INTERNATIONAL MONETARY FUND

CHAD

April 9, 2020

REQUESTS FOR DISBURSEMENT UNDER THE RAPID CREDIT FACILITY, EXTENSION OF THE EXTENDED CREDIT FACILITY ARRANGEMENT, AND REPHASING OF ACCESS—DEBT SUSTAINABILITY ANALYSIS

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Chad **Bank-Fund Debt Sustainability Analysis**	
Risk of external debt distress	*High*
Overall risk of debt distress	*High*
Granularity in the risk rating	*Sustainable*
Application of judgement	*No*

Chad's risks of external and overall debt distress remain high and the impact of the coronavirus crisis has appreciably elevated risk since the last DSA. The pandemic is expected to raise borrowing needs markedly for several years. Although debt remains sustainable under the baseline forecast, uncertainty has also risen. For instance, the DSA assumes the financing gaps will be closed with concessional financing, which has not yet been identified. Under the baseline, three of the external debt sustainability indicators stay below their respective high-risk thresholds, but the debt-to-revenue ratio breaches its threshold through 2027. Under stress scenarios, indicators approach levels seen during Chad's last episode of debt distress. Total public debt vulnerabilities are elevated, and the pandemic pushes the present value (PV) of public debt-to-GDP ratio above its threshold from 2020 to 2024. The debt sustainability analysis is based on projected continued fiscal prudence and an increase in non-oil revenues after the pandemic crisis abates. Following the restructuring in 2018, the new Glencore debt contract has allowed lower debt service to cushion the recent oil price declines, with some remaining flexibility remaining. However, the contingency mechanisms could become exhausted after 2021 under the conditions *of the customized oil price shock stress test. If downside risks materialize, the debt-service to revenue ratio will rise sharply, and the authorities would likely need to identify additional measures and approach creditors and development partners for additional debt relief or financing.*

PUBLIC DEBT COVERAGE

1. **The coverage of public debt includes state and local governments and the national oil company.** As in the previous DSA, coverage includes the central government, as well as state guaranteed external debt owed by the public oil company "Société des Hydrocarbures du Tchad" (SHT) (Text Table 1). This scope encompasses all public external debt; other public sector entities (including sub-national government and other state-owned enterprises) do not have access to external financing. The Ministry of Finance census of public sector enterprises uncovered the outstanding domestic borrowing of the largest SOEs. Because these are mostly commercial arrears with no formal maturity, they have been added to the contingency analysis.

2. **The contingent liability stress test accounts for vulnerabilities associated with non-guaranteed state-owned enterprises (SOEs), possible unaudited domestic arrears, and financial markets (Text Table 1).** The SOE census indicates that as of 2017, the Société de Raffinage de Ndjamena (SRN), Société Nationale d'Electricité (SNE) and Société Nationale de Ciment (SONACIM) have a combined debt of about CFA 540 billion or 9.5 percent of GDP.[1] Contingent liabilities from financial markets are set at 5 percent of GDP, which represents the average cost to the government of a financial crisis in a low-income country since 1980. The audit of arrears has been completed but the government has not made specific plans for paying them, so the contingent liability is the full value of audited arrears, 6.9 percent of GDP.[2] The contingent liability stress test is customized to 21 percent.

Text Table 1. Chad: Coverage of Public-Sector Debt and Design of Contingent Liability Stress Tests

	Subsectors of the public sector	Check box
1	Central government	X
2	State and local government	X
3	Other elements in the general government	
4	o/w: Social security fund	
5	o/w: Extra budgetary funds (EBFs)	
6	Guarantees (to other entities in the public and private sector, including to SOEs)	
7	Central bank (borrowed on behalf of the government)	X
8	Non-guaranteed SOE debt	

1	The country's coverage of public debt	The central, state, and local governments, central bank		
		Default	Used for the analysis	Reasons for deviations from the default settings
2	Other elements of the general government not captured in 1.	0 percent of GDP	6.9	Audited domestic arrears with no commitment to pay yet established.
3	SoE's debt (guaranteed and not guaranteed by the government) 1/	2 percent of GDP	9.5	From the SOE census, 2017 levels.
4	PPP	35 percent of PPP stock	0	
5	Financial market (the default value of 5 percent of GDP is the minimum value)	5 percent of GDP	5	
	Total (2+3+4+5) (in percent of GDP)		21	

1/ The default shock of 2% of GDP will be triggered for countries whose government-guaranteed debt is not fully captured under the country's public debt definition (1.). If it is already included in the government debt (1.) and risks associated with SoE's debt not guaranteed by the government is assessed to be negligible, a country team may reduce this to 0%.

[1] This figure ascribes 40 percent of SRN's debt to the government, reflecting its 40 percent ownership share.

[2] These arrears will be reflected in the debt stock in the next DSA in line with the clearance strategy adopted by the authorities. Further work is needed to identify the terms of the SOE debt so it can be included in totals of public debt.

BACKGROUND

A. Evolution and Composition of Debt

3. **Chad's external public and publicly guaranteed (PPG) debt burden has stabilized at about 25 percent of GDP since 2017.** Chad's recent debt problems derive from 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. Falling oil prices over 2014-16 were the primary reason for reduced revenues available to repay oil sales advances. This debt has since been restructured twice, most recently in early 2018, which has considerably reduced its burden. At end- 2019, outstanding PPG external debt stood at about $2.8 billion (25.6 percent of GDP). Chad's CFAF-denominated debt held by the regional central bank (BEAC), the regional development bank (BDEAC), and bilateral creditors in the currency union (Republic of Congo, Equatorial Guinea, and Cameroon) amounts to 9.3 percent of GDP. It is not included in external debt, which is calculated on a currency basis.

4. **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 87 percent in 2008 to 32 percent in 2019. The share of commercial debt, mostly to Glencore, which was virtually non-existent in 2008, soared following the 2014 crisis. It is now trending down briskly from a peak in 2016 of 53 percent to 39 percent at end-2019. Bilateral debt doubled over the past decade but, as a share of total debt, it is still less than commercial debt (Text Table 2). Consistent with the ECF arrangement, external debt is defined on a currency basis.

5. **Domestic public debt has begun to decline in recent years** (Text Table 3).[3] Since 2017, domestic debt has been declining as the authorities aim to loosen the bank-sovereign nexus and reduce domestic arrears. However, in 2019 all maturing securities were rolled over into six-month T-bills as banks were not willing to accept longer maturities. Following a peak in 2015, debt to the BEAC was restructured and Chad stopped borrowing from the BEAC. In addition to the debt owed to BEAC (38 percent of total debt), some debt denominated in local currency is held within the CEMAC region, including about 9.8 percent of total debt owed to official bilateral partners and BDEAC, and in the form of securities that could be held by non-resident banks.

[3] State and local debt amounts to less than 0.1 percent of GDP.

Table 1. Chad: External Debt Stock 2016–2019[1]

	2016	2017	2018	2019e
Total (Millions of US$)	2,608	2,702	2,754	2,740
(Billions of CFA francs)	1,622	1,498	1,587	1,617
(Percent of GDP)	25	25	25	24
Billions of CFA francs				
Multilateral	390	385	427	505
IMF	77	96	151	225
World Bank/IDA	110	101	101	101
African Development Fund/Bank	56	56	55	56
Others	147	133	120	124
Bilateral	370	408	467	428
Paris Club official debt	...	25	64	66
Non-Paris Club official debt	370	383	404	363
of which: China, People's Republic	156	132	130	129
Libya	164	150	156	136
India	30	27	21	22
Commercial[2]	862	705	693	684
Share of Total (percent)				
Multilateral	24	26	27	31
Bilateral	23	27	29	27
Commercial[2]	53	47	44	42
Memo: Millions of US$				
Multilateral	628	695	741	856
IMF	124	173	262	381
World Bank/IDA	177	182	175	171
African Development Fund/Bank	90	100	95	94
Others	237	239	208	210
Bilateral	594	734	809	726
Paris Club official debt	...	43	108	112
Non-Paris Club official debt	594	690	701	614
of which: China, People's Republic	251	226	226	218
Libya	264	230	272	230
India	48	38	37	37
Commercial[2]	1,386	1,272	1,202	1,158

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

[1]Includes only debt denominated in foreign currency.

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

Text Table 2. Chad: Domestic Debt Stock 2016–2019

	2016	2017	2018	2019
Total (Billions of CFA francs)	**1482**	**1446**	**1424**	**1260**
(Percent of GDP)	**24.5**	**24.7**	**23.2**	**19.7**
Share of Total (in percent)				
Central Bank financing	33.3	33.2	33.7	38.1
Statutory advances [1]	*18.9*	*20.5*	...	...
Exceptional advance [1]	*11.5*	*10.2*	...	...
Consolidated debt	*3.0*	*2.4*	...	...
Commercial banks' loans	3.3	3.6	7.1	7.4
2011 Bond[2]	0.0	0.0	0.0	0.0
2013 Bond[2]	3.7	1.2	0.0	0.0
Treasury Bonds[3]	21.2	21.8	12.3	9.0
Treasury Bills	*11.2*	*11.7*	*20.6*	*21.5*
BDEAC	3.2	3.4	3.5	3.9
Republic of Congo	2.4	2.4	2.5	2.8
Equatorial Guinea	1.0	1.0	1.1	1.2
Cameroon	2.0	2.1	1.9	1.9
Domestic arrears	12.8	13.5	11.2	7.6
Others[4]	5.9	6.1	6.2	6.6

Source: Chadian authorities

[1]Includes advances that were consolidated in 2017.

[2]Issued through banks' syndication

[3]Auctionned in regional securities' market.

[4] Legal commitments, standing payment orders, and accounting arrears.

6. **External payment arrears have dropped considerably since 2017.** Due to 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 creditors (Mega bank from Taiwan province of China). By end-2018 about $63 million (0.6 percent of GDP) remained outstanding, mainly to bilateral creditors—debt to the Republic of Congo alone is about $53 million. After complications related to payment modalities, the authorities reached an agreement in July 2019 to pay the Angola debt in kind in cattle.[4] Active discussions are underway to address all outstanding arrears, including with Equatorial Guinea, the Republic of Congo and Mega Bank. The agreement under negotiation with Equatorial Guinea will also entail in-kind payment, with the only remaining detail to decide being the price of the commodity (fresh meat). The Mega Bank negotiations have reached an agreement-in-principle that requires ratification. The pandemic has forced several negotiation meetings this spring to be postponed. The authorities have taken concrete

[4] Arrears to Angola were very small, so outstanding arrears at end-2019 were $61, below the *de minimis* threshold that would warrant an "in debt distress" rating.

steps to prevent further accumulation of arrears—including measures to improve coordination among relevant agencies and enhance debt servicing, including reactivation of an escrow account for the payment of external debt at the BEAC.

B. Macroeconomic Forecast

7. **The DSA's baseline scenario reflects policies underlying the ECF arrangement, the financing assumptions underlying the RCF request and medium-term projections that including the Glencore debt restructuring**. The pandemic has impacted the growth projection compared to the previous DSA (June 2019) from 5.4 and 4.8 percent in 2020 and 2021 respectively to –0.1 and 6.1 percent. Both oil and non-oil GDP are expected to rebound in 2021. The outlook assumes that the ECF's revenue-led fiscal consolidation will continue beyond the program horizon at a gradual pace and that spending control would be maintained. Export growth is expected to fall 30 percent in 2020 with oil prices having collapsed and production lower than initial projections at the time of the 5th review. Oil production is expected to continue to increase in the medium term, leading to higher oil revenues, higher exports and overall GDP growth (Text Table 4). The forecast is subject to heightened uncertainty as the economic impact of the pandemic unfolds. The baseline scenario assumes full clearance of external arrears in 2020. The authorities have a financing plan that should underpin gradual repayment of audited domestic arrears.

Text Table 3. Chad: Macroeconomic Assumptions Comparison Table

	DSA June 2019		Current DSA	
	2018-23	2024-39	2019-24	2025-40
Real GDP (%)	4.1	3.1	3.6	3.1
Inflation (GDP deflator, %)	3.3	3.0	0.8	3.2
Average nominal interest rate on external debt (%)	2.9	1.5	2.2	1.2
Average nominal interest rate on domestic debt (%)	3.0	5.1	3.2	4.5
Primary Balance (% of GDP)	3.3	2.9	0.4	1.9
Real primary spending growth (%)	4.8	4.6	8.2	3.7
Exports of G&S growth (%)	12.3	2.3	4.8	2.6
Noninterest current account deficit (% GDP)	4.8	3.1	8.0	3.6

Sources: Chadian authorities and IMF staff estimates and projections.

8. **The projected financing gaps in the balance of payments are assumed to be closed with concessional financing, which has not yet been identified.** The discount rate is kept at 5 percent and the grant element of new borrowing is set at about 37 percent over the forecast horizon. With regards to domestic financing, the maturity structure lengthens across the 20 years of the forecast, in line with the authorities' debt management plans. In accordance with assumed improvements in fiscal and financial sector health, the average real interest rate falls modestly to

match levels seen in more developed markets in the region.

9. The forecast is broadly realistic. The projected 3-year fiscal adjustment is in line with historical data on LIC adjustment programs. Continued fiscal prudence and efforts to raise non-oil revenues beyond the current ECF arrangement horizon are expected to ensure a sustainable adjustment. The fiscal multiplier tool suggests that growth in 2020 and 2021 could differ from the projected consolidation. However, current extreme volatility weakens established relationships. Staff expect the pandemic to lower growth exceptionally this year and allow a stronger-than-normal rebound in 2021. Staff expect the private sector to drive growth, led by private investment, as shown in the lower left panel of Figure 4. New oilfield development projects have boosted expected private investment, while public sector investment remains low.

C. Country Classification and Determination of Stress Test Scenarios

10. The composite indicator (CI) based on October 2019 World Economic Outlook (WEO) projections and an update of the CPIA index to 2020 levels indicates weak debt carrying capacity for Chad. The CI combines the CPIA score, external conditions as captured by world economic growth and country-specific factors. The October 2019 data indicate weak debt carrying capacity, reflecting mainly a low CPIA, very low remittances, and a low level of foreign reserves (Text Table 5).

Text Table 4. Chad: CI Score

Components	Coefficients (A)	10-year average values (B)	CI Score components (A*B) = (C)	Contribution of components
CPIA	0.38	2.72	1.05	42%
Real growth rate (in percent)	2.72	2.51	0.07	3%
Import coverage of reserves (in percent)	4.05	31.30	1.27	51%
Import coverage of reserves^2 (in percent)	-3.99	9.80	-0.39	-16%
Remittances (in percent)	2.02	0.00	0.00	0%
World economic growth (in percent)	13.52	3.50	0.47	19%
CI Score			2.47	100%
CI rating			Weak	

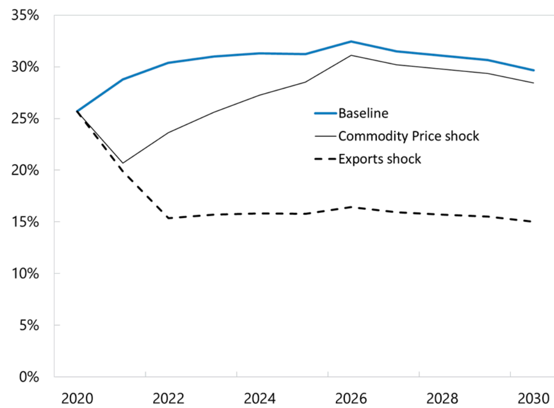
Source: IMF staff calculations. The CI cutoff for medium debt carrying capacity is 2.69.

11. The debt sustainability analysis relies on six standard stress tests and a customized commodity price shock stress test (Figures 1 and 2 and Tables 3 and 4).[5] Of the standard stress tests described in Table 3, the exports shock and the commodity price shock have the most relevance for Chad. The export shock assumes a one-standard deviation (21.1 percent) decline in exports in 2021 and 2020 (Text Figure 1). This stress test might approximate a scenario

[5] The fourth panel of Figure 1 presenting debt service-to-revenue ratios under standard alternative scenarios does not include the Glencore debt contract contingency mechanisms.

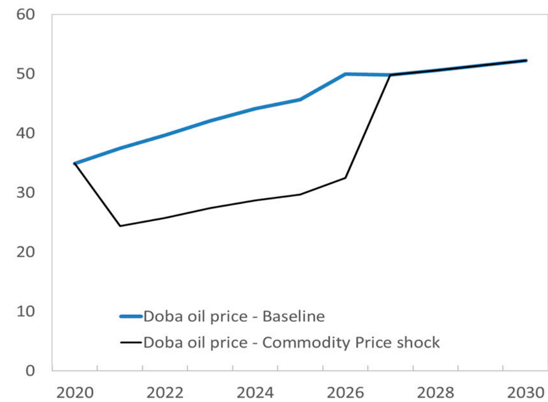
with much lower oil production or disruptions in export capabilities due to the pandemic. The commodity price shock assumes a one-standard deviation (35 percent) decline in oil prices from 2021-2026 (Text Figure 2). The customized oil price shock is further customized to account for contingency mechanisms which limit the negative effect of the shock in the near term.[6] Accounting for the Glencore debt contract contingency mechanisms also captures the revenue impact of the oil price decline more precisely than the standard commodity shock.

Text Figure 1. Chad: Exports/GDP under Alternative Scenarios, 2020-2030



Sources: IMF staff calculations.

Text Figure 2. Chad: Doba Oil Price under Alternative Scenarios, 2020-2030 (Dollars)



Sources: IMF staff calculations.

DEBT SUSTAINABILITY

A. External Debt Sustainability

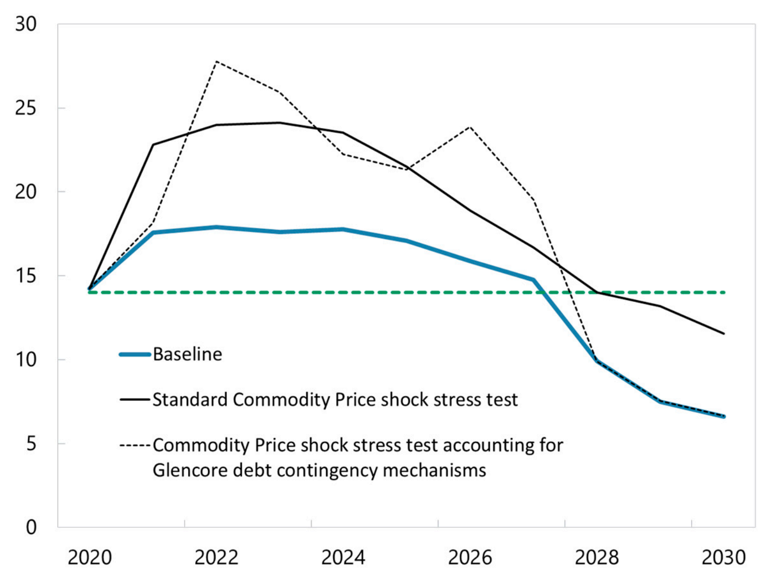
12. External debt risk has risen, though debt levels remain on a gradual downward trajectory over the forecast horizon. Under the baseline scenario the present value of PPG external debt-to-GDP ratio, the present value of PPG external debt-to-exports ratio and the debt service-to-exports ratio are all below their thresholds (Figure 1). The debt service-to-revenue ratio rises due to lower revenue and associated higher borrowing in response to the pandemic. However, it stays close to 18 percent, the target level for the 2018 Glencore debt renegotiation. Despite the significant impact of lower projected oil prices on oil revenue, oil revenue remains sufficient to service the Glencore debt. In fact, it would take a further significant decrease in petroleum prices below the baseline before oil revenue became insufficient to service the Glencore debt. Nonetheless, the debt service-to-revenue ratio is not expected to drop below its threshold of 14 percent until 2028 as the Glencore debt matures. These levels are higher than the

[6] Debt service under the Glencore contract includes a mandatory amortization and interest payment plus a cash sweep component that falls as the Doba oil price goes below a threshold. Because oil prices have fallen so far in the baseline, this contingency is fully exercised even in the baseline and the standard commodity price shock scenarios. As a second contingency mechanism, the contract allows Chad to defer some mandatory payments as prices fall, but the cumulative deferred amortization is capped $75 million. In the baseline (and standard commodity price shock) this contingency is exercised only partly and only in 2021.

previous DSA, but still below the unsustainable ratios felt during the 2015-2017 oil price shock, so staff view this level of debt service to be sustainable.

13. Under stress tests, the thresholds are substantially breached for all indicators. Under the shock scenarios, the exports stress test produces the most extreme scenario for all indicators except the debt service-to-revenue ratio, for which the commodity price stress test is the most extreme. Under the exports stress test all four indicator thresholds are breached through 2028. For the present value of PPG external debt-to GDP, present value of PPG external debt-to-exports, and debt service-to-exports ratios, levels approach those seen during Chad's recent debt distress episode. Under the customized oil price shock scenario, the $75 million adjustment cap is met in 2021, so thereafter the Glencore contract provides no further cushion (Text Figure 3). Debt service to revenue—the factor that pushed Chad into debt distress—peaks at 27.8 percent, high but below ranges in the 30s seen in the last episode of debt distress.[7] This scenario also puts the PV debt to GDP above the threshold from 2022 to 2024. Other stress tests may capture scenarios in which the pandemic accelerates and produces further disruption to GDP, revenues, or a combination of adverse developments. The outcomes of those stress tests were less extreme than the exports and commodity price stress tests.

Text Figure 3. Chad: Debt Service-to-Revenue Ratios



Sources: Chadian authorities; IMF staff calculations.

B. Public Debt Sustainability

14. The benchmark for public debt is breached for five years under the baseline. Due to higher budget deficits related to the impact of the pandemic, the PV of total public debt-to-GDP ratio is projected to hit 42.7 percent at end-2020. This is about 8 percentage points above the 35 percent benchmark level associated with heightened public debt vulnerabilities and a weak debt carrying capacity. This is higher than the last DSA. The level declines thereafter, reaching

[7] As noted in DSA ¶11, the customized oil shock models the impact of oil prices on revenue, so it continues to differ from the standard commodity shock even after the contingency mechanism's cap is reached in 2021.

33.7 by 2025. The benchmark for public debt is also breached through at least 2025 for every contingency scenario.

C. Risk Rating and Vulnerabilities

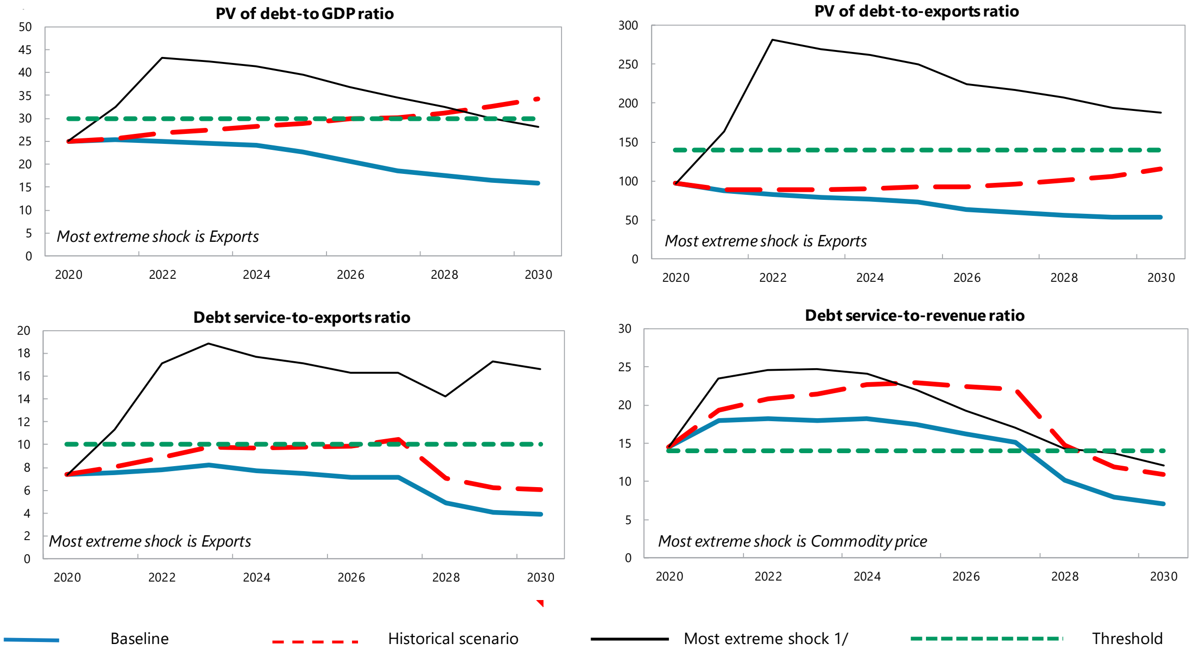
15. Chad is at high risk of external debt distress and high overall risk of public debt distress. While debt vulnerabilities have declined since the beginning of the ECF arrangement, the impact of the pandemic can be seen in significantly higher debt risk indicator levels compared to the last DSA. The elevated path of debt service to revenue reflects the difficulties Chad will face maintaining oil revenue in the near term due to the pandemic. In addition, the pressures of the pandemic are expected to push Chad's PV of total public debt-to-GDP ratio above the benchmark level in the near term. If downside risks materialize, the debt-service-to-revenue ratio will rise sharply, and the authorities would likely need to identify additional measures and approach creditors and development partners for additional debt relief or financing. As such, Chad's external and overall debt is assessed to be at high risk of debt distress. Mechanically, the CFAF-denominated debt held by the BEAC, BDEAC, and bilateral creditors would weaken the external debt sustainability indicators if the external DSA were done on residency basis. These claims do not face currency risk, and institutional ties with the creditors are relatively strong. Nonetheless, some difficulties may still be faced in restructuring such debt if necessary, and the risks associated with the rollover of securities held by non-residents (the scale of which is unclear) remains even if it is limited.

16. Significant efforts are warranted to ensure debt remains on a downward trajectory. Elevated vulnerabilities reinforce the need to maintain prudent fiscal policy including on external and domestic borrowing. While progress has been made recently to reduce the stock of external and domestic arrears, Chad will need to refocus on clearing the remaining domestic arrears once the current fiscal pressures abate. Finally, continued effective inter-agency coordination to strengthen the capacity to record and monitor public debt is very important to better manage public debt.

D. Authorities' Views

17. The authorities remain committed to improving Chad's debt sustainability and consider that completing debt restructuring is key in the near-term. By negotiating payment-in-kind for the debt to Angola—and likely for the debt to Equatorial Guinea—Chad has monetized its livestock, an asset that is otherwise difficult for a land-locked country to exploit. The authorities anticipate that further negotiations with Libya and Congo will lower debt service meaningfully. Additionally, the authorities aspire to reduce domestic debt service by graduating from the rollover mechanism for placing Treasury bills and bonds to a market-based auction. As the pandemic crisis passes, the authorities expect that improving the non-oil economy's growth performance will further improve debt sustainability.

Figure 1. Chad: Indicators of Public and Publicly Guaranteed External Debt under Alternative Scenarios, 2020–2030



Customization of Default Settings		
	Size	Interactions
Tailored Tests		
Combined CLs	Yes	
Natural Disasters	n.a.	n.a.
Commodity Prices 2/	No	No
Market Financing	n.a.	n.a.

Note: "Yes" indicates any change to the size or interactions of the default settings for the stress tests. "n.a." indicates that the stress test does not apply.

Borrowing Assumptions for Stress Tests*		
	Default	User defined
Shares of marginal debt		
External PPG MLT debt	100%	
Terms of marginal debt		
Avg. nominal interest rate on new borrowing in USD	1.0%	1.0%
USD Discount rate	5.0%	5.0%
Avg. maturity (incl. grace period)	17	20
Avg. grace period	8	6

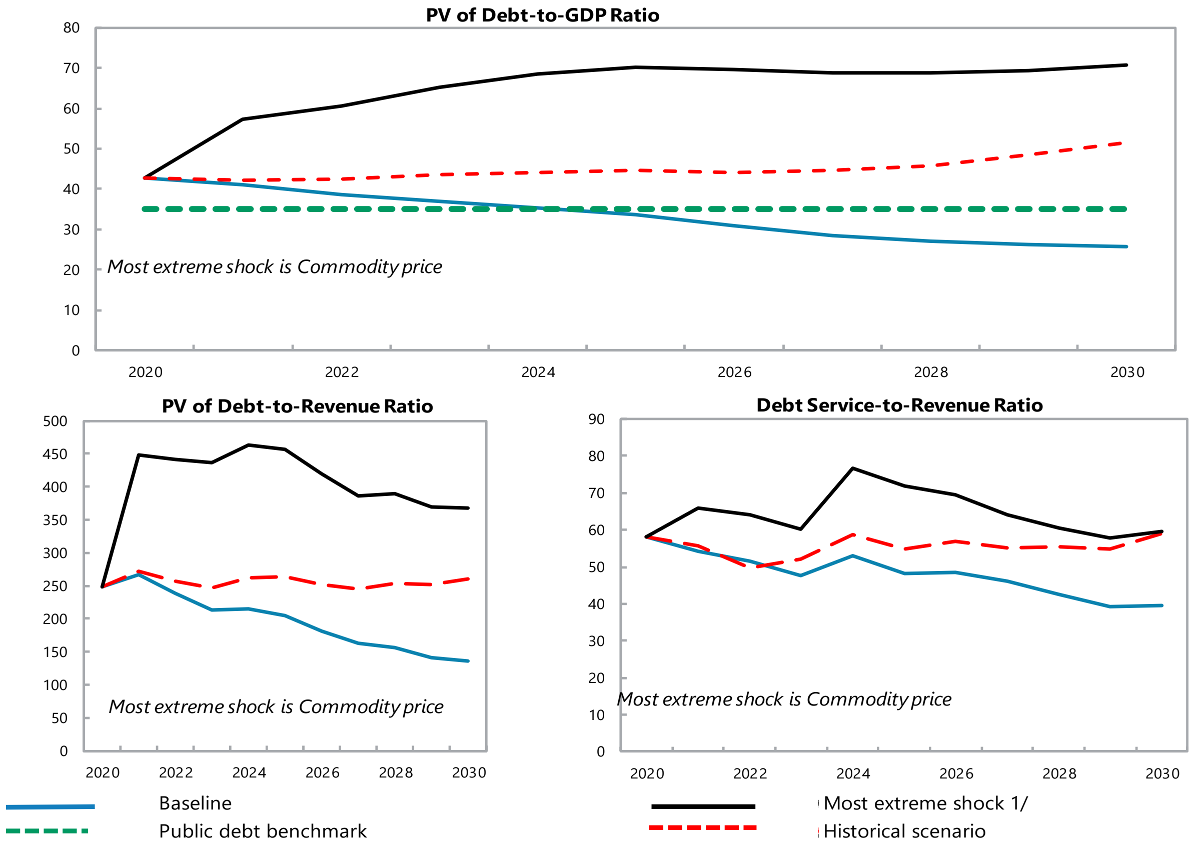
* Note: All the additional financing needs generated by the shocks under the stress tests are assumed to be covered by PPG external MLT debt in the external DSA. Default terms of marginal debt are based on baseline 10-year projections.

Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in or before 2030. Stress tests with one-off breaches are also presented (if any), while these one-off breaches are deemed away for mechanical signals. When a stress test with a one-off breach happens to be the most exterme shock even after disregarding the one-off breach, only that stress test (with a one-off breach) would be presented.

2/ The magnitude of shocks used for the commodity price shock stress test are based on the commodity prices outlook prepared by the IMF research department. The tailored commodity price stress test presented here does not account for the contingency mechanisms in the Glencore debt as Text Figure 3 does.

Figure 2. Chad: Indicators of Public Debt Under Alternative Scenarios, 2020–2030



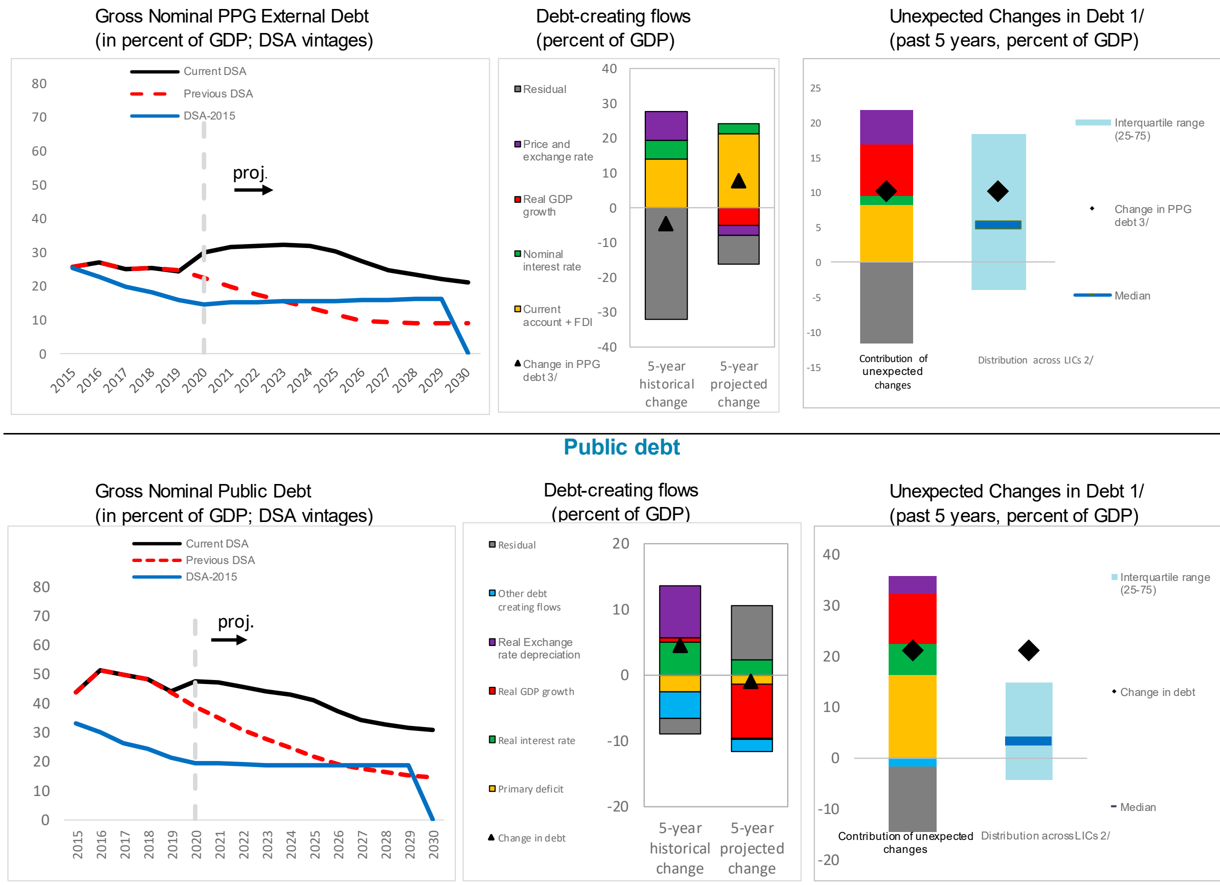
Borrowing Assumptions for Stress Tests*	Default	User defined
Shares of marginal debt		
External PPG medium and long-term	36%	65%
Domestic medium and long-term	10%	5%
Domestic short-term	74%	30%
Terms of marginal debt		
External MLT debt		
Avg. nominal interest rate on new borrowing in USD	1.0%	1.0%
Avg. maturity (incl. grace period)	17	20
Avg. grace period	8	6
Domestic MLT debt		
Avg. real interest rate on new borrowing	5.7%	5.0%
Avg. maturity (incl. grace period)	6	1
Avg. grace period	0	0
Domestic short-term debt		
Avg. real interest rate	1%	2.0%

* Note: The public DSA allows for domestic financing to cover the additional financing needs generated by the shocks under the stress tests in the public DSA. Default terms of marginal debt are based on baseline 10-year projections.

Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in or before 2030. The stress test with a one-off breach is also presented (if any), while the one-off breach is deemed away for mechanical signals. When a stress test with a one-off breach happens to be the most exterme shock even after disregarding the one-off breach, only that stress test (with a one-off breach) would be presented.

Figure 3. Chad: Drivers of Debt Dynamics—Baseline Scenario



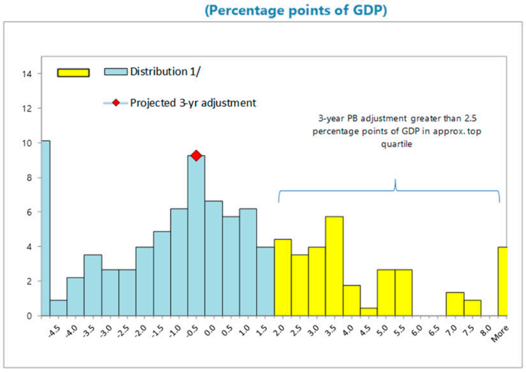
1/ Difference between anticipated and actual contributions on debt ratios.

2/ Distribution across LICs for which LIC DSAs were produced.

3/ Given the relatively low private external debt for average low-income countries, a ppt change in PPG external debt should be largely explained by the drivers of the external debt dynamics equation.

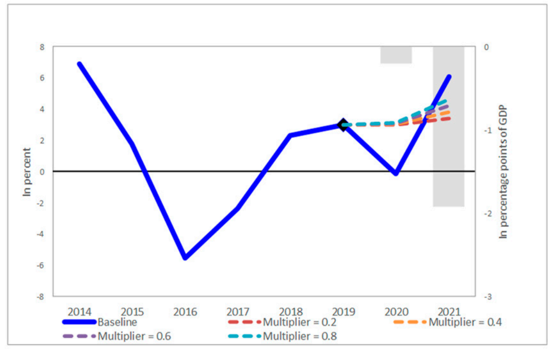
Figure 4. Chad: Realism Tools

3-Year Adjustment in Primary Balance
(Percentage points of GDP)



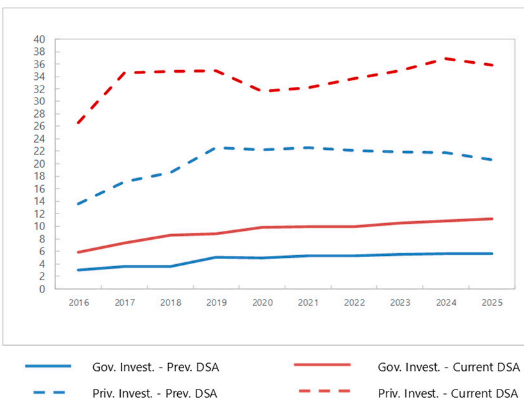
1/ Data cover Fund-supported programs for LICs (excluding emergency financing) approved since 1990. The size of 3-year adjustment from program inception is found on the horizontal axis; the percent of sample is found on the vertical axis.

Fiscal Adjustment and Possible Growth Paths 1/



1/ Bars refer to annual projected fiscal adjustment (right-hand side scale) and lines show possible real GDP growth paths under different fiscal multipliers (left-hand side scale).

Public and Private Investment Rates
(% of GDP)



Contribution to Real GDP growth
(percent, 5-year average)

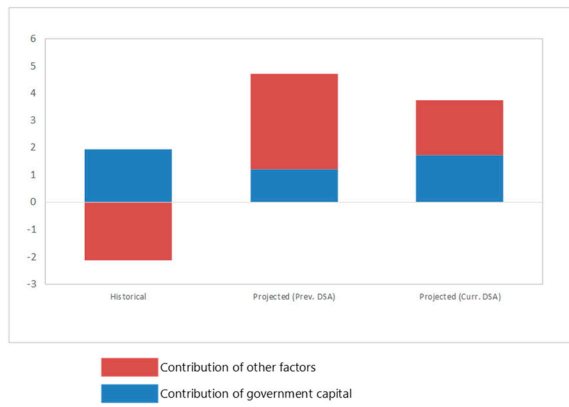
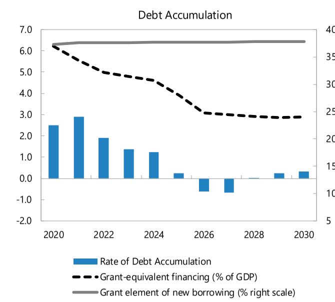


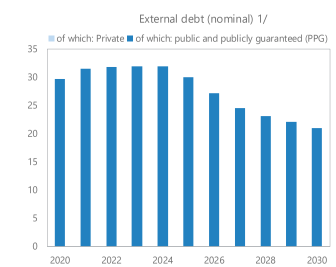
Table 2. Chad: External Debt Sustainability Framework, Baseline Scenario, 2009–2040

(In percent of GDP, unless otherwise indicated)

	Actual											Projections								Average 8/	
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030	2040	Historical	Projections
External debt (nominal) 1/	26.1	24.6	21.8	20.0	21.1	29.1	25.5	27.0	25.1	25.1	24.4	29.7	31.5	31.9	32.0	31.9	30.0	21.0	9.2	24.4	27.7
of which: public and publicly guaranteed (PPG)	26.1	24.6	21.8	20.0	21.1	29.1	25.5	27.0	25.1	25.1	24.4	29.7	31.5	31.9	32.0	31.9	30.0	21.0	9.2	24.4	27.7
Change in external debt	...	-1.5	-2.8	-1.7	1.1	8.0	-3.7	1.5	-1.9	0.0	-0.7	5.3	1.7	0.4	0.1	-0.1	-1.8	-1.1	-0.5		
Identified net debt-creating flows	...	0.0	-1.7	2.7	4.2	2.2	16.8	9.9	3.8	-3.8	0.8	8.6	4.1	1.9	2.3	1.6	0.5	0.4	4.2	3.5	1.7
Non-interest current account deficit	8.0	8.4	5.4	7.1	8.5	8.2	12.6	8.7	6.0	0.7	4.2	12.6	9.8	7.2	7.4	6.7	5.4	1.7	4.9	7.0	5.3
Deficit in balance of goods and services	11.5	10.8	7.5	9.8	9.6	12.5	16.5	16.2	15.2	8.7	9.6	20.4	16.5	13.9	13.5	12.7	11.6	7.4	9.4	11.6	11.6
Exports	35.2	37.8	40.6	38.2	33.4	31.5	26.4	22.9	26.5	33.3	34.7	25.7	28.8	30.4	31.0	31.3	31.2	29.7	17.3		
Imports	46.8	48.6	48.1	48.0	43.1	43.9	42.9	39.1	41.7	42.0	44.3	46.1	45.3	44.3	44.5	44.0	42.8	37.0	26.7		
Net current transfers (negative = inflow)	-7.5	-5.6	-4.3	-4.4	-5.1	-7.9	-7.1	-7.6	-9.4	-8.9	-7.4	-10.0	-8.8	-8.4	-7.8	-7.7	-7.4	-5.8	-4.4	-6.8	-7.4
of which: official	-0.6	-0.3	-0.3	-0.7	-1.3	-4.0	-2.5	-2.4	-3.1	-3.2	-1.3	-3.0	-2.1	-2.0	-1.9	-1.9	-1.8	-1.2	-1.2		
Other current account flows (negative = net inflow)	3.9	3.2	2.2	1.7	3.9	3.6	3.2	0.1	0.3	0.9	2.0	2.2	2.1	1.7	1.7	1.7	1.2	0.1	0.0	2.1	1.1
Net FDI (negative = inflow)	-6.5	-5.2	-4.5	-4.7	-4.0	-5.2	-5.1	-2.4	-3.6	-3.0	-4.3	-4.6	-4.6	-4.5	-4.4	-4.5	-4.1	-0.9	-0.6	-4.2	-3.1
Endogenous debt dynamics 2/	...	-3.2	-2.6	0.3	-0.3	-0.8	9.3	3.6	1.4	-1.5	0.9	0.6	-1.1	-0.8	-0.6	-0.6	-0.8	-0.4	-0.2		
Contribution from nominal interest rate	...	0.2	0.4	0.7	0.6	0.7	1.1	1.7	1.0	0.6	0.7	0.6	0.6	0.6	0.6	0.5	0.4	0.2	0.1		
Contribution from real GDP growth	...	-3.1	0.0	-1.9	-1.1	-1.4	-0.7	1.5	0.6	-0.5	-0.8	0.0	-1.6	-1.4	-1.2	-1.1	-1.1	-0.6	-0.3		
Contribution from price and exchange rate changes	...	-0.3	-3.0	1.5	0.2	-0.2	8.8	0.4	-0.3	-1.6	1.0	...	...	...	...	...	...	...	...		
Residual 3/	...	-1.4	-1.1	-4.5	-3.1	5.8	-20.4	-8.4	-5.7	3.8	-1.5	-3.3	-2.3	-1.5	-2.2	-1.7	-2.3	-1.4	-4.7	-3.7	-2.0
of which: exceptional financing	...	0.0	0.0	0.0	0.0	-0.1	-0.8	-1.1	-1.0	-1.3	-1.6	-0.8	-0.4	-0.4	-0.3	-0.3	-0.3	-0.2	-0.1		
Sustainability indicators																					
PV of PPG external debt-to-GDP ratio	...	...	...	...	...	...	...	...	...	...	21.0	25.0	25.4	25.0	24.6	24.1	22.7	16.0	6.8		
PV of PPG external debt-to-exports ratio	...	...	...	...	...	...	...	...	...	...	60.6	97.1	88.1	82.3	79.2	76.9	72.7	53.8	39.3		
PPG debt service-to-exports ratio	2.0	1.5	2.2	3.2	3.9	15.6	9.6	14.4	9.0	6.1	4.0	7.3	7.5	7.8	8.2	7.7	7.5	3.9	4.7		
PPG debt service-to-revenue ratio	5.7	3.1	3.9	5.7	7.1	31.0	24.0	34.5	22.4	16.9	10.9	14.5	17.9	18.3	18.0	18.2	17.5	7.0	4.9		
Gross external financing need (Million of U.S. dollars)	...	...	...	...	755.2	1114.1	1101.1	980.4	486.4	-25.0	137.5	1018.2	826.9	623.7	724.7	659.9	542.1	405.8	1972.9		
Key macroeconomic assumptions																					
Real GDP growth (in percent)	4.1	13.6	0.1	8.8	5.8	6.9	1.8	-5.6	-2.4	2.3	3.0	-0.1	6.1	4.9	4.0	3.8	3.8	3.0	3.2	3.4	3.7
GDP deflator in US dollar terms (change in percent)	-14.2	1.1	13.7	-6.4	-1.0	0.8	-23.2	-1.4	1.2	7.0	-3.8	-5.7	3.4	4.1	3.2	3.2	3.3	2.8	3.2	-1.2	2.4
Effective interest rate (percent) 4/	...	0.7	1.8	3.3	3.4	3.7	3.1	6.2	3.8	2.8	2.6	2.4	2.1	2.1	1.9	1.8	1.2	1.0	1.0	3.1	1.9
Growth of exports of G&S (US dollar terms, in percent)	-26.0	23.2	22.3	-4.1	-8.4	1.4	-34.4	-19.2	14.5	37.6	3.1	-30.2	23.0	15.2	9.5	8.2	6.9	2.6	1.9	3.6	5.5
Growth of imports of G&S (US dollar terms, in percent)	2.2	19.4	12.7	1.6	-6.0	9.9	-23.7	-15.1	5.4	10.3	4.5	-2.1	7.8	6.7	7.9	5.9	4.2	2.5	4.3	1.9	4.5
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	...	...	...	...	...	...	37.2	37.6	37.6	37.6	37.6	37.7	37.8	37.8	...	37.6
Government revenues (excluding grants, in percent of GDP)	12.3	18.9	23.2	21.7	18.5	15.8	10.5	9.5	10.6	12.0	12.6	13.0	12.1	13.0	14.1	13.3	13.3	16.5	16.8	15.3	14.1
Aid flows (in Million of US dollars) 5/	350.8	263.4	279.6	477.1	377.5	369.1	433.3	326.8	527.7	511.9	303.8	861.9	929.4	880.5	886.5	902.8	749.4	708.6	920.4		
Grant-equivalent financing (in percent of GDP) 6/	...	...	...	...	...	...	...	...	...	...	...	6.2	5.5	5.0	4.8	4.6	3.9	2.9	2.1	...	4.1
Grant-equivalent financing (in percent of external financing) 6/	...	...	...	...	...	...	...	...	...	...	...	64.4	60.2	62.6	64.4	65.5	73.2	80.9	80.9	...	72.5
Nominal GDP (Million of US dollars)	9,315	10,701	12,183	12,411	12,994	14,003	10,952	10,202	10,079	11,036	10,934	10,300	11,302	12,340	13,244	14,194	15,217	21,065	38,074		
Nominal dollar GDP growth	...	14.9	13.8	1.9	4.7	7.8	-21.8	-6.8	-1.2	9.5	-0.9	-5.8	9.7	9.2	7.3	7.2	7.2	5.9	6.4	2.2	6.2
Memorandum items:																					
PV of external debt 7/	...	...	...	...	...	...	...	...	...	...	21.0	25.0	25.4	25.0	24.6	24.1	22.7	16.0	6.8		
In percent of exports	...	...	...	...	...	...	...	...	...	...	60.6	97.1	88.1	82.3	79.2	76.9	72.7	53.8	39.3		
Total external debt service-to-exports ratio	2.0	1.5	2.2	3.2	3.9	15.6	9.6	14.4	9.0	6.1	4.0	7.3	7.5	7.8	8.2	7.7	7.5	3.9	4.7		
PV of PPG external debt (in Million of US dollars)											2296.2	2570.1	2868.2	3085.2	3253.1	3418.0	3452.4	3363.9	2595.4		
(PVt-PVt-1)/GDPt-1 (in percent)												2.5	2.9	1.9	1.4	1.2	0.2	0.3	0.0		
Non-interest current account deficit that stabilizes debt ratio	...	9.8	8.3	8.8	7.4	0.2	16.3	7.2	8.0	0.7	4.9	7.3	8.0	6.8	7.3	6.8	7.2	2.8	5.5		

Definition of external/domestic debt	Currency-based
Is there a material difference between the two criteria?	Yes





Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

2/ Derived as [r - g - ρ(1+g)]/(1+g+ρ+gρ) times previous period debt ratio, with r = nominal interest rate; g = real GDP growth rate, and ρ = growth rate of GDP deflator in U.S. dollar terms.

3/ Includes exceptional financing (i.e., changes in arrears and debt relief); changes in gross foreign assets; and valuation adjustments. For projections also includes contribution from price and exchange rate changes.

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

5/ Defined as grants, concessional loans, and debt relief.

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

7/ Assumes that PV of private sector debt is equivalent to its face value.

8/ Historical averages are generally derived over the past 10 years, subject to data availability, whereas projections averages are over the first year of projection and the next 10 years.

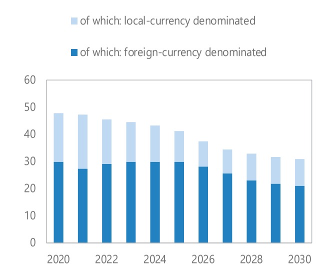
Table 3. Chad: Public Sector Debt Sustainability Framework, Baseline Scenario, 2017–2040

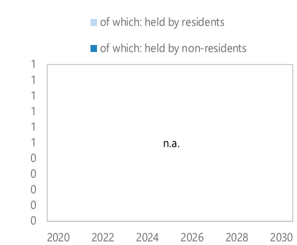
(In percent of GDP, unless otherwise indicated)

	Actual			Projections								Average 6/	
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030	2040	Historical	Projections
Public sector debt 1/	49.8	48.4	44.2	47.6	47.3	45.5	44.3	43.2	41.0	30.9	24.6	39.2	39.6
of which: external debt	25.1	25.1	24.4	29.7	31.5	31.9	32.0	31.9	30.0	21.0	9.2	24.4	27.7
Change in public sector debt	-1.7	-1.4	-4.2	3.5	-0.4	-1.8	-1.2	-1.1	-2.1	-0.8	-1.5		
Identified debt-creating flows	-3.1	-3.8	-1.7	2.7	-1.6	-3.3	-4.0	-3.1	-3.6	-4.6	-2.3	0.2	-3.2
Primary deficit	-1.3	-3.0	-0.8	-0.2	1.5	-0.2	-1.7	-0.9	-1.2	-3.3	-1.4	0.2	-1.5
Revenue and grants	14.6	15.3	14.2	17.2	15.4	16.2	17.3	16.5	16.4	19.0	18.5	17.8	17.1
of which: grants	4.0	3.3	1.7	4.2	3.3	3.2	3.2	3.1	3.0	2.5	1.8		
Primary (noninterest) expenditure	13.3	12.3	13.4	17.0	16.9	16.0	15.6	15.6	15.1	15.7	17.2	18.1	15.6
Automatic debt dynamics	0.0	-0.2	-0.4	3.3	-2.8	-2.7	-2.0	-1.8	-2.0	-1.1	-0.8		
Contribution from interest rate/growth differential	2.4	-1.2	-1.0	2.0	-2.4	-2.2	-1.6	-1.5	-1.6	-0.9	-0.7		
of which: contribution from average real interest rate	1.2	-0.1	0.3	1.9	0.3	0.0	0.1	0.1	0.0	0.0	0.1		
of which: contribution from real GDP growth	1.3	-1.1	-1.4	0.1	-2.7	-2.2	-1.7	-1.6	-1.6	-0.9	-0.8		
Contribution from real exchange rate depreciation	-2.4	1.0	0.6	...	...	...	...	...	...	...	...		
Other identified debt-creating flows	-1.8	-0.6	-0.4	-0.4	-0.4	-0.4	-0.3	-0.3	-0.3	-0.2	-0.1	-0.9	-0.3
Privatization receipts (negative)	-1.2	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Recognition of contingent liabilities (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		
Debt relief (HIPC and other)	-0.5	-0.4	-0.4	-0.4	-0.4	-0.4	-0.3	-0.3	-0.3	-0.2	-0.1		
Other debt creating or reducing flow (please specify)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Residual	1.4	2.4	-2.5	2.1	0.9	1.0	2.4	1.6	1.0	3.6	0.7	1.6	1.8
Sustainability indicators													
PV of public debt-to-GDP ratio 2/	...	...	40.9	42.7	41.1	38.6	36.9	35.4	33.7	25.8	22.2		
PV of public debt-to-revenue and grants ratio	...	...	287.0	248.5	266.9	238.4	212.7	214.9	205.7	136.1	119.6		
Debt service-to-revenue and grants ratio 3/	46.5	18.3	30.3	58.0	54.1	51.5	47.7	52.9	48.1	39.6	75.2		
Gross financing need 4/	4.1	-1.3	3.5	10.1	10.4	9.2	8.1	9.0	7.4	4.3	12.6		
Key macroeconomic and fiscal assumptions													
Real GDP growth (in percent)	-2.4	2.3	3.0	-0.1	6.1	4.9	4.0	3.8	3.8	3.0	3.2	3.4	3.7
Average nominal interest rate on external debt (in percent)	4.0	2.7	2.7	2.4	2.1	2.1	1.9	1.8	1.3	1.0	1.0	3.2	1.9
Average real interest rate on domestic debt (in percent)	2.3	-0.5	0.5	7.6	1.2	-0.1	0.8	1.1	1.3	1.8	1.3	1.1	1.8
Real exchange rate depreciation (in percent, + indicates depreciation)	-8.5	4.1	2.6	...	...	...	...	...	...	...	...	4.3	...
Inflation rate (GDP deflator, in percent)	-0.8	2.3	1.5	-5.2	2.4	3.6	3.0	3.0	3.1	2.8	3.2	0.7	2.2
Growth of real primary spending (deflated by GDP deflator, in percent)	5.0	-5.7	12.8	26.5	5.7	-1.0	1.7	3.3	0.9	6.1	4.5	-1.2	5.4
Primary deficit that stabilizes the debt-to-GDP ratio 5/	0.4	-1.6	3.4	-3.7	1.9	1.5	-0.5	0.2	0.9	-2.5	0.1	0.7	-0.3
PV of contingent liabilities (not included in public sector debt)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Definition of external/domestic debt	**Currency-based**
Is there a material difference between the two criteria?	**Yes**

Public sector debt 1/





Sources: Country authorities; and staff estimates and projections.

1/ Coverage of debt: The central, state, and local governments, central bank. Definition of external debt is Currency-based.

2/ The underlying PV of external debt-to-GDP ratio under the public DSA differs from the external DSA with the size of differences depending on exchange rates projections.

3/ Debt service is defined as the sum of interest and amortization of medium and long-term, and short-term debt.

4/ 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 and other debt creating/reducing flows.

5/ Defined as a primary deficit minus a change in the public debt-to-GDP ratio ((-): a primary surplus), which would stabilizes the debt ratio only in the year in question.

6/ Historical averages are generally derived over the past 10 years, subject to data availability, whereas projections averages are over the first year of projection and the next 10 years.

Table 4. Chad: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2020–2030

(In percent)

	Projections 1/										
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
PV of debt-to GDP ratio											
Baseline	25.0	25.4	25.0	24.6	24.1	22.7	20.6	18.7	17.5	16.6	16.0
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2019-2039 2/	25.0	25.6	26.9	27.4	28.3	28.9	29.9	**30.1**	**31.2**	**32.6**	**34.1**
B. Bound Tests											
B1. Real GDP growth	25.0	28.9	**31.8**	**31.2**	**30.6**	28.9	26.2	23.7	22.2	21.1	20.3
B2. Primary balance	25.0	26.0	26.2	25.2	23.9	21.8	19.3	17.1	15.7	14.6	13.8
B3. Exports	25.0	**32.5**	**43.2**	**42.3**	**41.4**	**39.5**	**36.9**	**34.5**	**32.5**	**30.0**	28.1
B4. Other flows 3/	25.0	28.6	**31.1**	**30.5**	29.8	28.3	26.0	24.0	22.5	21.0	20.0
B6. One-time 30 percent nominal depreciation	25.0	**31.8**	27.4	27.0	26.5	24.8	22.3	19.9	18.5	17.8	17.3
B6. Combination of B1-B5	25.0	**37.6**	**40.1**	**39.3**	**38.5**	**36.5**	**33.7**	**31.2**	28.9	27.0	25.5
C. Tailored Tests											
C1. Combined contingent liabilities	25.0	25.0	23.9	22.5	21.1	19.0	16.6	14.4	13.1	12.1	11.3
C2. Natural disaster	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
C3. Commodity price	25.0	**31.2**	**36.1**	**35.6**	**34.7**	**32.7**	29.9	27.2	25.0	22.7	20.9
C4. Market Financing	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
Threshold	**30**	**30**	**30**	**30**	**30**	**30**	**30**	**30**	**30**	**30**	**30**
PV of debt-to-exports ratio											
Baseline	97.1	88.1	82.3	79.2	76.9	72.7	63.5	59.2	56.3	54.1	53.8
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2019-2039 2/	97.1	88.9	88.4	88.5	90.5	92.6	92.1	95.7	100.5	106.3	115.0
B. Bound Tests											
B1. Real GDP growth	97.1	88.1	82.3	79.2	76.9	72.7	63.5	59.2	56.3	54.1	53.8
B2. Primary balance	97.1	90.3	86.3	81.3	76.4	70.0	59.6	54.3	50.6	47.7	46.6
B3. Exports	97.1	**163.1**	**281.3**	**269.7**	**261.3**	**250.1**	**224.6**	**216.3**	**206.6**	**193.8**	**187.2**
B4. Other flows 3/	97.1	99.5	102.2	98.2	95.3	90.6	80.3	76.1	72.3	68.7	67.2
B6. One-time 30 percent nominal depreciation	97.1	88.1	71.9	69.3	67.4	63.4	54.7	50.4	47.6	46.2	46.5
B6. Combination of B1-B5	97.1	**151.5**	108.0	**170.5**	**165.4**	**157.5**	140.0	133.2	125.4	118.7	115.8
C. Tailored Tests											
C1. Combined contingent liabilities	97.1	86.8	78.7	72.5	67.5	61.0	51.1	45.8	42.1	39.4	38.2
C2. Natural disaster	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
C3. Commodity price	97.1	**151.0**	**152.9**	138.9	127.4	114.7	96.2	90.1	83.8	77.3	73.4
C4. Market Financing	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
Threshold	**140**	**140**	**140**	**140**	**140**	**140**	**140**	**140**	**140**	**140**	**140**
Debt service-to-exports ratio											
Baseline	7.3	7.5	7.8	8.2	7.7	7.5	7.2	7.1	4.9	4.1	3.9
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2019-2039 2/	7.3	8.1	8.9	9.8	9.7	9.8	9.9	**10.4**	7.0	6.2	6.1
B. Bound Tests											
B1. Real GDP growth	7.3	7.5	7.8	8.2	7.7	7.5	7.2	7.1	4.9	4.1	3.9
B2. Primary balance	7.3	7.5	7.8	8.2	7.8	7.4	7.1	7.0	4.9	4.2	3.9
B3. Exports	7.3	**11.3**	**17.1**	**18.8**	**17.7**	**17.1**	**16.3**	**16.2**	**14.2**	**17.3**	**16.6**
B4. Other flows 3/	7.3	7.5	8.0	8.5	8.0	7.7	7.4	7.4	5.8	5.7	5.4
B6. One-time 30 percent nominal depreciation	7.3	7.5	7.8	8.1	7.6	7.3	7.0	7.0	4.7	3.3	3.1
B6. Combination of B1-B5	7.3	10.0	**13.5**	**14.1**	**13.3**	**12.8**	**12.3**	**12.2**	**11.2**	**10.1**	9.6
C. Tailored Tests											
C1. Combined contingent liabilities	7.3	7.5	7.8	8.1	7.6	7.3	7.0	7.0	4.7	3.9	3.7
C2. Natural disaster	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
C3. Commodity price	7.3	**10.7**	**10.8**	**11.1**	**10.0**	9.3	8.5	8.4	7.1	7.4	7.0
C4. Market Financing	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
Threshold	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Debt service-to-revenue ratio											
Baseline	**14.5**	**17.9**	**18.3**	**18.0**	**18.2**	**17.5**	**16.3**	**15.1**	10.2	7.9	7.0
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2019-2039 2/	**14.5**	**19.3**	**20.8**	**21.5**	**22.7**	**22.9**	**22.5**	**22.1**	**14.7**	11.9	10.9
B. Bound Tests											
B1. Real GDP growth	**14.5**	**20.4**	**23.2**	**22.9**	**23.1**	**22.2**	**20.7**	**19.2**	13.0	10.0	8.9
B2. Primary balance	**14.5**	**17.9**	**18.3**	**18.1**	**18.2**	**17.4**	**16.1**	**14.8**	10.2	8.1	7.0
B3. Exports	**14.5**	**18.6**	**20.2**	**20.9**	**21.1**	**20.2**	**18.7**	**17.4**	**15.1**	**16.8**	**15.2**
B4. Other flows 3/	**14.5**	**17.9**	**18.6**	**18.6**	**18.8**	**18.1**	**16.8**	**15.6**	12.2	10.9	9.8
B6. One-time 30 percent nominal depreciation	**14.5**	**22.5**	**22.9**	**22.1**	**22.4**	**21.6**	**20.1**	**18.7**	12.5	7.9	7.0
B6. Combination of B1-B5	**14.5**	**20.5**	**23.3**	**22.9**	**23.2**	**22.3**	**20.7**	**19.2**	**17.5**	**14.3**	12.9
C. Tailored Tests											
C1. Combined contingent liabilities	**14.5**	**17.9**	**18.2**	**17.8**	**17.9**	**17.1**	**15.9**	**14.7**	9.8	7.5	6.7
C2. Natural disaster	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
C3. Commodity price	**14.5**	**23.4**	**24.6**	**24.7**	**24.1**	**22.0**	**19.3**	**17.1**	**14.3**	13.6	12.0
C4. Market Financing	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
Threshold	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**

Sources: Country authorities; and staff estimates and projections.

1/ A bold value indicates a breach of the threshold.

2/ Variables include real GDP growth, GDP deflator (in U.S. dollar terms), non-interest current account in percent of GDP, and non-debt creating flows.

3/ Includes official and private transfers and FDI.

Table 5. Chad: Sensitivity Analysis for Key Indicators of Public Debt, 2020–2030/1

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
				PV of Debt-to-GDP Ratio							
Baseline	**42.7**	**41.1**	**38.6**	**36.9**	**35.4**	33.7	30.9	28.5	27.1	26.2	25.8
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2019-2039 2/	**43**	**42**	**42**	**44**	**44**	**45**	**44**	**45**	**46**	**49**	**52**
B. Bound Tests											
B1. Real GDP growth	**43**	**62**	**68**	**69**	**69**	**69**	**67**	**66**	**66**	**67**	**69**
B2. Primary balance	**43**	**44**	**43**	**41**	**40**	**38**	**35**	33	31	30	30
B3. Exports	**43**	**47**	**54**	**52**	**50**	**48**	**45**	**42**	**40**	**38**	**36**
B4. Other flows 3/	**43**	**44**	**45**	**43**	**41**	**39**	**36**	34	32	31	30
B6. One-time 30 percent nominal depreciation	**43**	**62**	**58**	**55**	**52**	**49**	**45**	**42**	**40**	**38**	**36**
B6. Combination of B1-B5	**43**	**43**	**43**	**42**	**42**	**41**	**39**	**37**	**36**	35	34
C. Tailored Tests											
C1. Combined contingent liabilities	**43**	**63**	**59**	**57**	**54**	**52**	**48**	**44**	**42**	**40**	**39**
C2. Natural disaster	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
C3. Commodity price	**43**	**57**	**60**	**65**	**69**	**70**	**70**	**69**	**69**	**69**	**71**
C4. Market Financing	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
Public debt benchmark	**35**	**35**	**35**	**35**	**35**	**35**	**35**	**35**	**35**	**35**	**35**
				PV of Debt-to-Revenue Ratio							
Baseline	248.5	266.9	238.4	212.7	214.9	205.7	182.1	163.2	156.4	141.6	136.1
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2019-2039 2/	248	272	258	246	261	263	252	246	254	252	260
B. Bound Tests											
B1. Real GDP growth	248	390	400	378	399	401	380	364	368	350	350
B2. Primary balance	248	284	266	239	243	234	209	189	181	163	156
B3. Exports	248	305	335	300	305	294	265	242	231	204	191
B4. Other flows 3/	248	288	276	247	250	240	214	194	185	166	157
B6. One-time 30 percent nominal depreciation	248	411	361	322	323	306	271	243	231	206	194
B6. Combination of B1-B5	248	280	264	241	254	251	230	210	204	187	180
C. Tailored Tests											
C1. Combined contingent liabilities	248	410	366	327	330	315	281	253	241	216	204
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	248	448	441	437	464	457	419	386	390	369	368
C4. Market Financing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
				Debt Service-to-Revenue Ratio							
Baseline	58.0	54.1	51.5	47.7	52.9	48.1	48.4	46.0	42.5	39.3	39.6
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2019-2039 2/	58	56	50	52	59	55	57	55	55	55	59
B. Bound Tests											
B1. Real GDP growth	58	59	63	61	68	63	66	65	62	59	61
B2. Primary balance	58	54	55	51	50	44	45	44	41	38	39
B3. Exports	58	54	52	49	54	49	50	47	46	46	46
B4. Other flows 3/	58	54	52	48	53	49	49	46	44	42	42
B6. One-time 30 percent nominal depreciation	58	53	54	47	55	50	50	47	42	38	37
B6. Combination of B1-B5	58	54	54	50	55	50	51	49	45	42	43
C. Tailored Tests											
C1. Combined contingent liabilities	58	54	49	44	47	43	44	43	40	38	38
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	58	66	64	60	77	72	70	64	61	58	60
C4. Market Financing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Sources: Country authorities; and staff estimates and projections.

1/ A bold value indicates a breach of the threshold.

2/ Variables include real GDP growth, GDP deflator and primary deficit in percent of GDP.

3/ Includes official and private transfers and FDI.