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FIRST REVIEW UNDER THE EXTENDED CREDIT FACILITY ARRANGEMENT, REQUEST FOR A WAIVER OF NONOBSERVANCE OF PERFORMANCE CRITERIA, REPHASING OF DISBURSEMENTS, AND FINANCING ASSURANCES REVIEW—DEBT SUSTAINABILITY ANALYSIS

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Following the agreement in principle to restructure the debt to Glencore, Chad's debt vulnerabilities have declined significantly. Once the final agreement is reached and progress is made on clearing outstanding external arrears, other things equal, the risk rating would be expected to be upgraded to 'moderate' under the current LIC DSF methodology. The Debt Sustainability Analysis[1] (DSA) shows that all debt burden indicators fall below their respective thresholds in the baseline from 2018 onwards. Notably, the debt-service-to-revenue ratio, which was significantly above the threshold in the 2017 DSA, is now projected to be about 5 percentage points below for 2018 and to remain below the threshold throughout the projection period. Overall, public debt vulnerabilities are elevated although the present value (PV) of the public debt-to-GDP ratio remains on a downward trajectory. Given that some external arrears remain outstanding and debt restructuring discussions with Glencore have not been finalized, staff considers that debt is in distress at this time. The fixed primary balance scenario, which keeps the primary deficit-to-GDP ratio unchanged from 2017, shows the public debt ratio declining at a slower pace throughout the forecast period, further highlighting the need to adhere to the prudent fiscal policy framework underpinning the IMF-supported program. Adoption and implementation of an appropriate debt management strategy, while making progress in economic diversification would further reduce vulnerabilities.

[1] Chad's three-year average score of the Country Policy and Institutional Assessment (CPIA) for 2015–17 is estimated at 2.60. This corresponds to a weak policy performance under the DSA framework.

BACKGROUND AND RECENT DEVELOPMENTS

1. **Chad's external public debt burden increased considerably from 2008, mainly on account of external commercial borrowings related to oil.** At end-2017, outstanding public and publicly guaranteed (PPG) external debt stood at nearly US$2.8 billion (27.2 percent of GDP) compared to US$1.6 billion (18 percent of GDP) at end-2008 (Text Table 1). Commercial borrowings (oil sale advances) from Glencore in 2013 to cover revenue shortfalls and in 2014 to purchase a share in the Doba oil Consortium were the main contributors. Falling oil prices over 2014-16 also contributed to rising debt service burdens by reducing revenues available to repay oil sales advances.

2. **Debt relief, following the achievement of the HIPC completion point, along with some debt reprofiling helped to ease the rising debt burden.** Chad benefited from US$756 million in debt relief after achieving the HIPC completion point in April 2015. This amount includes MDRI relief from the International Development Association and the African Development Bank, and forgiveness from the Paris Club, while non-Paris Club members agreed to reschedule their remaining amounts on IDA comparable terms. In late 2015, the authorities also signed a rescheduling agreement with Glencore to consolidate the oil sale advances and extend their maturities. However, while the rescheduling agreement provided some flow relief, it proved to be insufficient, and led to an increase in the present value of the debt. In February 2018, the authorities reached an agreement in principle with Glencore for a deeper restructuring which helped reestablish debt sustainability. In April 2017, the authorities rescheduled arrears (accrued in 2016) and upcoming maturities with China.

3. **The composition of external public debt has changed significantly over the past decade**. The share of external debt from multilaterals has fallen sharply from about 86.5 percent in 2008 to 24.1 percent in 2017, while the share of commercial debt, which was virtually non-existent in 2008, has risen to almost 50 percent, mostly to Glencore. Bilateral debt doubled over the decade but, as a share of total debt, it is still significantly less than commercial debt (Text Table 1).

4. **External payment arrears accumulated in 2016 and in 2017.** As a result of liquidity challenges in 2016 and the first half of 2017, the government accrued external arrears vis-à-vis a number of multilateral, bilateral, and one commercial creditor (a bank from Taiwan province of China). While some arrears particularly to multilateral creditors were cleared, some (to bilaterals) estimated at about US$98 million (1 percent of GDP) remained outstanding at end-2017 (Text Table 2). The authorities are making an effort to address those arrears.

5. **Domestic public debt, which includes external debt denominated in domestic currency, has increased significantly in recent years.** There has been a greater reliance on non-central bank financing, in particular issuance of government securities. While debt to the regional central bank (BEAC) remains high, its share in total debt has declined. In addition, in September 2017, all debt to the BEAC (for an amount of CFAF 479 billion) was consolidated and rescheduled into long-term securities with a grace period of 4 years and maturity of 14 years (Text Table 3).

Text Table 1. Chad: External Debt Stock 2014-17 /1

	2014	2015	2016	2017
Total (Billions of CFA francs)	2010.2	1616.6	1622.5	1561.9
(Percent of GDP)	29.1	25.0	27.1	27.2
Billions of CFA francs				
Multilateral	734.8	375.1	390.4	377.1
IMF	11.1	38.3	77.3	96.0
World Bank/IDA	397.4	112.9	110.1	100.9
African Development Fund/Bank	180.7	68.6	55.9	55.6
Others	145.6	155.4	147.2	124.7
Bilateral	334.0	366.3	369.5	417.0
Paris Club official debt	11.5	2.1	…	25
Non-Paris Club official debt	322.5	364.2	369.5	391.9
of which: China, People's Republic	129.0	144.4	156.0	131.5
Libya	139.6	158.3	164.0	149.6
India	21.1	27.4	30.1	26.9
Commercial 2/	941.5	875.2	862.5	767.9
Share of Total (percent)				
Multilateral	36.6	23.2	24.1	24.1
Bilateral	16.6	22.7	22.8	26.7
Commercial 2/	46.8	54.1	53.2	49.2

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

[1]Includes only debt denominated in foreign currency

[2]Glencore loan accounts for about 98 percent of commercial debt stock in 2017

Text Table 2. Chad: Estimated External Arrears

(Millions of US dollars)

	2017
Multilateral	**6.68**
Islamic Development Bank	6.50
European Investment Bank	0.18
Bilateral	**92.02**
Libya	40.35
India	10.25
Congo[1]	37.89
Equatorial Guinea	3.53
Commercial	**3.20**
Mega International Commercial Bank[2]	3.20
Total	**101.90**

[1] In CFAF

[2] Commercial bank from Taiwan Province of China.

Text Table 3. Chad: Domestic Debt at Year-End, 2014-2017

	2014	2015	2016	2017p
Total (Billions of CFA francs)	**708.9**	**1185.0**	**1437.0**	**1457.4**
(Percent of GDP)	**10.3**	**18.3**	**24.0**	**25.5**
Share of Total (in percent)				
Central Bank financing	31.4	38.4	34.4	32.9
Statutory advances [1]	*26.5*	*23.6*	*19.5*	...
Exceptional advance [1]		*11.8*	*11.8*	...
Consolidated debt	*4.9*	*2.9*	*3.1*	...
Commercial banks' loans	19.4	7.3	3.8	3.5
2011 Bond[2]	7.6	2.3	0.0	0.0
2013 Bond[2]	10.2	4.6	3.8	1.2
Treasury Bonds[3]		11.8	20.8	21.6
BDEAC	1.7	1.7	3.3	4.7
Republic of Congo	4.9	3.0	2.4	2.4
Equatorial Guinea	2.1	1.3	1.0	1.0
Cameroon			2.1	2.1
Domestic arrears[4]	7.3	16.9	11.7	14.4
Others[5]	12.4	7.4	6.1	6.0
Memo items:				
Treasury Bills	*3.9*	*7.1*	*11.9*	*10.2*

Source: Chadian authorities

[1]Existing balances were converted into long-term securities with grace period of 4 years and maturity of 14 years.

[2]Issued through banks' syndication

[3]Auctionned in regional securities' market.

[4]Assumes repayment of 20 billion in recognized arrears since June 2017 bring the total for 2017 to 51 billion.

[5]Legal commitments, Standing payment orders, and accounting arrears.

Glencore Debt Restructuring

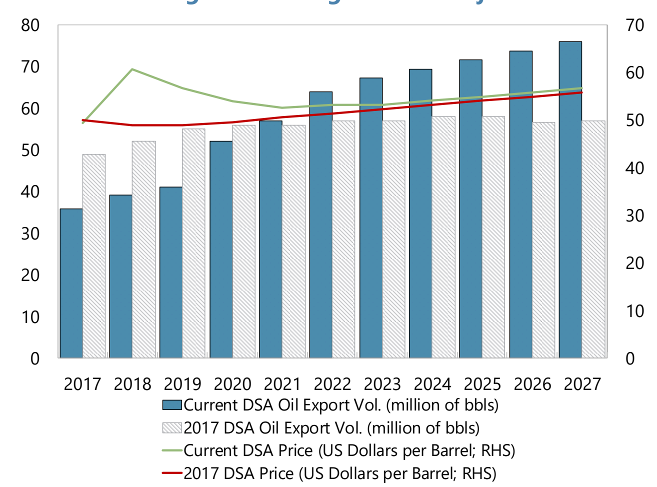
6. **The authorities have reached an *agreement in principle* with Glencore on the terms of the debt restructuring.** The restructuring is expected to reestablish debt sustainability and alleviate budgetary pressures. The restructuring agreement covers a total of about US$1.3 billion of external debt and includes a significant extension of maturity, a large reduction in restructuring fees, and a lower interest rate. Specific contingencies are included to help safeguard sustainability in downside scenarios and accelerate the payment of debt in case of upside scenarios.

UNDERLYING ASSUMPTIONS

7. **The DSA's baseline scenario reflects policies and financing assumptions underlying the ECF arrangement and the Glencore debt restructuring.** It is based on the WEO oil price projection, a gradual recovery in oil production, and policies to stabilize the fiscal position and support a sustainable recovery in non-oil activity. It also assumes clearance of external arrears in 2018.

- **Oil exports.** Chad's medium- and long-term macroeconomic outlook is characterized by a gradual increase in oil production. In 2017, oil production was significantly lower than projected at the time of the 2017 DSA due to technical problems faced by the second largest oil producer in Chad. Production is expected to begin to recover in 2018 but delays in implementing new extraction technologies will keep production below the 2017 DSA projections up to 2020, after which production is expected to increase gradually in line with the use of this technology and with the capacity of new fields projected to start production (Text Figure 1). The price of a barrel of Chadian oil has been revised upward in the medium-term relative to the 2017 DSA projections, reflecting a significant decline in the discount applied to Chad oil in the past year and higher world oil prices, but converges from 2023 onwards.

Text Figure 1. Changes in Oil Projections



Sources: Chadian authorities; and IMF staff calculations.

- **Fiscal policy.** It is assumed that the authorities remain committed to strengthen the fiscal position, including by maintaining tight spending control, and improving non-oil revenue mobilization. However, the fiscal surplus over 2018-21 is slightly lower than assumed in the 2017 DSA due to small revisions to non-oil tax revenues to take into account lower-than expected performance in 2017.

- **Arrears.** Efforts are underway to clear arrears to official bilateral creditors and the authorities are making good faith efforts to clear arrears to the bank from Taiwan province of China. The baseline scenario also includes a gradual reduction in the stock of verified domestic arrears.

- **External current account.** The current account deficit is now wider in the medium-term than under the 2017 DSA reflecting lower oil export receipts due to lower production and the use of part of government oil for domestic consumption. In addition, import projections have been revised up to reflect planned increases in oil capital expenditure and currency appreciation.

8. Risks to the outlook. While the agreement in principle to restructure the Glencore debt has removed a major source of vulnerability, the baseline remains subject to a number of risks. These stem from the potential for additional domestic debt and arrears not identified yet, a rise in non-concessional borrowing, and overruns in the wage bill. In addition, a further deterioration in the liquidity position of banks presents a risk given that it could undermine the rollover of domestic public debt. Developments in the international oil market continue to pose both upside and downside risks to the outlook, although the contingencies integrated into the agreement in principle to restructure the Glencore debt help alleviate the impact of lower oil prices.

Text Table 4. 2017 DSA vs. Current DSA (assumptions)

	2017	2018	2019	2020	2021	2022
			(Percentage Change)			
Real Growth						
2017 DSA	0.6	2.4	3.1	3.9	3.6	3.7
Current DSA	-3.1	3.5	2.8	6.8	4.8	4.6
Inflation (deflator, av.)						
2017 DSA	-4.1	1.5	2.3	3.2	2.7	2.3
Current DSA	1.0	12.4	3.6	4.1	3.7	3.6
			(Percent of GDP)			
Budget Balance						
2017 DSA	3.6	3.1	2.4	2.4	1.9	2.2
Current DSA	0.6	2.1	0.9	1.7	1.5	2.3
Net FDI						
2017 DSA	3.2	3.4	3.7	4.0	4.0	3.6
Current DSA	3.7	4.0	4.4	4.6	4.7	3.5
Non-Interest Current Account Balance						
2017 DSA	-0.7	-1.9	-2.5	-2.7	-3.2	-2.6
Current DSA	-4.2	-3.6	-4.8	-4.2	-4.3	-4.0

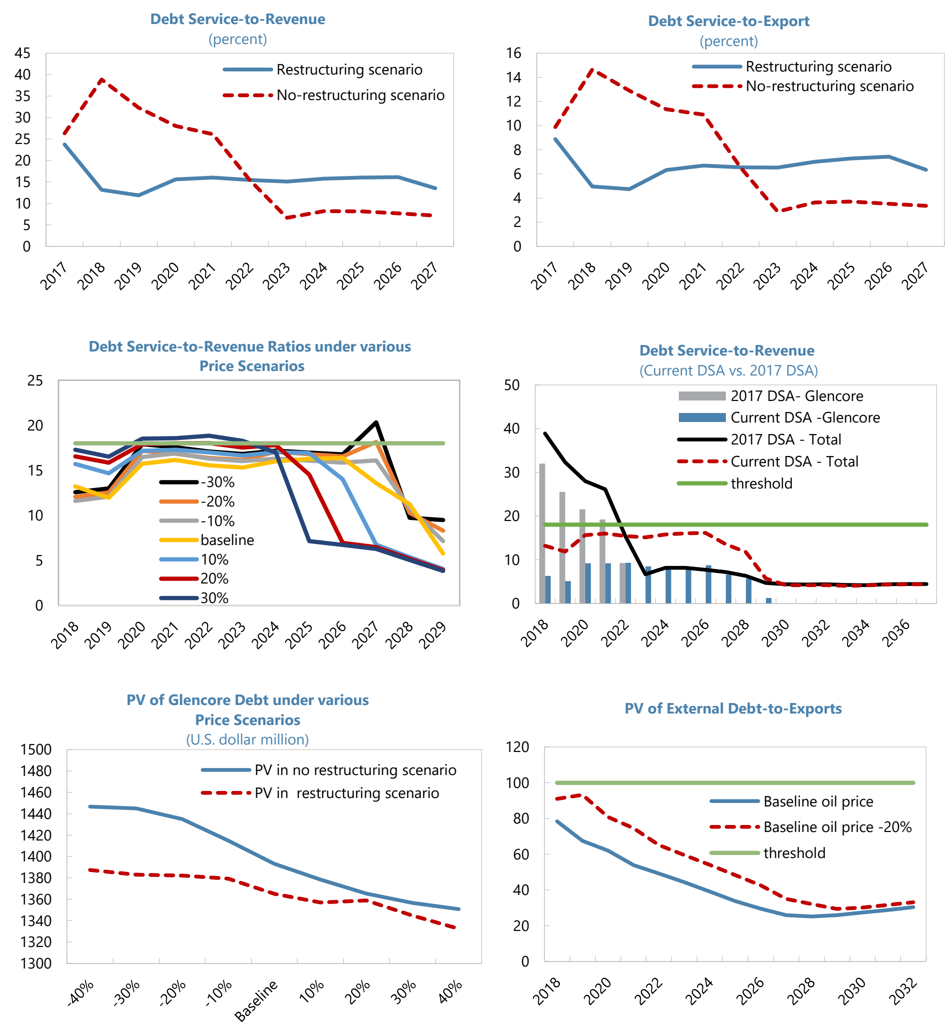
EXTERNAL DSA

9. While the Glencore debt restructuring is expected to lead to a significant improvement in debt dynamics, at this time staff assesses external debt to be in distress given that the final restructuring agreement has not been signed and some external arrears remain. Once the final agreement is reached and progress is made on clearing the outstanding external arrears, other things equal, staff would expect to upgrade the risk rating to moderate under the current LIC DSF methodology (Text Figures 2).

- The agreement in principle to restructure the Glencore debt has eliminated the breach to the debt service to revenue threshold mainly responsible for the debt difficulties Chad has faced recently. The ratio drops considerably in 2018 to 13.2 percent, almost 5 percentage points below the threshold. While it increases slightly over the medium term, it remains firmly below the threshold under the baseline scenario, as well as under reasonable lower oil price scenarios. This is the main change from the 2017 DSA, in which the ratio was close to 40 percent for 2018. Similar improvement is seen to the evolution of the debt service to export ratio.

- The present value of the debt reflecting the agreement in principle also improves. It is 4 percent lower compared to the old debt contract under a baseline scenario that reflects similar prices, and is also lower under higher and lower oil price scenarios. The PV of debt to exports is significantly below the LIC DSF threshold even with oil prices 20 percent lower than under the baseline.

Text Figure 2. Impact of Debt Restructuring



Sources: Chadian authorities; and IMF staff calculations.

10. All external debt burden indicators are generally below their respective thresholds in the baseline. The PV of public and publicly guaranteed external debt as a share of GDP declines gradually from 27.2 percent at end-2017 to under 10 percent by 2028 (Figure 1; Table 1). At 202.7 percent, the PV of debt-to-revenue ratio is slightly above the 200 percent threshold mark in 2018 but falls below it in 2019 and continues to decline steadily to reach 54 percent by 2028.

11. All the debt indicators breach the relevant thresholds in the presence of extreme shocks (Figure 1, Table 2). A shock to exports would push the PV of debt-to-exports and the debt service-to-exports ratios well above their thresholds. The shock that generates the largest impact for the PV of debt-to-GDP ratio, the PV of debt-to-revenue ratio, and debt service-to-revenue ratio is a combination shock where both growth and the primary balance fall below their historical average by half a standard deviation. All three debt burden indicators would rise sharply above their respective threshold in 2018 and remain elevated well into the medium-term. This highlights the sensitivity of the debt trajectory to the fiscal and growth assumptions and further confirms the need to adhere to the fiscal adjustment path under the IMF-supported program.

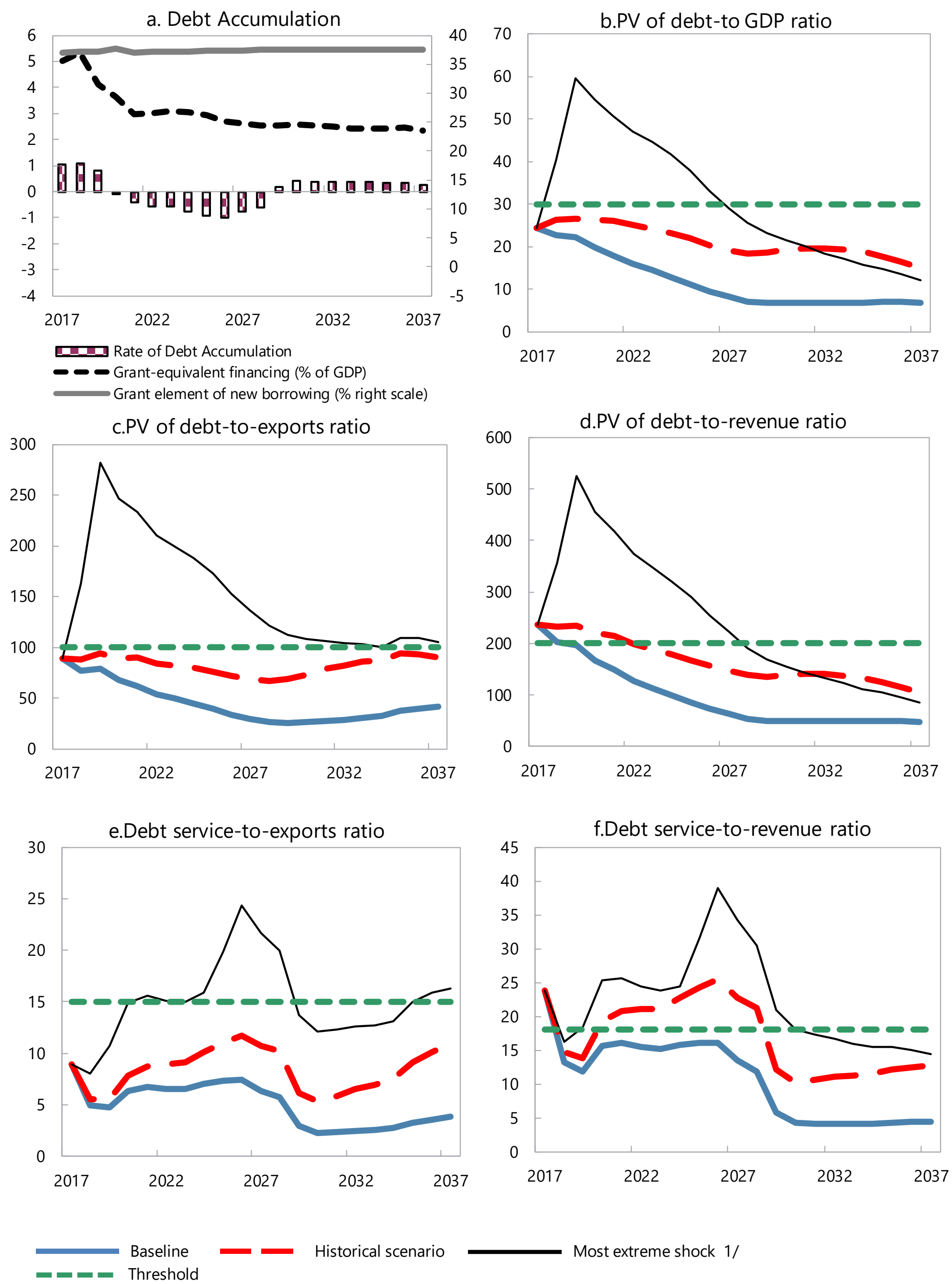
PUBLIC DSA

12. Analysis of total public debt suggests a heightened level of vulnerability (Figure 2, Table 3). The PV of total public debt, as a share of GDP, at end-2017 stood at 49.7 percent, which is about 11.5 percentage points above the benchmark level associated with heightened public debt vulnerabilities for weak policy performance. However, this indicator declines continuously over the medium-term, falling below the threshold by 2023 and eventually stabilizing at about 20 percent into the long-term. The fixed primary balance scenario follows a similar trajectory but remains above the baseline, underscoring the need to remain committed to prudent fiscal policies (Figure 2).

CONCLUSION

13. Chad's external debt is assessed to be in distress at this time and there are heightened public debt vulnerabilities. The rescheduling of the Glencore debt, along with the projected recovery in the oil sector and prudent fiscal policy, result in debt burden indicators declining significantly over the near and medium term. The external debt trajectory remains sensitive to a number of shocks including on exports and to fiscal slippages. However, given that the restructuring agreement is still to be finalized and some external arrears remain outstanding, external debt is considered currently in distress. Additionally, total public debt vulnerabilities remain elevated, which reinforces the need to maintain prudent fiscal policy including on external and domestic borrowing. Finally, effective inter-agency coordination to strengthen the capacity to record and monitor public debt is very important to better manage public debt.

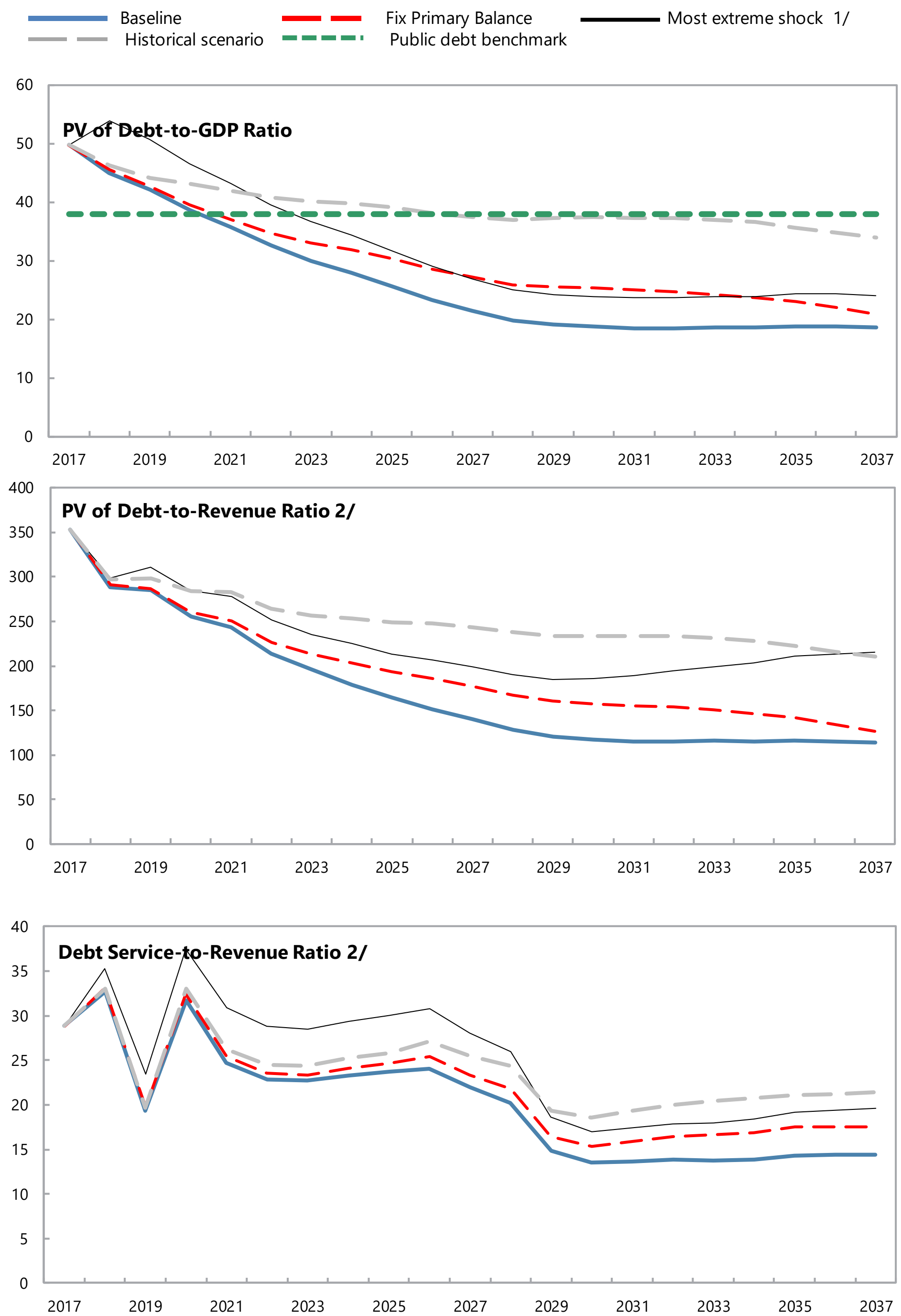
Figure 1. Chad: Indicators of Public and Publicly Guaranteed External Debt under Alternative Scenarios, 2017–37 1/



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 2027. 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 Combination shock

Figure 2. Chad: Indicators of Public Debt under Alternative Scenarios, 2017–37 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 2027.
2/ Revenues are defined inclusive of grants.

Table 1. Chad: External Debt Sustainability Framework, Baseline Scenario, 2014–37 1/

(Percent of GDP, unless otherwise indicated)

	Actual			Historical Average 6/	Standard Deviation 6/	Projections									
	2014	2015	2016			2017	2018	2019	2020	2021	2022	2017-2022 Average	2027	2037	2023-2037 Average
External debt (nominal) 1/	**29.1**	**25.0**	**27.1**			**27.2**	**26.0**	**25.4**	**23.0**	**20.7**	**18.7**		**10.3**	**9.7**	
of which: public and publicly guaranteed (PPG)	29.1	25.0	27.1			27.2	26.0	25.4	23.0	20.7	18.7		10.3	9.7	
Change in external debt	8.0	-4.1	2.2			0.1	-1.2	-0.6	-2.4	-2.2	-2.0		-1.4	-0.2	
Identified net debt-creating flows	2.2	16.7	8.9			2.5	-0.6	0.5	-1.2	-0.8	0.1		0.4	1.8	
Non-interest current account deficit	**8.2**	**12.5**	**7.2**	**5.3**	**6.3**	**4.2**	**3.6**	**4.8**	**4.2**	**4.3**	**4.0**		**2.6**	**2.9**	2.4
Deficit in balance of goods and services	12.5	16.3	15.0			13.9	13.1	13.3	11.5	10.7	8.6		5.6	7.3	
Exports	31.4	26.5	24.4			27.5	29.9	28.3	29.5	28.9	29.8		27.9	16.6	
Imports	43.9	42.9	39.4			41.5	43.0	41.6	41.1	39.6	38.3		33.5	23.9	
Net current transfers (negative = inflow)	-7.9	-7.1	-7.7	-6.1	1.5	-10.0	-9.6	-8.7	-7.9	-7.0	-6.7		-5.3	-4.3	-5.1
of which: official	-4.4	-3.0	-2.9			-3.6	-4.3	-3.1	-2.5	-1.9	-1.9		-1.5	-1.6	
Other current account flows (negative = net inflow)	3.6	3.2	-0.2			0.2	0.2	0.2	0.5	0.6	2.1		2.3	0.0	
Net FDI (negative = inflow)	**-5.2**	**-5.1**	**-2.4**	**-4.3**	**1.9**	**-3.7**	**-4.0**	**-4.4**	**-4.6**	**-4.7**	**-3.5**		**-2.0**	**-1.0**	-1.8
Endogenous debt dynamics 2/	**-0.8**	**9.3**	**4.2**			**2.0**	**-0.2**	**0.0**	**-0.9**	**-0.5**	**-0.4**		**-0.3**	**-0.1**	
Contribution from nominal interest rate	0.7	1.2	2.1			1.1	0.7	0.7	0.7	0.6	0.5		0.2	0.1	
Contribution from real GDP growth	-1.4	-0.7	1.7			0.9	-0.8	-0.7	-1.6	-1.0	-0.9		-0.4	-0.3	
Contribution from price and exchange rate changes	-0.2	8.8	0.4			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	**5.7**	**-20.8**	**-6.7**			**-2.4**	**-0.7**	**-1.0**	**-1.2**	**-1.4**	**-2.1**		**-1.7**	**-2.0**	
of which: exceptional financing	-0.1	-0.8	-1.1			-1.0	-1.7	-1.1	-0.6	-0.3	-0.3		-0.2	-0.1	
PV of external debt 4/	...	...	25.2			24.4	22.8	22.2	19.9	17.9	16.1		8.2	6.9	
In percent of exports	...	...	103.6			88.7	76.4	78.4	67.4	62.0	53.9		29.5	41.2	
PV of PPG external debt	**...**	**...**	**25.2**			**24.4**	**22.8**	**22.2**	**19.9**	**17.9**	**16.1**		**8.2**	**6.9**	
In percent of exports	**...**	**...**	**103.6**			**88.7**	**76.4**	**78.4**	**67.4**	**62.0**	**53.9**		**29.5**	**41.2**	
In percent of government revenues	**...**	**...**	**262.2**			**236.8**	**202.8**	**196.4**	**166.5**	**148.3**	**127.3**		**63.0**	**47.8**	
Debt service-to-exports ratio (in percent)	**15.6**	**9.5**	**16.7**			**8.9**	**5.0**	**4.7**	**6.3**	**6.7**	**6.5**		**6.3**	**3.8**	
PPG debt service-to-exports ratio (in percent)	**15.6**	**9.5**	**16.7**			**8.9**	**5.0**	**4.7**	**6.3**	**6.7**	**6.5**		**6.3**	**3.8**	
PPG debt service-to-revenue ratio (in percent)	**29.9**	**24.0**	**42.2**			**23.7**	**13.2**	**11.9**	**15.6**	**16.0**	**15.4**		**13.5**	**4.4**	
Total gross financing need (Billions of U.S. dollars)	1.1	1.1	0.9			0.3	0.1	0.2	0.2	0.2	0.4		0.5	1.0	
Non-interest current account deficit that stabilizes debt ratio	0.2	16.6	5.0			4.1	4.9	5.3	6.7	6.5	6.0		4.0	3.1	
Key macroeconomic assumptions															
Real GDP growth (in percent)	6.9	1.8	-6.4	4.1	5.3	-3.1	3.5	2.8	6.8	4.8	4.6	3.2	3.9	2.8	3.0
GDP deflator in US dollar terms (change in percent)	0.8	-23.2	-1.5	-0.1	12.5	1.0	12.4	3.6	4.1	3.7	3.6	4.7	2.9	2.9	2.9
Effective interest rate (percent) 5/	3.6	3.3	7.6	2.7	2.1	4.1	2.8	3.0	3.0	2.7	2.7	3.0	1.5	1.2	1.9
Growth of exports of G&S (US dollar terms, in percent)	1.3	-33.9	-15.3	-1.7	19.6	10.5	26.5	0.9	16.0	6.5	11.5	12.0	5.4	0.0	2.0
Growth of imports of G&S (US dollar terms, in percent)	9.8	-23.6	-15.3	1.9	14.1	2.9	20.7	3.2	9.8	4.9	4.8	7.7	4.4	1.4	2.7
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	37.1	37.1	37.3	37.7	37.0	37.1	37.2	37.4	37.6	37.4
Government revenues (excluding grants, in percent of GDP)	16.4	10.5	9.6			10.3	11.3	11.3	12.0	12.1	12.6		13.0	14.4	13.6
Aid flows (in Billions of US dollars) 7/	0.4	0.4	0.3			0.6	0.6	0.5	0.5	0.5	0.5		0.6	0.9	
of which: Grants	0.3	0.4	0.3			0.4	0.5	0.4	0.4	0.4	0.4		0.5	0.8	
of which: Concessional loans	0.1	0.1	0.0			0.2	0.1	0.1	0.1	0.1	0.1		0.1	0.2	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			5.0	5.4	4.1	3.6	3.0	3.0		2.6	2.3	2.6
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			70.7	75.6	79.9	82.4	82.7	83.3		81.0	80.8	80.9
Memorandum items:															
Nominal GDP (Billions of US dollars)	14.0	10.9	10.1			9.9	11.5	12.2	13.6	14.8	16.0		22.4	38.0	
Nominal dollar GDP growth	7.8	-21.8	-7.8			-2.2	16.3	6.6	11.2	8.7	8.3	8.2	6.8	5.7	5.9
PV of PPG external debt (in Billions of US dollars)			2.4			2.5	2.6	2.7	2.7	2.7	2.6		1.8	2.6	
(PVt-PVt-1)/GDPt-1 (in percent)						**1.0**	1.1	0.8	-0.1	-0.4	-0.6	0.3	-0.8	0.3	-0.1
Gross workers' remittances (Billions of US dollars)	...	...	...			...	...	...	...	...	...		...	...	
PV of PPG external debt (in percent of GDP + remittances)	...	...	25.2			24.4	22.8	22.2	19.9	17.9	16.1		8.2	6.9	
PV of PPG external debt (in percent of exports + remittances)	...	...	103.6			88.7	76.4	78.4	67.4	62.0	53.9		29.5	41.2	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	16.7			8.9	5.0	4.7	6.3	6.7	6.5		6.3	3.8	

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. 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 2. Chad: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2017–37
(Percent)

	Projections							
	2017	2018	2019	2020	2021	2022	**2027**	2037
PV of debt-to GDP ratio								
Baseline	24	23	22	20	18	16	**8**	7
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	24	26	27	26	26	25	**19**	15
A2. New public sector loans on less favorable terms in 2017-2037 2/	24	23	23	21	19	17	**10**	11
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	24	24	24	22	20	18	**9**	7
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	24	30	39	35	33	30	**18**	8
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	24	30	34	31	28	25	**13**	10
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	24	27	30	27	25	23	**13**	8
B5. Combination of B1-B4 using one-half standard deviation shocks	24	40	60	55	51	47	**29**	12
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	24	31	30	27	25	22	**11**	9
PV of debt-to-exports ratio								
Baseline	89	76	78	67	62	54	**29**	41
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	89	88	94	90	90	84	**69**	90
A2. New public sector loans on less favorable terms in 2017-2037 2/	89	78	82	71	66	58	**38**	65
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	89	77	79	68	62	54	**30**	41
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	89	162	281	246	233	210	**136**	105
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	89	77	79	68	62	54	**30**	41
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	89	91	107	93	87	77	**47**	46
B5. Combination of B1-B4 using one-half standard deviation shocks	89	157	249	218	207	187	**124**	87
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	89	77	79	68	62	54	**30**	41
PV of debt-to-revenue ratio								
Baseline	237	203	196	166	148	127	**63**	48
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	237	233	235	221	215	199	**147**	104
A2. New public sector loans on less favorable terms in 2017-2037 2/	237	208	205	175	158	138	**80**	75
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	237	214	216	182	163	139	**69**	52
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	237	268	342	295	271	240	**141**	59
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	237	263	302	255	228	195	**96**	73
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	237	241	268	229	208	182	**101**	53
B5. Combination of B1-B4 using one-half standard deviation shocks	237	357	527	455	419	373	**223**	85
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	237	278	270	228	203	174	**86**	65

Table 2. Chad: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2017–37 (continued)

(Percent)

	Projections							
	2017	2018	2019	2020	2021	2022	**2027**	2037
Debt service-to-exports ratio								
Baseline	9	5	5	6	7	7	**6**	4
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	9	6	5	8	9	9	**11**	11
A2. New public sector loans on less favorable terms in 2017-2037 2/	9	5	5	6	7	7	**6**	5
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	9	5	5	6	7	7	**6**	4
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	9	8	11	15	16	15	**22**	16
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	9	5	5	6	7	7	**6**	4
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	9	5	5	7	7	7	**8**	6
B5. Combination of B1-B4 using one-half standard deviation shocks	9	7	9	12	13	12	**19**	15
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	9	5	5	6	7	7	**6**	4
Debt service-to-revenue ratio								
Baseline	24	13	12	16	16	15	**14**	4
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	24	15	14	19	21	21	**23**	13
A2. New public sector loans on less favorable terms in 2017-2037 2/	24	13	12	16	16	16	**13**	6
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	24	14	13	17	17	17	**15**	5
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	24	13	13	18	18	17	**22**	9
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	24	17	18	24	24	24	**21**	7
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	24	13	13	17	17	16	**18**	7
B5. Combination of B1-B4 using one-half standard deviation shocks	24	16	18	25	26	24	**34**	14
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	24	18	16	21	22	21	**18**	6
Memorandum item:								
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, 2014-2037

(Percent of GDP, unless otherwise indicated)

	Actual					Estimate	Projections								
	2014	2015	2016	Average 5/	Standard Deviation 5/	2017	2018	2019	2020	2021	2022	2017-22 Average	2027	2037	2023-37 Average
Public sector debt 1/	39.3	43.3	51.4			52.5	48.1	45.4	41.7	38.6	35.3	43.6	23.6	21.6	21.6
of which: foreign-currency denominated	29.1	25.0	27.1			27.2	26.0	25.4	23.0	20.7	18.7		10.3	9.7	
Change in public sector debt	8.8	3.9	8.1			1.2	-4.5	-2.7	-3.7	-3.1	-3.4		-1.9	-0.2	
Identified debt-creating flows	0.1	5.4	3.9			-1.7	-4.6	-2.9	-5.1	-4.0	-4.6		-3.3	-0.5	
Primary deficit 6/	2.6	3.0	-0.4	0.9	3.9	-0.6	-2.1	-0.9	-1.7	-1.5	-2.3	-1.5	-1.9	0.4	-1.1
Revenue and grants	18.4	14.0	12.6			14.1	15.7	14.8	15.1	14.7	15.3		15.3	16.4	
of which: grants	2.0	3.4	2.9			3.8	4.4	3.5	3.2	2.6	2.6		2.3	2.0	
Primary (noninterest) expenditure	21.0	17.0	12.2			13.5	13.6	13.9	13.5	13.2	13.0		13.4	16.8	
Automatic debt dynamics	1.9	3.0	4.8			0.4	-2.1	-1.6	-3.1	-2.2	-2.0		-1.2	-0.8	
Contribution from interest rate/growth differential	-1.0	-2.6	5.0			4.2	1.4	-1.1	-2.7	-1.9	-1.8		-1.2	-0.8	
of which: contribution from average real interest rate	1.0	-1.9	2.0			2.5	3.2	0.3	0.2	0.0	-0.1		-0.3	-0.2	
of which: contribution from real GDP growth	-2.0	-0.7	3.0			1.7	-1.8	-1.3	-2.9	-1.9	-1.7		-0.9	-0.6	
Contribution from real exchange rate depreciation	2.9	5.6	-0.3			-3.8	-3.5	-0.5	-0.4	-0.3	-0.2		...	...	
Other identified debt-creating flows	-4.4	-0.7	-0.5			-1.4	-0.4	-0.4	-0.3	-0.3	-0.3		-0.2	-0.1	
Privatization receipts (negative)	-4.0	-0.4	0.0			-0.9	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)	-0.4	-0.3	-0.5			-0.5	-0.4	-0.4	-0.3	-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	8.7	-1.4	4.3			2.8	0.1	0.2	1.5	0.9	1.2		1.3	0.3	
Other Sustainability Indicators															
PV of public sector debt	...	...	49.5			49.8	45.0	42.2	38.7	35.9	32.7		21.5	18.8	
of which: foreign-currency denominated	...	...	25.2			24.4	22.8	22.2	19.9	17.9	16.1		8.2	6.9	
of which: external	...	...	25.2			24.4	22.8	22.2	19.9	17.9	16.1		8.2	6.9	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	8.4	8.2	6.2			6.5	5.5	4.0	4.9	3.9	3.0		4.0	5.3	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	394.1			353.1	287.0	285.5	255.5	243.7	214.0		140.6	114.6	
PV of public sector debt-to-revenue ratio (in percent)	...	...	514.1			482.5	398.9	373.4	323.3	296.4	258.9		165.1	130.6	
of which: external 3/	...	...	262.2			236.8	202.8	196.4	166.5	148.3	127.3		63.0	47.8	
Debt service-to-revenue and grants ratio (in percent) 4/	31.6	33.6	41.7			28.8	32.5	19.4	31.9	24.9	23.1		22.2	14.5	
Debt service-to-revenue ratio (in percent) 4/	35.3	44.6	54.4			39.4	45.1	25.3	40.4	30.3	27.9		26.0	16.5	
Primary deficit that stabilizes the debt-to-GDP ratio	-6.2	-0.9	-8.5			-1.7	2.4	1.8	2.0	1.6	1.1		0.1	0.6	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	6.9	1.8	-6.4	4.1	5.3	-3.1	3.5	2.8	6.8	4.8	4.6	3.2	3.9	2.8	3.0
Average nominal interest rate on forex debt (in percent)	3.6	3.3	7.6	2.7	2.1	4.1	2.8	3.0	3.0	2.7	2.7	3.0	1.5	1.2	1.9
Average real interest rate on domestic debt (in percent)	5.1	-1.5	-1.3	1.7	3.4	2.2	1.5	-0.8	-0.7	-0.5	-1.0	0.1	-0.7	-0.5	-0.6
Real exchange rate depreciation (in percent, + indicates depreciation)	14.3	20.8	-0.9	3.7	13.9	-12.7	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	-2.0	3.3	3.1	1.2	3.6	-0.7	0.3	2.2	2.6	2.7	2.9	1.7	2.8	3.0	2.9
Growth of real primary spending (deflated by GDP deflator, in percent)	4.8	-26.6	-35.9	-5.7	13.7	7.5	6.1	5.1	4.1	3.2	3.0	4.8	5.4	3.5	4.7
Grant element of new external borrowing (in percent)	...	...	...	...	...	37.1	37.1	37.3	37.7	37.0	37.1	37.2	37.4	37.6	...

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 grosses up oil revenue and debt service on the oil sales advances

Table 4. Chad – Current Policies: Sensitivity Analysis for Key Indicators of Public Debt, 2017–37

	Projections							
	2017	2018	2019	2020	2021	2022	2027	2037
PV of Debt-to-GDP Ratio								
Baseline	50	45	42	39	36	33	21	19
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	50	46	44	43	42	41	37	34
A2. Primary balance is unchanged from 2017	50	45	43	40	37	35	27	21
A3. Permanently lower GDP growth 1/	50	46	43	41	39	36	30	48
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2018-2019	50	47	47	44	42	39	31	36
B2. Primary balance is at historical average minus one standard deviations in 2018-2019	50	49	50	46	43	40	28	25
B3. Combination of B1-B2 using one half standard deviation shocks	50	49	49	45	43	40	29	29
B4. One-time 30 percent real depreciation in 2018	50	54	51	46	43	40	27	24
B5. 10 percent of GDP increase in other debt-creating flows in 2018	50	51	48	45	42	39	27	25
PV of Debt-to-Revenue Ratio 2/								
Baseline	353	288	285	255	243	213	140	114
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	353	297	298	283	283	265	244	210
A2. Primary balance is unchanged from 2017	353	291	287	260	251	226	177	127
A3. Permanently lower GDP growth 1/	353	290	291	266	260	235	195	285
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2018-2019	353	299	310	284	278	251	199	215
B2. Primary balance is at historical average minus one standard deviations in 2018-2019	353	314	335	302	291	259	184	154
B3. Combination of B1-B2 using one half standard deviation shocks	353	310	326	296	287	257	190	178
B4. One-time 30 percent real depreciation in 2018	353	344	341	305	292	258	175	147
B5. 10 percent of GDP increase in other debt-creating flows in 2018	353	327	326	294	283	252	178	150
Debt Service-to-Revenue Ratio 2/								
Baseline	29	33	19	32	25	23	22	14
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	29	33	20	33	26	25	25	21
A2. Primary balance is unchanged from 2017	29	33	20	32	25	24	23	18
A3. Permanently lower GDP growth 1/	29	33	20	33	26	25	26	24
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2018-2019	29	34	21	35	27	25	25	21
B2. Primary balance is at historical average minus one standard deviations in 2018-2019	29	33	20	34	26	24	26	18
B3. Combination of B1-B2 using one half standard deviation shocks	29	34	21	34	27	25	26	19
B4. One-time 30 percent real depreciation in 2018	29	35	23	37	31	29	28	20
B5. 10 percent of GDP increase in other debt-creating flows in 2018	29	33	20	34	26	24	25	18

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.