INTERNATIONAL MONETARY FUND

CHAD

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

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

The staffs' assessment of Chad's debt vulnerability and risk of debt distress, which remains moderate, has not changed since the 2010 debt sustainability analysis (DSA). The assumptions underpinning the DSA are also quite similar, except for an upward revision of current and projected oil prices. Public and publicly-guaranteed external debt and debt service indicators remain well below the indicative thresholds through the projection horizon. However, Chad's debt sustainability outlook remains highly sensitive to an oil price shock. Should a decline in oil price similar to that experienced in 2009 reoccur, all debt and debt service ratios would be breached and remain persistently above most debt indicator thresholds. Furthermore, borrowing to finance contemplated major projects would also jeopardize sustainability.

BACKGROUND

Recent Developments in Public External Debt

1. Chad's external public debt burden diminished considerably in 2001–08, thanks to strong oil sector-driven growth and low borrowing from abroad. Even in 2009, notwithstanding a sharp deterioration of the fiscal position, external public debt decreased in nominal terms. With a steep drop in oil revenue, the overall fiscal deficit (excluding grants) reached about 22 percent of non-oil GDP, but it was largely financed by depleting government deposits and drawing statutory advances from the central bank. However, the negative GDP shock in 2009 pushed up the external public debt-to-GDP ratio.

2. In 2010, the authorities borrowed abroad on nonconcessional terms and external debt picked up. As a result, the rate of debt accumulation (the year-to-year change in present value (PV) of debt relative to previous year's GDP) spiked due in part to the low grant element of new borrowing (from Libya and China). The external public debt-to-GDP ratio reached about 25 percent compared with 27½ percent anticipated in the 2010 DSA, as the overall fiscal situation was slightly better, and recourse to external borrowing was lower than anticipated. With the rebound in oil prices, the overall fiscal deficit (excluding grants) dropped to around 12 percent of non-oil GDP, but the external current account deficit widened to 35 percent of GDP, because of the high import content of investment spending (notably, in the oil and energy sector).

Status of Implementation of Debt Relief Initiatives

3. Poor macroeconomic policy performance has prevented Chad from reaching the completion point under the Enhanced Heavily Indebted Poor Countries (HIPC) Initiative. Chad reached the Decision Point under the Enhanced HIPC Initiative in May 2001. Chad's inability to meet agreed fiscal targets and to implement satisfactorily a program under the IMF's Poverty Reduction and Growth Facility (PRGF) has been the principal obstacle to debt relief. The 2005 PRGF expired in 2008 without any reviews being concluded. Subsequent efforts to resume the path toward debt relief with the support of IMF Staff-Monitored Programs (SMP) were also hindered by fiscal slippages. Progress towards other completion point triggers[1] has either been slow or early gains have been followed by subsequent deterioration.[2]

4. Meeting the conditions for debt relief under the Enhanced HIPC Initiative and the Multilateral Debt Relief Initiative (MDRI) would cut external debt in half (in nominal terms). MDRI relief would cover the full stock of debt owed to three multilateral creditors (IDA, IMF, and the African Development Fund (AfDF))

[1] For a description of completion point triggers, see Chad, Decision Point Document for the Enhanced Heavily Indebted Poor Countries (HIPC) Initiative, May 4, 2001, pp. 29–31.

[2] Heavily Indebted Poor Countries (HIPC) Initiative and Multilateral Debt Relief Initiative (MDRI)—Status of Implementation 2010. Table 2B, p.30.

Text Table 1. Chad: External Debt Stock at Year-End, 2001–10
(Billions of CFA francs)

	2001	2002	2003	2004	2005	2006	2007	2008	2009 Rev.	2010 Est.
Total	794.7	786.6	736.9	797.2	898.9	896.2	794.0	782.3	781.8	1,066.8
(percent of GDP)	63.4	56.8	46.3	34.2	29.0	27.2	23.6	20.9	23.4	25.2
Multilateral	678.1	687.7	652.5	715.3	810.2	805.5	718.6	706.6	677.7	757.7
IMF	65.3	67.3	57.0	47.7	47.5	37.4	25.4	19.0	12.9	8.3
World Bank/IDA	380.6	398.3	394.0	444.5	507.8	486.1	453.4	422.0	402.7	439.5
African Development Fund/Bank	182.8	169.8	159.9	168.5	179.8	205.8	173.7	182.4	185.5	208.7
EIB	3.9	7.9	7.3	13.0	13.0	12.4	9.9	9.8	8.7	9.4
Others	45.5	44.4	34.2	41.6	62.0	63.8	56.2	73.4	67.9	91.8
Bilateral	116.2	98.6	84.1	81.9	88.8	90.7	75.4	75.7	104.1	309.1
Paris Club official debt	30.2	25.8	24.0	25.2	24.3	23.2	23.6	19.2	16.6	32.0
Non-Paris Club official debt	86.1	72.7	60.1	56.7	64.4	67.5	51.8	56.5	87.5	277.2
of which: China, People's Republic	28.6	25.4	22.0	13.6	15.4	13.9	-	3.5	20.4	125.1
Libya	-	-	-	-	-	-	-	-	-	96.2
India	-	-	-	-	-	11.3	14.8	22.7	21.4	22.9

Sources: World Bank, Chadian authorities, selected creditors and staff estimates.

Text Table 1's end-2010 external public debt stocks are estimated by staff based on World Bank Debt Reporting System (DRS) end-2009 debt stock, Chad's debt management office's estimates of 2010 disbursements and amortization, and Ministry of Economy and Planning estimates of 2010 project loan disbursements. The official external debt stock data underestimate the actual level of external debt. Most notably, the debt registry does not capture the loan from Libya or the loan from China for the state's stake in the joint-venture refinery. Also, project loan disbursements are recognized only after a long lag. Both text tables have discrepancies with corresponding fiscal or balance of payments flow estimates, giving rise to residuals in the sustainability analyses. Data could be substantially revised in the 2012 DSA.

that remains after Enhanced HIPC relief on disbursements before end-2004 in the case of IMF and AfDF, and before end-2003 in the case of IDA. In nominal terms, this could total over $1 billion and would imply a reduction in debt service of about $40 million per year, for about 30 years.

Recent Developments in Public Domestic Debt

5. The stock of public domestic debt has grown, mainly as a result of drawing on central bank statutory advances. Chad's domestic debt is estimated at about CFAF 87 billion (7½ percent of GDP) at end-2010 (Text Table 2). The public domestic debt includes central bank statutory advances (*avances statutaires*); treasury arrears (*arriérés comptables*); rescheduled debt (*dettes conventionnées*); legal payment obligations (*engagements juridiques*); and one small public bond issue. The authorities made a significant effort to reduce domestic arrears in 2010. Most of domestic arrears outstanding at end-2009 were paid, which brought down the stock outstanding to about

Text Table 2. Chad: Public Domestic Debt Stock at Year-End, 2006–10
(Billions of CFA francs)

	2006	2007	2008	2009	2010
Total	122.3	123.1	142.7	238.5	286.9
(Percent of GDP)	3.7	3.7	3.8	7.1	6.8
Central Bank Statutory Advances	-	17.0	21.6	141.6	208.6
Rescheduled debts	71.8	48.6	56.8	58.2	67.9
Treasury arrears	24.8	26.1	41.1	25.7	3.1
Legal commitments	13.2	12.5	10.8	10.1	4.6
Standing payment orders	11.5	18.1	11.5	2.1	1.8
National Savings Bond	0.9	0.9	0.9	0.9	0.9

Source: Chadian authorities.

CFAF 3 billion (about 0.1 percent of GDP) at end-2010. In July 2011, the authorities completed a sale of over CFAF 100 billion of five-year savings bonds with a 6 percent coupon. Sixty three percent of the issue was purchased by Chadian residents. Two-thirds (67 percent) of the issue was purchased by banks, local and regional.

Debt Burden Thresholds under the Debt Sustainability Framework

6. **Chad is a weak policy performer for the purpose of debt burden thresholds under the Debt Sustainability Framework (DSF).** Chad's rating on the World Bank's Country Policy and Institutional Assessment (CPIA) is weak (2.46 on average for 2008–10, on a scale from 1 to 6) and declined from 2.88 in 2005 to 2.38 in 2010.

Text Table 3. External Public Debt Burden Thresholds for "Weak Policy Performers" under the Debt Sustainability Framework

Present value of external debt in percent of:	
GDP	30
Exports	100
Revenue	200
External debt service in percent of:	
Exports	15
Revenue	25

Source: 2010 IDA Country Performance ratings (methodology and results).

DSA BASELINE SCENARIO

7. **Chad's external debt ratio in current value terms deteriorated in 2010 by less than expected, due to higher-than-expected GDP growth and lower-than-expected recourse to external borrowing.** Real GDP growth reached 13 percent and higher oil prices strengthened exports and government revenues. The non-oil primary deficit in 2010, at 31 percent of non-oil GDP, was larger than in 2009 and exceeded the 2010 supplementary budget target by nearly 3 points of non-oil GDP. However, higher-than-expected oil revenues led to a smaller-than-expected overall deficit. In the event, the authorities drew only two-thirds of the $300 million nonconcessional budget support loan from Libyan Foreign Bank.

8. **The central feature of Chad's medium- and long-term macroeconomic outlook remains the steady decline of oil production over the twenty-year projection period.** Production at the Doba oil field started in 2003, reached its peak of 61 million barrels in 2004, with annual output set to decline steadily to a negligible level beyond 2030. Long-term oil export projections are based on this gradual depletion of the Doba field. Chad's oil trades below the international reference price, reflecting a quality discount and transport cost. For the medium term (to 2016) the price of Chadian oil is assumed to drop from $99.8 per barrel (all discounts included) to about $92 per barrel in 2015–16, in line with the trend projected in the IMF's World Economic Outlook (WEO) average oil price; from 2017 onward, the price is assumed to increase 3 percent per year in U.S. dollar terms (consistent with the assumption used by the IMF in long-term projections for other sub-Saharan African countries). Production has begun at a second oil field, Bongor, which is only one-third the size of the Doba oil field. Bongor produces crude oil at a rate of 20,000 barrels per day; however its output is not for export, but feedstock for the oil refinery, the output of which is projected to reduce Chad's imports of refined petroleum products.

9. **The baseline scenario assumes a fiscal adjustment to offset the decline in oil revenues.** Dwindling oil revenues will cause a steady decline of total government revenue from 44 percent of non-oil GDP in 2011 to 24 percent in 2030. The adjustment (resulting in a steady reduction of non-oil primary deficit to about 5 percent in 2030) is assumed to be achieved by increased non-oil revenue effort, reduction and subsequent stabilization of investment outlays at about 14 percent of non-oil GDP, and cuts in recurrent spending, notably exceptional security transfers and transfers to cover losses of state-owned enterprises.

10. **The authorities recognize the downward sloping profile of oil revenues and see the need for fiscal adjustment.** Their draft medium-term fiscal framework (through 2014) features a similar degree of fiscal adjustment as the baseline scenario, but a significantly better end-2011 fiscal position, higher oil revenues, and a strong improvement in non-oil revenues, all of which enable a higher level of domestically-financed investment.

Box 1. Baseline Macroeconomic Assumptions (2011–30)

The primary determinant of **real GDP growth** in the baseline scenario is the steady decline of annual oil production over the next twenty years. Non-oil GDP growth is projected to increase in the short term, as major projects come on line (see below), and is assumed to stabilize at 3.7 percent in the long term, with the help of a sustained level of domestic public investment and private investment in the non-oil sector.

Inflation stabilizes at a level consistent with the CEMAC convergence criterion of maximum 3 percent per year.

The **external current account** remains in significant deficit until the new pipeline and refinery (Chad-China joint-venture) are completed (they are expected to operate for a full year in 2012), at which time construction-related and refined petroleum product imports drop significantly. Similarly, strong FDI, associated with the refinery and other investment projects (power station and cement factory), slows upon their completion in 2012.

The **fiscal outlook** is dominated by dwindling oil revenues and limited financing options. The authorities adjust by increasing non-oil revenue effort, eliminating exceptional security spending and subsidies to public enterprises, while maintaining an appropriately high level of investment and social spending to ensure steady growth in non-oil economy and poverty reduction.

The **external financing** assumptions are based on historical averages; 5 percent of non-oil GDP, 70 percent grants and 30 percent in loans from official multilateral and bilateral creditors. The average grant element of borrowing declines over time, as the mix of terms changes with diminishing reliance on IDA-type loans. In the absence of an IMF arrangement, there is no target date for the HIPC completion point, and the baseline does not take into account HIPC and MDRI debt relief for which Chad is eligible.

The **domestic financing** assumptions include reimbursement of BEAC statutory advances by 2014 (as scheduled), no accrual of domestic arrears, and issuance of domestic debt instruments (with an average maturity of one year), the stock of which reaches about 11 percent of GDP by 2030.

	2010 Est.	2011	2012	2013	2014	2015	2010–15 Avg.	2016–30 Avg.
Real GDP growth (percent per year)	13.0	3.8	6.9	3.2	3.2	3.3	5.6	2.8
Oil	6.4	-1.8	10.4	-4.9	-4.4	-4.5	0.2	-5.2
Non-oil	15.0	5.3	6.0	5.3	5.0	5.0	6.9	3.7
Consumer price inflation (percent per year)	-2.1	2.0	5.0	3.0	3.0	3.0	2.3	3.0
External current account balance (percent of GDP)	-34.6	-23.9	-16.9	-11.7	-11.0	-10.1	-18.0	-7.4
	(In percent of non-oil GDP)							
Government revenue and grants	41.8	46.7	41.5	37.6	36.6	34.1	39.7	29.1
Of which: oil revenue	26.5	33.4	26.3	21.9	20.7	17.9	24.4	8.3
Of which: grants	2.7	2.8	3.5	3.5	3.5	3.5	3.2	3.5
Government expenditure (commitment basis)	50.4	42.1	36.1	35.7	34.1	32.8	38.5	31.0
Overall fiscal balance (incl. grants; cash basis)	-6.7	6.6	4.1	2.1	2.5	1.3	1.7	-1.7
Non-oil primary fiscal bal. (excl. grants; commitment	-31.5	-26.2	-19.2	-18.4	-16.6	-15.1	-21.2	-8.3
Memorandum item:								
Government deposits (in percent of non-oil GDP)	4.1	8.6	11.3	11.7	12.0	12.2	10.0	7.8
Chadian crude oil price (US$/barrel)	73.6	99.8	98.8	95.3	93.0	92.3	92.1	115.6

Source: Chadian authorities; and staff estimates and projections.

EXTERNAL DEBT

Baseline

11. The evolution of external debt is driven by the volume of project loans (Box 1). Going forward, new borrowing is expected to comprise funding from IDA, AfDB, other multilateral lenders, Paris Club and non-Paris Club lenders.[3] Absent a substantial improvement in macroeconomic and public financial management performance, traditional donors (multilaterals and Paris Club) are expected to continue to provide concessional project loans at roughly the same nominal level as in the last few years, with an increasing share of project lending by non-Paris Club bilateral creditors. The concessionality of borrowing is projected to decline steadily over the 20-year horizon (Figure 1a).

12. Under the baseline scenario, the present value of external public- and publicly-guaranteed debt remains well below the 30 percent of GDP threshold, declining steadily from 22 percent to 12 percent in 2030 (Figure 1b). With the expected steady decline in oil exports over the projection period, both debt stock and debt service rise steadily relative to exports, but remain well below their respective thresholds (Figures 1c and 1e). Relative to government revenue, the debt stock and debt service rise from 2011 to 2015–16, when amortization of the nonconcessional loans disbursed in 2010 and 2011 begins. Again, the baseline remains well below the respective thresholds (Figures 1d and 1f).

[3] The terms of IDA, AfDB and other multilateral loans are concessional, with grant elements ranging from 35 percent to 52 percent.

Alternative Scenarios and Stress Tests

13. A continuation of current policies would quickly bring the external public- and publicly-guaranteed (PPG) debt burden above the thresholds. If the authorities were to continue to run a current account deficit far higher than the foreign direct investment (FDI) inflows in the oil sector, as they did in 2009, external PPG debt would breach two of the five of the sustainability thresholds (Historical scenario in ,Figures 1b, 1c, 1d and 1e; and Alternative Scenario A1 in Table 2a).

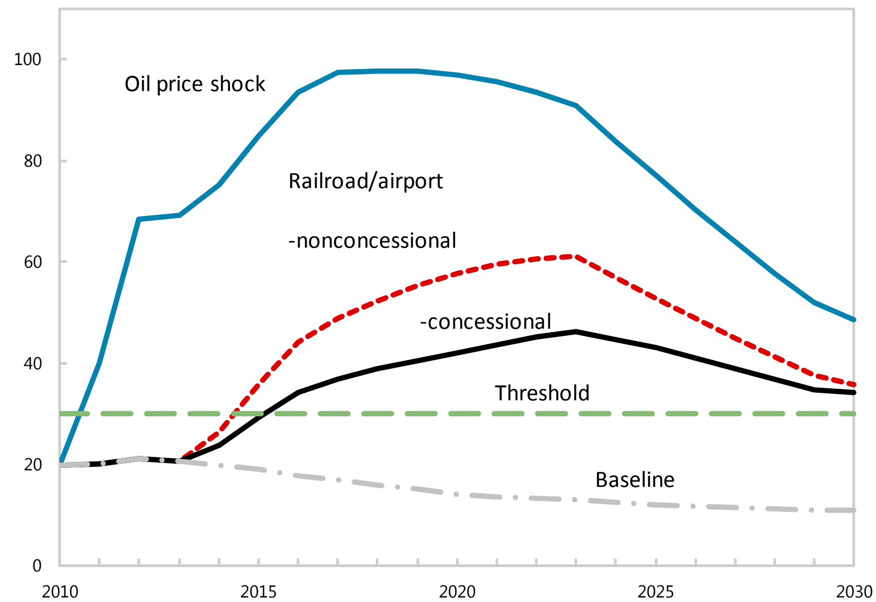
14. Chad's external debt burden indicators are highly sensitive to an oil price shock. Across all indicative debt burden thresholds, the most extreme shock is a drop in export growth in 2011—12 proportional to a two-standard-deviation lower oil price (Most extreme shock in Figure 1 and B2 Bound Test in Table 2a). Such a shock would send the debt on a path that would breach all indicative debt burden thresholds.

15. Nonconcessional borrowing for contemplated major capital projects would increase the risk of debt distress. The authorities have signed letters of intent with Chinese companies for construction of a new airport (estimated cost $1 billion) and an East-West railroad ($7.5 billion). If the projects were undertaken over and above the baseline level of spending, executed and financed over 10 years, and did not significantly accelerate growth, the debt path would breach the 30 percent of GDP threshold in 2015 and peak in 2023, implying an increased risk of debt distress.[4]

[4] These projects are tentative, and therefore not in the baseline. Also, their impact and cost-effectiveness relative to alternative investment projects has not been established; no growth impact is assumed.

This would occur under either the typical terms (33 percent grant element) or most concessional terms (52 percent grant element).

Present Value of Public and Publicly-Guaranteed External Debt
(Percent of GDP)



Sources: Chadian authorities; and staff estimates and projections.

PUBLIC DEBT

Baseline

16. The inclusion of domestic debt does not alter the assessment of Chad's debt sustainability. Given the size of Chad's domestic debt, the baseline adjustment in the non-oil primary balance, and expected oil revenues, the public debt sustainability analysis broadly parallels the external debt sustainability analysis. The domestic debt component increases from 7½ percent of GDP in 2010 to 11¼ percent of GDP in 2030, reflecting the increased reliance on domestic debt financing.

17. Staffs recommend that the authorities begin to issue short-term treasury paper on a regular basis, to alleviate liquidity constraints and demonstrate leadership in the development of a regional financial market. The authorities are eager to proceed, as soon as technically feasible, to issue instruments with maturities shorter than one year.[5]

Alternative Scenarios and Stress Tests

18. The analysis of total public debt sustainability confirms that the recent (2010) fiscal stance is not sustainable. Even with ample oil revenues, and assuming that financing could

[5] Domestic borrowing would include the contemplated issuance of short-term instruments on the regional CEMAC market, but their share of total domestic borrowing is not identified.

be secured, the resulting debt path would increase steeply, leading to an unmanageable debt and debt-service burden (Fixed Primary Balance Scenario in Figure 2). A temporary shock to real GDP growth in 2011–12 would also impair public debt sustainability (Most Extreme Shock in Figure 2 and Bound Test B1 in Table 2b).

THE AUTHORITIES' VIEWS

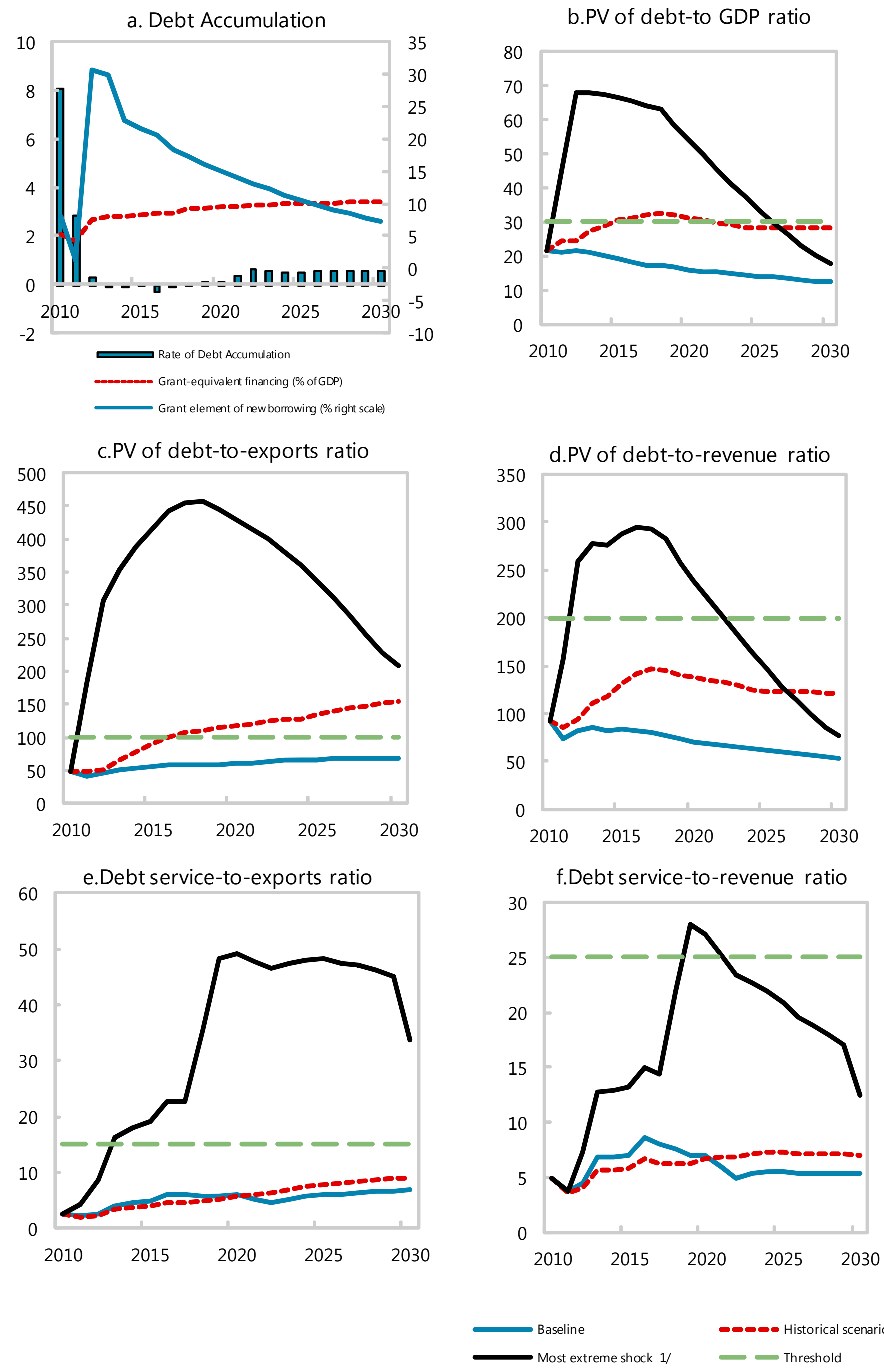
19. The authorities have expressed renewed determination to resume the path to debt relief. They urged staffs to recognize Chad's special post-conflict circumstances and recent progress, and to accelerate the remaining steps toward completion point. The authorities welcome closer collaboration with staffs in designing their long-term growth strategy, including a framework for managing major capital projects and related financing. That said, the authorities continue to emphasize that public investment is critical to growth, and that debt relief is needed to create fiscal space for additional development spending (including foreign-financed).

DEBT DISTRESS CLASSIFICATION AND CONCLUSIONS

20. It is staffs' view that, based on external debt burden indicators, Chad's risk of debt distress is moderate. The public DSA suggests that under the baseline scenario Chad's overall public sector debt dynamics are sustainable, in light of the current size, and expected evolution, of the domestic debt stock. This year's DSA yields roughly the same debt dynamics under the baseline scenario and sensitivity to shocks as last year's, but stress test results remain a source of concern.

21. Progress toward the HIPC completion point would substantially reduce Chad's debt vulnerabilities, as HIPC Initiative and MDRI debt relief would cut external debt in half. Staffs are supportive of the authorities' expressed determination to return to the path to debt relief, including successfully implementing an IMF-supported program. In this context, staffs continue to emphasize the need for stronger public financial management and a more prudent fiscal policy, both to minimize the risk of debt distress directly and as a basis for an IMF-supported program. The staffs urged the authorities to subject major public investment proposals to careful, independent evaluation, and to avoid nonconcessional borrowing. Better coordination of Chadian agencies, to collect and disseminate comprehensive, timely and reliable debt statistics, would facilitate the conduct of sustainability analysis.

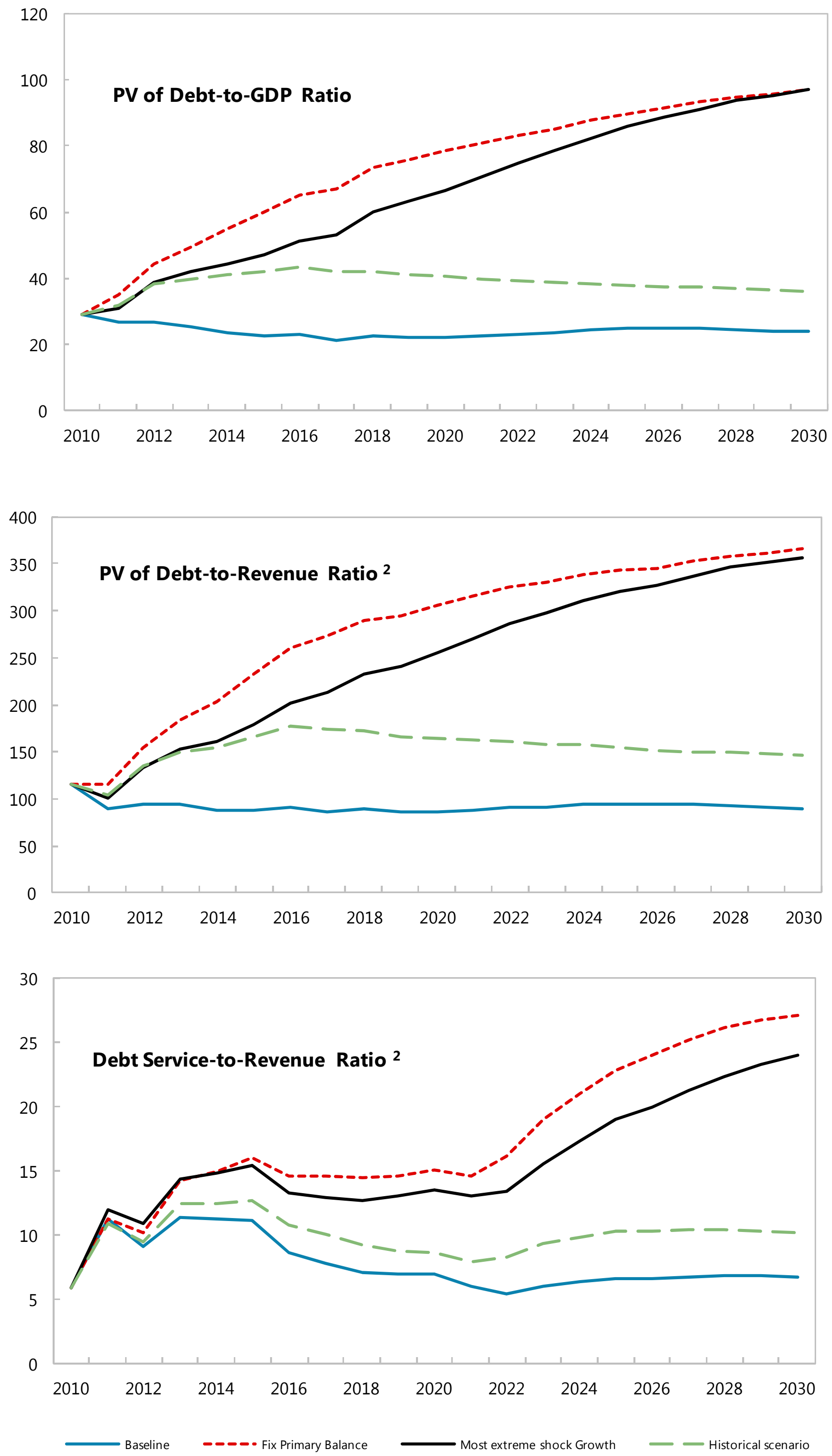
Figure 1. Chad: Indicators of Public- and Publicly-Guaranteed External Debt under Alternative Scenarios, 2010–30 [1]



Sources: Country authorities; and staff estimates and projections.

[1] The most extreme stress test is a reduction in export growth proportional to a two standard devision drop in the oil price.

Figure 2. Chad: Indicators of Public Debt under Alternative Scenarios, 2010–30 [1]



Sources: Country authorities; and staff estimates and projections.

[1] The most extreme stress test is a reduction in export growth proportional to a two standard devision drop in the oil price.

[2] Revenues are defined inclusive of grants.

Table 1a.: External Debt Sustainability Framework, Baseline Scenario, 2007–2030 [1]
(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average	Standard Deviation	Projections									
	2007	2008	2009			2010	2011	2012	2013	2014	2015	2010–2015 Average	2020	2030	2016–2030 Average
External debt (nominal)	**23.6**	**20.9**	**23.0**			**25.0**	**23.7**	**23.9**	**23.2**	**22.2**	**21.3**		**17.2**	**12.5**	
Change in external debt	-3.6	-2.7	2.1			2.0	-1.3	0.2	-0.7	-0.9	-0.9		-0.9	-0.4	
Identified net debt-creating flows	-2.2	-9.9	5.4			9.4	3.5	2.9	0.6	1.2	1.4		3.6	3.6	
Non-interest current account deficit	**10.4**	**-3.4**	**16.9**	**23.5**	**29.1**	**34.2**	**23.5**	**16.4**	**11.2**	**10.6**	**9.7**	17.6	**8.6**	**5.2**	7.3
Deficit in balance of goods and services	-2.5	-5.9	18.8			34.0	20.9	13.0	9.0	8.5	8.7		10.2	9.8	
Exports	54.8	54.0	44.1			45.0	50.7	47.2	40.8	37.0	34.1		26.7	18.3	
Imports	52.3	48.1	62.9			79.0	71.6	60.2	49.8	45.5	42.8		36.8	28.1	
Net current transfers (negative = inflow)	-4.0	-6.0	-7.3	-4.9	1.1	-7.5	-7.5	-7.9	-8.2	-8.0	-8.1		-8.7	-7.8	-8.4
o/w official	-2.5	-1.5	-2.4			-0.5	-0.6	-0.6	-0.6	-0.7	-0.7		-0.8	-0.9	
Other current account flows (negative = net inflow)	16.9	8.5	5.4			7.7	10.1	11.3	10.4	10.1	9.1		7.1	3.2	
Net FDI (negative = inflow)	**-10.1**	**-2.8**	**-15.6**	**-15.6**	**14.1**	**-22.7**	**-19.5**	**-12.4**	**-10.3**	**-9.1**	**-8.0**	-13.7	**-4.9**	**-1.6**	-3.9
Endogenous debt dynamics [2]	**-2.5**	**-3.7**	**4.2**			**-2.1**	**-0.5**	**-1.2**	**-0.3**	**-0.3**	**-0.3**		**-0.1**	**-0.1**	
Contribution from nominal interest rate	0.2	0.2	0.4			0.4	0.3	0.5	0.5	0.5	0.4		0.3	0.3	
Contribution from real GDP growth	0.0	0.1	-0.2			-2.5	-0.8	-1.6	-0.7	-0.7	-0.7		-0.5	-0.4	
Contribution from price and exchange rate changes	-2.7	-4.0	4.0			...	...	...	...	...	...		...	...	
Residual [3]	**-1.3**	**7.2**	**-3.3**			**-7.4**	**-4.8**	**-2.7**	**-1.3**	**-2.1**	**-2.3**		**-4.5**	**-4.0**	
o/w 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 PPG external debt	**...**	**...**	**17.1**			**21.6**	**21.2**	**21.5**	**20.9**	**20.2**	**19.4**		**16.0**	**12.4**	
In percent of exports	**...**	**...**	**38.8**			**48.1**	**41.7**	**45.5**	**51.3**	**54.6**	**57.1**		**59.9**	**67.6**	
In percent of government revenues	**...**	**...**	**105.9**			**91.5**	**74.3**	**82.0**	**85.6**	**82.6**	**83.8**		**70.5**	**53.1**	
Debt service-to-exports ratio (in percent)	**1.5**	**3.5**	**2.1**			**2.6**	**2.1**	**2.5**	**4.1**	**4.6**	**4.8**		**5.9**	**6.8**	
PPG debt service-to-exports ratio (in percent)	**1.5**	**3.5**	**2.1**			**2.6**	**2.1**	**2.5**	**4.1**	**4.6**	**4.8**		**5.9**	**6.8**	
PPG debt service-to-revenue ratio (in percent)	**3.5**	**7.1**	**5.7**			**5.0**	**3.8**	**4.4**	**6.8**	**6.9**	**7.0**		**7.0**	**5.3**	
Total gross financing need (Billions of U.S. dollars)	0.1	-0.4	0.2			1.1	0.5	0.5	0.3	0.3	0.4		0.7	1.2	
Non-interest current account deficit that stabilizes debt ratio	14.0	-0.7	14.8			32.3	24.8	16.2	11.9	11.5	10.6		9.4	5.6	
Key macroeconomic assumptions															
Real GDP growth (in percent)	0.2	-0.4	0.9	7.6	10.7	13.0	3.8	6.9	3.2	3.2	3.3	5.6	2.7	3.4	2.8
GDP deflator in US dollar terms (change in percent)	11.1	20.1	-16.1	9.5	13.1	6.6	10.0	-5.2	-0.8	0.1	0.5	1.9	2.4	3.8	2.8
Effective interest rate (percent) [4]	0.9	1.0	1.4	1.1	0.2	1.9	1.5	1.9	2.0	2.0	2.1	1.9	2.0	2.7	2.2
Growth of exports of G&S (US dollar terms, in percent)	8.0	17.9	-30.9	43.8	87.3	23.0	28.7	-5.7	-11.7	-6.3	-4.3	4.0	0.1	5.1	1.4
Growth of imports of G&S (US dollar terms, in percent)	12.8	10.1	10.6	32.1	52.3	51.4	3.5	-14.8	-15.5	-5.5	-2.2	2.8	1.9	6.0	2.8
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	8.0	1.2	30.7	29.8	22.8	21.6	19.0	15.1	7.3	12.8
Government revenues (excluding grants, in percent of GDP)	22.8	26.4	16.1			23.6	28.5	26.2	24.4	24.4	23.2		22.6	23.3	22.8
Aid flows (in Billions of US dollars) [5]	0.1	0.1	0.3			0.3	0.3	0.3	0.4	0.4	0.4		0.6	1.2	
o/w Grants	0.1	0.1	0.2			0.1	0.2	0.2	0.3	0.3	0.3		0.4	0.8	
o/w Concessional loans	0.0	0.0	0.1			0.12	0.11	0.10	0.11	0.12	0.13		0.18	0.36	
Grant-equivalent financing (in percent of GDP) [6]	...	...	...			2.1	1.8	2.7	2.8	2.8	2.9		3.2	3.4	3.2
Grant-equivalent financing (in percent of external financing) [6]	...	...	...			28.4	39.4	81.3	79.1	77.0	76.6		74.7	72.4	74.0
Memorandum items:															
Nominal GDP (Billions of US dollars)	7.0	8.4	7.1			8.6	9.8	9.9	10.1	10.5	10.9		13.2	24.8	
Nominal dollar GDP growth	11.3	19.6	-15.4			20.5	14.1	1.3	2.3	3.3	3.8	7.6	5.2	7.3	5.7
PV of PPG external debt (in Billions of US dollars)			1.3			1.8	2.1	2.1	2.1	2.1	2.1		2.1	3.1	
(PVt-PVt-1)/GDPt-1 (in percent)						8.1	2.8	0.3	-0.1	0.0	0.0	1.8	0.1	0.6	0.4

Sources: Country authorities; and staff estimates and projections.

[1] All of Chad's external debt is public.

[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 transfers not in the current account, changes in gross reserves, and valuation adjustments. For projections also includes contribution from price and exchange rate changes.

[4] Current-year interest payments divided by previous period debt stock.

[5] Defined as grants, concessional loans, and debt relief.

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

Table 1b. Chad: Public Sector Debt Sustainability Framework, Baseline Scenario, 2007–2030
(In percent of GDP, unless otherwise indicated)

	Actual					Estimate	Projections								
	2007	2008	2009	Average	Standard Deviation	2010	2011	2012	2013	2014	2015	2010–15 Average	2020	2030	2016–30 Average
Public sector debt [1]	26.0	23.6	30.5			32.6	29.3	29.3	27.8	25.8	24.5		23.3	23.8	
o/w foreign-currency denominated	23.6	20.9	23.0			25.0	23.7	23.9	23.2	22.2	21.3		17.2	12.5	
Change in public sector debt	-3.6	-2.4	6.9			2.1	-3.2	-0.1	-1.5	-2.0	-1.3		-0.3	-0.3	
Identified debt-creating flows	-6.2	-5.6	11.1			0.5	-6.8	-3.8	-2.1	-2.8	-2.0		0.7	-0.2	
Primary deficit	-3.4	-4.8	9.4	2.3	4.8	4.5	-3.6	-4.4	-2.0	-2.5	-1.6	-1.6	1.3	0.6	1.1
Revenue and grants	24.2	27.9	19.6			25.3	30.3	28.6	26.9	27.0	25.8		25.6	26.6	
of which: grants	1.5	1.5	3.5			1.6	1.8	2.4	2.5	2.6	2.6		3.0	3.3	
Primary (noninterest) expenditure	20.8	23.1	29.0			29.8	26.7	24.2	24.9	24.5	24.2		27.0	27.1	
Automatic debt dynamics	-2.8	-0.9	1.7			-3.8	-3.2	0.6	-0.1	-0.3	-0.4		-0.6	-0.8	
Contribution from interest rate/growth differential	-0.5	-0.4	-3.4			-6.6	0.5	0.4	-0.5	-0.7	-0.7		-0.6	-0.8	
of which: contribution from average real interest rate	-0.5	-0.5	-3.2			-3.1	1.7	2.3	0.4	0.2	0.1		0.0	0.0	
of which: contribution from real GDP growth	-0.1	0.1	-0.2			-3.5	-1.2	-1.9	-0.9	-0.9	-0.8		-0.6	-0.8	
Contribution from real exchange rate depreciation	-2.2	-0.5	5.1			2.8	-3.7	0.2	0.4	0.4	0.3		...	...	
Other identified debt-creating flows	0.0	0.0	0.0			-0.2	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	0.0	0.0	0.0			-0.2	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	2.6	3.3	-4.2			1.6	3.6	3.7	0.6	0.8	0.7		-1.0	-0.1	
Other Sustainability Indicators															
PV of public sector debt	2.4	2.7	24.6			29.2	26.8	26.9	25.5	23.7	22.6		22.1	23.7	
o/w foreign-currency denominated	0.0	0.0	17.1			21.6	21.2	21.5	20.9	20.2	19.4		16.0	12.4	
o/w external	...	...	17.1			21.6	21.2	21.5	20.9	20.2	19.4		16.0	12.4	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need [2]	-0.8	-2.2	12.4			6.5	-0.1	-1.2	2.6	2.6	3.5		8.4	12.9	
PV of public sector debt-to-revenue and grants ratio (in percent)	9.7	9.6	125.3			115.8	88.6	94.1	94.9	87.9	87.5		86.1	89.3	
PV of public sector debt-to-revenue ratio (in percent)	10.3	10.2	152.1			123.7	94.2	102.6	104.5	97.1	97.4		97.5	102.0	
o/w external [3]	...	...	105.9			91.5	74.3	82.0	85.6	82.6	83.8		70.5	53.1	
Debt service-to-revenue and grants ratio (in percent) [4]	7.7	6.8	8.8			5.9	11.2	9.1	11.4	11.2	11.1		6.9	6.7	
Debt service-to-revenue ratio (in percent) [4]	8.1	7.2	10.7			6.3	11.9	9.9	12.6	12.4	12.4		7.8	7.6	
Primary deficit that stabilizes the debt-to-GDP ratio	0.2	-2.4	2.6			2.4	-0.4	-4.3	-0.5	-0.5	-0.3		1.6	0.9	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	0.2	-0.4	0.9	7.6	10.7	13.0	3.8	6.9	3.2	3.2	3.3	5.6	2.7	3.4	2.8
Average nominal interest rate on forex debt (in percent)	0.9	1.0	1.4	1.1	0.2	1.9	1.5	1.9	2.0	2.0	2.1	1.9	2.0	2.7	2.2
Average real interest rate on domestic debt (in percent)	2.0	-9.0	18.6	2.3	11.8	-5.8	1.6	9.5	3.8	3.2	3.1	...	1.2	1.3	...
Real exchange rate depreciation (in percent, + indicates depreciation)	-8.4	-2.3	30.0	-4.1	14.0	15.9	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	1.8	11.8	-11.4	6.2	9.3	11.9	2.3	-5.4	0.1	1.0	1.3	1.9	2.4	3.8	2.9
Growth of real primary spending (deflated by GDP deflator, in percent)	0.3	0.1	0.3	0.1	0.1	0.2	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Grant element of new external borrowing (in percent)	...	...	...	...	...	8.0	1.2	30.7	29.8	22.8	21.6	19.0	15.1	7.3	...

Sources: Country authorities; and staff estimates and projections.

[1] Gross debt of the central government including debts guaranteed for, or assumed from, state-owned enterprises.

[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.

CHAD 2011 ARTICLE IV REPORT—DEBT SUSTAINABILITY ANALYSIS

Table 2a. Chad: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2010–2030
(In percent)

	Projections											
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	**2020**	2030
	PV of debt-to GDP ratio											
Baseline	22	21	21	21	20	19	18	17	17	17	**16**	12
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2010–2030 [1]	22	24	24	27	29	31	31	32	32	32	**31**	28
A2. New public sector loans on less favorable terms in 2010–2030 [2]	22	22	22	22	21	21	20	19	20	19	**19**	17
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2011–2012	22	23	25	25	24	23	22	21	20	20	**19**	15
B2. Export value growth at baseline minus a one-standard-deviation lower oil price in 2011 [3]	22	45	68	68	67	67	65	64	63	59	**54**	18
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011–2012	22	24	24	23	23	22	21	20	19	19	**18**	14
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011–2012 [4]	22	41	55	54	54	53	52	51	50	46	**43**	16
B5. Combination of B1-B4 using one-half standard deviation shocks	22	49	63	62	62	61	60	58	58	53	**49**	18
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011 [5]	22	29	29	29	28	27	25	24	24	23	**22**	17
	PV of debt-to-exports ratio											
Baseline	48	42	45	51	55	57	58	59	59	59	**60**	68
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2010–2030 [1]	48	48	52	67	78	90	99	108	110	114	**117**	154
A2. New public sector loans on less favorable terms in 2010–2030 [2]	48	42	47	53	57	61	64	65	66	68	**70**	91
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2011–2012	48	42	45	51	54	57	58	58	59	59	**60**	67
B2. Export value growth at baseline minus a one-standard-deviation lower oil price in 2011 [3]	48	185	306	355	388	416	442	456	457	446	**431**	209
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011–2012	48	42	45	51	54	57	58	58	59	59	**60**	67
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011–2012 [4]	48	80	116	134	146	156	165	170	170	166	**161**	89
B5. Combination of B1-B4 using one-half standard deviation shocks	48	114	154	178	194	208	220	227	226	221	**214**	112
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011 [5]	48	42	45	51	54	57	58	58	59	59	**60**	67
	PV of debt-to-revenue ratio											
Baseline	92	74	82	86	83	84	83	80	78	73	**70**	53
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2010–2030 [1]	92	85	94	111	119	132	141	147	145	140	**138**	121
A2. New public sector loans on less favorable terms in 2010–2030 [2]	92	76	84	89	87	90	90	88	87	84	**82**	72
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2011–2012	92	80	96	101	97	99	97	94	91	86	**83**	62
B2. Export value growth at baseline minus a one-standard-deviation lower oil price in 2011 [3]	92	158	259	278	276	287	294	292	283	257	**238**	77
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011–2012	92	86	92	96	92	94	93	89	87	82	**79**	59
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011–2012 [4]	92	143	209	223	221	229	234	232	223	204	**190**	70
B5. Combination of B1-B4 using one-half standard deviation shocks	92	171	239	256	253	263	269	267	257	234	**217**	76
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011 [5]	92	103	112	117	113	115	113	110	106	100	**96**	73

Table 2a. Chad: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2010–2030 (continued)
(In percent)

	Projections											
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	**2020**	2030
						Debt service-to-exports ratio						
Baseline	3	2	2	4	5	5	6	6	6	6	**6**	7
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2010–2030 [1]	3	2	2	3	4	4	5	5	5	5	**6**	9
A2. New public sector loans on less favorable terms in 2010–2030 [2]	3	2	2	3	3	4	4	4	5	5	**5**	6
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2011–2012	3	2	2	4	5	5	6	6	6	6	**6**	7
B2. Export value growth at baseline minus a one-standard-deviation lower oil price in 2011 [3]	3	4	9	16	18	19	23	22	35	48	**49**	34
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011–2012	3	2	2	4	5	5	6	6	6	6	**6**	7
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011–2012 [4]	3	2	4	7	7	8	9	9	14	18	**18**	13
B5. Combination of B1-B4 using one-half standard deviation shocks	3	3	5	9	9	10	12	12	19	24	**24**	16
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011 [5]	3	2	2	4	5	5	6	6	6	6	**6**	7
						Debt service-to-revenue ratio						
Baseline	5	4	4	7	7	7	9	8	8	7	**7**	5
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2010–2030 [1]	5	4	4	6	6	6	7	6	6	6	**7**	7
A2. New public sector loans on less favorable terms in 2010–2030 [2]	5	4	4	4	5	6	6	6	6	6	**6**	5
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2011–2012	5	4	5	8	8	8	10	9	9	8	**8**	6
B2. Export value growth at baseline minus a one-standard-deviation lower oil price in 2011 [3]	5	4	7	13	13	13	15	14	22	28	**27**	12
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011–2012	5	4	5	8	8	8	10	9	8	8	**8**	6
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011–2012 [4]	5	4	7	11	11	11	13	13	19	22	**21**	10
B5. Combination of B1-B4 using one-half standard deviation shocks	5	4	8	12	12	13	15	14	22	25	**25**	11
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011 [5]	5	5	6	9	9	10	12	11	10	10	**10**	7
Memorandum item:												
Grant element assumed on residual financing (i.e., financing required above baseline) [6]	11	11	11	11	11	11	11	11	11	11	**11**	11

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

[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 2b. Chad: Sensitivity Analysis for Key Indicators of Public Debt 2010–2030

		Projections				
	2010	2011	2012	2013	2014	2030
	PV of Debt-to-GDP Ratio					
Baseline	29	27	27	26	24	24
A. Alternative Scenarios						
A1. Real GDP growth and primary balance are at historical averages	29	32	38	40	41	36
A2. Primary balance is unchanged from 2010	29	35	44	50	55	97
A3. Permanently lower GDP growth [1]	29	28	30	31	32	173
B. Bound Tests						
B1. Real GDP growth is at historical average minus one standard deviations in 2011–2012	29	31	39	42	44	97
B2. Primary balance is at historical average minus one standard deviations in 2011–2012	29	38	49	48	47	42
B3. Combination of B1-B2 using one half standard deviation shocks	29	36	47	47	47	61
B4. One-time 30 percent real depreciation in 2011	29	34	35	33	32	31
B5. 10 percent of GDP increase in other debt-creating flows in 2011	29	37	37	36	34	32
	PV of Debt-to-Revenue Ratio [2]					
Baseline	116	89	94	95	88	89
A. Alternative Scenarios						
A1. Real GDP growth and primary balance are at historical averages	116	105	134	149	154	146
A2. Primary balance is unchanged from 2010	116	115	154	184	203	366
A3. Permanently lower GDP growth [1]	116	93	105	115	119	607
B. Bound Tests						
B1. Real GDP growth is at historical average minus one standard deviations in 2011–2012	116	101	134	153	161	357
B2. Primary balance is at historical average minus one standard deviations in 2011–2012	116	124	173	180	173	157
B3. Combination of B1-B2 using one half standard deviation shocks	116	117	163	175	173	228
B4. One-time 30 percent real depreciation in 2011	116	113	121	124	117	118
B5. 10 percent of GDP increase in other debt-creating flows in 2011	116	122	130	134	127	120
	Debt Service-to-Revenue Ratio [2]					
Baseline	6	11	9	11	11	7
A. Alternative Scenarios						
A1. Real GDP growth and primary balance are at historical averages	6	11	10	12	12	10
A2. Primary balance is unchanged from 2010	6	11	10	14	15	27
A3. Permanently lower GDP growth [1]	6	11	10	12	13	33
B. Bound Tests						
B1. Real GDP growth is at historical average minus one standard deviations in 2011–2012	6	12	11	14	15	24
B2. Primary balance is at historical average minus one standard deviations in 2011–2012	6	11	11	15	15	14
B3. Combination of B1-B2 using one half standard deviation shocks	6	11	11	15	15	18
B4. One-time 30 percent real depreciation in 2011	6	12	11	14	14	11
B5. 10 percent of GDP increase in other debt-creating flows in 2011	6	11	10	13	13	10

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.