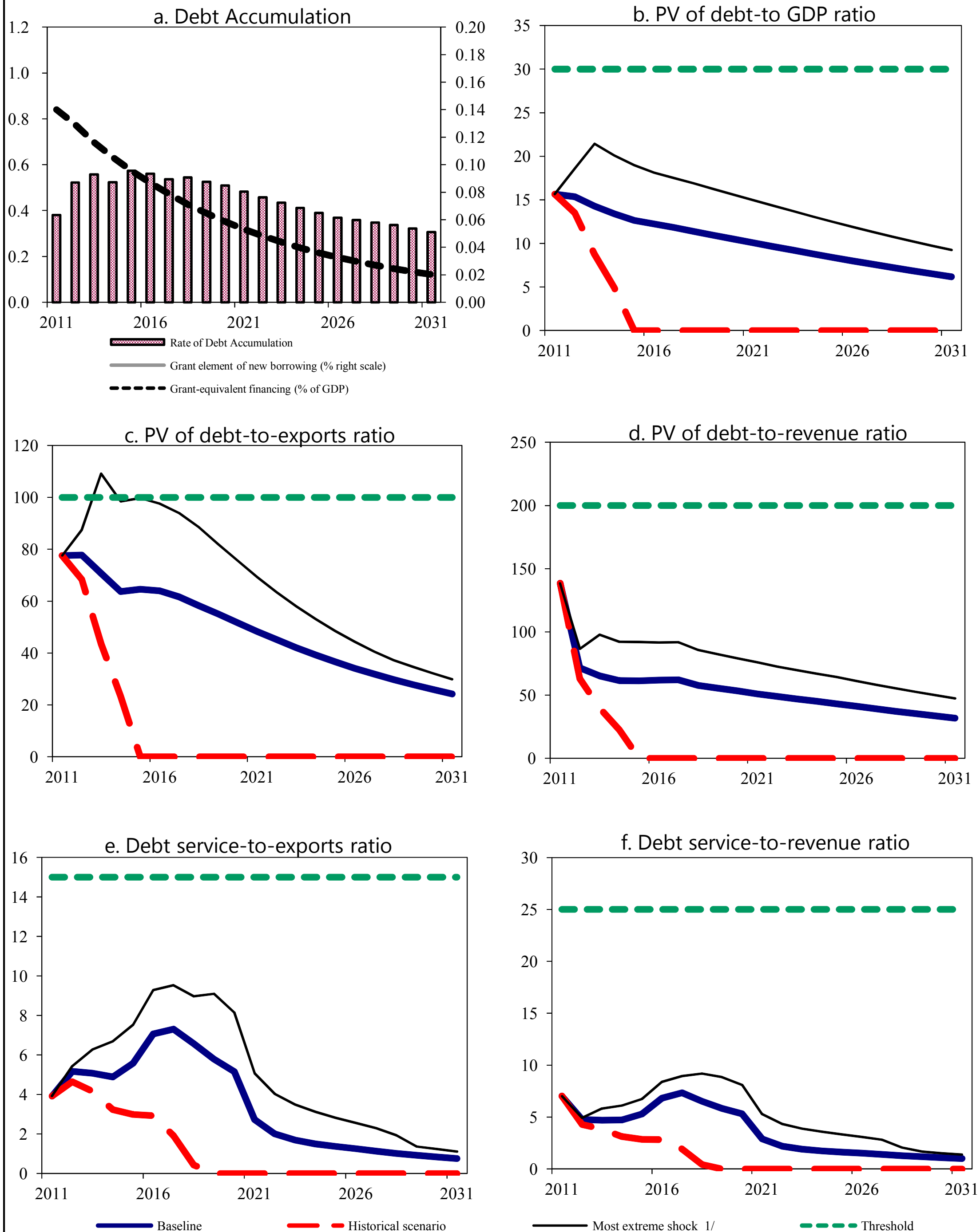
10. Although the debt indicators show a moderate risk of debt distress based on a forward-looking analysis, the presence of substantial arrears and uncertainty about their resolution pose substantial risks to the debt outlook. Compared to last year's DSA, the projected paths of external and public debt burden indicators improve significantly over the medium and long term owing to the projected smaller fiscal deficits due to increasing gas revenues with the use of a market-determined exchange rate in budgetary operations,[4] and a better economic outlook. In previous DSAs, the former impact could not be captured due to the absence of any credible plans to unify the exchange rate. Notwithstanding the improvement in debt indicators, the presence of arrears and uncertainty about the timing and modality of their resolution indicate debt distress. Thus, Myanmar remains classified as in debt distress.

11. The baseline projections and the associated standard stress tests show moderate risk related to external debt. Only one of the indicators would breach the indicative debt burden thresholds under stress tests**.** However, there is great need for sound macroeconomic policies, including in public fiscal management, to safeguard fiscal sustainability, and to improve Myanmar's growth potential and increase export diversification to manage risks to external debt sustainability. External arrears constitute a large portion of external PPG debt, and it will be important for the authorities to resolve them to improve the overall debt profile.

12. The improving debt indicators depend on increasing revenues from nonrenewable natural resources. Maintaining the primary balance at its 2011 level would put public debt sustainability under significant risk. This underscores the importance of reducing reliance on nonrenewable revenue sources by improved tax policies and public financial management.

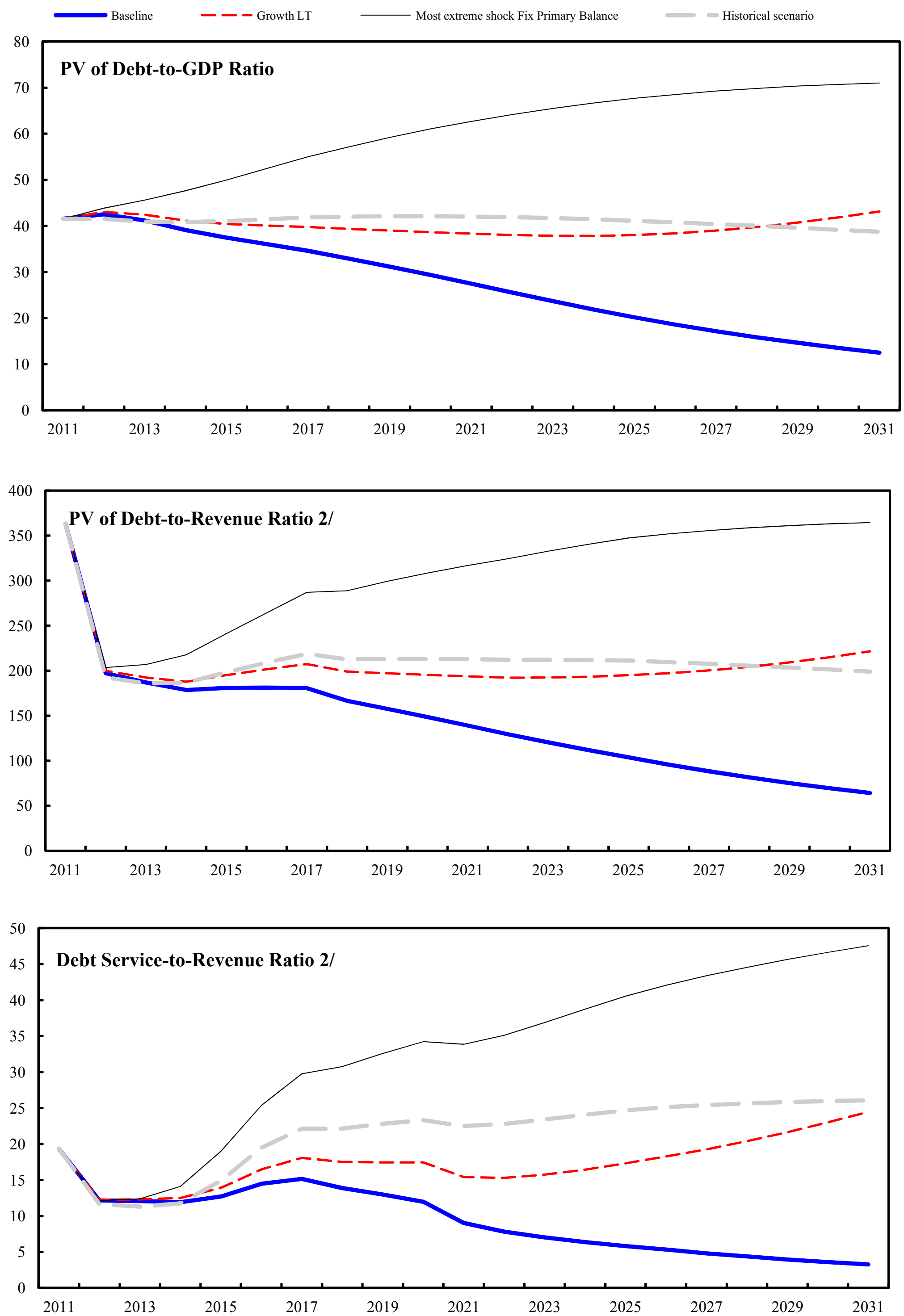
[4] See accompanying Selected Issues Paper, Chapter V.

Figure 1. Myanmar: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2011–2031 1/



Sources: Myanmar authorities; and staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio in 2021. In figure b. it corresponds to a GDP deflator shock; in c. to a Exports shock; in d. to a GDP deflator shock; in e. to a Exports shock and in figure f. to a Combination shock

Figure 2. Myanmar: Indicators of Public Debt Under Alternative Scenarios, 2011–2031 1/



Sources: Myanmar authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2021.

2/ Revenues are defined as consolidated revenue of nonfinancial public sector, which is inclusive of grants and all revenue receipts of SEEs.

Table 1a.: External Debt Sustainability Framework, Baseline Scenario, 2008–2031 1/

(In percent of GDP, unless otherwise indicated)

	Actual			Historical 2/	Standard 2/	Projections									
				Average	Deviation							2011–2016			2017–2031
	2008	2009	2010			2011	2012	2013	2014	2015	2016	Average	2021	2031	Average
External debt (nominal) 1/	**28.8**	**28.4**	**24.4**			**21.4**	**20.7**	**19.0**	**17.7**	**16.3**	**15.0**		**9.7**	**6.1**	
o/w public and publicly guaranteed (PPG)	28.8	28.4	24.4			21.4	20.7	19.0	17.7	16.3	15.0		9.7	6.1	
Change in external debt	-6.5	-0.4	-4.0			-3.0	-0.7	-1.7	-1.4	-1.4	-1.3		-0.5	-0.3	
Identified net debt-creating flows	-12.8	-3.2	-7.7			-4.0	-4.1	-1.5	-1.6	0.1	0.9		2.2	-0.4	
Non-interest current account deficit	**2.5**	**2.6**	**0.7**	**-1.0**	**3.3**	**2.4**	**3.7**	**2.7**	**0.9**	**2.5**	**3.4**		**4.0**	**0.5**	2.8
Deficit in balance of goods and services	4.0	3.5	1.4			3.2	4.7	3.9	2.1	3.6	4.5		4.7	0.7	
Exports	24.6	21.6	21.0			20.2	19.8	20.2	21.1	19.6	19.1		20.8	25.5	
Imports	28.6	25.1	22.3			23.4	24.5	24.1	23.2	23.2	23.6		25.5	26.2	
Net current transfers (negative = inflow)	-1.3	-1.5	-0.7	-1.5	0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6		-0.4	-0.2	-0.3
o/w official	-0.2	-0.7	-0.2			-0.1	-0.1	-0.1	-0.1	-0.1	-0.1		-0.1	0.0	
Other current account flows (negative = net inflow)	-0.3	0.6	0.0			-0.2	-0.4	-0.5	-0.6	-0.5	-0.5		-0.2	-0.1	
Net FDI (negative = inflow)	**-3.1**	**-2.7**	**-2.1**	**-2.7**	**0.5**	**-5.5**	**-7.1**	**-3.7**	**-2.1**	**-2.1**	**-2.1**		**-1.6**	**-0.6**	-1.3
Endogenous debt dynamics 3/	**-12.2**	**-3.0**	**-6.2**			**-0.9**	**-0.7**	**-0.5**	**-0.3**	**-0.3**	**-0.3**		**-0.3**	**-0.3**	
Contribution from nominal interest rate	0.4	0.1	0.1			0.3	0.5	0.6	0.7	0.6	0.6		0.3	0.1	
Contribution from real GDP growth	-0.8	-1.3	-1.2			-1.2	-1.2	-1.1	-1.0	-1.0	-0.9		-0.6	-0.4	
Contribution from price and exchange rate changes	-11.8	-1.8	-5.2			...	...	...	...	...	...		...	...	
Residual (3-4) 4/	**6.3**	**2.8**	**3.7**			**1.0**	**3.4**	**-0.2**	**0.2**	**-1.5**	**-2.2**		**-2.7**	**0.1**	
o/w exceptional financing	-1.6	-1.2	-1.4			-0.2	-0.3	-0.3	-0.3	-0.3	-0.3		-0.2	-0.1	
PV of external debt 5/	...	...	17.8			15.6	15.4	14.3	13.4	12.7	12.2		10.1	6.2	
In percent of exports	...	...	84.8			77.6	77.7	70.6	63.7	64.6	64.0		48.3	24.2	
PV of PPG external debt	**...**	**...**	**17.8**			**15.6**	**15.4**	**14.3**	**13.4**	**12.7**	**12.2**		**10.1**	**6.2**	
In percent of exports	**...**	**...**	**84.8**			**77.6**	**77.7**	**70.6**	**63.7**	**64.6**	**64.0**		**48.3**	**24.2**	
In percent of government revenues	**...**	**...**	**151.5**			**138.5**	**71.6**	**65.2**	**61.5**	**61.3**	**61.8**		**51.0**	**31.8**	
Debt service-to-exports ratio (in percent)	**5.9**	**4.4**	**3.1**			**3.9**	**5.2**	**5.1**	**4.9**	**5.6**	**7.1**		**2.7**	**0.8**	
PPG debt service-to-exports ratio (in percent)	**5.9**	**4.4**	**3.1**			**3.9**	**5.2**	**5.1**	**4.9**	**5.6**	**7.1**		**2.7**	**0.8**	
PPG debt service-to-revenue ratio (in percent)	**11.2**	**8.4**	**5.6**			**7.0**	**4.8**	**4.7**	**4.7**	**5.3**	**6.8**		**2.9**	**1.0**	
Total gross financing need (Billions of U.S. dollars)	0.3	0.3	-0.4			-1.2	-1.3	0.0	-0.1	1.1	2.2		3.9	0.1	
Non-interest current account deficit that stabilizes debt ratio	9.0	2.9	4.7			5.3	4.4	4.4	2.3	3.9	4.7		4.6	0.8	
Key macroeconomic assumptions															
Real GDP growth (in percent)	3.6	5.1	5.3	10.4	4.0	5.5	6.0	5.9	6.0	6.0	6.0	5.9	6.0	6.0	6.0
GDP deflator in US dollar terms (change in percent)	50.0	6.8	22.3	9.4	24.6	8.5	2.4	5.1	4.3	4.3	3.2	4.6	3.0	4.1	3.2
Effective interest rate (percent) 6/	1.8	0.5	0.5	1.1	0.4	1.4	2.6	3.4	4.0	3.8	3.8	3.2	3.2	1.5	2.6
Growth of exports of G&S (US dollar terms, in percent)	11.6	-1.3	24.9	15.9	15.1	10.0	6.2	14.1	15.0	2.8	6.7	9.1	11.9	12.0	11.5
Growth of imports of G&S (US dollar terms, in percent)	27.2	-1.5	14.6	15.7	18.1	19.6	13.8	9.5	6.3	10.7	10.9	11.8	10.5	10.0	10.1
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Government revenues (excluding grants, in percent of GDP)	12.9	11.4	11.7			11.3	21.4	21.9	21.8	20.6	19.8		19.7	19.5	19.5
Aid flows (in Billions of US dollars) 7/	0.1	0.2	0.1			0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	
o/w Grants	0.1	0.2	0.1			0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	
o/w Concessional loans	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.0	0.0
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			26.9	26.0	25.1	24.2	23.4	22.4		17.3	11.0	15.4
Memorandum items:															
Nominal GDP (Billions of US dollars)	31.4	35.2	45.4			51.9	56.3	62.7	69.3	76.6	83.8		126.9	320.4	
Nominal dollar GDP growth	55.4	12.3	28.8			14.4	8.5	11.3	10.5	10.5	9.3	10.8	9.1	10.3	9.4
PV of PPG external debt (in Billions of US dollars)			8.2			8.4	8.7	9.0	9.3	9.7	10.1		12.7	19.8	
(PVt-PVt-1)/GDPt-1 (in percent)						0.4	0.5	0.6	0.5	0.6	0.6	0.5	0.5	0.3	0.4
Gross workers' remittances (Billions of US dollars)	...	...	...			...	...	...	...	...	...		...	...	
PV of PPG external debt (in percent of GDP + remittances)	...	...	17.8			15.6	15.4	14.3	13.4	12.7	12.2		10.1	6.2	
PV of PPG external debt (in percent of exports + remittances)	...	...	84.8			77.6	77.7	70.6	63.7	64.6	64.0		48.3	24.2	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	3.1			3.9	5.2	5.1	4.9	5.6	7.1		2.7	0.8	

Sources: Myanmar 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.Myanmar: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2011–2031

(In percent)

	Projections							
	2011	2012	2013	2014	2015	2016	**2021**	2031
PV of debt-to GDP ratio								
Baseline	16	15	14	13	13	12	**10**	6
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2011-2031 1/	16	14	9	5	0	0	**0**	0
A2. New public sector loans on less favorable terms in 2011-2031 2/	16	15	14	14	13	12	**10**	7
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	16	15	14	13	13	12	**10**	6
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	16	16	19	17	16	16	**12**	6
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	16	19	21	20	19	18	**15**	9
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	16	20	20	19	18	17	**13**	6
B5. Combination of B1-B4 using one-half standard deviation shocks	16	20	21	20	19	18	**14**	7
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	16	22	20	19	18	17	**14**	9
PV of debt-to-exports ratio								
Baseline	78	78	71	64	65	64	**48**	24
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2011-2031 1/	78	68	43	23	0	0	**0**	0
A2. New public sector loans on less favorable terms in 2011-2031 2/	78	78	71	64	66	64	**50**	26
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	78	78	71	64	65	63	**48**	24
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	78	87	109	98	100	98	**69**	30
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	78	78	71	64	65	63	**48**	24
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	78	101	98	88	90	88	**60**	25
B5. Combination of B1-B4 using one-half standard deviation shocks	78	95	99	90	91	89	**62**	26
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	78	78	71	64	65	63	**48**	24
PV of debt-to-revenue ratio								
Baseline	139	72	65	62	61	62	**51**	32
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2011-2031 1/	139	63	40	23	0	0	**0**	0
A2. New public sector loans on less favorable terms in 2011-2031 2/	139	72	66	62	62	62	**53**	35
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	139	71	65	61	61	61	**50**	31
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	139	76	84	80	79	79	**61**	33
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	139	87	98	92	92	92	**76**	47
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	139	93	90	85	85	85	**64**	33
B5. Combination of B1-B4 using one-half standard deviation shocks	139	92	97	92	91	91	**69**	36
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	139	101	92	87	87	86	**72**	45

Table 1b.Myanmar: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2011–2031 (continued)

(In percent)

	Debt service-to-exports ratio							
Baseline	4	5	5	5	6	7	**3**	1
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2011-2031 1/	4	5	4	3	3	3	**0**	0
A2. New public sector loans on less favorable terms in 2011-2031 2/	4	5	5	5	6	7	**3**	1
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	4	5	5	5	6	7	**3**	1
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	4	5	6	7	8	9	**5**	1
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	4	5	5	5	6	7	**3**	1
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	4	5	6	6	7	8	**5**	1
B5. Combination of B1-B4 using one-half standard deviation shocks	4	5	6	6	7	8	**5**	1
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	4	5	5	5	6	7	**3**	1
	Debt service-to-revenue ratio							
Baseline	7	5	5	5	5	7	**3**	1
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2011-2031 1/	7	4	4	3	3	3	**0**	0
A2. New public sector loans on less favorable terms in 2011-2031 2/	7	5	5	5	5	7	**3**	1
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	7	5	5	5	5	7	**3**	1
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	7	5	5	5	6	8	**4**	1
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	7	6	7	7	8	10	**4**	1
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	7	5	5	6	6	8	**5**	1
B5. Combination of B1-B4 using one-half standard deviation shocks	7	5	6	6	7	8	**5**	1
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	7	7	7	7	8	10	**4**	1
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	0	0	0	0	0	0	**0**	0

Sources: Myanmar 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.Myanmar: Public Sector Debt Sustainability Framework, Baseline Scenario, 2008–2031

(In percent of GDP, unless otherwise indicated)

	Actual					Estimate	Projections								
	2008	2009	2010	Average 1/	Standard Deviation 1/	2011	2012	2013	2014	2015	2016	2011-16 Average	2021	2031	2017-31 Average
Public sector debt 2/	45.5	48.4	47.2			47.3	47.9	45.9	43.3	41.1	38.8		27.1	12.4	
o/w foreign-currency denominated	28.8	28.4	24.4			21.4	20.7	19.0	17.7	16.3	15.0		9.7	6.1	
Change in public sector debt	-6.2	2.9	-1.2			0.1	0.6	-2.0	-2.6	-2.3	-2.3		-2.0	-1.0	
Identified debt-creating flows	-10.6	-0.1	-3.4			-0.4	0.2	-2.5	-3.2	-3.0	-2.6		-2.4	-1.3	
Primary deficit	1.3	3.9	4.7	3.0	1.1	3.8	2.4	0.6	-0.6	-0.5	-0.7	0.8	-1.1	-0.5	-0.9
Revenue and grants	13.1	12.1	11.9			11.4	21.6	22.0	21.9	20.7	19.9		19.8	19.5	
of which: grants	0.2	0.7	0.2			0.1	0.1	0.1	0.1	0.1	0.1		0.0	0.0	
Primary (noninterest) expenditure	14.4	15.9	16.6			15.2	24.0	22.7	21.3	20.2	19.2		18.6	18.9	
Automatic debt dynamics	-11.7	-3.8	-7.8			-3.6	-1.7	-2.7	-2.1	-2.0	-1.5		-1.2	-0.8	
Contribution from interest rate/growth differential	-4.2	-3.1	-3.0			-1.7	-2.1	-2.0	-1.7	-1.6	-1.5		-1.1	-0.6	
of which: contribution from average real interest rate	-2.4	-0.8	-0.5			0.7	0.5	0.7	0.9	0.8	0.8		0.6	0.1	
of which: contribution from real GDP growth	-1.8	-2.2	-2.5			-2.4	-2.7	-2.7	-2.6	-2.4	-2.3		-1.6	-0.8	
Contribution from real exchange rate depreciation	-7.5	-0.7	-4.8			-1.9	0.4	-0.7	-0.4	-0.4	0.0		...	...	
Other identified debt-creating flows	-0.2	-0.2	-0.3			-0.5	-0.5	-0.5	-0.5	-0.4	-0.4		-0.1	0.0	
Privatization receipts (negative)	-0.2	-0.2	-0.3			-0.5	-0.5	-0.5	-0.5	-0.4	-0.4		-0.1	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	4.4	3.0	2.2			0.4	0.4	0.5	0.6	0.7	0.3		0.4	0.3	
Other Sustainability Indicators															
PV of public sector debt	...	...	40.6			41.5	42.5	41.2	39.1	37.4	36.0		27.5	12.5	
o/w foreign-currency denominated	...	...	17.8			15.6	15.4	14.3	13.4	12.7	12.2		10.1	6.2	
o/w external	...	...	17.8			15.6	15.4	14.3	13.4	12.7	12.2		10.1	6.2	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 3/	3.3	5.6	6.5			6.0	5.1	3.3	2.0	2.1	2.2		0.7	0.1	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	341.5			363.2	197.2	186.8	178.5	180.7	181.2		139.0	64.1	
PV of public sector debt-to-revenue ratio (in percent)	...	...	346.0			367.6	198.3	187.7	179.3	181.6	182.0		139.3	64.2	
o/w external 4/	...	...	151.5			138.5	71.6	65.2	61.5	61.3	61.8		51.0	31.8	
Debt service-to-revenue and grants ratio (in percent) 5/	15.8	14.7	15.2			19.3	12.1	12.1	11.9	12.7	14.5		9.0	3.3	
Debt service-to-revenue ratio (in percent) 5/	16.1	15.6	15.4			19.6	12.2	12.1	12.0	12.8	14.5		9.1	3.3	
Primary deficit that stabilizes the debt-to-GDP ratio	7.5	1.0	5.9			3.7	1.8	2.6	2.0	1.7	1.6		0.8	0.5	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	3.6	5.1	5.3	10.4	4.0	5.5	6.0	5.9	6.0	6.0	6.0	5.9	6.0	6.0	6.0
Average nominal interest rate on forex debt (in percent)	1.8	0.5	0.5	1.1	0.4	1.4	2.6	3.4	4.0	3.8	3.8	3.2	3.2	1.5	2.6
Average real interest rate on domestic debt (in percent)	-12.0	-1.4	-0.4	-10.8	8.3	3.1	1.1	1.3	2.0	2.1	2.2	2.0	2.6	2.4	2.5
Real exchange rate depreciation (in percent, + indicates depreciation) 6/	-22.5	-2.6	-18.1	-4.0	22.3	-8.0	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	19.0	6.9	6.9	18.7	11.0	3.6	5.8	5.3	4.5	4.5	4.5	4.7	4.5	4.5	4.5
Growth of real primary spending (deflated by GDP deflator, in percent)	-0.1	0.2	0.1	0.1	0.2	0.0	0.7	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Grant element of new external borrowing (in percent)	...	...	...	...	...	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	...

Sources: Myanmar authorities; and staff estimates and projections.

1/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.
2/ Public sector is defined as nonfinancial public sector.
3/ 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.
4/ Revenues excluding grants.
5/ Debt service is defined as the sum of interest and amortization of medium and long-term debt.
6/ Based on market exchange rate from 2012.

Table 2b.Myanmar: Sensitivity Analysis for Key Indicators of Public Debt 2011–2031

	Projections							
	2011	2012	2013	2014	2015	2016	2021	2031
PV of Debt-to-GDP Ratio								
Baseline	42	43	41	39	37	36	27	12
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	42	41	41	41	41	41	42	39
A2. Primary balance is unchanged from 2011	42	44	46	48	50	53	63	71
A3. Permanently lower GDP growth 1/	42	43	42	41	40	40	38	43
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012-2013	42	42	41	38	37	35	26	11
B2. Primary balance is at historical average minus one standard deviations in 2012-2013	42	44	46	44	42	40	31	15
B3. Combination of B1-B2 using one half standard deviation shocks	42	43	43	40	38	35	23	3
B4. One-time 30 percent real depreciation in 2012	42	50	48	46	44	43	34	17
B5. 10 percent of GDP increase in other debt-creating flows in 2012	42	53	51	48	46	44	34	16
PV of Debt-to-Revenue Ratio 2/								
Baseline	363	197	187	178	181	181	139	64
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	363	192	186	187	198	209	213	199
A2. Primary balance is unchanged from 2011	363	203	207	218	241	264	317	364
A3. Permanently lower GDP growth 1/	363	200	192	188	195	201	194	221
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012-2013	363	196	184	175	177	177	132	54
B2. Primary balance is at historical average minus one standard deviations in 2012-2013	363	205	210	200	203	203	157	75
B3. Combination of B1-B2 using one half standard deviation shocks	363	198	197	184	182	178	117	0
B4. One-time 30 percent real depreciation in 2012	363	232	219	209	212	215	173	86
B5. 10 percent of GDP increase in other debt-creating flows in 2012	363	244	230	220	222	223	173	85
Debt Service-to-Revenue Ratio 2/								
Baseline	19	12	12	12	13	14	9	3
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	19	12	11	12	15	19	22	26
A2. Primary balance is unchanged from 2011	19	12	12	14	19	25	34	48
A3. Permanently lower GDP growth 1/	19	12	12	13	14	16	15	24
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012-2013	19	12	12	12	12	14	8	2
B2. Primary balance is at historical average minus one standard deviations in 2012-2013	19	12	12	15	19	19	12	5
B3. Combination of B1-B2 using one half standard deviation shocks	19	12	12	13	17	16	6	0
B4. One-time 30 percent real depreciation in 2012	19	13	14	14	16	19	14	6
B5. 10 percent of GDP increase in other debt-creating flows in 2012	19	12	14	23	24	19	14	7

Sources: Myanmar 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 as consolidated revenue of nonfinancial public sector, which is inclusive of grants and all revenue receipts of SEEs.

Table 3. Myanmar: External Arrears by Creditor, 2006/07–2010/11

(In millions of U.S. dollars)

	2006/07			2010/11		
	Principal	Interest	Total	Principal	Interest	Total
Bilateral loans	**2,145.1**	**527.3**	**2,672.4**	**3,584.0**	**761.3**	**4,345.3**
People's Republic of China	27.3	0.2	27.6	…	…	0.0
Czech	15.6	…	15.6	…	…	0.0
Demark	25.9	…	25.9	42.7	…	42.7
Germany	183.8	78.9	262.7	209.7	79.1	288.8
Japan	1,785.0	405.4	2,190.4	3,276.1	672.5	3,948.6
Others	107.4	42.7	150.2	55.5	9.7	65.2
Multilateral loans	**311.8**	**141.4**	**453.2**	**649.8**	**108.0**	**757.8**
Asian Development Bank	138.7	88.3	227.0	375.5	31.6	407.1
International Development Association	172.7	53.0	225.6	274.3	76.4	350.7
Others	0.4	0.1	0.5	…	…	0.0
Supplier's credits	**46.5**	**2.0**	**48.5**	**0.0**	**0.0**	**0.0**
Japan	31.8	1.2	33.0	…	…	0.0
Germany	…	…	0.0	…	…	0.0
Yugoslavia	1.9	0.1	2.0	…	…	0.0
Others	12.8	0.7	13.5	…	…	0.0
Financial institutions	**228.6**	**160.2**	**388.8**	**214.8**	**87.6**	**302.4**
Austria	30.2	6.8	37.0	30.2	6.8	37.0
France	54.8	24.9	79.6	52.2	21.5	73.7
United Kingdom	28.1	6.8	35.0	29.0	7.6	36.6
Germany	103.0	117.6	220.6	103.0	51.7	154.7
Japan	5.5	2.3	7.9	…	…	0.0
Netherlands	6.9	1.8	8.7	0.4	…	0.4

Sources: Data provided by the Myanmar authorities. The differences between the numbers in this table and those in Table 5 of the 2010 DSA report are due to the revaluation of debt using updated exchange rate done by the authorities in 2011.