INTERNATIONAL MONETARY FUND

CHAD

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REQUEST FOR A THREE-YEAR ARRANGEMENT UNDER THE EXTENDED CREDIT FACILITY AND CANCELLATION OF THE CURRENT ARRANGEMENT—DEBT SUSTAINABILITY ANALYSIS

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With the accumulation of external debt arrears, Chad is currently in debt distress and the debt sustainability analysis shows that debt is unsustainable without external commercial debt restructuring. Two external debt indicators exhibit protracted breaches of their indicative thresholds. The debt service to revenue ratio continues to be significantly above the threshold until 2021. Domestic debt has increased in recent years but is projected to decline starting in 2017. Preserving debt sustainability requires that the authorities maintain fiscal prudence to gradually improve the primary fiscal balance, and implement prudent debt management policies, including a comprehensive strategy for domestic arrears clearance. The debt restructuring currently being pursued by the authorities will be critical to reducing debt to sustainable levels and lowering the risk of debt distress. 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

1. **The composition of Chad's public debt has changed significantly over the past decade.** Over the last few years, Chad has increasingly relied on domestic and regional banks, 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.

Public External Debt

2. **After stabilizing at around 20 percent, the external public debt-to-GDP ratio increased to 29 percent in 2014 following two non-concessional oil sales' advance operations with a commercial creditor, Glencore.** In 2013, the authorities signed two agreements for a total of US$600 million with Glencore to cover revenue shortfalls. In 2014, a new commercial borrowing operation for US$ 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.

3. **In late 2015, a rescheduling agreement with Glencore consolidated the two oil sales' advance operations, extending their maturities.** The rescheduling agreement provided much needed debt service flow relief by extending maturity from 4 to over 6 years. However, the imposition of restructuring fees led to an increase in the present value of the debt. Repaying the Glencore loan using oil receipts, however, continues to place an excessive burden on the budget. The authorities have publicly announced their plan to reschedule this debt again.

4. **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. 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.

5. **As of end-2016, about 53 percent of Chad's external debt was commercial debt (Text Table 1).** In addition, around 24 percent was owed to multilateral creditors, and 23 percent to bilateral creditors.

6. **External payment arrears accumulated in 2016 and in 2017.** As a result of liquidity challenges the government accrued external arrears vis-à-vis a number of multilateral, bilateral, and commercial creditors (a bank from Taiwan province of China). The stock of external arrears is estimated at about US$88 million (0.9 percent of GDP) at end-April 2017 (Text Table 2). The authorities reached out to the creditors to resolve the arrears. In April 2017, the government reached an agreement with EXIM Bank China to reschedule overdue (accrued in 2016) and upcoming maturities.

Text Table 1. Chad: External Debt Stock at Year-End, 2013–2016

(Billions of CFA francs)

	2013	2014	2015	2016
Total	1,410.7	2,010.2	1,616.6	1,619.0
(Percent of GDP)	22.0	29.1	25.0	27.1
Multilateral	719.9	734.8	375.1	387.9
IMF	0.9	11.1	38.3	74.7
World Bank/IDA	387.8	397.4	112.9	110.1
African Development Fund/Bank	181.4	180.7	68.6	55.9
Others	149.8	145.6	155.4	147.2
Bilateral	283.2	334.0	366.3	368.6
Paris Club official debt	13.8	11.5	2.1	[...]
Non-Paris Club official debt	269.4	322.5	364.2	368.6
of which: China, People's Republic	83.3	129.0	144.4	156.0
Libya	133.9	139.6	158.3	163.0
India	18.3	21.1	27.4	30.1
Commercial 1/	407.6	941.5	875.2	862.5

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

1/Glencore loan accounts for about 98 percent of commercial debt stock in 2016

Text Table 2. Chad: Estimated External Arrears at End April 2017

(Millions of US dollar)

Multilateral	**24.53**
World Bank	0.37
Development Bank of Central African States[1]	11.25
Islamic Development Bank	8.73
European Investment Bank	0.16
Arab Bank for Economic Development in Africa	0.72
OPEC Fund for International Development	3.15
International Fund for Agriculture Development	0.14
Bilateral	**61.42**
Libya	27.36
Kuwait	1.38
India	6.09
Congo[1]	26.58
Saudi Arabia	0.01
Commercial	
Mega International Commercial Bank[2]	2.27
Total	**88.21**

[1] In CFAF

[2] Commercial bank from Taiwan Province of China.

Public Domestic Debt

7. The stock of domestic public debt rose to about 24 percent of GDP in 2016, in part reflecting the authorities stepping up their domestic debt issuance program in the CEMAC market (Text Table 3). In 2016, Chad issued CFAF 174 billion (net) in Treasury Bonds, with maturities of two to five years, and CFAF 67 billion (net) in Treasury Bills bringing the combined stock of Treasury Bonds and Bills to CFAF 470 billion or 7.9 percent of GDP. This has exposed the government to significant rollover and interest rate risk. The stock of debt also includes sizeable advances by BEAC (the regional central bank), loans from commercial banks, Development Bank of Central African States (BDEAC), Republic of Congo (in 2012), Equatorial Guinea (in 2013), and Cameroon (2016), as well as verified domestic arrears of CFAF 168 million or 2.8 percent of GDP at end 2016.

8. Following at least 5 years of increase, the stock of domestic debt is projected to fall in 2017 under the proposed ECF program. The fall is driven by the repayment of domestic arrears and an exceptional advance received from the BEAC in late 2016, together with the projected payment of arrears to banks, arrears to suppliers, and other maturities on domestic currency debt. The program does not assume any new domestic borrowing; the authorities will only seek the rollover of maturing T-bills and T-bonds.

Text Table 3. Chad: Stock of Domestic Debt at Year-End, 2011-2017

(Billions of CFA francs)

	2011	2012	2013	2014	2015	2016	2017p
Total	**504.3**	**552.8**	**602.4**	**708.9**	**1185.0**	**1437.0**	**1319.6**
(Percent of GDP)	**8.8**	**8.7**	**9.4**	**10.3**	**18.3**	**24.0**	**21.9**
Central Bank financing	241.9	241.9	222.5	222.5	454.6	494.0	454.6
Statutory advances	*208.6*	*208.6*	*187.8*	*187.8*	*280.0*	*280.0*	*280.0*
Exceptional advance					*140.0*	*170.0*	*140.0*
Consolidated debt	*33.3*	*33.3*	*34.7*	*34.7*	*34.7*	*44.1*	*34.7*
Commercial banks' loans	8.5	8.5	15.1	137.6	86.8	55.2	41.4
2011 Bond[1]	107.6	107.6	80.7	53.8	26.9	0.0	0.0
2013 Bond[1]			90.3	72.2	54.2	54.2	18.0
Treasury Bonds[2]					139.3	298.6	314.1
BDEAC	3.0	4.8	11.0	12.2	19.9	47.7	63.2
Republic of Congo		50.3	40.3	30.3	20.3	20.3	10.3
Equatorial Guinea			15.0	13.3	11.7	10.0	8.3
Cameroon						30.0	30.0
Domestic arrears[3]	56.4	50.3	39.9	51.8	199.8	168.0	138.0
Others[4]	86.9	89.4	87.7	87.7	87.7	87.7	87.7
Memo items:							
Treasury Bills				*27.5*	*84.0*	*171.3*	*154.0*

Source: Chadian authorities

[1]Issued through banks' syndication

[2]Auctionned in regional securities' market

[3] Assumes full repayment of arrears accumulated in 2017

[4]Legal commitments, Standing payment orders, and accounting arrears

DSA ASSUMPTIONS

9. The DSA incorporates historical information on external debt until 2016. The historical information on external debt is based on the World Bank-DRS database and information provided by Chadian authorities.

10. The DSA's baseline scenario assumes fiscal adjustment under the proposed ECF program but does not include debt restructuring. It includes a stable path for oil price, a recovery in oil production, and policies to stabilize the fiscal position and support a sustainable recovery in non-oil activity. It assumes clearance of external arrears within the program period, substantial budget support from donors but does not assume the restructuring of commercial debt, which is necessary to reestablish debt sustainability and fill the financing gap that emerges under the proposed program.

11. Oil production: Chad's medium- and long-term macroeconomic outlook is characterized by gradual increase in oil production over the period 2017–21, but a steady decline over the longer term.

- Oil export is expected to rise from 122,000 bpd in 2016 to about 153,000 bpd in 2021. Proven reserves in the new fields are much smaller than 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.[2]

- Chad's oil trades below the WEO reference price, reflecting a quality discount and transport cost of US$ 4-12 per barrel. For the medium term (five-year horizon) the price of a barrel of Chadian oil is assumed to average about US$50 in 2017–21, in line with the trend projected in the WEO. From 2021 onward, the price is assumed to increase, on average, by around 2 percent per year in U.S. dollar terms (Box 1).

12. Fiscal policy: The analysis assumes that the substantial fiscal adjustment of the past two years will be broadly preserved, with additional adjustment gradually implemented over the medium term through improvement in non-oil revenue. The non-oil primary deficit (NOPD) is expected to improve from 4.4 percent of non-oil GDP to 2.8 percent in 2021. Oil revenue is projected to increase to 6.4 percent of non-oil GDP in 2017 from 3.5 percent last year and then moderate over the medium and long term.[3] 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 19 percent of GDP, while the

[2] 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.

[3] In contrast to previous DSAs, oil revenue is presented on gross basis, i.e., without excluding the debt service on oil sales advances (to Glencore). It only nets out the operation costs associated with the government ownership in the Doba consortium, and oil transportation cost.

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 14 percent of non-oil GDP by 2037); ii) maintaining total investment outlays around 8 percent of non-oil GDP in the long term; and (iii) keeping recurrent spending at relatively low levels by streamlining transfers and subsidies to public enterprises and improving wage bill management. The analysis also assumes a comprehensive strategy for clearing domestic arrears and avoiding further accumulation going forward.

13. Arrears. The authorities' strategy is that arrears to external creditors will be paid within the program period. Arrears accumulated in 2017 are assumed to be repaid in the next few months. Clearance of arrears to official external creditors is programmed within the next 12 months. Arrears to other creditors are programmed to be cleared within the program period. The authorities are making good faith efforts to reach collaborative agreement with the bank from Taiwan province of China. The baseline scenario also includes a gradual reduction in the stock of verified domestic arrears. An audit of domestic arrears is planned to start in 2017 and depending on its outcome, the stock of domestic arrears and the path of repayment may change.

14. The DSA baseline remains subject to downside risks. Implementation challenges related to planned government reforms could weigh on growth prospects, particularly in the medium and longer run. Risks stem from additional domestic debt and arrears that may be off the books but remain to be identified through increased monitoring efforts, including planned audits in 2017. The SOE portfolio may add fiscal exposure. There is also uncertainty around future oil prices and the security situation. A further fall in oil prices would put additional pressure on fiscal accounts and compromise the government's ability to finance its planned expenditure and deb. In addition, unexpected security costs and increased expenditure demands of addressing economic disruptions could divert resources away from priority social and structural programs as well as institutional capacity-building. At the same time, a negative climatic shock would affect the prospects for agricultural growth and significantly reduce GDP growth.

Macroeconomic Assumptions

Real GDP growth is driven by a recovery in 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 **fiscal outlook** features a modest increase in oil revenues in the medium term but a decline in the long term. The non-oil primary deficit is projected at 2.8 percent of non-oil GDP in 2021. The non-oil revenue is projected to gradually improve over the projection horizon starting in 2017. Domestically financed public investment is expected to recover gradually to about 2.2 percent of non-oil GDP in 2021.

The evolution of the **external current account** deficit will be largely driven by the oil price path. The current account deficit is projected at about 3.5 percent of GDP in 2021, thanks to an increase in oil export values. After 2021, barring new oil discoveries, the external current account is projected to remain in deficit, stabilizing at around 2 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 remain low but improve gradually in the short term, as investments from oil companies are envisaged to recover. FDI is assumed to stabilize in 2018–20 at around 4 percent of GDP before it declines to an average of about 2 percent of GDP in 2023–37 in line with the assumption of maturing oil fields and amortized investments.

External financing: The analysis incorporates significant donor support in the period 2017–20. External borrowing is assumed to be on concessional terms over the medium and long term.

Domestic financing: While most of domestic debt is expected to be rolled over in the near term, the program envisages a decline in government financing from the banking system in 2017–18. Arrears to banks from missed bond payment last year is expected to be paid this year. The program assumes no further advances from the BEAC and the repayment to BEAC is assumed to start in 2018.

Text Table 4. Chad: Medium-Term Projections

	2016	2017	2018	2019	2020	2021	2022	2017-22 Avg.	2023-37 Avg.
Real GDP growth (percent per year)	-6.4	0.6	2.4	3.1	3.9	3.6	3.7	2.9	3.3
Oil	-8.4	3.0	6.1	5.8	5.4	1.7	0.0	3.7	-3.2
Non-oil	-6.0	0.1	1.6	2.6	3.6	4.0	4.5	2.7	4.1
Consumer price inflation (percent per year)	-1.1	0.2	1.9	2.4	3.0	3.0	3.0	2.3	3.0
External current account balance (percent of GDP)	-9.2	-2.2	-3.2	-3.5	-3.3	-3.5	-2.8	-3.1	-2.1
Exports of goods and services (percent of GDP)	22.0	30.2	30.7	30.4	30.0	29.4	28.6	29.9	21.7
					(In percent of non-oil GDP)				
Government revenue and grants	14.9	19.9	19.2	19.2	19.5	19.0	19.4	19.4	19.1
Of which: oil revenue	3.5	6.4	6.5	6.3	6.2	6.1	5.9	6.2	3.7
Of which: grants	3.0	5.4	4.3	4.1	4.1	3.5	5.9	4.5	5.3
Government expenditure (commitment basis)	18.0	18.8	18.5	18.7	18.2	17.5	17.3	18.2	18.8
Overall fiscal balance (incl. grants; cash basis)	-4.9	0.1	0.0	-0.4	0.8	1.1	1.6	0.5	0.3
Non-oil primary fiscal bal. (excl. grants; commitment basis)	-4.4	-4.6	-4.3	-4.2	-3.6	-2.8	-2.2	-3.6	-1.5
Memorandum items:									
Chadian crude oil price (US$/barrel)	36.2	50.4	49.9	49.0	48.9	49.5	50.6	49.7	57.9

Sources: Chadian authorities, and IMF staff estimates and projections.

EXTERNAL DSA

15. The evolution of external debt is driven by the government's borrowing strategy which envisages a reasonable volume of project and budget support loans 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 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 36.7 percent over the projection period (Figure 1).

16. Without debt restructuring, debt is unsustainable as reflected in particular by the large breach of the debt service to revenue threshold over the next four years (Figure 1, Table 1). Without debt restructuring, debt service is projected to be about 40 percent of revenue in 2017–18 and average above 30 percent per year during 2019–21.[4] Burdened by a high debt service and weak budgetary resources, the country accumulated significant domestic and external payment arrears in 2016 despite significant fiscal contraction. The country would not be able to continue to sustain such a high burden of debt service, which would lead to further fiscal contraction and a likely disorderly adjustment with severely adverse social and economic consequences.

Stress Tests

17. 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 the main economic variables remain at their historical averages, two of the indicators breach their indicative thresholds, one of which is a minor breach of the debt-to-revenue ratio in 2017. Bounds tests reveal that Chad is most vulnerable to an adverse shock to exports (although this is unlikely given that the oil price shock has happened in the past two years), and a scenario that combines different types of macroeconomic shocks. A one-time depreciation shock (30 percent nominal depreciation in 2017) generates further vulnerability in the debt service-to-revenue indicator. These shocks have the potential to raise the debt burden indicators significantly above their 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

18. Domestic debt has increased in recent years, but is projected to decline (Table 3 and 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 2017–20 under the baseline scenario. Under the requested ECF arrangement, with prudent fiscal policies, the domestic debt component would fall from 22 percent of GDP in 2017 to 17 percent of GDP in 2020. Beyond 2020, domestic debt to GDP continues to

[4] The residuals in Table 1 are associated with 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.

decline steadily until it reaches about 12.6 percent of GDP in 2037. Altogether, the public debt stock would decrease from about 50 percent of GDP in 2017 to 30 percent of GDP in 2022 until it stabilizes around an average of 23 percent of GDP in 2023–37.

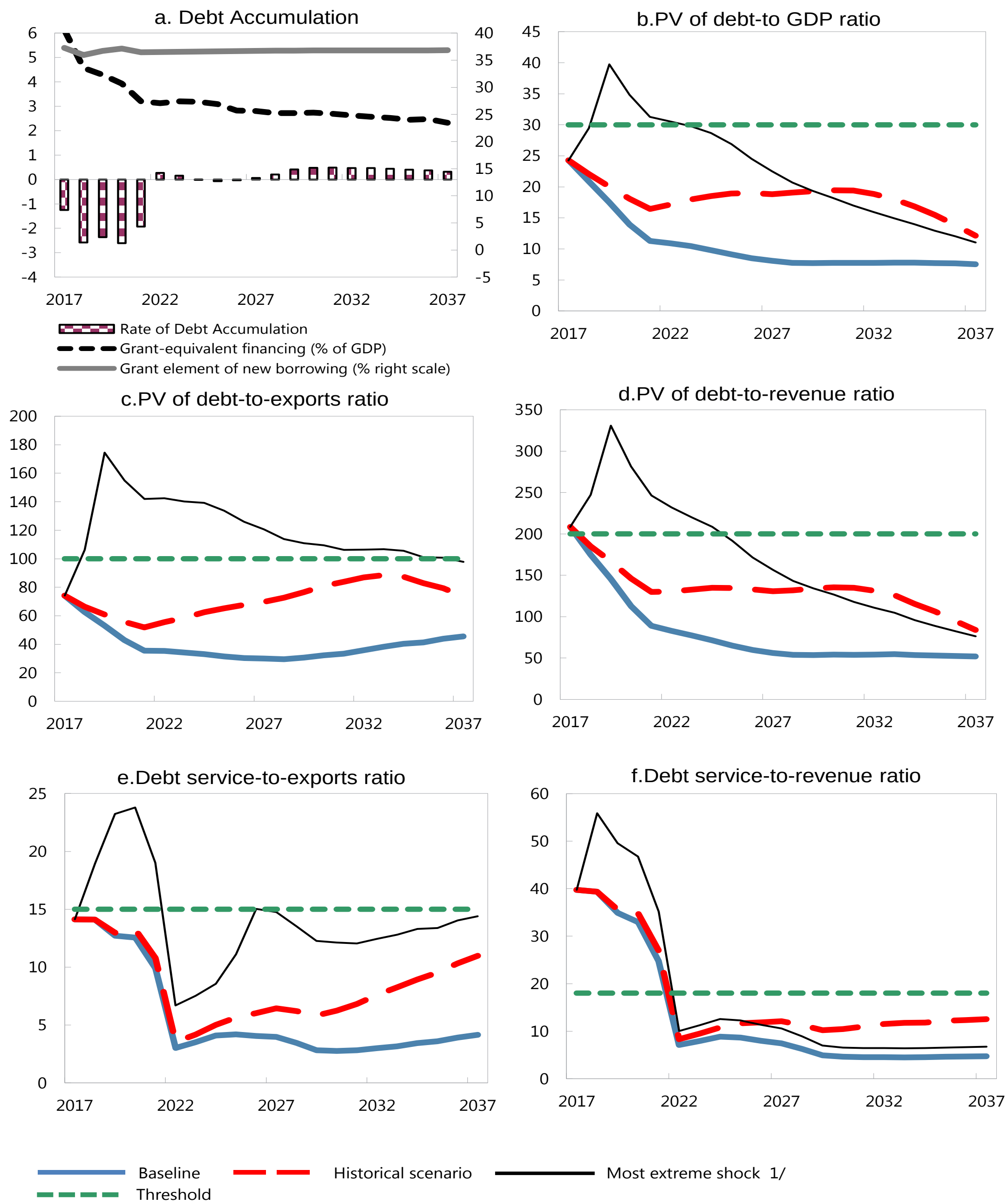
19. Standard stress tests indicate sustainability risks in the next few years. In particular, a real depreciation shock in 2016 could impair public debt sustainability in the short to medium term (Most Extreme Shock in Figure 2 and Bound Tests in Table 4).

CONCLUSION

20. Chad is in debt distress and debt is unsustainable without external commercial debt restructuring. The burden of external commercial debt service is taking a heavy toll on government finances. The government has accumulated significant domestic and external arrears despite significant fiscal adjustments. Without commercial debt restructuring, debt service to revenue ratio breaches the indicative threshold for the next four years by a significant margin. However, with the rescheduling of debt in line with parameters of the newly requested ECF arrangement, and the projected recovery in the oil and non-oil sector, debt ratios can decline significantly over the near and medium term, significantly reducing the risk of debt distress. With the appointment of financial and legal advisors, discussions with the creditor are set to begin soon. Given the exhaustible and volatile oil revenues, it is also necessary to strengthen fiscal and debt management, maintain a prudent external and domestic borrowing policy, and make further progress in diversifying the economy. Effective inter-agency coordination will be important for strengthening the capacity to record and monitor public debt.

21. The authorities broadly concur with the staff assessment. They agreed that the burden of debt service, particularly of the external commercial loan, was weighing heavily on the budgetary resources and on debt sustainability. They agreed that a debt restructuring is necessary to make debt sustainable. They have announced their intention to restructure the debt with Glencore and are firmly committed to achieve a restructuring that restore debt sustainability and is in line with the proposed program parameters. They are committed to a prudent borrowing policy, including seeking external loans on concessional terms in line with program assumptions. They have taken steps to improve debt management practices, including by improving interagency coordination and through technical assistance to improve their cash flow and debt management databases. They have started issuing annual debt management reports (with support from Fund TA), and will undertake institutional improvements in the management of domestic payment arrears in line with Fund TA recommendations. In addition, they also recognize the importance of diversifying their economy, and are finalizing a National Development Plan that strives to do so.

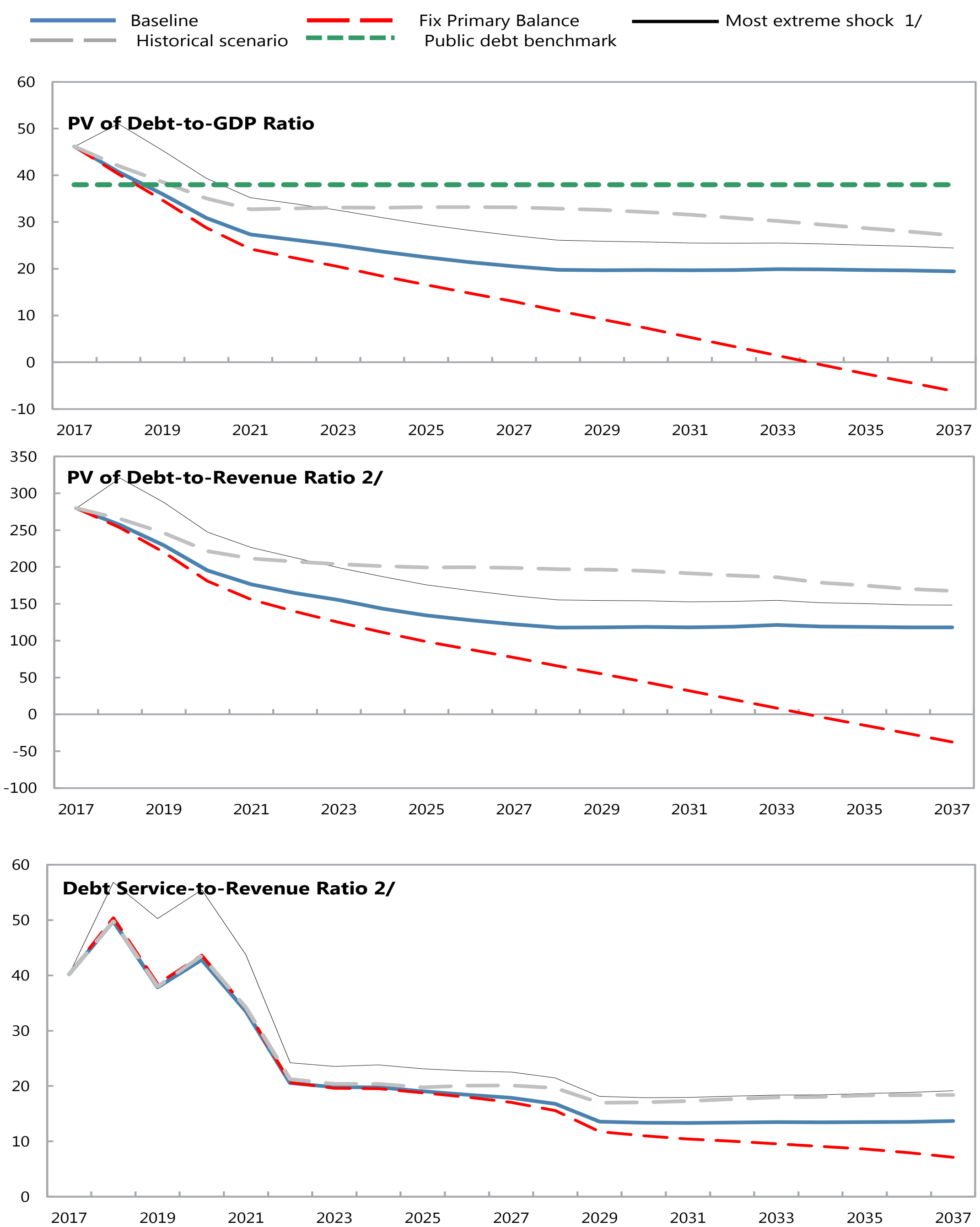
Figure 1. Chad: Indicators of Public and Publicly Guaranteed External Debt Under Alternative Scenarios 2017–37[1]



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 One-time depreciation 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]

	Actual			Historical [6/] Average	Standard [6/] Deviation	Projections									
	2014	2015	2016			2017	2018	2019	2020	2021	2022	2017-2022 Average	2027	2037	2023-203 Average
External debt (nominal) 1/	**29.1**	**25.0**	**27.1**			**27.1**	**24.3**	**21.4**	**17.8**	**15.0**	**14.4**		**11.1**	**10.6**	
of which: public and publicly guaranteed (PPG)	29.1	25.0	27.1			27.1	24.3	21.4	17.8	15.0	14.4		11.1	10.6	
Change in external debt	8.0	-4.2	2.2			-0.1	-2.7	-2.9	-3.6	-2.8	-0.6		-0.5	-0.2	
Identified net debt-creating flows	2.2	15.4	8.9			-1.1	-0.8	-1.0	-1.5	-1.0	-1.3		-0.4	1.6	
Non-interest current account deficit	**8.1**	**11.2**	**8.0**	**4.8**	**6.5**	**0.7**	**1.9**	**2.5**	**2.7**	**3.2**	**2.6**		**1.8**	**2.7**	1.9
Deficit in balance of goods and services	12.5	16.3	15.0			9.7	9.1	9.1	8.7	8.1	7.1		4.8	6.8	
Exports	31.5	26.5	24.4			32.7	33.3	32.9	32.5	31.7	30.9		27.0	16.5	
Imports	43.9	42.9	39.4			42.4	42.3	42.0	41.1	39.8	38.0		31.8	23.3	
Net current transfers (negative = inflow)	-7.9	-7.1	-7.7	-6.1	1.5	-9.7	-8.7	-8.2	-7.7	-6.8	-6.5		-5.3	-4.0	-5.0
of which: official	-4.4	-3.0	-2.9			-4.7	-3.6	-3.2	-2.8	-2.1	-2.0		-1.7	-1.6	
Other current account flows (negative = net inflow)	3.5	2.0	0.6			0.8	1.5	1.6	1.7	1.9	2.0		2.3	0.0	
Net FDI (negative = inflow)	**-5.2**	**-5.1**	**-2.4**	**-4.3**	**1.9**	**-3.2**	**-3.4**	**-3.7**	**-4.0**	**-4.0**	**-3.6**		**-2.0**	**-0.9**	-1.8
Endogenous debt dynamics 2/	**-0.7**	**9.3**	**3.3**			**1.4**	**0.6**	**0.3**	**-0.1**	**-0.3**	**-0.3**		**-0.2**	**-0.2**	
Contribution from nominal interest rate	0.8	1.1	1.2			1.6	1.3	1.0	0.7	0.3	0.2		0.1	0.1	
Contribution from real GDP growth	-1.4	-0.7	1.7			-0.2	-0.6	-0.7	-0.8	-0.6	-0.5		-0.4	-0.3	
Contribution from price and exchange rate changes	-0.2	8.8	0.4			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	**5.8**	**-19.5**	**-6.7**			**1.0**	**-1.9**	**-1.9**	**-2.1**	**-1.8**	**0.7**		**0.0**	**-1.8**	
of which: exceptional financing	-0.1	-0.8	-1.1			-1.5	-1.4	-1.2	-0.7	-0.4	-0.4		-0.3	0.0	
PV of external debt 4/	...	...	25.9			24.3	20.9	17.6	13.9	11.3	10.9		8.1	7.5	
In percent of exports	...	...	106.2			74.4	62.9	53.4	42.9	35.5	35.3		30.0	45.5	
PV of PPG external debt	**...**	**...**	**25.9**			**24.3**	**20.9**	**17.6**	**13.9**	**11.3**	**10.9**		**8.1**	**7.5**	
In percent of exports	**...**	**...**	**106.2**			**74.4**	**62.9**	**53.4**	**42.9**	**35.5**	**35.3**		**30.0**	**45.5**	
In percent of government revenues	**...**	**...**	**268.8**			**209.1**	**175.6**	**146.4**	**112.4**	**88.9**	**82.8**		**56.1**	**51.9**	
Debt service-to-exports ratio (in percent)	**6.8**	**10.4**	**12.3**			**14.1**	**14.1**	**12.7**	**12.6**	**9.9**	**3.0**		**4.0**	**4.2**	
PPG debt service-to-exports ratio (in percent)	**6.8**	**10.4**	**12.3**			**14.1**	**14.1**	**12.7**	**12.6**	**9.9**	**3.0**		**4.0**	**4.2**	
PPG debt service-to-revenue ratio (in percent)	**13.1**	**26.2**	**31.0**			**39.7**	**39.4**	**34.9**	**32.9**	**24.8**	**7.1**		**7.4**	**4.8**	
Total gross financing need (Billions of U.S. dollars)	0.7	1.0	0.9			0.2	0.3	0.3	0.3	0.3	0.0		0.2	0.8	
Non-interest current account deficit that stabilizes debt ratio	0.1	15.4	5.9			0.8	4.6	5.4	6.3	6.1	3.2		2.3	2.9	
Key macroeconomic assumptions															
Real GDP growth (in percent)	6.9	1.8	-6.4	4.1	5.3	0.6	2.4	3.1	3.9	3.6	3.7	2.9	3.2	3.3	3.3
GDP deflator in US dollar terms (change in percent)	0.8	-23.2	-1.5	-0.1	12.5	-4.1	1.5	2.3	3.2	2.7	2.3	1.3	2.8	2.9	2.8
Effective interest rate (percent) 5/	4.1	3.1	4.3	5.0	1.3	5.6	4.8	4.3	3.3	1.8	1.3	3.5	1.2	1.2	1.2
Growth of exports of G&S (US dollar terms, in percent)	1.4	-34.0	-15.4	-1.7	19.7	29.4	5.7	4.6	5.7	4.0	3.2	8.8	1.9	0.6	1.8
Growth of imports of G&S (US dollar terms, in percent)	9.9	-23.7	-15.3	1.9	14.2	3.8	3.8	4.8	5.0	3.1	1.2	3.6	2.6	1.8	2.7
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	37.3	36.0	36.7	37.1	36.5	36.5	36.7	36.7	36.9	36.8
Government revenues (excluding grants, in percent of GDP)	16.5	10.5	9.6			11.6	11.9	12.0	12.4	12.7	13.2		14.4	14.5	14.3
Aid flows (in Billions of US dollars) 7/	0.4	0.4	0.3			0.7	0.5	0.5	0.5	0.4	0.4		0.5	0.7	
of which: Grants	0.3	0.4	0.3			0.5	0.4	0.4	0.4	0.3	0.4		0.4	0.6	
of which: Concessional loans	0.1	0.1	0.0			0.2	0.1	0.1	0.1	0.1	0.1		0.1	0.1	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			6.1	4.6	4.3	3.9	3.2	3.1		2.8	2.3	2.7
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			74.3	79.7	80.2	82.4	82.6	82.6		79.3	78.7	79.3
Memorandum items:															
Nominal GDP (Billions of US dollars)	14.0	11.0	10.1			9.7	10.1	10.7	11.5	12.2	12.9		17.6	31.6	
Nominal dollar GDP growth	7.8	-21.8	-7.8			-3.5	3.9	5.5	7.3	6.4	6.1	4.3	6.1	6.2	6.1
PV of PPG external debt (in Billions of US dollars)			2.5			2.4	2.1	1.9	1.6	1.4	1.4		1.4	2.4	
(PVt-PVt-1)/GDPt-1 (in percent)						**-1.2**	-2.6	-2.4	-2.7	-1.9	0.3	-1.7	0.1	0.3	0.3
Gross workers' remittances (Billions of US dollars)	...	...	...			...	...	...	...	...	...		...	...	
PV of PPG external debt (in percent of GDP + remittances)	...	...	25.9			24.3	20.9	17.6	13.9	11.3	10.9		8.1	7.5	
PV of PPG external debt (in percent of exports + remittances)	...	...	106.2			74.4	62.9	53.4	42.9	35.5	35.3		30.0	45.5	
Debt service of PPG external debt (in percent of exports + remittanc	...	...	12.3			14.1	14.1	12.7	12.6	9.9	3.0		4.0	4.2	

Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

2/ Derived as [r - g - 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 cha

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[1]

(In percent)

	Projections							
	2017	2018	2019	2020	2021	2022	**2027**	2037
PV of debt-to GDP ratio								
Baseline	24	21	18	14	11	11	**8**	8
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	24	22	20	18	16	17	**19**	12
A2. New public sector loans on less favorable terms in 2017-2037 2/	24	21	18	15	12	12	**10**	12
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	24	22	19	15	12	12	**9**	8
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	24	26	32	28	25	25	**18**	9
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	24	24	24	19	15	15	**11**	10
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	24	24	24	20	17	17	**12**	8
B5. Combination of B1-B4 using one-half standard deviation shocks	24	30	40	35	31	31	**23**	11
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	24	30	25	20	16	15	**11**	11
PV of debt-to-exports ratio								
Baseline	74	63	53	43	36	35	**30**	45
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	74	67	61	56	52	56	**70**	73
A2. New public sector loans on less favorable terms in 2017-2037 2/	74	64	55	45	39	39	**39**	71
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	74	63	53	43	35	35	**30**	45
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	74	107	175	155	142	142	**121**	98
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	74	63	53	43	35	35	**30**	45
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	74	72	72	61	54	54	**46**	49
B5. Combination of B1-B4 using one-half standard deviation shocks	74	97	140	125	114	115	**97**	78
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	74	63	53	43	35	35	**30**	45
PV of debt-to-revenue ratio								
Baseline	209	176	146	112	89	83	**56**	52
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	209	186	168	146	130	130	**131**	84
A2. New public sector loans on less favorable terms in 2017-2037 2/	209	178	152	119	97	92	**73**	81
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	209	182	159	122	96	89	**61**	56
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	209	221	268	227	199	187	**126**	62
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	209	204	199	153	121	112	**76**	70
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	209	202	198	161	136	127	**86**	56
B5. Combination of B1-B4 using one-half standard deviation shocks	209	248	332	282	246	232	**156**	76
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	209	249	208	159	126	117	**79**	73

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

(In percent)

Debt service-to-exports ratio								
Baseline	14	14	13	13	10	3	**4**	4
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	14	14	13	13	11	4	**6**	11
A2. New public sector loans on less favorable terms in 2017-2037 2/	14	14	13	13	10	3	**4**	5
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	14	14	13	13	10	3	**4**	4
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	14	19	23	24	19	7	**15**	14
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	14	14	13	13	10	3	**4**	4
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	14	14	13	13	10	3	**6**	6
B5. Combination of B1-B4 using one-half standard deviation shocks	14	17	18	19	15	5	**12**	12
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	14	14	13	13	10	3	**4**	4
Debt service-to-revenue ratio								
Baseline	40	39	35	33	25	7	**7**	5
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	40	39	36	35	27	8	**12**	13
A2. New public sector loans on less favorable terms in 2017-2037 2/	40	39	35	33	25	8	**7**	6
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	40	41	38	36	27	8	**8**	5
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	40	39	36	35	27	9	**15**	9
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	40	46	48	45	34	10	**10**	6
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	40	39	35	34	26	8	**11**	7
B5. Combination of B1-B4 using one-half standard deviation shocks	40	43	44	43	32	11	**19**	11
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	40	56	50	47	35	10	**11**	7
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, 2014–37

(In 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/	39.4	43.3	51.2			49.0	44.2	39.9	34.8	31.1	29.7	38.1	23.6	22.5	22.8
of which: foreign-currency denominated	29.1	25.0	27.1			27.1	24.3	21.4	17.8	15.0	14.4		11.1	10.6	
Change in public sector debt	8.9	3.9	7.9			-2.2	-4.8	-4.3	-5.1	-3.7	-1.4		-0.9	-0.3	
Identified debt-creating flows	0.1	4.0	3.9			-2.3	-3.0	-3.6	-4.2	-3.8	-4.0		-3.2	-0.8	
Primary deficit 6/	2.5	1.8	0.5	0.3	3.9	-3.6	-3.1	-2.4	-2.4	-1.9	-2.2	-2.6	-1.9	0.2	-0.7
Revenue and grants	18.4	14.0	12.6			16.5	15.8	15.7	15.8	15.5	15.9		16.8	16.4	
of which: grants	2.0	3.4	2.9			4.9	3.9	3.7	3.4	2.8	2.7		2.4	2.0	
Primary (noninterest) expenditure	20.9	15.8	13.0			12.9	12.7	13.3	13.5	13.6	13.7		14.8	16.6	
Automatic debt dynamics	2.0	2.9	3.9			1.8	0.5	-0.8	-1.4	-1.5	-1.4		-1.0	-0.9	
Contribution from interest rate/growth differential	-0.9	-2.7	4.1			0.6	0.0	-0.9	-1.6	-1.6	-1.5		-1.0	-0.9	
of which: contribution from average real interest rate	1.1	-2.0	1.2			0.9	1.2	0.4	-0.1	-0.4	-0.5		-0.2	-0.2	
of which: contribution from real GDP growth	-2.0	-0.7	3.0			-0.3	-1.2	-1.3	-1.5	-1.2	-1.1		-0.8	-0.7	
Contribution from real exchange rate depreciation	2.9	5.6	-0.2			1.2	0.5	0.1	0.2	0.1	0.1		...	...	
Other identified debt-creating flows	-4.4	-0.7	-0.5			-0.5	-0.5	-0.4	-0.4	-0.4	-0.4		-0.3	-0.1	
Privatization receipts (negative)	-4.0	-0.4	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recognition of implicit or contingent liabilities	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Debt relief (HIPC and other)	-0.4	-0.3	-0.5			-0.5	-0.5	-0.4	-0.4	-0.4	-0.4		-0.3	-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	8.8	-0.2	4.0			0.1	-1.7	-0.7	-0.9	0.1	2.6		2.3	0.6	
Other Sustainability Indicators															
PV of public sector debt	...	...	49.9			46.2	40.8	36.1	30.9	27.4	26.2		20.5	19.4	
of which: foreign-currency denominated	...	...	25.9			24.3	20.9	17.6	13.9	11.3	10.9		8.1	7.5	
of which: external	...	...	25.9			24.3	20.9	17.6	13.9	11.3	10.9		8.1	7.5	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	5.5	7.1	6.0			5.9	7.2	5.9	6.7	5.5	3.4		3.5	5.1	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	397.2			280.2	257.6	229.9	195.2	176.5	164.6		122.3	118.2	
PV of public sector debt-to-revenue ratio (in percent)	...	...	518.2			397.4	342.3	300.2	249.4	215.7	198.9		142.5	134.2	
of which: external 3/	...	...	268.8			209.1	175.6	146.4	112.4	88.9	82.8		56.1	51.9	
Debt service-to-revenue and grants ratio (in percent) 4/	16.6	35.2	33.1			40.2	49.8	37.8	42.8	33.5	20.5		17.9	13.7	
Debt service-to-revenue ratio (in percent) 4/	18.5	46.7	43.1			57.1	66.2	49.4	54.7	40.9	24.8		20.8	15.5	
Primary deficit that stabilizes the debt-to-GDP ratio	-6.4	-2.1	-7.4			-1.4	1.7	2.0	2.8	1.8	-0.8		-1.0	0.5	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	6.9	1.8	-6.4	4.1	5.3	0.6	2.4	3.1	3.9	3.6	3.7	2.9	3.2	3.3	3.3
Average nominal interest rate on forex debt (in percent)	4.1	3.1	4.3	5.0	1.3	5.6	4.8	4.3	3.3	1.8	1.3	3.5	1.2	1.2	1.2
Average real interest rate on domestic debt (in percent)	5.1	-1.5	-1.3	1.7	3.4	2.4	1.7	0.0	-0.6	-1.1	-1.0	0.2	-0.4	-0.4	-0.4
Real exchange rate depreciation (in percent, + indicates depreciation)	14.2	20.9	-0.8	3.7	13.9	4.5	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	-2.0	3.3	3.1	1.2	3.6	-0.7	0.0	1.7	2.4	3.1	3.0	1.6	2.8	3.0	2.9
Growth of real primary spending (deflated by GDP deflator, in percent)	5.5	-31.6	-25.8	-5.1	12.6	0.2	2.9	8.5	5.7	4.6	4.4	4.4	5.4	2.7	4.5
Grant element of new external borrowing (in percent)	...	...	...	...	...	37.3	36.0	36.7	37.1	36.5	36.5	36.7	36.7	36.9	...

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

Table 4. Chad: 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	46	41	36	31	27	26	21	19
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	46	42	39	35	33	33	33	27
A2. Primary balance is unchanged from 2017	46	40	35	29	24	22	13	-6
A3. Permanently lower GDP growth 1/	46	41	37	33	30	30	30	49
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2018-2019	46	43	40	35	32	32	30	35
B2. Primary balance is at historical average minus one standard deviations in 2018-2019	46	45	44	39	36	35	29	26
B3. Combination of B1-B2 using one half standard deviation shocks	46	44	43	38	35	34	29	29
B4. One-time 30 percent real depreciation in 2018	46	51	45	39	35	34	27	24
B5. 10 percent of GDP increase in other debt-creating flows in 2018	46	47	42	37	34	33	27	25
PV of Debt-to-Revenue Ratio 2/								
Baseline	280	258	230	195	177	165	122	118
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	280	266	247	222	211	207	199	168
A2. Primary balance is unchanged from 2017	280	254	221	181	156	140	77	-37
A3. Permanently lower GDP growth 1/	280	259	235	204	190	184	175	286
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2018-2019	280	265	249	217	203	196	174	208
B2. Primary balance is at historical average minus one standard deviations in 2018-2019	280	284	282	246	229	217	170	158
B3. Combination of B1-B2 using one half standard deviation shocks	280	279	272	237	222	211	172	174
B4. One-time 30 percent real depreciation in 2018	280	321	288	247	226	213	161	148
B5. 10 percent of GDP increase in other debt-creating flows in 2018	280	296	268	233	216	204	160	151
Debt Service-to-Revenue Ratio 2/								
Baseline	40	50	38	43	33	21	18	14
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	40	50	38	44	34	21	20	18
A2. Primary balance is unchanged from 2017	40	50	38	44	34	21	17	7
A3. Permanently lower GDP growth 1/	40	51	39	45	36	22	21	23
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2018-2019	40	52	41	47	37	23	21	20
B2. Primary balance is at historical average minus one standard deviations in 2018-2019	40	50	39	45	36	22	22	18
B3. Combination of B1-B2 using one half standard deviation shocks	40	51	40	46	36	22	22	18
B4. One-time 30 percent real depreciation in 2018	40	57	50	55	44	24	23	19
B5. 10 percent of GDP increase in other debt-creating flows in 2018	40	50	39	45	35	22	21	17

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.