INTERNATIONAL MONETARY FUND

REPUBLIC OF MADAGASCAR

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REQUEST FOR AN ARRANGEMENT UNDER THE EXTENDED CREDIT FACILITY; FIRST REVIEW UNDER THE STAFF MONITORED PROGRAM—DEBT SUSTAINABILITY ANALYSIS[1]

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Prepared by the Staffs of the International Monetary Fund and the International Development Association

Risk of external debt distress:	**Moderate**
Augmented by significant risks stemming from domestic public and/or private external debt?	**No**

Madagascar's risk of external debt distress is assessed to be 'moderate,' unchanged from the last DSA of November last year. Debt dynamics remain comparable in the baseline scenario, although a faster scaling up of foreign financed investments, a gradual depreciation, and the projected deterioration of the terms of trade lead to a slightly faster debt accumulation over the medium term. The public DSA suggests that the dynamics of Madagascar's total public and publically-guaranteed (PPG) debt are sustainable, although weak fiscal revenue generation, possible exchange rate shocks, and contingent liabilities related to state-owned enterprises (SOEs) remain sources of vulnerability.

[1] Prepared by IMF and World Bank staff, in consultation with the country authorities, during the mission in May/June 2016. This DSA follows the IMF and World Bank Staff Guidance Note on the Application of the Joint Fund-Bank Debt Sustainability Framework for Low-Income Countries, November 5, 2013 (available at http://www.imf.org/external/pp/longres.aspx?id=4827).

INTRODUCTION

1. **This joint DSA has been prepared by IMF and World Bank staff**. It is based on the framework for LICs approved by the respective Executive Boards. The framework takes into account indicative thresholds for debt burden indicators determined by the quality of the country's policies and institutions.[2] The assessment comprises a baseline scenario and a set of alternative scenarios.

2. **This DSA includes public debt and guarantees of the *general* government.** The DSA does not include the debt of local government or SOEs (other than through direct guarantees). The measure of debt is on a *gross* rather than *net* basis. And the *residency* criterion is used to determine the split between external and domestic debt.

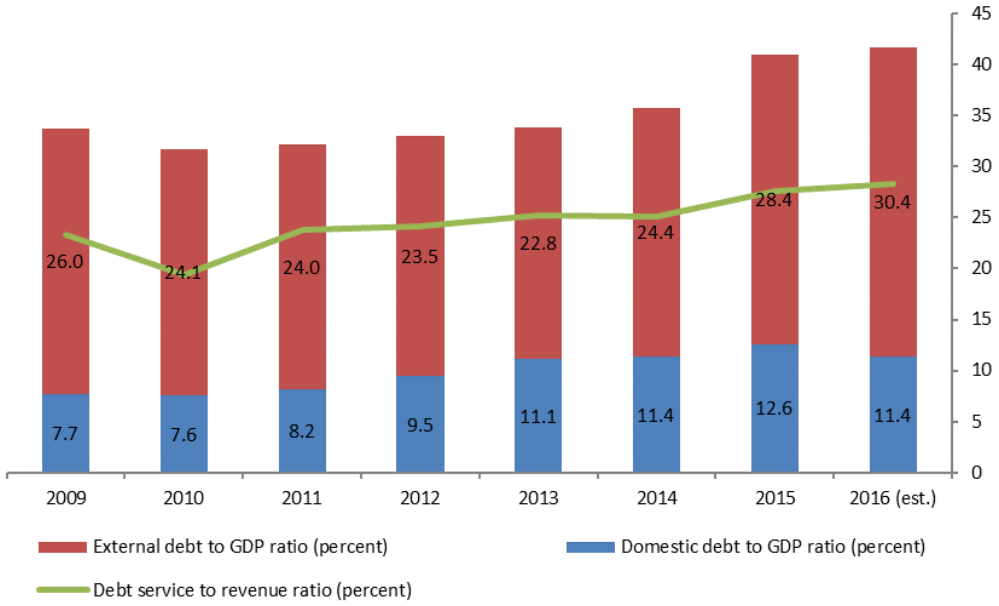
RECENT DEVELOPMENTS AND CURRENT DEBT SITUATION

3. **Re-engagement with the international community has broadened access to external financing sources, reducing the need for domestic borrowing.** Development partners reduced their lending to Madagascar during the 2008-13 crisis and the government relied more on domestic sources to finance budget deficits. Domestic debt, including domestic budgetary arrears, increased from 7.3 percent of GDP in 2008 to 12.6 percent in 2015. With the government re-engaging with the international donor community, external financing has become more readily available. As a result, external PPG debt, on average about 24 percent of GDP over 2008-14, is projected to increase to over 30 percent of GDP by end-2016, while domestic debt is projected to decrease slightly to 11 percent of GDP by end-2016 (Figure 1 and Table 3). The authorities have largely refrained from borrowing externally on non-concessional terms, which helps support debt sustainability. Overall, total public debt rose from around US$2.5 billion (33 percent of GDP) in 2007 to US$3.7 billion (41 percent of GDP) in 2015 (Table 6). Debt still remains substantially below the pre-HIPC peak of 95 percent of GDP. The debt service to revenue ratio is continuing to increase because of the higher indebtedness, the still high reliance on domestic financing, and poor revenue mobilization.

4. **The exchange rate depreciation in 2015 amplified the burden of external debt**. The depreciation of the Ariary, by more than 20 percent relative to the dollar, was the main driver behind a 3.5 percentage point increase in external PPG debt in 2015 (Figure 1 and Table 3). New external loans amounted to about 2½ percent of GDP, which was partially offset by a nominal GDP growth of 10 percent. The current exchange rate remains more depreciated than last year's average; another, though probably more moderate, valuation effect will add to external debt this year.

[2] According to the World Bank Country and Policy Institutional Assessment (CPIA) Index, Madagascar is rated as a 'low' performer, unchanged from the last DSA. The indicative thresholds for external debt applicable for that category of countries are: (i) 30 percent for the PV of debt-to-GDP ratio; (ii) 100 percent for PV of debt-to-exports ratio; (iii) 200 percent for the PV of debt to fiscal revenues ratio; (iv) 15 percent for the debt service to exports ratio; and (v) 18 percent for the debt service to revenue ratio. The indicative threshold for the PV of total PPG debt is 38 percent of GDP.

Figure 1: Debt Level and Service Ratios



5. **Most external debt is owed to multilateral creditors on highly concessional terms** (Table 1). Slightly below one-third of total debt is held by domestic creditors, mainly in the form of Treasury bills and debt to the central bank[3]. Domestic arrears remained relatively high, estimated at around 3½ percent of GDP in 2015. The vast majority of external debt is held by multilateral creditors, in particular the World Bank and African Development Bank.

6. **Private external debt is mainly issued by local subsidiaries of multinational companies.** A number of multinational companies—in mining, banking, and telecommunication—have wholly-owned local subsidiaries with external debt. While the authorities do not have comprehensive data on private-sector obligations, by far the largest of these debtors is the nickel/cobalt mining company *Ambatovy*.[4] This company has external debt just under US$2 billion (20 percent of GDP), which has caused total external debt to increase from 24 percent of GDP in 2007 to 49 percent in 2015 (see Table 3). It is projected that this commercial loan will be fully repaid by around 2030. External debt owed by *domestically* owned companies and households is negligible.

[3] Much of the debt held by the central bank are in marketable debt instruments (*titre de credit negociable*) and relate to past BCM losses to be covered by the government and irregular government financing that have been regularized in various conventions. Statutory advances, about 30 percent of the debt owed to the central bank, will be gradually reduced to 5 percent of ordinary income starting this year.

[4] Ambatovy is a private sector partnership of Sherritt International Corporation (40 percent) from Canada, Sumitomo Corporation (32.5 percent) from Japan, and Korea Resources Corporation (27.5 percent) from Korea.

7. **The government could face some contingent liabilities with respect to SOEs, including the nonbank financial sector, while the banking sector is less likely to generate direct fiscal costs.** The electricity utility, JIRAMA, had long-term debt corresponding to ½ percent of GDP and short-term debt (suppliers' credits, overdrafts etc.) corresponding to 5 percent of GDP at end-2014[5]. Air Madagascar is aiming to restructure its balance sheet in 2016 and is seeking a publicly guaranteed domestic loan of US$25 million (0.3 percent of GDP) as well as a MGA 90 billion (0.3 percent of GDP) public capital injection (through the transformation of outstanding tax liabilities). The postal savings scheme and possibly also the Madagascar Savings Fund (CEM) could need a future recapitalization (likely less than 1 percent of GDP combined). While the government has stakes in several major commercial banks, these banks also mostly have foreign parents. Moreover, bank resources are largely composed of deposits, which exceed loans significantly. Dollarization of deposits (let alone credit) is not pronounced and banks generally maintain foreign assets that are larger than their foreign liabilities.

Table 1: Break-down of Total PPG Debt (end-2015)

Creditor	Amount (US$m)	Percent of GDP	Percent of total
Domestic debt, *of which:*	**1,127**	**12.6**	**30.8**
Treasury bills	370	4.1	10.1
Debt to the Central Bank	386	4.3	10.5
Arrears	319	3.6	8.7
Other inc. loans	51	0.6	1.4
External debt, *of which:*	**2,535**	**28.4**	**69.2**
Multilateral	2,008	22.5	54.8
Paris Club	136	1.5	3.7
Non-Paris Club	366	4.1	10.0
Commercial	17	0.2	0.5
Total PPG debt	**3,662**	**41.0**	**100.0**

[5] Financial statement for 2015 not yet available.

UNDERLYING ASSUMPTIONS

8. **Apart from the increasing current account deficit, most key variables driving debt dynamics are forecasted to improve over the coming years** (Box 1 and Table 2). The DSA projections are consistent with the authorities' plan to scale-up much needed infrastructure investment and social spending. A large part of this investment will be financed through concessional external borrowing and grants, although some semi-concessional and very limited non-concessional borrowing is incorporated in projections throughout the forecast horizon. Consistent with the ceiling in the program, non-concessional borrowing (with an average negative grant element of minus 12 percent[6]) is foreseen at US$100 million over the 2016-19 period. Additionally, the share of the remaining financing gap that is financed by semi-concessional loans (with a grant element in the range of 20 and 35 percent) is set such that disbursements over the 2016-19 period are equivalent to what could be expected if the authorities signed the maximum amounts allowed under the quantitative performance criteria[7]. Over the medium term, the importance of non-concessional borrowing would increase, reducing the average grant element of new borrowing from an average above 40 percent over the next three years to 30 percent in 2036. Apart from the additional amount of short-term non-concessional borrowing, these assumptions are roughly unchanged from the previous DSA.

9. **The main risks to the baseline scenario relate to revenue generation, limited donor grant support, possible exchange rate shocks, and contingent liabilities related to SOEs**. Continued weak revenue performance and limited donor grant support could accelerate the accumulation of new debt, while faster-than-expected depreciation of the Ariary would increase the real value of the existing stock. However, these risks are largely symmetric. The exchange rate may also surprise on the upside (by depreciating more slowly than expected), the potential for higher revenues is significant (given the low starting base), and structural fiscal reforms could stimulate greater donor support. This would increase fiscal space and facilitate a more rapid attainment of development objectives. The risks from SOEs are more asymmetric, however, with little upside. Forceful action to improve their management and control is essential to reduce the need for future transfers.

[6] Such a grant element is the outcome of conservative assumption regarding borrowing conditions on commercial loans, only part of which would benefit from a guarantee from an external agency; notably 8.5 percent interest, 7- years maturity and a two-year grace period.

[7] This assumes that the signed semi-concessional projects are disbursed over a 5-year period. On average, 83 percent of the financing gap would thus be financed by semi-concessional loans, far above the 45 percent assumed in the previous DSA, which is still used for subsequent years. Semi-concessional borrowing is assumed to have a grant element of 25 percent on average, consistent with such contracts that have recently been negotiated.

Box 1. Baseline Macroeconomic Assumptions

Real GDP growth. Growth is projected to accelerate gradually to about 5.0 percent a year over the forecast horizon. Differences to the 2015 DSA are small; the acceleration is slightly slower this year (mainly due to a more challenging international environment), but more dynamic in the years 2017 to 2019 (due to increased investment expanding production capacity and export potential). Medium-term growth remains driven by improved confidence, further re-engagement of development partners, and increased mining exports.

Current account. The decline in global oil and rice prices led to an improvement in the current account, which was only partially offset by lower than expected mining revenues. In the coming years, imports are projected to increase, as investment and domestic consumption recover. Over the medium term, the non-interest current account deficit is expected to decline gradually after a peak at 3.7 percent of GDP in 2018. The differences relative to the 2015 DSA are due to a slightly faster scaling up of investment related imports and a more persistent deterioration of terms of trade[8].

Grants. Donor grant support has been revised down since the 2015 DSA, based on the currently uncertain outcome of negotiations between the authorities and donors. Grants may increase faster in the medium-term, if the IMF-supported program catalyzes other resources, but will likely decrease in the long-run as the country matures and gains access to alternative sources of financing.

Revenues. Revenues (excluding grants) are projected to evolve similarly as in the previous DSA, increasing by roughly ½ percent of GDP per year over the forecast horizon. Revenue collection is a leading source of vulnerability for the debt sustainability and laying the foundation for the projected increase is a key priority in the authorities' reform program.

Expenditures. Expenditures in 2016 and the medium term are comparable to the 2015 DSA. However, the primary deficit is expected to increase in the near term in order to accommodate the scaling up of capital investment and social spending.

Table 2: Madagascar; Baseline Macroeconomic Assumptions

Table 2. Madagascar: Baseline Macroeconic Assumptions

		2016	2017	2018	2019	2020	2021
Real GDP growth (percent)	2016DSA	4.1	4.5	4.8	5.0	5.0	5.0
	2015DSA	4.3	4.4	4.5	4.7	5.0	
Non-interest CA deficit (percent GDP)	2016DSA	2.0	3.3	3.7	3.7	3.6	3.5
	2015DSA	1.5	1.8	3.1	3.2	3.1	
Primary deficit (percent of GDP)	2016DSA	2.3	3.4	3.3	3.1	2.9	2.7
	2015DSA	1.7	3.6	2.8	2.6	2.5	
Total revenues, excl grants (percent of GDP)	2016DSA	11.0	11.2	11.7	12.2	12.7	13.2
	2015DSA	10.9	11.3	11.8	12.2	12.7	
Grants (percent of GDP)	2016DSA	2.0	2.8	1.7	2.0	2.1	1.8
	2015DSA	3.1	2.7	2.8	2.5	2.6	
Non-Interest Expenditure (percent of GDP)	2016DSA	15.3	17.3	16.6	17.0	17.2	17.3
	2015DSA	15.3	17.5	17.1	17.1	17.3	

Source: IMF staff projections.

[8] Part of the CA deterioration in the years 2017-2018 is due to the cyclicality of clove harvests. According to the authorities, a multi-year cycle consists of two boom years followed by two meager years, during which exports are reduced by roughly 50 percent. Given that cloves make up around 10% of exports in boom years, the cyclicality has noticeable effects on the county's overall external position.

EXTERNAL DSA

Baseline scenario

10. **The level of PPG external debt was just over US$2.5 billion at end-2015 and is projected to grow gradually throughout the forecast horizon**. PPG external debt is forecast to increase from 28½ percent of GDP in 2015 to a peak of 37½ percent of GDP in 2021 (Table 3). A temporarily rising trade deficit and outflows from the mining sector (profit repatriation)[9] are balanced by increasing transfer inflows, relatively strong growth, and a moderate increase in net FDI inflows[10], consistent with the authorities' National Development Plan. As domestic debt markets deepen (see below), PPG external debt is projected to decline as a proportion of GDP to 27 percent of GDP in 2036.

11. **Under the baseline projection, all PPG external debt indicators remain below the policy-dependent debt burden thresholds** (Figure 2). The present value (PV) of the 2015 level of external debt, 15 percent of GDP, is projected to increase to 23 percent by 2021, but then declines again to just below 20 percent in 2036.[11] This projection is broadly consistent with the medium term forecast from the last DSA conducted in 2015.

12. **Private external debt is projected to decline slowly, as the loans related to a major mining project are repaid.** Given the exceptional nature of this project, the DSA does not forecast substantial new external borrowing from the private sector. Furthermore, this debt is not assessed to pose a significant threat to external sustainability, as the ultimate liability of these loans is held by the multinational shareholders, rather than resident entities (such as domestic banks or the government).

Alternative scenarios

13. **The two standard DSA stress test scenarios are applied to the baseline external PPG debt projection.** First, the standard bounds test applies pre-defined shocks to the key macroeconomic variables that drive external debt (summarized in Footnote 1 of Figure 2). Second, a historical scenario, where macroeconomic variables are assumed to equal their average over 2006-15, is imposed on the baseline projection. These shocks are detailed in Table 4.

14. **For the standard bounds tests, two scenarios cause a breach of the thresholds for one or more indicators**. A one-time 30 percent depreciation shock would cause the PV of debt-

[9] The large residual in Table 3 is partly related to mining activity. Mining exports are recorded in full in the balance of payment statistics. However, only a fraction of these receipts actually returns to Madagascar, with the remainder being repatriated to the parent companies.

[10] FDI is assumed to remain substantially below the 2011 and 2012 levels, when major mining projects were being constructed.

[11] The capacity to service public debt is expected to grow faster than GDP considering that fiscal revenues are projected to increase in percent of GDP.

to-GDP to peak at 34 percent, slightly above the 30 percent threshold implied by Madagascar's CPIA rating. Additionally, the PV of debt-to-revenue would peak at 245 percent, compared to a threshold of 200 percent. For this metric, a combination of smaller shocks also causes a significant breach of the threshold (see Table 4). The second scenario that would cause a breach of the thresholds is fixing export growth for 2017-2018 to two standard deviation below the historical average. It would increase the PV of debt-to-export to 117 percent by 2021, above the threshold of 100. However, this scenario should be interpreted with caution, as the coming on stream of large nickel and cobalt plants in 2012 serves to exaggerate the volatility of exports.

15. **The historical scenario[12] projects a rapid increase in all debt metrics and causes a breach for four of the five external debt thresholds.** These scenarios cause a substantial breach in the thresholds, especially for the PV of debt-to-GDP and the PV of debt-to-revenue. But there is reason to place less weight on this scenario—the very large current account deficit in 2008 and 2009 (over 20% of GDP in both years) was mainly driven by substantial imports associated with large mining investments, which were financed through non-debt creating FDI. These deficits did not lead to a build-up of PPG external debt, and this period is not representative of the normal economic environment in Madagascar.

PUBLIC DSA

Baseline scenario

16. **Domestic PPG debt as a proportion of GDP is projected to decline over the next decade**, with the authorities substituting away from local borrowing into concessional financing, as donor relations normalize. The importance of domestic PPG debt is then expected to partially recover, as domestic markets deepen and savings become more abundant.

17. **The *present value* of total PPG debt is projected to remain close to 30 percent of GDP throughout the forecast horizon - below the threshold of 38 percent** (Figure 3 and Table 5)**.** Madagascar's relatively weak revenue-to-GDP ratio leaves the authorities somewhat vulnerable on the debt service-to-revenue measure. This risk could further increase over time if interest payments (associated with less concessional financing) increased at a faster rate than revenue mobilization.

Alternative scenarios

18. **One of the three alternative scenarios used to stress-test the baseline breaches the risk threshold** (Figure 3 and Table 6). The most extreme shock–a one standard deviation reduction of GDP growth in 2017-2018—would lead to persistent breach of the threshold for the PV of debt to GDP, starting in 2021. The historical scenario and the one, where the primary deficit as a proportion of GDP remains unchanged throughout the forecast result in the PV of debt-to-

[12] Key macroeconomic variables (non-interest current account, growth, GDP deflator, growth of exports, current official transfers and net FDI) remain fixed at the average of the 2006-15 period.

GDP ratio converging to the threshold, without significantly breaching it. However, staff and authorities agree that reducing the current gap between revenue and spending is a priority.

CONCLUSION

19. **Breaches of debt thresholds only under stress scenarios result in a moderate risk rating.** While the authorities are expected to be able to service current and future debt obligations, debt sustainability is vulnerable to trade and exchange rate shocks, poor revenue collection, and contingent liabilities related to state-owned enterprises. While measures that can help address this vulnerability have been initiated, further progress is needed. They include enhanced revenue collection, improved budgetary execution, strengthened debt monitoring capacity, and improved policy and institutional performance to help secure favorable financing conditions and increase potential economic growth. It is also important to strengthen the monitoring and management of state-owned enterprises, including by publishing their audited financial statements.

20. **The DSA was discussed with the authorities during the May/June mission.** Staff used the results to illustrate the need for prudence when increasing external borrowing to avoid putting debt sustainability at risk and the need for structural fiscal reforms. Reforms should focus on i) increasing tax revenues to increase the capacity of the state to service debt; ii) ensure that debt continues to be financed on the most concessional terms possible; iii) ensure that investments are carefully prioritized to enhance growth and human capital accumulation; and iv) improve debt monitoring capacity, especially in terms of controlling debt guarantees and potential contingent liabilities.

Table 3. Madagascar: External Debt Sustainability Framework, Baseline Scenario, 2013-36[1]

(In percent of GDP; unless otherwise indicated)

	Actual			Historical Average 6/	Standard Deviation 6/	Projections									
	2013	2014	2015			2016	2017	2018	2019	2020	2021	2016-2021 Average	2026	2036	2022-2036 Average
External debt (nominal) 1/	**43.8**	**45.0**	**48.6**	**41.0**	**8.4**	**48.8**	**48.6**	**48.4**	**47.7**	**47.1**	**46.1**	**47.8**	**40.0**	**35.4**	**38.1**
of which: public and publicly guaranteed (PPG)	22.8	24.4	28.4	24.7	1.8	30.4	32.6	34.5	35.8	36.9	37.4	34.6	36.8	27.4	33.6
Change in external debt	-0.5	1.2	3.7	3.1	16.3	0.2	-0.2	-0.2	-0.7	-0.7	-1.0	-0.4	-1.5	0.4	-0.7
Identified net debt-creating flows	-2.2	-2.9	1.7			-4.7	-3.4	-3.3	-3.2	-3.2	-3.3		-4.9	-6.0	
Non-interest current account deficit	**5.6**	**0.1**	**1.6**	**8.7**	**7.2**	**2.0**	**3.3**	**3.7**	**3.7**	**3.6**	**3.5**	**3.3**	**2.3**	**0.9**	**1.9**
Deficit in balance of goods and services	8.7	4.4	3.5	12.7	7.1	3.9	5.5	5.9	5.9	5.8	5.9	5.5	4.8	3.6	4.5
Exports	30.0	32.8	32.1			33.0	32.2	32.0	32.0	32.1	31.8		31.8	31.3	31.6
Imports	38.7	37.2	35.5			36.9	37.7	37.9	37.9	38.0	37.8		36.6	35.0	36.1
Net current transfers (negative = inflow)	-6.0	-6.9	-5.4	-5.7	1.8	-5.6	-5.8	-5.8	-5.8	-5.8	-5.9	-5.8	-5.9	-5.9	-5.9
of which: official	0.0	-0.8	-1.5	-1.7	1.9	-2.0	-2.7	-1.5	-1.3	-1.2	-1.1	-1.6	-1.0	-0.8	-1.0
Other current account flows (negative = net inflow)	2.9	2.5	3.6	1.7	1.2	3.7	3.7	3.6	3.6	3.5	3.5	3.6	3.5	3.2	3.3
Net FDI (negative = inflow)	**-5.2**	**-2.9**	**-4.5**	**-5.6**	**1.9**	**-5.0**	**-5.1**	**-5.2**	**-5.1**	**-5.1**	**-5.1**	**-5.1**	**-5.1**	**-5.1**	**-5.1**
Endogenous debt dynamics 2/	**-2.6**	**0.0**	**4.6**	**-1.7**	**3.8**	**-1.7**	**-1.7**	**-1.7**	**-1.7**	**-1.7**	**-1.6**	**-1.7**	**-2.2**	**-1.8**	**-2.0**
Contribution from nominal interest rate	0.3	0.3	0.3	0.3	0.1	0.3	0.4	0.5	0.5	0.5	0.6	0.5	0.6	0.5	0.5
Contribution from real GDP growth	-0.9	-1.4	-1.5	-1.1	1.3	-2.0	-2.1	-2.2	-2.3	-2.2	-2.2	-2.2	-1.9	-1.6	-1.8
Contribution from price and exchange rate changes	-1.9	1.1	5.8			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	**1.7**	**4.1**	**1.9**	**-4.1**	**14.1**	**4.8**	**3.2**	**3.1**	**2.5**	**2.5**	**2.3**	**3.1**	**3.5**	**6.3**	**4.5**
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/	...	...	35.3			35.3	34.4	33.8	33.1	32.5	31.6		27.1	26.4	
In percent of exports	...	...	110.2			107.0	106.9	105.5	103.3	101.1	99.2		85.1	84.4	
PV of PPG external debt	**...**	**...**	**15.1**			**16.9**	**18.4**	**19.9**	**21.2**	**22.3**	**22.9**		**23.9**	**18.4**	
In percent of exports	**...**	**...**	**47.0**			**51.1**	**57.1**	**62.2**	**66.3**	**69.3**	**72.0**		**75.2**	**58.7**	
In percent of government revenues	**...**	**...**	**146**			**153**	**164**	**171**	**174**	**176**	**174**		**158**	**123**	
Debt service-to-exports ratio (in percent)	**1.8**	**2.3**	**2.1**			**3.1**	**3.4**	**3.6**	**3.9**	**4.0**	**4.3**		**5.2**	**5.7**	
PPG debt service-to-exports ratio (in percent)	**1.8**	**2.3**	**2.1**			**3.1**	**3.4**	**3.6**	**3.9**	**4.0**	**4.3**		**5.2**	**5.7**	
PPG debt service-to-revenue ratio (in percent)	**5.5**	**7.4**	**6.5**			**9.3**	**9.7**	**9.9**	**10.2**	**10.2**	**10.5**		**10.9**	**11.7**	
Total gross financing need (Millions of U.S. dollars)	98.7	-227.5	-211.0			-189.8	-68.7	-38.5	-25.0	-31.8	-34.1		-212.3	-891.3	
Non-interest current account deficit that stabilizes debt ratio	6.1	-1.1	-2.0			1.8	3.6	3.9	4.3	4.2	4.5		3.8	0.6	
Key macroeconomic assumptions															
Real GDP growth (in percent)	2.3	3.3	3.1	2.8	3.4	4.1	4.5	4.8	5.0	5.0	5.0	4.7	5.0	5.0	5.0
GDP deflator in US dollar terms (change in percent)	4.5	-2.6	-11.5	4.5	11.3	-4.0	1.9	1.4	2.1	2.1	2.3	1.0	1.9	1.9	1.9
Effective interest rate (percent) 5/	0.6	0.6	0.6	0.9	0.4	0.6	0.8	1.0	1.1	1.2	1.3	1.0	1.5	1.6	1.5
Growth of exports of G&S (US dollar terms, in percent)	10.7	9.8	-10.7	10.0	17.0	2.9	3.9	5.6	7.4	7.5	6.4	5.6	6.9	7.5	6.9
Growth of imports of G&S (US dollar terms, in percent)	6.9	-3.4	-12.7	7.2	22.4	3.8	8.8	6.8	7.2	7.4	6.8	6.8	6.4	6.6	6.5
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	32.6	39.6	37.5	31.6	33.8	34.9	35.0	33.6	31.3	32.7
Government revenues (excluding grants, in percent of GDP)	9.6	10.1	10.4	10.6	1.0	11.0	11.2	11.7	12.2	12.7	13.2	12.0	15.2	14.0	15.0
Aid flows (in Millions of US dollars) 7/	134	246	144			351	522	439	363	484	466		434	480	
of which: Grants	134	246	144			195	281	177	200	214	198		216	292	
of which: Concessional loans	0.0	0.0	0.0			156.0	241.5	262.1	162.9	269.3	267.9		218.1	188.0	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			3.4	4.5	3.4	3.1	3.1	2.8	3.4	2.1	1.5	1.9
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			54.2	61.9	53.3	50.5	52.9	52.6	54.2	52.3	49.1	51.3
Memorandum items:															
Nominal GDP (Millions of US dollars)	10602	10674	9744			9740	10372	11021	11817	12668	13601		19095	37634	
Nominal dollar GDP growth	6.9	0.7	-8.7			0.0	6.5	6.3	7.2	7.2	7.4	5.7	7.0	7.0	7.0
PV of PPG external debt (in Millions of US dollars)			1347.4			1599.2	1857.2	2149.4	2467.9	2778.0	3073.8		4502.1	6819.9	
(PVt-PVt-1)/GDPt-1 (in percent)						2.6	2.6	2.8	2.9	2.6	2.3	2.6	1.5	0.6	1.2
Gross workers' remittances (Millions of US dollars)	...	...	...			...	...	...	...	...	...		...	...	
PV of PPG external debt (in percent of GDP + remittances)	...	...	15.1			16.9	18.4	19.9	21.2	22.3	22.9		23.9	18.4	
PV of PPG external debt (in percent of exports + remittances)	...	...	47.0			51.1	57.1	62.2	66.3	69.3	72.0		75.2	58.7	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	2.1			3.1	3.4	3.6	3.9	4.0	4.3		5.2	5.7	

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.

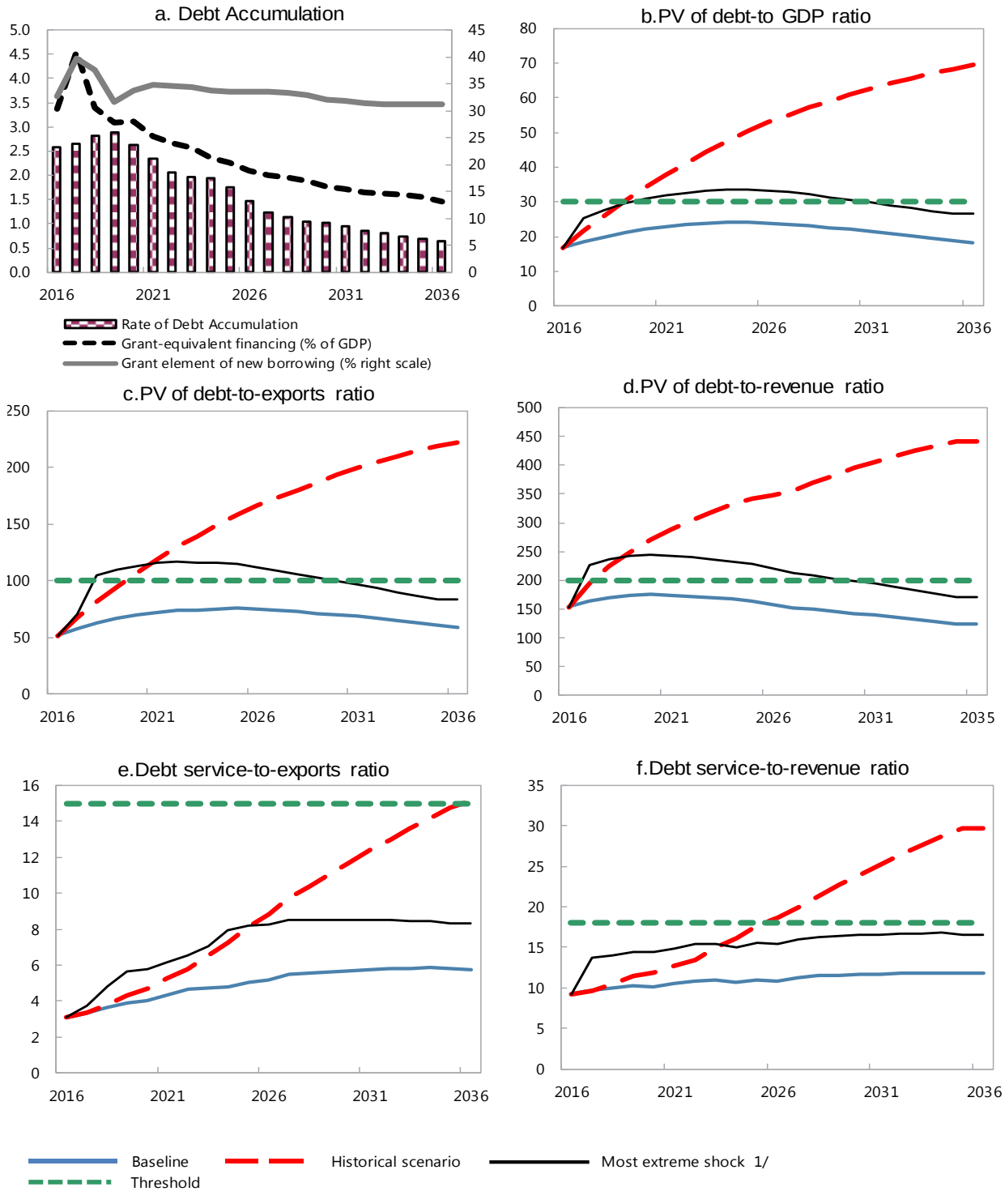
5/ Current-year interest payments divided by previous period debt stock.

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).

Figure 2. Madagascar: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2016-2036 1/



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 2026. In figure b. it corresponds to a One-time depreciation shock; in c. to a Exports shock; in d. to a One-time depreciation shock; in e. to a Exports shock and in figure f. to a One-time depreciation shock

Table 4. Madagascar: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2016-36

(In percent)

	Projections																				
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	**2026**	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
PV of debt-to GDP ratio																					
Baseline	17	18	20	21	22	23	23	24	24	24	**24**	24	23	23	22	21	21	20	20	19	18
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2016-2036 1/	17	22	26	30	34	38	41	44	48	50	**53**	55	57	59	61	63	64	66	67	68	69
A2. New public sector loans on less favorable terms in 2016-2036 2	17	20	22	25	27	28	29	30	31	32	**32**	32	32	32	32	31	31	31	30	30	30
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	17	19	22	23	25	25	26	26	27	27	**27**	26	26	25	24	24	23	22	22	21	20
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	17	20	26	28	29	29	29	29	29	29	**28**	27	26	26	25	24	23	22	21	20	20
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	17	20	23	25	26	27	27	28	28	28	**28**	28	27	26	26	25	24	24	23	22	21
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	17	20	24	25	26	27	27	27	27	27	**27**	26	25	24	24	23	22	21	21	20	19
B5. Combination of B1-B4 using one-half standard deviation shocks	17	21	28	30	31	31	32	32	32	31	**31**	30	29	28	27	26	26	25	24	23	22
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	17	25	28	30	31	32	33	33	33	34	**33**	33	32	31	31	30	29	28	27	26	26
PV of debt-to-exports ratio																					
Baseline	51	57	62	66	69	72	74	74	75	76	**75**	74	73	71	70	68	67	65	63	61	59
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2016-2036 1/	51	67	82	95	107	119	130	139	149	158	**166**	173	180	186	193	199	205	210	214	219	222
A2. New public sector loans on less favorable terms in 2016-2036 2	51	61	70	77	83	89	93	95	98	100	**101**	101	101	100	100	100	99	98	97	96	95
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	51	56	61	65	68	71	73	73	74	74	**74**	73	71	70	69	67	65	64	62	60	58
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	51	70	105	110	113	115	117	116	116	114	**112**	109	106	102	99	96	93	90	86	83	79
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	51	56	61	65	68	71	73	73	74	74	**74**	73	71	70	69	67	65	64	62	60	58
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	51	63	75	79	82	84	86	85	85	85	**83**	81	79	77	75	73	71	68	66	64	61
B5. Combination of B1-B4 using one-half standard deviation shocks	51	63	82	86	89	91	93	92	92	91	**90**	88	85	83	81	78	76	73	71	68	65
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	51	56	61	65	68	71	73	73	74	74	**74**	73	71	70	69	67	65	64	62	60	58
PV of debt-to-revenue ratio																					
Baseline	153	164	171	174	176	174	173	170	167	163	**158**	152	149	146	143	139	135	131	127	123	123
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2016-2036 1/	153	194	224	249	270	288	303	318	331	341	**349**	356	370	382	395	406	416	425	434	442	495
A2. New public sector loans on less favorable terms in 2016-2036 2	153	176	192	202	211	215	217	218	218	216	**212**	208	207	206	205	203	201	199	197	194	211
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	153	169	188	192	194	193	191	188	185	181	**175**	169	165	161	158	154	150	145	141	136	145
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	153	181	227	226	225	220	216	210	203	195	**185**	177	171	166	160	155	149	143	138	132	139
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	153	175	199	203	205	204	202	199	196	191	**185**	178	174	170	167	162	158	153	149	144	153
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	153	181	207	208	207	204	200	195	190	183	**175**	167	163	158	153	148	143	138	133	128	136
B5. Combination of B1-B4 using one-half standard deviation shocks	153	190	241	242	241	237	232	227	220	212	**203**	194	188	182	177	171	165	159	153	147	156
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	153	227	237	242	245	243	241	237	233	228	**220**	212	208	203	199	194	188	183	177	171	183

Table 4. Madagascar: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2016-36 (concluded)

(In percent)

	Projections																				
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	**2026**	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Debt service-to-exports ratio																					
Baseline	3	3	4	4	4	4	5	5	5	5	**5**	5	6	6	6	6	6	6	6	6	6
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2016-2036 1/	3	3	4	4	5	5	6	7	7	8	**9**	10	10	11	12	12	13	14	14	15	15
A2. New public sector loans on less favorable terms in 2016-2036 2	3	3	4	4	4	4	5	6	6	7	**7**	7	8	8	8	8	8	8	9	9	9
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	3	3	4	4	4	4	5	5	5	5	**5**	5	6	6	6	6	6	6	6	6	6
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	3	4	5	6	6	6	7	7	8	8	**8**	8	9	9	9	9	9	8	8	8	8
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	3	3	4	4	4	4	5	5	5	5	**5**	5	6	6	6	6	6	6	6	6	6
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	3	3	4	4	4	5	5	5	6	6	**6**	6	6	6	6	6	6	6	6	6	6
B5. Combination of B1-B4 using one-half standard deviation shocks	3	3	4	5	5	5	5	6	6	6	**7**	7	7	7	7	7	7	7	7	7	7
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	3	3	4	4	4	4	5	5	5	5	**5**	5	6	6	6	6	6	6	6	6	6
Debt service-to-revenue ratio																					
Baseline	9	10	10	10	10	10	11	11	11	11	**11**	11	11	12	12	12	12	12	12	12	12
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2016-2036 1/	9	10	10	11	12	13	13	15	16	18	**19**	20	21	23	24	25	26	28	29	30	34
A2. New public sector loans on less favorable terms in 2016-2036 2	9	10	10	9	10	10	12	13	14	15	**15**	15	16	16	16	17	17	17	17	17	19
B. Bound Tests																					
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	9	10	11	11	11	12	12	12	12	12	**12**	13	13	13	13	13	13	13	13	13	14
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	9	10	10	12	12	12	12	13	14	14	**14**	14	14	14	14	14	14	14	13	13	14
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	9	11	12	12	12	12	13	13	13	13	**13**	13	14	14	14	14	14	14	14	14	15
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	9	10	10	11	11	11	12	12	13	13	**13**	13	13	13	13	13	13	13	13	13	14
B5. Combination of B1-B4 using one-half standard deviation shocks	9	10	12	13	13	13	13	14	15	15	**15**	15	15	15	15	15	15	15	15	15	16
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	9	14	14	14	14	15	15	15	15	15	**15**	16	16	16	16	17	17	17	17	17	18
Memorandum item:																					
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	31	31	31	31	31	31	31	31	31	31	**31**	31	31	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.

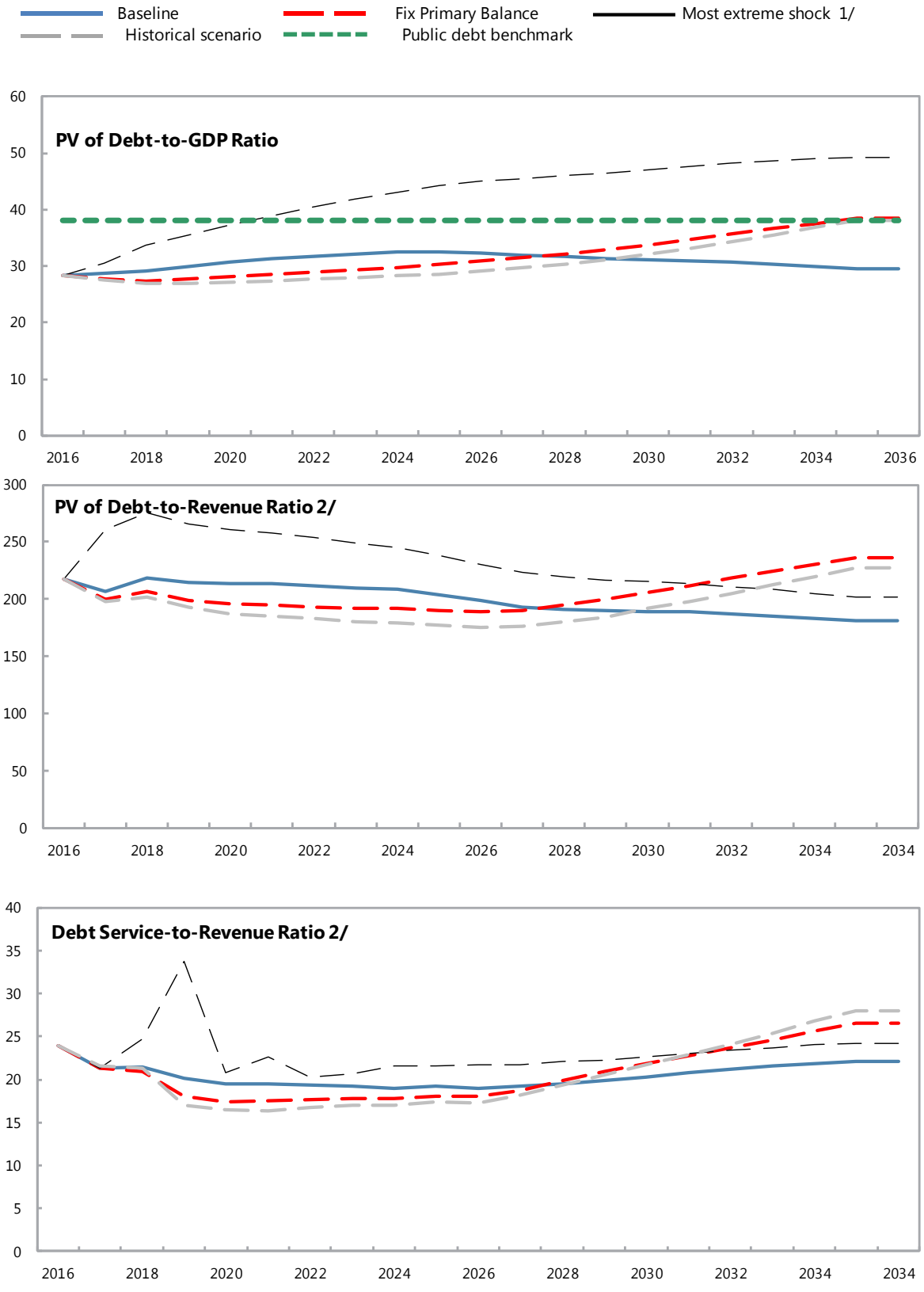
3/ Exports values are assumed to remain permanently at the lower level, but the current account as a share of GDP is assumed to return to its baseline level after the shock (implicitly assuming an offsetting adjustment in import levels).

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.

Figure 3.Madagascar: Indicators of Public Debt Under Alternative Scenarios, 2016-2036



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 2026.
2/ Revenues are defined inclusive of grants.

Table 5. Madagascar: Public Sector Debt Sustainability Framework, Baseline Scenario, 2013-36

(In percent of GDP, unless otherwise indicated)

	Actual					Projections									
	2013	2014	2015	Average 5/	Standard Deviation 5/	2016	2017	2018	2019	2020	2021	2016-21 Average	2026	2036	2022-36 Average
Public sector debt 1/	33.9	35.8	41.0	34.3	3.0	41.8	42.8	43.7	44.5	45.2	45.7	44.0	45.3	36.9	42.7
of which: foreign-currency denominated	22.8	24.4	28.4	24.9	1.8	30.4	32.6	34.5	35.8	36.9	37.4	34.6	36.8	27.4	33.6
Change in public sector debt	0.9	1.9	5.2			0.8	1.1	0.8	0.8	0.7	0.5		-0.6	-1.9	
Identified debt-creating flows	3.6	1.8	4.4			-0.9	0.7	0.6	0.4	0.4	0.3		-0.9	-1.8	
Primary deficit	3.2	1.7	2.4	1.3	1.4	2.3	3.4	3.3	3.1	2.9	2.7	2.9	1.4	0.1	1.0
Revenue and grants	10.9	12.4	11.8	13.5	3.2	13.0	13.9	13.3	13.9	14.4	14.6	13.8	16.3	14.8	16.0
of which: grants	1.3	2.3	1.5	2.9	2.6	2.0	2.7	1.6	1.7	1.7	1.5	1.9	1.1	0.8	1.0
Primary (noninterest) expenditure	14.1	14.1	14.3	14.8	2.2	15.3	17.3	16.6	17.0	17.2	17.3	16.8	17.7	14.9	17.1
Automatic debt dynamics	-1.9	0.9	2.5			-1.9	-2.1	-2.2	-2.4	-2.3	-2.4		-2.3	-1.9	
Contribution from interest rate/growth differential	-0.8	-1.4	-1.4			-2.0	-2.1	-2.2	-2.3	-2.4	-2.4		-2.5	-2.0	
of which: contribution from average real interest rate	-0.1	-0.3	-0.3			-0.3	-0.3	-0.2	-0.2	-0.3	-0.3		-0.3	-0.2	
of which: contribution from real GDP growth	-0.7	-1.1	-1.1			-1.6	-1.8	-2.0	-2.1	-2.1	-2.2		-2.2	-1.8	
Contribution from real exchange rate depreciation	-1.1	2.3	3.9			0.0	0.1	0.0	-0.1	0.1	0.1		...	...	
Other identified debt-creating flows	2.2	-0.7	-0.5			-1.2	-0.7	-0.5	-0.3	-0.2	0.0		0.0	0.0	
Privatization receipts (negative)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recognition of 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	
Reduction of domestic arrears	2.2	-0.7	-0.5			-1.2	-0.7	-0.5	-0.3	-0.2	0.0		0.0	0.0	
Residual, including asset changes	-2.7	0.1	0.8	-0.3	1.9	1.7	0.4	0.3	0.4	0.4	0.1	0.5	0.3	-0.1	0.5
Other Sustainability Indicators															
PV of public sector debt	...	...	27.7			28.3	28.7	29.0	29.9	30.6	31.2		32.4	28.0	
of which: foreign-currency denominated	...	...	15.1			16.9	18.4	19.9	21.2	22.3	22.9		23.9	18.4	
of which: external	...	...	15.1			16.9	18.4	19.9	21.2	22.3	22.9		23.9	18.4	
Gross financing need 2/	10.1	9.3	10.4	12.4	13.8	11.0	11.5	10.8	10.0	9.6	9.3	10.4	8.3	8.3	8.4
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	234.1			217.2	206.4	218.7	215.0	213.2	213.6		198.7	188.9	
PV of public sector debt-to-revenue ratio (in percent)	...	...	267.5			256.7	256.3	248.8	244.7	241.6	237.3		213.6	199.4	
of which: external 3/	...	...	145.7			153.2	164.5	170.6	173.8	175.5	174.2		157.8	131.1	
Debt service-to-revenue and grants ratio (in percent) 4/	22.3	20.5	24.2	40.7	67.8	23.9	21.3	21.4	20.1	19.5	19.5	21.0	18.9	23.2	20.3
Debt service-to-revenue ratio (in percent) 4/	25.3	25.2	27.6	64.4	131.0	28.3	26.4	24.3	22.9	22.1	21.7	24.3	20.4	24.5	21.8
Primary deficit that stabilizes the debt-to-GDP ratio	2.4	-0.2	-2.8	-0.2	2.6	1.5	2.3	2.5	2.3	2.1	2.2	2.2	2.0	2.0	1.6
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	2.3	3.3	3.1	2.8	3.4	4.1	4.5	4.8	5.0	5.0	5.0	4.7	5.0	5.0	5.0
Average nominal interest rate on forex debt (in percent)	1.2	1.1	1.1	1.2	0.2	1.2	1.4	1.5	1.6	1.6	1.6	1.5	1.6	2.0	1.7
Average real interest rate on domestic debt (in percent)	0.7	-2.7	-1.5	1.0	3.4	-0.8	-1.1	-0.5	-0.3	0.4	0.4	-0.3	0.0	-0.4	0.0
Real exchange rate depreciation (in percent, + indicates depreciation)	-4.6	10.4	16.4	3.2	8.4	0.2	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	5.1	6.6	7.6	8.0	1.9	6.7	6.9	6.4	6.1	5.5	5.4	6.2	5.0	5.0	5.0
Growth of real primary spending (deflated by GDP deflator, in percent)	14.3	3.2	4.3	2.2	4.5	11.6	18.6	0.4	7.6	6.4	5.5	8.3	4.2	-5.1	4.0
Grant element of new external borrowing (in percent)	...	...	...	...	...	32.6	39.6	37.5	31.6	33.8	34.9	35.0	33.6	31.3	32.7

Sources: Country authorities; and staff estimates and projections.
1/ General government gross debt

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 6. Madagascar: Sensitivity Analysis for Key Indicators of Public Debt 2016-36

(In percent)

	Projections																				
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
PV of Debt-to-GDP Ratio																					
Baseline	28	29	29	30	31	31	32	32	32	33	32	32	32	31	31	31	31	30	30	30	28
A. Alternative scenarios																					
A1. Real GDP growth and primary balance are at historical averages	28	28	27	27	27	27	28	28	28	29	29	30	30	31	32	33	34	36	37	38	38
A2. Primary balance is unchanged from 2016	28	28	27	28	28	28	29	29	30	30	31	31	32	33	34	35	36	37	38	39	38
A3. Permanently lower GDP growth 1/	28	29	30	31	32	33	35	36	37	38	39	39	40	41	42	43	44	45	46	47	47
B. Bound tests																					
B1. Real GDP growth is at historical average minus one standard deviations in 2017-2018	28	31	34	36	37	39	40	42	43	44	45	46	46	47	47	48	48	49	49	49	48
B2. Primary balance is at historical average minus one standard deviations in 2017-2018	28	28	28	29	30	30	31	31	32	32	32	31	31	31	30	30	30	30	29	29	27
B3. Combination of B1-B2 using one half standard deviation shocks	28	29	29	30	32	33	35	36	37	38	38	39	39	39	40	40	40	41	41	41	40
B4. One-time 30 percent real depreciation in 2017	28	36	35	35	35	36	36	36	36	36	36	36	36	35	35	35	35	35	35	34	33
B5. 10 percent of GDP increase in other debt-creating flows in 2017	28	36	37	37	37	38	38	38	38	38	38	37	36	36	35	35	35	34	34	33	31
PV of Debt-to-Revenue Ratio 2/																					
Baseline	217	206	219	215	213	214	212	209	208	204	199	193	191	190	190	189	187	185	183	181	189
A. Alternative scenarios																					
A1. Real GDP growth and primary balance are at historical averages	217	197	201	193	188	185	183	180	179	177	176	176	180	184	192	198	205	212	220	228	247
A2. Primary balance is unchanged from 2016	217	200	206	199	196	195	193	192	192	190	189	190	194	199	206	212	218	224	230	236	258
A3. Permanently lower GDP growth 1/	217	208	223	222	223	227	230	231	235	236	236	236	241	246	254	261	268	275	282	289	315
B. Bound tests																					
B1. Real GDP growth is at historical average minus one standard deviations in 2017-2018	217	218	250	252	256	263	267	270	275	275	274	273	276	280	285	289	293	296	298	300	322
B2. Primary balance is at historical average minus one standard deviations in 2017-2018	217	202	211	208	207	208	206	204	203	199	194	189	187	186	186	185	184	182	180	178	186
B3. Combination of B1-B2 using one half standard deviation shocks	217	204	215	217	221	227	230	232	235	235	234	232	234	236	240	243	245	247	248	249	266
B4. One-time 30 percent real depreciation in 2017	217	256	263	253	246	243	239	235	232	227	222	216	215	214	215	215	214	213	212	210	222
B5. 10 percent of GDP increase in other debt-creating flows in 2017	217	261	276	265	260	258	254	249	245	239	231	223	220	217	216	214	211	208	205	202	211
Debt Service-to-Revenue Ratio 2/																					
Baseline	24	21	21	20	19	20	19	19	19	19	19	19	20	20	20	21	21	22	22	22	23
A. Alternative scenarios																					
A1. Real GDP growth and primary balance are at historical averages	24	22	21	17	16	16	17	17	17	17	17	18	19	21	22	23	24	25	27	28	30
A2. Primary balance is unchanged from 2016	24	21	21	18	17	17	18	18	18	18	18	19	20	21	22	23	24	25	26	26	29
A3. Permanently lower GDP growth 1/	24	21	22	21	20	21	21	21	21	22	22	23	24	25	26	27	29	30	31	32	35
B. Bound tests																					
B1. Real GDP growth is at historical average minus one standard deviations in 2017-2018	24	22	24	23	24	24	24	25	25	25	26	26	27	28	29	30	31	32	33	33	36
B2. Primary balance is at historical average minus one standard deviations in 2017-2018	24	21	21	19	18	19	19	19	19	19	19	19	19	19	20	20	21	21	22	22	23
B3. Combination of B1-B2 using one half standard deviation shocks	24	22	22	18	18	21	21	22	22	22	22	23	23	24	25	26	26	27	28	28	30
B4. One-time 30 percent real depreciation in 2017	24	23	25	25	25	25	25	25	25	26	26	26	27	28	28	29	30	30	31	31	34
B5. 10 percent of GDP increase in other debt-creating flows in 2017	24	21	25	34	21	23	20	21	22	22	22	22	22	22	23	23	23	24	24	24	25

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.