



CHAD

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THIRD AND FOURTH REVIEWS UNDER THE EXTENDED CREDIT FACILITY ARRANGEMENT, AND REQUESTS FOR WAIVERS OF NONOBSERVANCE OF PERFORMANCE CRITERIA, AUGMENTATION OF ACCESS, EXTENSION OF THE CURRENT ARRANGEMENT, AND REPHASING OF DISBURSEMENTS—DEBT SUSTAINABILITY ANALYSIS

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The debt sustainability analysis shows that Chad remains at high risk of external debt distress, reflecting vulnerabilities concentrated in the next few years. The assessment of high risk is reinforced by vulnerabilities related to domestic debt. Two external debt indicators exhibit temporary and small breaches of their indicative thresholds, and a third one, the external debt service-to-revenue ratio, shows a relatively protracted and large breach. These breaches reflect low government oil revenue and high debt service payments on external debt falling due in the short term. Although the debt indicators remain well below their indicative thresholds in the medium to long term, the DSA confirms that Chad is susceptible to external macroeconomic shocks such as the ongoing oil price shock. Preserving debt sustainability in the current environment requires that the authorities continue on the path of fiscal adjustment and implement prudent debt management policies, including a comprehensive strategy for domestic arrears clearance. Progress in economic diversification would also strengthen debt sustainability.¹

¹ Chad's average CPIA over 2013-15 is estimated at 2.7. This corresponds to a weak policy performance under the Debt Sustainability Framework for Low-Income Countries (LIC-DSA).

BACKGROUND

Public External Debt

1. The composition of Chad's external public debt has changed significantly over the past decade. Debt owed to multilateral institutions and traditional bilateral donors has been basically constant in nominal terms over the last few years. Chad has instead relied more on non-Paris Club creditors (e.g., China, Libya, and India) and commercial credits to address its financing needs. There is no recorded external private debt in Chad.

2. After stabilizing at around 20 percent, the external public debt-to-GDP ratio increased in 2013-14 following two non-concessional oil sales' advance operations with a commercial creditor, Glencore Energy. In 2013, the authorities signed two agreements for a total of US\$600 million with Glencore Energy to cover revenue shortfalls. In 2014, a new commercial borrowing operation for US\$ 1.4 billion was contracted by SHT (a state-owned oil company) to finance the purchase of Chevron's shares in Chad's largest oil consortium in June of that year. After these operations, the external public debt-to-GDP ratio rose above 27 percent of GDP in 2014.

3. As of end-2014, nearly half of Chad's debt was commercial debt (Text Table 1). In addition, around 40 percent was owed to multilateral creditors, and less than 20 percent to bilateral creditors (the bulk of which was owed to non-Paris Club creditors).

4. In late 2015, a rescheduling agreement with Glencore consolidated the two oil sales' advance operations, extending their maturities. The rescheduling agreement implied an increase in the original debt's net present value, but extended its maturity from 4 to 6-7 years. Repaying the Glencore loan, however, continues to have a significant effect on the flow of oil revenues to the budget.

5. Following the achievement of the HIPC completion point in April 2015, Chad was able to secure at least US\$756 million in debt relief. This amount includes MDRI relief from International Development Association (IDA) and African Development Bank (AfDB), forgiveness from the IMF, and a hundred percent cancellation from the Paris Club.² Regarding non-Paris Club members, the authorities signed a new agreement with Saudi Arabia in July 2015 which reschedules their remaining amount on IDA comparable terms.

² As of end 2015, the Paris Club's Official Development Assistance (ODA) claims on Chad have been fully canceled, while the stock of non-Official Development Assistance (NODA) claims is US\$4 million.

Text Table 1. Chad: External Debt Stock at Year-End, 2002–2015
(Billions of CFA francs)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015p
Total	786.3	736.6	797.2	898.9	896.2	776.9	839.4	786.2	1,016.7	1,226.3	1,299.6	1,410.7	2,010.2	1,616.1
(Percent of GDP)	54.1	44.5	32.6	24.3	24.2	19.9	16.7	18.8	19.1	20.2	20.9	22.7	27.0	24.5
Multilateral	687.7	652.5	715.3	810.2	805.5	693.6	725.7	683.6	758.6	767.3	771.4	719.9	734.8	343.3
IMF	67.3	57.0	47.7	47.5	37.4	24.3	20.1	12.6	8.3	4.6	2.4	0.9	11.1	38.3
World Bank/IDA	398.3	394.0	444.5	507.8	486.1	435.6	435.7	402.7	429.1	420.7	414.8	387.8	397.4	125.2
African Development Fund/Bank	169.8	159.9	168.5	179.8	205.8	174.1	195.4	185.5	207.7	209.4	200.4	181.4	180.7	56.8
Others	52.3	41.5	54.6	75.0	76.2	59.6	74.5	82.8	113.5	132.6	153.8	149.8	145.6	123.1
Bilateral	98.6	84.1	81.9	88.8	90.7	83.3	113.6	102.6	258.1	296.1	311.1	283.2	334.0	258.3
Paris Club official debt	25.8	24.0	25.2	24.3	23.2	20.1	19.1	17.1	16.5	17.0	15.8	13.8	11.5	2.1
Non-Paris Club official debt	72.7	60.1	56.7	64.4	67.5	63.3	94.5	85.5	241.6	279.1	295.3	269.4	322.5	256.1
of which: China, People's Republic	25.4	22.0	13.6	15.4	13.9	-	21.9	20.4	23.3	66.1	85.9	83.3	129.0	78.3
Libya	-	-	-	-	-	-	-	-	148.9	149.3	150.0	133.9	139.6	148.5
India	-	-	-	-	11.3	14.8	22.7	21.4	23.7	22.4	20.8	18.3	21.1	26.9
Commercial 1/										162.9	217.1	407.6	941.5	1014.5

1/ Commercial debt includes debt signed with CNPC and Glencore.

Source: World Bank, Chadian authorities, selected creditors, and staff estimates. The concept of debt used here includes both contracted and guaranteed debt. Figures are based on historical data as of end-2014 and preliminary information for 2015. The official external debt stock data reported in this table may not accurately reflect the actual level of external debt. For example, some project loan disbursements are recognized only after a lag. This table has discrepancies with corresponding fiscal or balance of payments flow estimates, giving rise to residuals in the sustainability analysis.

Public Domestic Debt

6. The stock of public domestic debt has increased in recent years, reaching 9.9 percent of GDP at end-2014 (Text Table 2). This growth is the result of drawing down the statutory advances provided by BEAC (the regional central bank), the sale of five-year savings bonds (CFAF 108 billion in 2011, and CFAF 90 billion in 2013), a CFAF 50 billion loan from Republic of Congo (in 2012), a CFAF 15 billion loan from Equatorial Guinea (in 2013), and the increasing use of commercial bank loans (which increased from CFAF 9 billion in 2013 to CFAF 127 billion in 2014). The stock of public domestic debt includes a balance of CFAF 52 billion in treasury arrears at end-December 2014. Additionally, short-term domestic obligations include the issuance of 3-month Treasury bills before the end of 2014 (CFAF 27.5 billion).

7. The stock of domestic public debt rose to about 18 percent of GDP in 2015; in part a result of the authorities stepping up their domestic debt issuance program in the CEMAC market. For the first time ever, Chad issued Treasury bills in the last quarter of 2014. Treasury bills have been regularly issued throughout 2015, with a gradual extension of maturities (up to one year) and interest rates below 3.4 percent. During 2015, the Treasury issued CFAF 156 billion (gross) in Treasury bills. The issuance of Treasury bonds amounted to CFAF 139 billion between July and December 2015, with maturities of two, three and five years, and an effective interest rate on average of 4.3 percent. Some of these Treasury bonds were used in swap operations involving the

exchange of commercial bank loans, which explains the reduction in the stock of those loans from CFAF 127 billion in 2014 to CFAF 56 billion in 2015.

Text Table 2. Chad: Stock of Domestic Debt at Year-End, 2011-2015
(Billions of CFA francs)

	2011	2012	2013	2014	2015
Total	501.3	548.0	584.8	686.4	1129.8
(Percent of GDP)	8.7	8.6	9.1	9.9	17.5
Central Bank financing	241.9	241.9	222.5	222.5	454.6
<i>Statutory advances</i>	208.6	208.6	187.8	187.8	280.0
<i>Exceptional advance</i>					140.0
<i>Consolidated debt</i>	33.3	33.3	34.7	34.7	34.7
Commercial banks' loans	8.5	8.5	8.5	127.3	56.4
2011 Bond ¹	107.6	107.6	80.7	53.8	26.9
2013 Bond ¹			90.3	72.2	54.2
Treasury Bonds ²					139.3
Republic of Congo		50.3	40.3	30.3	20.3
Equatorial Guinea			15.0	13.3	11.7
Cameroon					
Domestic arrears	56.4	50.3	39.9	51.8	199.8
Others ³	86.9	89.4	87.7	87.7	87.7
<i>Memo items:</i>					
<i>Treasury Bills</i>				27.5	79.0

Source: Chadian authorities.

1/ Issued through banks' syndication.

2/ Auctioned in the regional securities' market.

3/ Legal commitments, standing payment orders, and accounting arrears.

8. Domestic financing in 2015 included additional advances from BEAC. The 2015 statutory and extraordinary advances (CFAF 92.6 billion and CFAF 140 billion, respectively) have a maturity of 10 years, a grace period of 3 years, and an interest rate equivalent to BEAC's rediscount rate.

9. As of end-2015, the government accrued a sizable amount of domestic payment arrears. The balance of treasury arrears increased from CFAF 52 billion at end-December 2014 to around CFAF 200 billion (3.1 percent of GDP) in 2015. The stock of verified domestic arrears stood at CFAF 204 billion at end-June 2016.

DSA ASSUMPTIONS

10. The DSA incorporates preliminary information on external debt for 2015. The historical information on external debt, as of December 2014, is based on the latest World Bank-DRS database. Preliminary estimates on external debt are used for 2015. Compared to the previous DSA, this analysis incorporates revised projections of debt service.

11. The assumptions underpinning the DSA reflect the persistent oil price shock and security challenges. The analysis is conducted under a baseline scenario in line with the ECF-supported program. The financing gap in 2015 was covered through central bank advances, spending cuts, increased net domestic financing, and Fund disbursements under the ECF arrangement. The projected financing gap in 2016 is larger than in the previous DSA update and it is assumed to be financed through a combination of further fiscal adjustment, the mobilization of additional domestic financing, grant budget support, external concessional loans, and Fund disbursements associated with the third and fourth reviews under the ECF arrangement. The analysis incorporates the 2015 rescheduling that consolidated the various non-concessional oil sales' advance operations, but in contrast to the previous DSA update, it excludes exceptional receipts from divestments in the oil sector.

12. Oil production and revenue: Chad's medium- and long-term macroeconomic outlook is characterized by a small decline in oil production in 2016-17 followed by gradual increases when new fields come on line, but a steady decline of oil production over the longer term.³ The baseline projection for oil production in 2017 is fairly conservative, as prospects could somewhat improve in the context of the recent recovery in oil prices.

- Oil production is expected to temporarily rise from 144,000 bpd in 2015 to about 171,000 bpd in 2018-19. Proven reserves in the new fields are much smaller than that in the original Doba basin and will also likely be nearly exhausted around 2030. Hence, oil production and exports are projected to decline steadily to negligible levels beyond 2030. These prospects might change with new oil exploration activities or with the use of new oil extraction techniques.
- Chad's oil trades below the WEO reference price, reflecting a quality discount and transport cost of US\$ 6-10 per barrel. For the medium term (five-year horizon) the price of a barrel of Chadian oil is assumed to increase from about US\$34 (all discounts included) in 2016 to about US\$53 in 2020, in line with the trend projected in the WEO. From 2021 onward, the

³ Oil production at the Doba oilfield (exploited by the Esso-led consortium) started in 2003, reached its peak of 63 million barrels in 2005 and, absent other oil developments, will decline with annual output projected to become negligible beyond 2030. In 2011, oil production began at a second oil field, Bongor, operated by CNPC (about one-third the size of the Doba field). Exports of crude oil from Bongor started in 2014. Oil from another smaller operator (Caracal, formerly Griffiths) started to be produced in late 2013.

price is assumed to increase, on average, by around 3 percent per year in U.S. dollar terms (Box 1).

13. Fiscal policy: The analysis assumes a substantial fiscal adjustment in response to the current adverse shocks, with a non-oil primary deficit (NOPD) of about 4 percent of non-oil GDP in the short and medium term. The gradual recovery in oil prices is expected to help oil revenues increase from 1 percent of non-oil GDP in 2016 to over 5 percent of non-oil GDP in 2020. Over the longer term, in transition to the post-oil era, it is assumed that dwindling oil revenues will be partly offset by a stabilization of total government primary spending at around 20 percent of GDP, while the primary balance will be adjusted gradually to reach a small deficit of less than 2 percent of non-oil GDP by the end of the projection horizon. The latter is projected to be achieved mainly by: (i) gradually increasing non-oil revenues (from about 8 percent of non-oil GDP at present to about 16 percent of non-oil GDP by 2036);⁴ (ii) maintaining total investment outlays around 10 percent of non-oil GDP in the long term; and (iii) keeping recurrent spending at relatively low levels, notably, by streamlining transfers and subsidies to public enterprises. The analysis also assumes a comprehensive strategy for clearing domestic arrears and avoiding further accumulation going forward.

⁴ This assumes that Chad improves its tax effort in line with the CEMAC average. A recent Fund TA mission estimated a non-oil tax revenue gap above 5 percent of non-oil GDP.

Box 1. Chad: Macroeconomic Assumptions, 2016–2036

Real GDP growth is driven by a sharp slowdown of oil and non-oil production in the short term and a secular decline in oil production starting 2021, with upside risk over the long run given oil exploration activities. Non-oil GDP growth is projected at 4 percent per year over the medium to long term, driven by agriculture, commerce, and transportation.

Inflation is assumed to stabilize at 3 percent, consistent with the CEMAC convergence criterion. The disruptions to cross-border trade flows with Cameroon and Nigeria might continue to lead to increased volatility on domestic prices in the short run.

The **fiscal outlook** features a modest increase in oil revenues in the medium term but a decline in the long term. The NOPD is projected at 4 percent of non-oil GDP in 2020. The medium-term outlook for non-oil revenue is relatively low as a result of the regional security shock and a slowdown in demand from Nigeria, but a recovery is assumed in the long run. The long-run fiscal adjustment would maintain an appropriate level of investment and social spending to ensure steady growth and poverty reduction.

The evolution of the **external current account** deficit will be largely driven by the oil price path. The current account deficit is projected to fall from 7.5 percent of GDP in 2016 to about 6.3 percent of GDP in 2020, thanks to an increase in oil export values. After 2020, barring new oil discoveries, the external current account is projected to remain in deficit due to lower crude oil exports, stabilizing at around 4 percent of GDP beyond 2030. Non-oil sector imports are assumed to evolve in line with non-oil GDP over the projection horizon, while oil sector imports would decrease over the medium to long term as foreign direct investment declines too.

Foreign direct investment (FDI) is expected to be low in the short term, as investments from oil companies are envisaged to decline. FDI is assumed to stabilize in 2018–20 at around 4 percent of GDP before it declines to an average of 2 percent of GDP in 2021–35 in line with the assumption of maturing oil fields and amortized investments.

External financing: The analysis incorporates the 2015 rescheduling agreement with Glencore that consolidated the remaining balance of the loans and extended its maturity from 4 to 6–7 years. Under the ECF-supported program, external financing is assumed to be on concessional terms over the medium to long term.

Domestic financing: Domestic financing assumptions consider a continued but moderate placement of domestic debt instruments and exclude further utilization of BEAC advances. The stock of domestic arrears is expected to be gradually cleared until reaching negligible levels in the medium to long term. In 2016, the analysis incorporates a loan from Cameroon for an amount of CFAF 30 billion.

Text Table 3. Chad: Medium-Term Projections

	2015	2016	2017	2018	2019	2020	2021	2016-21	2022-36
								Avg.	Avg.
Real GDP growth (percent per year)	1.8	-3.5	-0.3	4.7	6.3	3.9	3.4	2.4	3.0
Oil	32.1	-5.9	-4.5	16.0	19.6	3.7	0.5	4.9	-5.6
Non-oil	-2.9	-3.0	0.6	2.6	3.5	4.0	4.2	2.0	4.1
Consumer price inflation (percent per year)	3.7	-2.0	0.1	3.0	3.0	3.0	3.0	1.7	3.0
External current account balance (percent of GDP)	-12.3	-7.5	-6.8	-6.4	-5.7	-6.3	-6.1	-6.5	-4.4
Exports of goods and services (percent of GDP)	26.5	23.5	25.6	28.9	31.8	31.2	31.0	28.7	21.0
	(In percent of non-oil GDP)								
Government revenue and grants	14.7	13.7	13.4	16.0	17.5	18.7	21.0	16.7	20.3
Of which: oil revenue	2.6	0.5	0.8	2.8	4.4	5.3	8.3	3.7	4.4
Of which: grants	3.9	5.0	4.1	4.1	3.8	4.0	3.8	4.1	5.8
Government expenditure (commitment basis)	21.2	16.8	16.7	17.2	18.1	18.6	19.5	17.8	20.0
Overall fiscal balance (incl. grants; cash basis)	-5.2	-4.4	-2.5	-1.6	-1.1	-0.6	1.1	-1.5	0.0
Non-oil primary fiscal bal. (excl. grants; commitment basis)	-9.7	-3.9	-3.6	-3.0	-3.8	-3.7	-4.5	-3.7	-3.0
<i>Memorandum items:</i>									
Chadian crude oil price (US\$/barrel)	43.4	33.8	45.2	48.5	50.8	52.7	54.3	47.6	68.1

Sources: Chadian authorities; and IMF staff estimates and projections

EXTERNAL DSA

14. The evolution of external debt is driven by the government's borrowing strategy which envisages a reasonable volume of project and budget support loans from both traditional and non-traditional sources and no further usage of commercial loans. Under the ECF-supported program, external financing is assumed to be on concessional terms over the medium to long term mostly financed by disbursements from multilaterals (46 percent) such as the IMF, WB, AfDB, Islamic Development Bank, and Arab Bank for Economic Development in Africa, and from other development partners. This leads to a grant element of an average of 37.2 percent over the projection period (Figure 1a).

15. Under the baseline scenario, three of the external debt indicators are above their thresholds, indicating a high risk of debt distress (Table 1, Figure 1).⁵ The PV of debt-to-revenue ratio and the debt-service-to exports ratio show temporary and small breaches of their indicative thresholds. The debt service-to-revenue ratio exhibits a more protracted and large breach in the 2016-2020 period. These breaches reflect the significant reduction in government oil revenue and the spike in debt service payments falling due in the next few years for the non-concessional loan contracted with Glencore. Conditional on the assumptions of the baseline scenario (including a sustained fiscal adjustment), the external debt indicators remain well below their indicative thresholds in the medium to long run.⁶

⁵ Arrears vis-à-vis the WB and the AfDB, were incurred during the first half of 2016, respectively at €869,000 and €80,000. These were cleared in early July.

⁶ The residuals in Table 1 are associated with the government's purchase of shares in the country's largest oil consortium in 2014, which was financed with a foreign commercial loan (around CFA 690 billion); the significant debt relief in 2015; and a substantial loss in international reserves in 2015 and 2016. The existence of historical and projected residuals can also be explained by shortcomings in quality affecting balance of payments data.

Stress tests

16. Stress tests highlight the susceptibility of Chad's external debt to shocks, especially in the next few years (Table 2, Figure 1). As in the baseline scenario, if main economic variables remain at their historical averages, only two of the indicators remain below their indicative thresholds. Bounds tests reveal that Chad is most vulnerable to an adverse shock to exports and a scenario that combines different types of macroeconomic shocks. A one-time depreciation shock (30 percent nominal depreciation in 2017) generates vulnerability in the debt service-to-revenue indicator. These shocks have the potential to raise the debt burden indicators above their indicative thresholds, especially over the short and medium term. The PV of debt-to-exports ratio is particularly sensitive to a poor export performance, showing a protracted breach under this stress test.

PUBLIC DSA

17. The recent increase in domestic debt has led to an increase in the risk to overall debt sustainability. (Tables 2 and 3, Figure 2). With the accumulation of domestic arrears and the increased issuances of debt securities in the regional market, the PV of debt-to-GDP ratio shows a breach in 2016-2017 under the baseline scenario. The domestic debt component would fall from 23 percent of GDP in 2016 to 16 percent of GDP in 2020 and will continue a steady decline until it reaches about 6 percent of GDP in 2036. Altogether, the public debt stock would decrease from about 47 percent of GDP in 2016 to 29 percent of GDP in 2020 until it stabilizes around an average of 18 percent of GDP in 2022-36.

18. Standard stress tests indicate sustainability risks in the next few years. In particular, a real depreciation shock in 2016 could impair public debt sustainability in the period 2016-18 (Most Extreme Shock in Figure 2 and Bound Tests in Table 4).

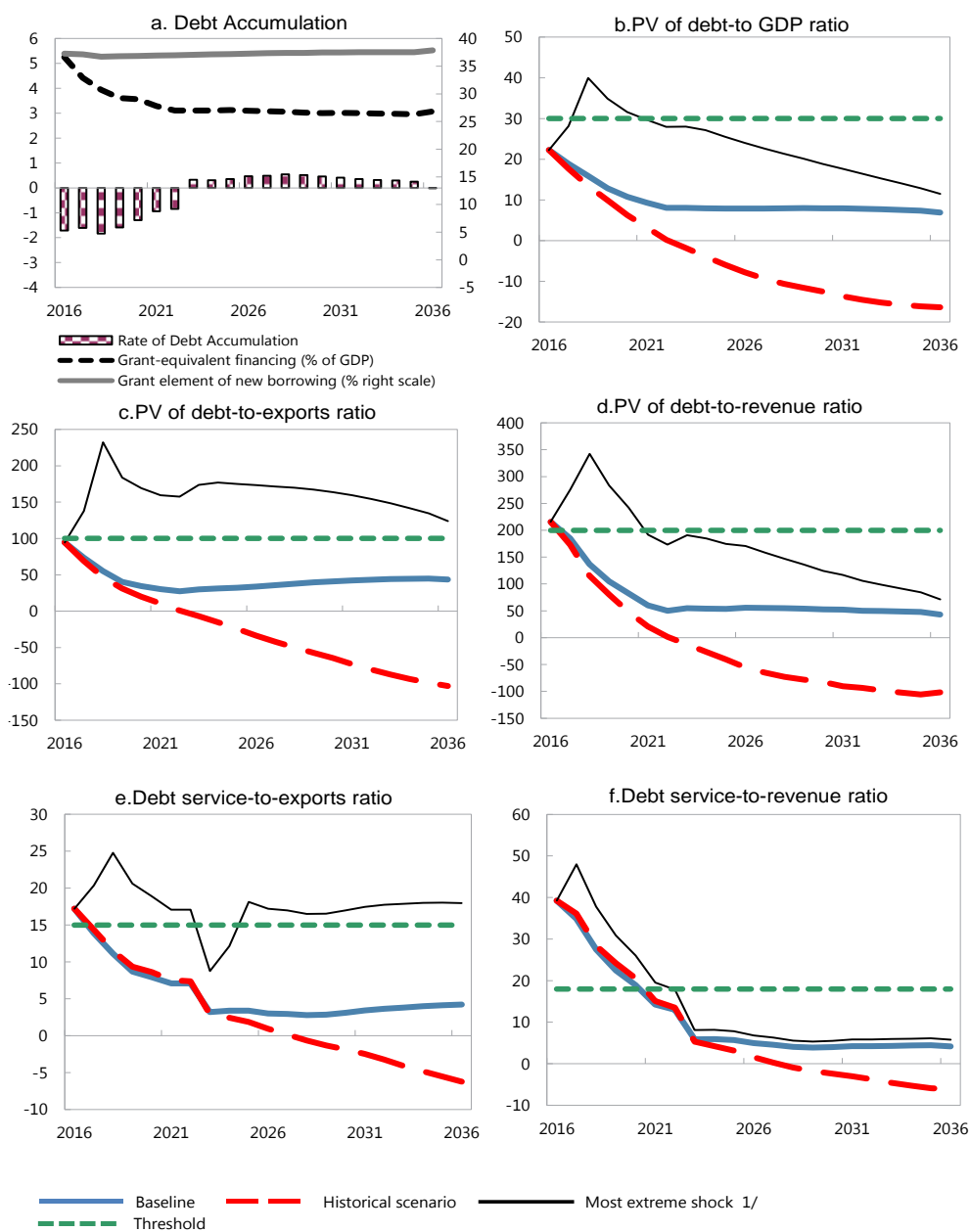
CONCLUSION

19. Chad remains at high risk of external debt distress with vulnerabilities concentrated in the next few years. The inclusion of Chad's domestic debt in the analysis reinforces the conclusions of the external DSA. On account of the persistent decline in oil prices and the burden imposed by the repayment of the Glencore loan, the baseline scenario shows breaches of some indicators around the beginning of the projection period, while over the long term all indicators are markedly below their thresholds. Preserving debt sustainability, however, is conditional on the substantial fiscal adjustment assumed under the baseline projection. In the event of a sustained rebound in the oil price and with improvements in the policy environment, the assessment of the debt sustainability could improve to moderate risk in the next few years. Given the exhaustible and volatile oil revenues, it is necessary to strengthen fiscal and debt management, maintain a prudent external and domestic borrowing policy, and make further progress in diversifying the economy. The effective functioning of the inter-ministerial debt coordination units will be important for strengthening the capacity to record and monitor public debt. In addition, the government has started issuing annual debt management reports (with support from Fund TA missions), and will undertake institutional

improvements in the management of domestic payment arrears in line with Fund TA recommendations.

20. The authorities broadly concur with the staff assessment. The authorities acknowledge the risks associated with debt sustainability and note that the Glencore loan is an important factor behind the external risk rating. They also acknowledge the importance of technical assistance in their current efforts to improve debt management. As for diversifying the economy, they have renewed their commitment to improve the business climate for private sector activity beyond the oil sector. The authorities are determined to implement a comprehensive strategy to clear existing arrears and avoid their reoccurrence.

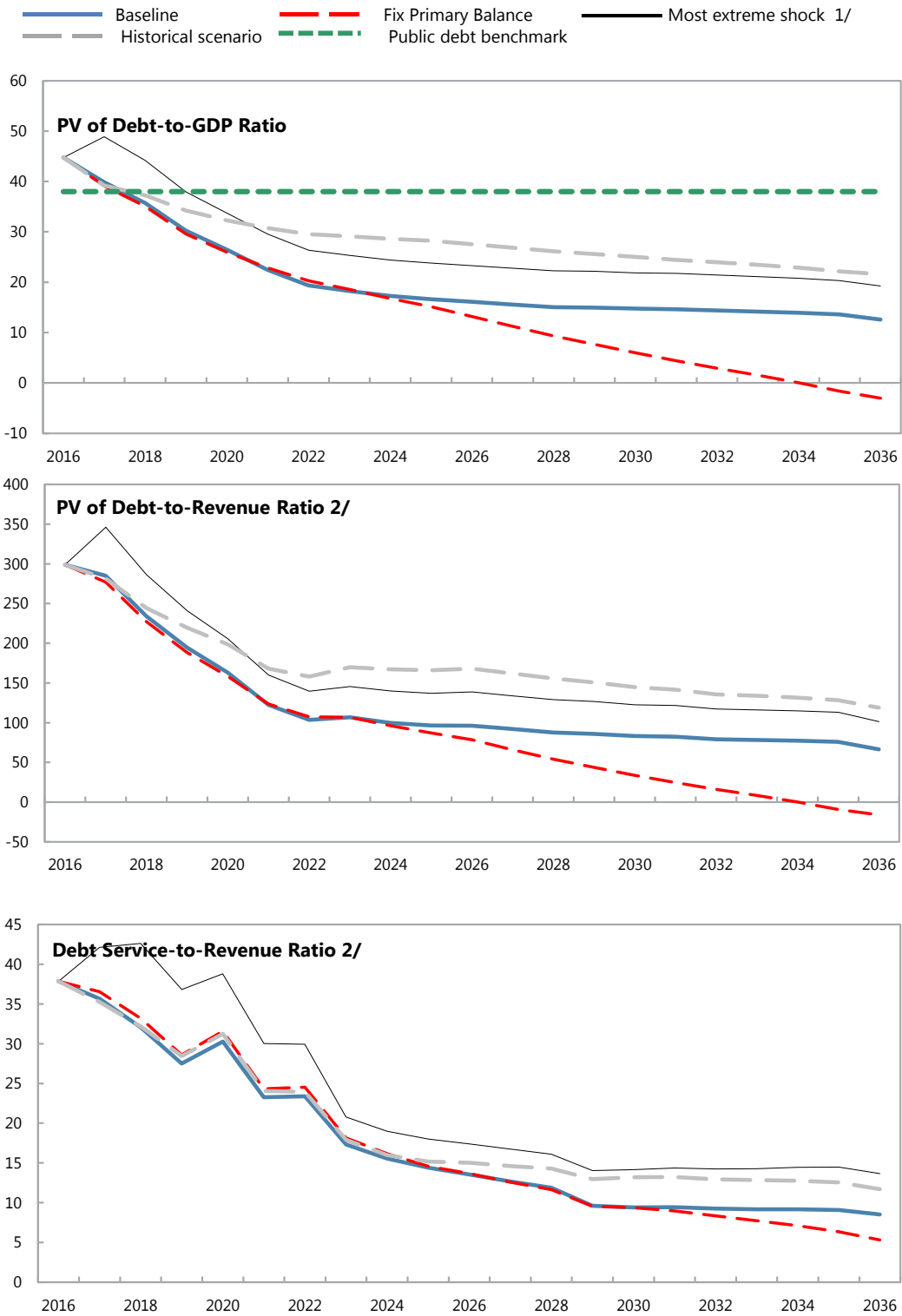
Figure 1. Chad: Indicators of Public and Publicly Guaranteed External Debt under Scenarios, 2016–36^{1/}



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 Combination shock; in c. to a Exports shock; in d. to a Combination shock; in e. to a Exports shock and in figure f. to a One-time depreciation shock

Figure 2. Chad: Indicators of Public Debt Under Alternative 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.

2/ Revenues are defined inclusive of grants.

Table 1 .Chad: External Debt Sustainability Framework, Baseline Scenario, 2013-2036 1/

(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average	Standard Deviation	Projections						2016-2036		
	2013	2014	2015			2016	2017	2018	2019	2020	2021	Average	2026	2036	Average
External debt (nominal) 1/	21.2	29.1	25.0			24.7	21.7	18.8	15.7	13.6	12.3		11.1	9.7
<i>of which: public and publicly guaranteed (PPG)</i>	21.2	29.1	25.0			24.7	21.7	18.8	15.7	13.6	12.3		11.1	9.7
Change in external debt	1.1	7.9	-4.2			-0.2	-3.0	-2.9	-3.2	-2.0	-1.4		0.0	-0.6
Identified net debt-creating flows	4.3	2.2	15.4			6.0	3.3	1.3	0.7	1.8	1.5		2.8	1.4
Non-interest current account deficit	8.5	8.2	11.2	4.2	7.1	6.3	5.8	5.6	5.1	5.9	5.8		5.0	2.6
Deficit in balance of goods and services	9.7	12.5	16.3			15.1	12.7	9.6	6.4	6.1	6.2		6.8	5.2
Exports	33.5	31.5	26.5			23.5	25.6	28.9	31.8	31.2	31.0		23.1	15.9
Imports	43.2	43.9	42.9			38.6	38.3	38.5	38.1	37.3	37.1		29.9	21.1
Net current transfers (negative = inflow)	-5.1	-7.9	-7.1	-5.6	1.6	-8.4	-7.5	-7.0	-6.3	-6.0	-5.7		-5.0	-3.8
<i>of which: official</i>	-1.5	-4.4	-3.0			-3.7	-3.0	-2.5	-2.1	-1.9	-1.9		-1.6	-1.6
Other current account flows (negative = net inflow)	3.9	3.6	1.9			-0.4	0.7	2.9	5.0	5.7	5.3		3.2	1.2
Net FDI (negative = inflow)	-4.0	-5.2	-5.1	-4.9	2.0	-2.5	-3.5	-4.1	-3.9	-3.9	-4.1		-2.0	-1.0
Endogenous debt dynamics 2/	-0.3	-0.9	9.3			2.2	1.0	-0.2	-0.5	-0.2	-0.2		-0.2	-0.2
Contribution from nominal interest rate	0.6	0.7	1.2			1.3	1.0	0.8	0.6	0.4	0.3		0.1	0.1
Contribution from real GDP growth	-1.1	-1.4	-0.7			0.9	0.1	-1.0	-1.1	-0.6	-0.4		-0.3	-0.3
Contribution from price and exchange rate changes	0.2	-0.2	8.8			...	...	...	...	...	...		...	...
Residual (3-4) 3/	-3.1	5.8	-19.6			-6.2	-6.3	-4.2	-3.9	-3.9	-2.8		-2.8	-2.1
<i>of which: exceptional financing</i>	0.0	0.0	-7.7			-0.9	-0.8	-0.4	-0.4	-0.3	-0.3		-0.2	-0.1
PV of external debt 4/	...	...	23.2			22.3	18.9	15.9	12.9	10.8	9.3		7.9	6.9
In percent of exports	...	...	87.3			94.6	73.7	55.2	40.5	34.6	30.1		34.0	43.4
PV of PPG external debt	...	...	23.2			22.3	18.9	15.9	12.9	10.8	9.3		7.9	6.9
In percent of exports	...	...	87.3			94.6	73.7	55.2	40.5	34.6	30.1		34.0	43.4
In percent of government revenues	...	...	245.3			215.7	185.1	136.5	104.6	82.6	60.2		55.9	43.0
Debt service-to-exports ratio (in percent)	3.9	15.6	9.5			17.2	13.9	11.1	8.7	7.9	7.1		3.0	4.2
PPG debt service-to-exports ratio (in percent)	3.9	15.6	9.5			17.2	13.9	11.1	8.7	7.9	7.1		3.0	4.2
PPG debt service-to-revenue ratio (in percent)	7.1	29.8	26.8			39.2	34.9	27.5	22.5	18.9	14.2		5.0	4.2
Total gross financing need (Billions of U.S. dollars)	0.8	1.1	0.9			0.8	0.7	0.6	0.5	0.6	0.6		0.7	0.8
Non-interest current account deficit that stabilizes debt ratio	7.4	0.3	15.3			6.5	8.9	8.5	8.3	7.9	7.1		4.9	3.3
Key macroeconomic assumptions														
Real GDP growth (in percent)	5.7	7.3	1.8	4.8	4.1	-3.5	-0.3	4.7	6.3	3.9	3.4	2.4	2.9	3.3
GDP deflator in US dollar terms (change in percent)	-1.0	0.8	-23.2	1.1	13.0	-2.7	10.0	2.1	4.8	3.7	1.8	3.3	2.9	2.9
Effective interest rate (percent) 5/	3.3	3.6	3.3	2.1	1.2	4.7	4.3	3.8	3.4	2.9	2.3	3.6	1.3	1.2
Growth of exports of G&S (US dollar terms, in percent)	-8.4	1.4	-34.0	0.9	19.4	-16.8	19.4	20.6	22.6	5.8	4.5	9.4	0.7	3.0
Growth of imports of G&S (US dollar terms, in percent)	-7.7	9.9	-23.7	7.8	17.9	-15.5	8.7	7.6	10.4	5.4	4.8	3.6	1.9	2.9
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	37.3	37.2	36.7	36.8	36.9	36.9	37.0	37.3	37.9
Government revenues (excluding grants, in percent of GDP)	18.5	16.5	9.4			10.3	10.2	11.7	12.3	13.1	15.5		14.1	16.1
Aid flows (in Billions of US dollars) 7/	0.4	0.4	0.4			0.5	0.5	0.5	0.5	0.5	0.5		0.6	1.1
<i>of which: Grants</i>	0.3	0.3	0.4			0.5	0.4	0.4	0.4	0.5	0.4		0.5	1.0
<i>of which: Concessional loans</i>	0.1	0.1	0.1			0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			5.2	4.4	3.9	3.6	3.6	3.3		3.1	3.1
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			83.9	80.4	86.5	85.4	84.1	80.5		80.2	90.5
Memorandum items:														
Nominal GDP (Billions of US dollars)	13.0	14.0	11.0			10.3	11.3	12.1	13.4	14.5	15.3		19.7	35.1
Nominal dollar GDP growth	4.7	8.1	-21.8			-6.1	9.7	7.0	11.4	7.8	5.3	5.8	5.9	6.2
PV of PPG external debt (in Billions of US dollars)	...	...	2.5			2.3	2.1	1.9	1.7	1.6	1.4		1.6	2.4
(PVT-PVT-1)/GDPt-1 (in percent)	-1.7	-1.6	-1.8			-1.7	-1.6	-1.8	-1.6	-1.3	-0.9		-1.5	0.0
Gross workers' remittances (Billions of US dollars)	...	...	...			...	...	...	...	...	...		...	...
PV of PPG external debt (in percent of GDP + remittances)	...	...	23.2			22.3	18.9	15.9	12.9	10.8	9.3		7.9	6.9
PV of PPG external debt (in percent of exports + remittances)	...	...	87.3			94.6	73.7	55.2	40.5	34.6	30.1		34.0	43.4
Debt service of PPG external debt (in percent of exports + remittances)	...	...	9.5			17.2	13.9	11.1	8.7	7.9	7.1		3.0	4.2

Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

2/ Derived as $[r - g - \rho(1+g)] / (1+g+\rho+g)$ 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. Projections also include 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 2a. Chad: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2016-2036
(In percent)

	Projections							2036
	2016	2017	2018	2019	2020	2021	2026	
PV of debt-to GDP ratio								
Baseline	22	19	16	13	11	9	8	7
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2016-2036 1/	22	18	13	10	6	3	-8	-16
A2. New public sector loans on less favorable terms in 2016-2036 2/	22	19	17	14	12	11	10	11
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	22	19	16	13	11	10	8	7
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	22	24	31	27	24	23	18	9
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	22	24	23	19	16	14	11	10
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	22	22	21	18	16	14	12	8
B5. Combination of B1-B4 using one-half standard deviation shocks	22	28	40	35	32	30	24	11
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	22	26	22	18	15	13	11	10
PV of debt-to-exports ratio								
Baseline	95	74	55	40	35	30	34	43
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2016-2036 1/	95	69	47	31	20	10	-34	-103
A2. New public sector loans on less favorable terms in 2016-2036 2/	95	75	57	43	37	34	45	68
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	95	74	55	41	35	30	34	44
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	95	138	232	184	169	160	173	124
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	95	74	55	41	35	30	34	44
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	95	84	74	56	50	45	50	48
B5. Combination of B1-B4 using one-half standard deviation shocks	95	127	193	153	141	134	145	101
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	95	74	55	41	35	30	34	44
PV of debt-to-revenue ratio								
Baseline	216	185	137	105	83	60	56	43
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2016-2036 1/	216	173	115	80	48	21	-55	-102
A2. New public sector loans on less favorable terms in 2016-2036 2/	216	189	141	111	89	68	74	67
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	216	184	141	108	85	62	58	44
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	216	236	265	219	186	147	131	57
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	216	232	198	152	120	87	81	62
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	216	212	182	145	119	91	82	48
B5. Combination of B1-B4 using one-half standard deviation shocks	216	276	342	284	242	191	171	71
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	216	255	188	145	114	83	77	59

Table 2a. Chad: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2016-2036 (continued)
(In percent)

	Projections							2036
	2016	2017	2018	2019	2020	2021	2026	
Debt service-to-exports ratio								
Baseline	17	14	11	9	8	7	3	4
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2016-2036 1/	17	14	11	9	9	8	1	-6
A2. New public sector loans on less favorable terms in 2016-2036 2/	17	14	11	9	8	7	3	6
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	17	14	11	9	8	7	3	4
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	17	20	25	21	19	17	17	18
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	17	14	11	9	8	7	3	4
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	17	14	11	9	8	7	5	6
B5. Combination of B1-B4 using one-half standard deviation shocks	17	18	20	17	15	14	14	15
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	17	14	11	9	8	7	3	4
Debt service-to-revenue ratio								
Baseline	39	35	27	22	19	14	5	4
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2016-2036 1/	39	36	28	24	21	15	2	-6
A2. New public sector loans on less favorable terms in 2016-2036 2/	39	35	28	23	19	15	6	6
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	39	35	28	23	20	15	5	4
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	39	35	28	25	21	16	13	8
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	39	44	40	33	27	21	7	6
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	39	35	28	23	20	15	8	6
B5. Combination of B1-B4 using one-half standard deviation shocks	39	39	35	31	26	20	17	11
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	39	48	38	31	26	20	7	6
<i>Memorandum item:</i>								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	36	36	36	36	36	36	36	36
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 interest rate on new borrowing is by 2 percentage points higher than in the baseline. 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 3. Chad: Public Sector Debt Sustainability Framework, Baseline Scenario, 2016-2036

(In percent of GDP, unless otherwise indicated)

	Actual			Average	s/ Standard Deviation	Estimate					Projections				
	2013	2014	2015			2016	2017	2018	2019	2020	2021	2016-21 Average	2026	2036	2022-36 Average
Public sector debt 1/	30.3	39.1	42.4			47.2	42.7	38.6	33.0	29.3	25.4	36.0	19.4	15.4	18.1
<i>of which: foreign-currency denominated</i>	21.2	29.1	25.0			24.7	21.7	18.8	15.7	13.6	12.3		11.1	9.7	
Change in public sector debt	1.6	8.7	3.4			4.8	-4.5	-4.1	-5.6	-3.8	-3.9		-0.5	-1.2	
Identified debt-creating flows	-0.3	-1.7	5.2			-1.0	-3.2	-4.3	-5.8	-4.6	-5.4		-1.2	-2.1	
Primary deficit 6/	1.3	2.6	2.8	0.6	4.0	-2.6	-1.8	-2.9	-2.7	-2.8	-4.0	-2.8	-0.2	-1.3	-0.7
Revenue and grants	20.8	18.4	12.9			15.0	14.0	15.3	15.5	16.2	18.3		16.7	19.0	
<i>of which: grants</i>	2.3	2.0	3.4			4.7	3.8	3.6	3.3	3.2	2.8		2.6	2.9	
Primary (noninterest) expenditure	22.1	21.0	15.7			12.3	12.2	12.4	12.9	13.4	14.3		16.5	17.6	
Automatic debt dynamics	-1.1	0.2	3.1			2.2	-1.0	-1.0	-2.8	-1.5	-1.1		-0.7	-0.7	
Contribution from interest rate/growth differential	0.9	-1.5	-2.6			4.2	-1.5	-1.1	-2.7	-1.3	-1.4		-0.7	-0.7	
<i>of which: contribution from average real interest rate</i>	2.5	0.5	-1.9			2.6	-1.6	0.9	-0.3	-0.1	-0.4		-0.2	-0.2	
<i>of which: contribution from real GDP growth</i>	-1.6	-2.1	-0.7			1.5	0.1	-1.9	-2.3	-1.2	-1.0		-0.6	-0.5	
Contribution from real exchange rate depreciation	-2.0	1.7	5.7			-2.0	0.4	0.1	-0.2	-0.2	0.3		...	...
Other identified debt-creating flows	-0.5	-4.4	-0.7			-0.5	-0.5	-0.4	-0.4	-0.3	-0.3		-0.2	-0.1	
Privatization receipts (negative)	0.0	-4.0	-0.4			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)	-0.5	-0.4	-0.3			-0.5	-0.5	-0.4	-0.4	-0.3	-0.3		-0.2	-0.1	
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	1.9	10.4	-1.9			5.8	-1.3	0.2	0.3	0.9	1.4		0.7	0.9	
Other Sustainability Indicators															
PV of public sector debt	...	...	40.6			44.8	39.9	35.7	30.2	26.5	22.4		16.1	12.6	
<i>of which: foreign-currency denominated</i>	...	...	23.2			22.3	18.9	15.9	12.9	10.8	9.3		7.9	6.9	
<i>of which: external</i>	...	...	23.2			22.3	18.9	15.9	12.9	10.8	9.3		7.9	6.9	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...
Gross financing need 2/	3.8	8.4	7.9			4.3	5.7	4.5	4.1	4.4	2.6		4.0	2.2	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	315.6			298.9	285.0	234.1	194.5	163.0	122.5		96.3	66.5	
PV of public sector debt-to-revenue ratio (in percent)	...	...	430.1			433.6	390.7	305.9	245.9	202.5	144.8		114.4	78.4	
<i>of which: external 3/</i>	...	...	245.3			215.7	185.1	136.5	104.6	82.6	60.2		55.9	43.0	
Debt service-to-revenue and grants ratio (in percent) 4/	12.0	31.5	36.5			37.9	35.7	32.1	27.5	30.3	23.3		13.6	8.5	
Debt service-to-revenue ratio (in percent) 4/	13.5	35.3	49.7			54.9	48.9	41.9	34.8	37.6	27.5		16.1	10.0	
Primary deficit that stabilizes the debt-to-GDP ratio	-0.3	-6.1	-0.5			-7.5	2.8	1.2	2.9	0.9	-0.1		0.2	-0.1	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	5.7	7.3	1.8	4.8	4.1	-3.5	-0.3	4.7	6.3	3.9	3.4	2.4	2.9	3.3	3.0
Average nominal interest rate on forex debt (in percent)	3.3	3.6	3.3	2.1	1.2	4.7	4.3	3.8	3.4	2.9	2.3	3.6	1.3	1.2	1.3
Average real interest rate on domestic debt (in percent)	3.8	-0.2	-1.2	2.4	3.8	1.6	-3.3	1.5	-1.8	-1.0	-0.8	-0.6	-0.1	0.0	-0.1
Real exchange rate depreciation (in percent, + indicates depreciation)	-9.4	8.3	21.2	3.3	14.8	-7.1	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	-2.0	3.3	3.1	1.2	3.6	0.2	5.3	0.2	3.7	3.1	3.0	2.6	2.8	3.0	2.9
Growth of real primary spending (deflated by GDP deflator, in percent)	-0.8	-0.5	-32.1	-3.2	10.2	-26.8	2.4	7.4	11.3	8.0	10.6	2.1	3.4	1.2	4.2
Grant element of new external borrowing (in percent)	...	...	...	...	...	37.3	37.2	36.7	36.8	36.9	36.9	37.0	37.3	37.9	...

Sources: Country authorities; and staff estimates and projections.

1/ The coverage of public sector debt comprises the obligations of the central government, including commercial debt. The definition of debt corresponds to 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.

6/ The primary deficit in the DSA grosses up oil revenue and debt service on the oil sales advances (in contrast to the fiscal tables in the Staff Report)

Table 4. Chad: Sensitivity Analysis for Key Indicators of Public Debt 2016-2036

	Projections							
	2016	2017	2018	2019	2020	2021	2026	2036
PV of Debt-to-GDP Ratio								
Baseline	45	40	36	30	26	22	16	13
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	45	39	37	34	32	31	28	22
A2. Primary balance is unchanged from 2016	45	39	35	30	26	23	13	-3
A3. Permanently lower GDP growth 1/	45	40	37	32	29	26	25	37
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2017-2018	45	39	37	32	29	25	22	22
B2. Primary balance is at historical average minus one standard deviations in 2017-2018	45	44	44	38	35	31	26	21
B3. Combination of B1-B2 using one half standard deviation shocks	45	41	41	36	32	28	23	18
B4. One-time 30 percent real depreciation in 2017	45	49	44	38	34	30	23	19
B5. 10 percent of GDP increase in other debt-creating flows in 2017	45	46	42	36	33	29	24	20
PV of Debt-to-Revenue Ratio 2/								
Baseline	299	285	234	194	163	122	96	66
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	299	281	244	220	199	168	168	119
A2. Primary balance is unchanged from 2016	299	277	227	188	158	124	78	-16
A3. Permanently lower GDP growth 1/	299	285	237	202	175	139	148	189
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2017-2018	299	280	239	202	174	136	129	113
B2. Primary balance is at historical average minus one standard deviations in 2017-2018	299	309	286	244	212	168	153	111
B3. Combination of B1-B2 using one half standard deviation shocks	299	294	268	227	196	153	136	96
B4. One-time 30 percent real depreciation in 2017	299	346	286	241	206	160	139	101
B5. 10 percent of GDP increase in other debt-creating flows in 2017	299	327	273	232	200	158	143	105
Debt Service-to-Revenue Ratio 2/								
Baseline	38	36	32	28	30	23	14	9
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	38	35	32	28	31	24	15	12
A2. Primary balance is unchanged from 2016	38	37	33	29	32	24	14	5
A3. Permanently lower GDP growth 1/	38	37	34	29	33	25	16	15
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2017-2018	38	36	34	29	33	25	15	12
B2. Primary balance is at historical average minus one standard deviations in 2017-2018	38	37	34	30	33	25	18	13
B3. Combination of B1-B2 using one half standard deviation shocks	38	36	33	29	32	25	17	11
B4. One-time 30 percent real depreciation in 2017	38	42	43	37	39	30	17	14
B5. 10 percent of GDP increase in other debt-creating flows in 2017	38	37	34	30	32	25	17	12
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.								