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CHAD

Selected Issues and Statistical Appendix

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Approved by the African Department

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I. Sources of Economic Growth in Chad[1]

A. Introduction

1. **This paper supplements the standard growth accounting exercise, which reveals historical sources of growth, with an analysis of Chad's current growth potential,** including the opportunities the petroleum sector offers. The paper analyzes factors of production and constraints that influence economic growth in Chad.

2. **The main findings of the paper are that**

- Armed conflicts and political instability in Chad over the last 40 years have seriously deterred the accumulation of human and physical capital and prevented the building of institutions that are vital for economic development. As a result, the annual average growth rate of real GDP per capita was only 0.63 percent from 1964 through 2000.

- The contribution of physical capital to GDP growth during the 1970s and 1980s was smaller than that of other factors of production, but its role has since become more central. Growth in 2000-04 was mainly driven by capital-intensive investments in oil production.

- Given its institutional capacity constraints, public spending above Chad's absorptive capacity could waste resources and cause a real appreciation of the currency. It is advisable that Chad save some oil revenues until its absorptive capacity improves.

- To expand its growth potential, Chad needs to improve its infrastructure, human capital, institutions, and governance.

3. The next section summarizes the historical growth of the economy. Section C compares factors of production for Chad and peer group countries. Section D presents the results of a growth accounting exercise. Section E discusses conditions under which Chad could benefit from the newly developed oil sector and describes obstacles facing the economy. Section F draws conclusions.

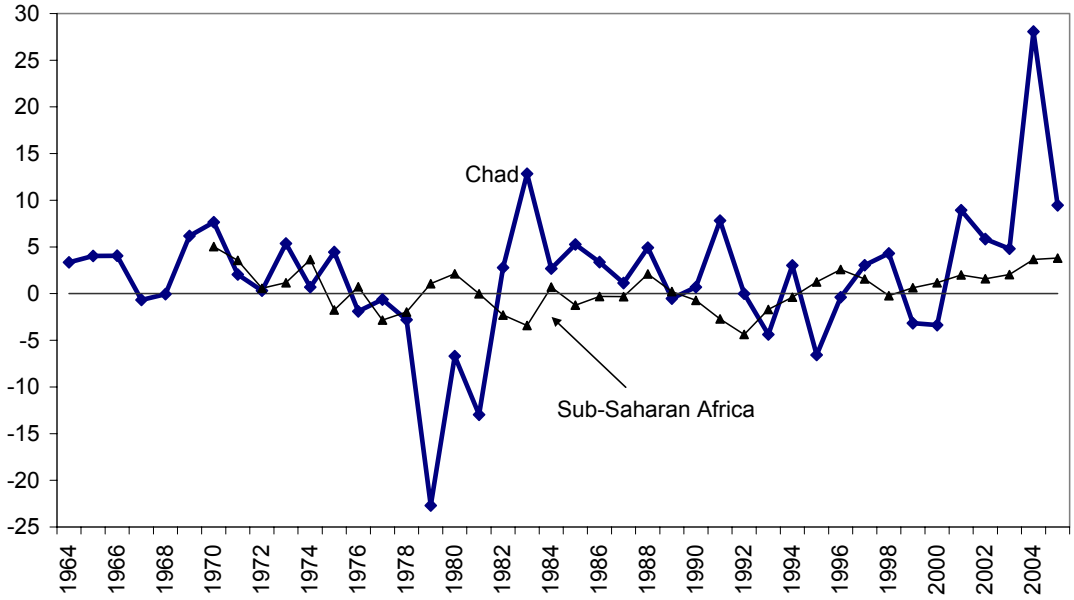
B. Background

4. **Growth in Chad can be considered in terms of five periods, each characterized by significant political and economic developments.** From 1963 through 1974, under the leadership of President Tombalbaye, per capita output grew on average 3 percent annually. From 1975, when Tombalbaye was assassinated, until 1982, when N'Djamena was captured by Hissen Habre, conflicts were particularly disruptive; output per capita fell by an average of 5 percent a year. During Habre's regime (1983-1989), per capita GDP grew by an average of 4.2 percent a year despite continuous conflict between government forces and the

[1] Prepared by Teresa Dabán and Dmitriy Kovtun.

opposition. After Idriss Deby, the current president, took control of Chad in 1990, though political stability improved, the government faced numerous rebellions until well into the 1990s. From 1990 through 1999, annual per capita output growth therefore stagnated, averaging 0.44 percent a year. The petroleum era in Chad began in 2000; since then annual per capita GDP growth has been averaging 8.9 percent.

Figure 1. Chad: Real GDP per capita growth



Source: IMF World Economic Outlook database.

C. Factors of Economic Growth in Chad and Peer Groups

5. **Factors that generally contribute to long-term economic growth are much weaker in Chad than in such peer groups as sub-Saharan countries generally, low-income countries, HIPC countries, and least-developed countries.** The components of long-term growth considered here are those identified by economic theory: (i) accumulation of physical capital; (ii) growth of human capital; and (iii) improvements in total factor productivity (TFP). TFP reflects not only the state of technology but also a wide range of other factors, such as the quality of institutions and governance, the business environment, macroeconomic stability, and other factors that affect the productivity of both capital and labor.

Table 1. Classification of Countries

Sub-Saharan Countries (48 countries)	**Low Income Countries** (66 countries)		**HIPC** (35 countries)	**Least Developed Countries (UN classification)** (49 countries)
Angola	Afghanistan	Rwanda	Benin	Afghanistan
Benin	Angola	Saõ Tomé and Príncipe	Bolivia	Angola
Botswana	Armenia	Senegal	Burkina Faso	Bangladesh
Burkina Faso	Azerbaijan	Sierra Leone	Burundi	Benin
Burundi	Bangladesh	Solomon Islands	Cameroon	Bhutan
Cameroon	Benin	Somalia	Chad	Burkina Faso
Cape Verde	Bhutan	Sudan	Cntrl, African Rep.	Burundi
Cntrl. African Rep.	Burkina Faso	Tajikistan	Congo, Dem. Rep. of	Cambodia
Chad	Burundi	Tanzania	Congo, Rep. of	Cape Verde
Comoros	Cambodia	Timor-Leste	Côte d'Ivoire	Cntrl. African Rep.
Congo, Dem. Rep.	Cameroon	Togo	Ethiopia	Chad
Congo, Rep. of	Cntrl, African Rep.	Uganda	Gambia, The	Comoros
Côte d'Ivoire	Chad	Ukraine	Ghana	Congo, Dem. Rep.
Equatorial Guinea	Comoros	Uzbekistan	Guinea	Djibouti
Eritrea	Congo, Dem. Rep.	Vietnam	Guinea-Bissau	Equatorial Guinea
Ethiopia	Congo, Rep. of	Yemen, Rep. of	Guyana	Eritrea
Gabon	Côte d'Ivoire	Zambia	Honduras	Ethiopia
Gambia, The	Equatorial Guinea	Zimbabwe	Lao PDR	Gambia
Ghana	Eritrea		Madagascar	Guinea
Guinea	Ethiopia		Malawi	Guinea-Bissau
Guinea-Bissau	Gambia, The		Mali	Haiti
Kenya	Georgia		Mauritania	Kiribati
Lesotho	Ghana		Mozambique, Rep. of	Lao PDR
Liberia	Guinea		Myanmar	Lesotho
Madagascar	Guinea-Bissau		Nicaragua	Liberia
Malawi	Haiti		Niger	Madagascar
Mali	India		Rwanda	Malawi
Mauritania	Indonesia		São Tomé and Príncipe	Maldives
Mauritius	Kenya		Senegal	Mali
Mayotte	Korea, Dem. Rep.		Sierra Leone	Mauritania
Mozambique	Kyrgyz Republic		Sudan	Mozambique
Namibia	Lao PDR		Tanzania	Myanmar
Niger	Lesotho		Togo	Nepal
Nigeria	Liberia		Uganda	Niger
Rwanda	Madagascar		Zambia	Rwanda
Saõ Tomé and Príncipe	Malawi			Samoa
Senegal	Mali			Saõ Tomé and Príncipe
Seychelles	Mauritania			Senegal
Sierra Leone	Moldova			Sierra Leone
Somalia	Mongolia			Solomon Islands
South Africa	Mozambique			Somalia
Sudan	Myanmar			Sudan
Swaziland	Nepal			Togo
Tanzania	Nicaragua			Tuvalu
Togo	Niger			Uganda
Uganda	Nigeria			Tanzania
Zambia	Pakistan			Vanuatu
Zimbabwe	Papua New Guinea			Yemen
				Zambia

Human and physical capital

6. **Indicators of human capital, broadly defined as human abilities and health, are lower in Chad than in peer countries.** The length of time an average person in Chad is schooled is shorter than that of an average person in any of the peer groups (Table 2), and the gender difference in length of schooling is strikingly higher than in the peer groups. Inadequate education decreases labor quality and increases the costs of doing business, most obviously for onsite training. Human capital in Chad is also constrained by generally poor health. Chad spends barely a third as much on health as the average sub-Saharan country.

Table 2. Indicators of Human Capital in Chad

	School Life Expectancy Both Sexes, 1998-2002	School Life Expectancy Female 1998-2002	School Life Expectancy Male 1998-2002	Health Expenditure, 1998-2003[1]	Life Expectancy at Birth, (years) 2004
Chad	5.41	3.87	6.88	12.8	43.9
Sub-Saharan Africa	7.25	6.66	7.67	31.4	46.2
Low-income countries	6.67	5.96	6.93	25.4	58.7
HIPC countries	6.64	6.05	7.14	39.3	49.3
Least-developed countries	6.29	5.68	6.79	31.5	52.1

Sources: UNESCO Institute for Statistics (http://stats.uis.unesco.org/TableViewer/); World Bank, World Development Indicators 2006 database.
[1] Annual per capita expenditure in current US dollars.

7. **As the growth research literature would suggest, Chad's human capital inadequacies undermine its long-term growth prospects.** Because human capital is considered one of the most important determinants of economic growth, countries with richer human capital resources are seen to be better positioned for economic growth. Lucas (1993) argues that human capital plays a more important role for long-term economic growth than accumulation of physical capital. Barro (2001) finds that growth is positively related to average secondary and higher education attainment of adult males. Baldacci et al. (2004) demonstrate that the impact of education and health on growth is especially pronounced in low-income countries. They estimate that an increase of 1 percentage point in the composite enrollment rate is associated with an 0.1 percentage point increase in per capita GDP growth. Similarly, a 1 percentage point increase in the survival rate of children under 5 is associated with an 0.1 percentage point increase in per capita GDP growth. Since it is virtually impossible to improve human capital in the short run, the dearth of human capital is one of the most limiting constraints on long-term growth in Chad.

8. **The indicators and anecdotal evidence suggest that capital stock per worker in Chad is much lower than in peer groups** (Table 3). The agricultural sector provides a striking illustration of the paucity of capital in the economy: farmers not only lack agricultural machinery, they lack plows, leaving them with only the most primitive means of

production. Roads are poor and largely unusable during the rainy season. Cotton farmers report that the poor quality of roads raises their production costs due to the substantial losses incurred during transportation.

Table 3. Indicators of Capital Stock and Infrastructure in Chad

	Tractors per 100 Hectares of Arable Land 2003	Paved Roads (percent of total roads) 1999	Gross Capital Formation (percent of GDP) 1990-2000
Chad	0.005	0.8	13.0
Sub-Saharan Africa	0.13	12.5	16.9
Low-income countries	0.89	13.3	22.6
HIPC countries	0.07	12.1	17.8
Least-developed countries	0.07	13.3	18.0

Source: World Bank, World Development Indicators 2006 database.

9. **The scarcity of human and physical capital reduces labor productivity.** The dominant share of the labor force is employed in the low-productivity agricultural sector.[2] The formal economy is still nascent, consisting only of a service sector located primarily in N'Djamena and an insignificant manufacturing sector. Because it is capital intensive, the emerging petroleum sector has not had much impact on employment.

Institutions and governance

10. **Governance is much poorer in Chad than in peer countries.** Kaufmann et al. (2003) studied the quality of governance in a broad sample of countries. Defining governance as the traditions and institutions by which authority in a country is exercised, they rank the countries in their sample according to six measures of governance: (i) voice and accountability; (ii) political stability and lack of violence; (iii) government effectiveness; (iv) regulatory quality; (v) rule of law; and (vi) control of corruption. Higher values correspond to better governance outcomes. The indicators reveal a troubling picture: except for government effectiveness, Chad is in only the 20th to 40th percentile. What is worrisome is that its performance on all indicators except the rule of law deteriorated between 1996 and 2002 (Table 4). The corruption index published in 2006 by Transparency International labels Chad and Bangladesh among the most corrupt countries in the world.

[2] According to the World Bank's World Development Indicators database, the share of agriculture workers in the labor force was 83 percent in 1990, which is the only data point for Chad.

Table 4. Aggregate Governance Indicators in Chad and Peer Group Countries, 1996-2002

			Sub-Saharan Countries		Low-Income Countries		Least-Developed Countries		HIPC Countries	
		Chad Index	Group Average	Chad's Percentile	Group Average	Chad's Percentile	Group Average	Chad's Percentile	Group Average	Chad's Percentile
Voice and Accountability	2002	-0.95	-0.64	0.40	-0.78	0.43	-0.63	0.36	-0.67	0.38
	2000	-0.89	-0.58	0.44	-0.73	0.44	-0.58	0.40	-0.62	0.44
	1998	-0.83	-0.52	0.40	-0.69	0.44	-0.52	0.43	-0.58	0.38
	1996	-0.72	-0.50	0.40	-0.65	0.47	-0.48	0.45	-0.53	0.41
Political Stability	2002	-1.78	-0.55	0.16	-0.73	0.14	-0.59	0.16	-0.58	0.15
	2000	-0.80	-0.64	0.43	-0.71	0.43	-0.71	0.44	-0.59	0.33
	1998	-1.36	-0.60	0.20	-0.62	0.23	-0.66	0.28	-0.51	0.15
	1996	-0.69	-0.46	0.33	-0.49	0.33	-0.50	0.36	-0.41	0.27
Government Effectiveness	2002	-0.75	-0.71	0.53	-0.82	0.60	-0.76	0.54	-0.77	0.53
	2000	-0.21	-0.64	0.67	-0.75	0.80	-0.65	0.70	-0.60	0.71
	1998	-0.33	-0.57	0.60	-0.65	0.70	-0.58	0.67	-0.48	0.59
	1996	-0.69	-0.62	0.47	-0.66	0.44	-0.68	0.47	-0.63	0.50
Regulatory Quality	2002	-1.11	-0.65	0.24	-0.82	0.29	-0.79	0.28	-0.67	0.18
	2000	-0.28	-0.47	0.44	-0.64	0.63	-0.58	0.54	-0.32	0.35
	1998	-0.67	-0.51	0.31	-0.62	0.38	-0.64	0.40	-0.37	0.26
	1996	-0.04	-0.57	0.76	-0.67	0.86	-0.60	0.82	-0.45	0.76
Rule of Law	2002	-0.93	-0.67	0.36	-0.84	0.40	-0.72	0.30	-0.75	0.29
	2000	-0.82	-0.60	0.36	-0.79	0.45	-0.75	0.37	-0.70	0.35
	1998	-0.98	-0.62	0.29	-0.76	0.31	-0.74	0.28	-0.69	0.24
	1996	-0.18	-0.56	0.66	-0.72	0.83	-0.76	0.78	-0.67	0.76
Control of Corruption	2002	-1.02	-0.59	0.22	-0.79	0.32	-0.68	0.22	-0.71	0.18
	2000	-0.61	-0.53	0.51	-0.73	0.67	-0.61	0.50	-0.65	0.59
	1998	-0.84	-0.57	0.22	-0.69	0.29	-0.64	0.18	-0.66	0.15

Source: D. Kaufmann, A. Kraay, M. Mastruzzi: Governance Indicators for 1996-2002.
World Bank Institute, http://www.worldbank.org/wbi/governance/govdata2002/index.html.

11. **Poor governance is another major barrier to Chad's achieving high growth.** The quality of a country's institutions and governance has been found to be the most significant determinant of long-term development (Acemoglu and others, 2004). Besides having a direct effect on growth, institutions and governance have an important indirect effect through human capital and investment. Baldacci and others (2004) found that poor governance greatly diminishes the efficiency of social spending: countries with better than average governance grow 1.6 percentage points faster than those with worse than average governance. Given the tremendous importance of institutions for the efficiency of social spending, the overarching challenge facing Chadian authorities is how to increase the quality of their institutions and to fight corruption.

D. Growth Accounting Exercise

Methodology

12. **This section presents the results of a growth accounting exercise to determine the relative contributions of factors of production to output growth in Chad for the period**

1969-2004. Though Bosworth and Collins (2003) believe that such an exercise does not reveal the true causes of growth, they agree that it gives a helpful indication of its components and is therefore useful for examining data. In the case of Chad, about which the data are unreliable, the results should in any case be considered with the greatest caution.

13. **As in other growth accounting studies, a Cobb-Douglas production function with the constant returns to scale is here assumed for Chad:**

$$Y_t = A_t K_t^{\alpha} L_t^{1-\alpha}, \qquad (1)$$

where Y_t is total output, K_t is the stock of physical capital, and L_t is labor during period t. A_t is TFP, representing the level of technology, and α is the capital share in output. The capital share is assumed to be equal to 0.35, as in other studies on African countries. The production function (1) can be represented in a growth form as follows:

$$gy_t = ga_t + \alpha \cdot gk_t + (1-\alpha) \cdot gl_t, \qquad (2)$$

where gy_t is the growth rate of output, ga_t is the growth rate of TFP, and gk_t and gl_t are the growth rates of capital and labor inputs.

Data

14. **Because estimates of the capital stock in Chad are not available, they must be drawn from data on investment.** Following Bosworth and Collins (2003), we use the perpetual inventory model to estimate Chad's capital stock. The fixed capital is assumed to evolve according to the following law:

$$K_t = K_{t-1}(1-d_t) + I_t, \qquad (3)$$

where d_t is the depreciation rate and I_t is gross fixed investment. Also, like Bosworth and Collins, we assume that the capital stock-to-GDP ratio equals 1.5 in the first year, and the annual rate of depreciation is 5 percent. To account for the destruction of the capital stock during years when fighting was especially disruptive, the annual depreciation rate is assumed to be 10 percent from 1979 through 1982. As a robustness check, the growth accounting exercise is repeated with a 10 percent depreciation rate (except for 1979-82, where it is assumed to be 15 percent).

15. **Because estimates of human capital are not available, it is impossible to account for how investment in developing human capital would affect output.** Thus, improvements in the quality of labor are attributed to TFP rather than to the productivity of human resources. In the calculations that follow, labor input is proxied by the size of the labor force, which is obtained from the World Development Indicators database.

Results

16. **Physical capital played a relatively minor role in output growth from 1969 through 1974.** During this period, growth was explained mainly by TFP, which contributed more than two-thirds of the total annual growth of 5.8 percent (Table 5). It must be noted, however, that TFP captures not only improvements in technology but also all other factors that influence economic growth. Notably, growth in agriculture due to favorable weather conditions can stimulate TFP, creating the appearance of an increase in technology.

Table 5. Sources of Economic Growth in Chad, 1969-2004[1]

	1969-74	1975-82	1983-89	1990-99	2000-04
Real GDP growth, percent	5.82	-3.12	6.85	3.27	13.05
Contribution of capital input, percentage points	0.74	-0.35	1.32	1.86	6.64
Contribution of labor input, percentage points	1.08	1.26	1.60	1.78	1.79
Contribution of total factor productivity, percentage points	4.00	-4.02	3.92	-0.37	4.63

Source: IMF staff estimates.
[1] Data on investment before 1969 are not available.

17. **For 1975-82, data on the relation of constituent factors to real GDP growth are very unreliable because of the civil war.** If, as is possible, the capital stock decreased by much more than the assumed rate of depreciation, a larger share of the decline in growth could be attributed to its loss. Given present assumptions, the negative growth is associated mainly with the destruction of capital and deterioration in TFP.

18. **Contributing factors are mixed for 1983-89.** Decomposition of real GDP growth reveals similar contributions of labor and capital inputs and a large increase in TFP. The rise in TFP is probably explained by the end of the civil war.

19. **In 1990-99 and 2000-04, the contribution of physical capital to output growth increased.** Calculations for 1990-99 suggest that GDP growth then was driven by the accumulation of the factors of production, with the contribution of TFP being negative. This could be explained by the loss of human capital from the large-scale emigration of educated Chadians to Cameroon. Finally, growth in 2000-04 was driven by the accumulation of capital stock related to construction of the oil pipeline.

20. **Increasing the assumed rate of depreciation of physical capital changes the contributions of capital and TFP, but qualitatively the results remain the same** (Table 6). It is plausible that the annual rate of depreciation of physical capital in Chad is more than 5 percent. Table 6 presents the decomposition of real GDP growth assuming that physical capital depreciates 10 percent annually (15 percent during the years of fighting). For 1975-82, the loss of growth associated with the loss of capital becomes more pronounced, but the contribution of TFP is still negative.

Table 6. Decomposition of GDP Growth Assuming a High Depreciation Rate

	1969-74	1975-82	1983-89	1990-99	2000-04
Real GDP growth, percent	5.82	-3.12	6.85	3.27	13.05
Contribution of capital input, percentage points	-0.69	-1.22	1.40	2.00	8.04
Contribution of labor input, percentage points	1.08	1.26	1.60	1.78	1.79
Contribution of total factor productivity, percentage points	5.43	-3.15	3.84	-0.51	3.23

Source: IMF staff estimates.

21. **With completion of the Chad-Cameroon pipeline in 2003, the petroleum era began in Chad, bringing hopes for rapid economic development.** However, there is ample evidence from other African countries that using petroleum resources to create sustainable economic growth is not easy. The next section discusses whether the new-born petroleum sector will be able to accelerate economic development and long-run growth in Chad.

E. Will the Oil Sector Help Boost Chad's Growth?

22. **The petroleum sector affects the economy of Chad through (i) a direct channel related to exploration and oil extraction; and (ii) an indirect channel related to government spending of oil revenues.** The direct channel has both first-order effects associated with the value added by exploration, field development, and sale of oil and second-order effects resulting from the growth of local activities to satisfy the oil sector's demand for inputs (e.g., catering, basic services). The indirect channel has such first-order effects as the additional value added created by government contractors and second-order multiplier effects resulting from an increase in household purchasing power.

23. **According to current estimates, the direct channel is giving significant impetus to overall GDP growth, though that will decrease in coming years.** Driven by pipeline construction and the initiation of oil production in 2003, real GDP growth averaged 11 percent in 2001-03. In 2004, the first full year of oil production, real GDP grew by a record 30 percent. Though there was a recovery in agriculture activities after the 2004 drought, the 12.2 percent GDP growth in 2005 reflected the fact that growth in the oil sector was significantly lower than projected because much more water was found in the wells than was expected.[3] The recent period of rapid growth is expected to end in 2006 as oil production trends downward.

[3] Initial projections were for oil production to remain at 225,000 barrels per day (bpd) during 2005-09 and to decrease gradually to 150,000 bdp by 2010 and further to 100,000 after 2014. Actual daily oil production in 2005 was about 173,000 bpd, in spite of the application of reinjection techniques to increase the yield of the

24. **Given the "enclave" nature of the petroleum sector within Chad, its impact on the domestic economy is limited.** Oil company activities in countries like Chad are highly localized and of limited size. In Chad, the only links between the local and the petroleum economies are (i) oil company employment and training of a small number of local workers; (ii) oil company development activities; and (iii) government spending of oil revenues. Since the petroleum sector is capital-intensive, its impact on domestic employment is negligible. For example, Esso was employing only 1,376 local people at the end of 2004.[4] That is why gross national product (GNP) is a much better measure of economic activity than GDP. Because GDP includes the value added by the consortium, which repatriates a significant share of value added in the oil sector as profits and loan repayments, it grossly overstates the activity of the Chadian economy. In 2003, for example, the growth rate of real GDP was 15 percent—but GNP is estimated to have decreased by about 2 percent.

25. **Spending of the oil revenues is therefore the only channel that can have a sizeable impact on the local economy**. Using oil revenues to upgrade infrastructure and invest in human and physical capital will be vital for relaxing the severe constraints already discussed. For example, improving transportation and providing more stable electrical and other utilities by decreasing system-wide unit costs may boost productive capacity. However, a key issue here is how much new spending the economy can absorb without generating inflationary pressures and the symptoms of Dutch disease. This issue is discussed below.

26. **The effect of oil-financed government spending on aggregate activity would depend on the supply response of the economy.** Spending oil revenues on inelastically supplied inputs will raise their prices, crowding them out from the private sector. The effect of spending on aggregate activity will be largest if the economy can channel idle resources (such as the unemployed) into productive uses, in which case an increase in aggregate demand generated by additional government spending would be met by a corresponding increase in aggregate supply. In this favorable scenario, the total effect of government spending on aggregate income would consist of not only first-order effects (the income government contractors receive for projects financed by oil revenue inflows) but also second-order effects resulting from increased household purchasing power because of higher employment. This higher purchasing power could also help deepen markets and expand the production of existing firms, thereby decreasing their unit costs.[5]A system-wide decrease in unit costs could lead to improved productivity generally, enhancing growth potential.

27. **It is likely, however, that Chad's domestic supply would be slow to respond to oil revenue spending.** First, the supply of skilled labor is inelastic. Although there is ample unemployment, there is a severe shortage of skilled labor. It is also very difficult to create

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wells and the coming on line of new oil fields. For the period 2006-09, daily oil production is projected at 135,000 bpd.

[4] Source: Chad Export Project Report #17, ESSO, 2004 http://www.essochad.com/Chad/Files/Chad/17_allchapters.pdf

[5] Building a local brewery in expectation of higher household incomes would be an example of business creation.

new businesses because the business environment is unfavorable: In 2005, entrepreneurs in Chad had to go through 19 steps to launch a business, taking an average of 75 days, at a cost equal to 360.8 percent of per capita gross national income (GNI).[6] To obtain a business registration number they had to deposit at least 619.1 percent of per capita GNI in a bank—more than twice the regional average of 297.2 percent and fifteen times the OECD average of 41.0 percent. Improving regulation to enhance the business environment would be one excellent way to remove constraints on aggregate supply.

28. **Owing to bottlenecks in domestic supply, oil revenue inflows could negatively affect the competitiveness of the economy and severely undermine macroeconomic stability.** Given supply constraints, a substantial increase in oil revenue spending could speed up inflation, which would put upward pressure on the real exchange rate and reduce the competitiveness of the non-oil tradable sector.[7] And given that a large part of the Chadian population is employed in the cotton sector (the largest export sector after oil), a further decline in its competitiveness could result in either an unreasonably large budget cost to support cotton farmers or grave social consequences if the cotton sector were to shrink, with a concomitant loss in employment.

29. **Structural reforms to increase the competitiveness of the economy are necessary to counteract negative pressures on the real effective exchange rate.** Improving the factors of production (see Section C) would expand the production potential of the economy. Chad could definitely benefit from investing in such vital areas as infrastructure, the energy sector, education, and health that would allow for system-wide increases in economic efficiency. The need to save part of the oil revenues principally arises because the successful development and implementation of investment projects is not a trivial task. To avoid waste, too, spending of oil revenues should be consistent with the absorptive capacity of the economy.

F. Conclusions and Recommendations

30. **Chad's current growth potential is seriously limited by low levels of both human and physical capital and by weak institutions and governance.** Chad's indicators of human and physical capital are below those of peer countries. Chad also ranks at the bottom of various measures of governance and cost of doing business.

31. **The development of the petroleum sector in Chad will not automatically translate into faster development and sustainable economic growth.** The direct impact of the petroleum sector is limited because the sector is not well integrated into the local economy. Moreover, the impact of oil-financed government spending on aggregate activity is likely to be limited by the rigidities of the supply side of Chad's economy. This in turn could lead to increasing inflation and erosion of the economy's competitiveness.

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[6] The data are taken from the World Bank Doing Business database, which collects data on (i) procedures required to establish a business, (ii) the associated time and cost, and (iii) the minimum capital requirement.

[7] See Chapter III on the competitiveness of the non-oil sector in Chad.

32. **If the economy is to expand without macroeconomic destabilization, oil-financed spending programs must be accompanied by prudent macroeconomic policies and structural measures to improve the absorptive capacity of the economy.** To prevent a loss of competitiveness in the tradable sector, Chad needs to upgrade its infrastructure and physical capital, make plans to develop human capital, and create a business environment that would allow an appropriate supply-side response to government spending. To increase the efficiency and effectiveness of social spending, the Chadian authorities would also need to upgrade substantially the quality of public institutions and governance generally.

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