Escaping Chad’s Growth Labyrinth
Disentangling constraints from opportunities and finding a path to sustainable growth

(Picture: M.C. Escher “Relativity” 1953)

June 2018
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EXECUTIVE SUMMARY

Chad is among the poorest and least developed countries in the world today. Fragility has constantly undermined economic development. Meanwhile, overreliance on the oil sector has left the economy undiversified with growth, exports and fiscal revenues all dependent on one source. As a result, Chad was thrown into a deep recession and liquidity crisis when oil prices hit rock bottom in 2015. Short term recovery is expected to be slow, oil dependent and complemented by prolonged austerity. Medium term growth will be hard to sustain in absence of structural growth drivers and relying on unproductive agriculture. Complex interactions between exogenous and endogenous factors obscure the path towards sustainable and inclusive growth. Therefore, the challenge of understanding and overcoming key constraints can be compared to escaping a labyrinth. Once inside the labyrinth it is hard to get the necessary overview to identify a possible pathway out.

This study seeks to understand the structure and workings of the labyrinth to propose a concrete escape. It attempts to answer the following questions. (1) Why is it that Chad could not translate the discovery of oil into structural development, economic diversification and sustainable growth? (2) What could possible pathways towards sustainable long run growth look like? (3) Which macro and micro policy actions could help build those pathways? The report is organized into four sections. Section A locates Chad within the growth labyrinth, while section B analyses what prevented Chad from finding a way out. This is followed by section C which identifies potential pathways out of the labyrinth. Finally, section D proposes a menu of policy recommendations which could help Chad ultimately escape the labyrinth.

A. Locating Chad within the labyrinth

Over the past three decades, growth has been largely defined by oil and insecurity. Economic performance has been volatile due to oil and security shocks. Between 1990 and 2002, the last year before the start of oil production, output grew by an average of 4 percent per year. The oil boom in the early 2000s allowed Chad to boost GDP per capita from US$220.8 in 2002 to US$660.2 by 2005, thus rapidly distancing itself from other low-income countries and reducing the large income gap with average Sub-Saharan Africa. Various bouts of domestic and regional insecurity complemented a broader inability to elevate growth to faster and sustainable levels. Ultimately, continued reliance on oil left the economy less diversified, less competitive and more vulnerable to exogenous shocks. Most recently, after the oil price shock of 2015, Chad has been enduring a deep recession and severe macroeconomic imbalances.

At the same time, Chad has been unable to leverage any major long-term drivers of growth. Economic theory provides alternative narratives around key conditions for and long-term drivers of growth, notably human capital, classical capital accumulation, institutions and governance, as well as competition and innovation for productivity. In Chad, these drivers appear to have not had any significant and sustainable impact over the past 30 years. First, human capital development exhibited poor performance with secondary school enrollment at only 19.3 percent between 2003-2014 compared to a 37 percent average in Sub-Saharan Africa (SSA). Indicators of dropout rates are also high and many community schools have poor results, casting doubts on teacher recruitment methods and the content of instruction. Education gaps are more severe among young girls who are subject to traditional practices such as early marriage, often forcing them to leave school before completing primary school. Moreover, life expectancy has barely improved over time, while public spending on health has decreased as a ratio of GDP. Second, low numbers of internet subscriptions and limited access to electricity illustrate the paucity of physical capital in the Chadian economy. Third, high inflation, increasing fiscal deficits and recent debt distress signal a weak macroeconomic policy environment unable to support resilient and sustainable growth. Fourth, varying measures of institutional quality including the World Bank Country Policy and Institutional Assessment (CPIA) reveal a weak governance setting which has not improved over the years. Ultimately,
lack of competition in key sectors as well as inefficient resource allocation has prevented significant productivity growth except for a very short oil boom period.

B. What prevented Chad from finding a way out of the labyrinth?

Micro and macroeconomic analyses identify the interaction of three major constraints as binding to faster and sustainable growth in Chad: insecurity, oil dependence and sub-optimal government intervention. Fragility and regional insecurity, which are largely exogenous factors to Chad’s economy, have constantly undermined important growth drivers such as trade or investment, and kept the country from increasing its economic potential. Another great opportunity has been missed. Rather than leveraging the potential of oil for productive investment and fiscal resilience, ineffective management of oil revenues has left Chad more vulnerable and contributed to the severe economic and fiscal crisis in following the oil price shock of 2014-15. Finally, the role of government in the economy – the public private interface including fiscal incentives, regulation as well as State Owned Enterprises – has deprived Chad of significant benefits and growth dividends from private sector participation and market competition.

Insecurity significantly constrained Chad’s growth potential during the oil price boom. Output growth was generally weaker during conflict periods, despite relatively higher oil prices. In fact, total government revenues as a percentage of GDP rose from 11.4 percent in 2005 to 22.4 percent in 2008, one of the highest levels in Chad’s history. However, Chad – in absence of conflict or insecurity - was growing at a 9.6 percent average per year compared to average growth of 2.8 percent during conflict years. As Chad experienced significant security threats, booming oil revenues were channeled towards military and security expenditure (increasing fivefold between 2005 and 2009) rather than fueling productive investments in human capital and infrastructure. A significant oil dividend was left untapped for structural long-term growth. Our estimates using the Synthetic Control Method (SCM) suggest that the onset of oil production in 2003 had a large positive impact on real GDP per capita in the short-run, but this effect could not be sustained. In other words, Chad appears to have missed a great opportunity to (1) boost and sustain GDP per capita levels, and (2) translate oil revenues into permanently faster GDP growth through investment into human capital and infrastructure. Even more so, oil has made Chad’s economy less competitive and more vulnerable to exogenous shocks. Notably, export diversification had been low already pre-oil, but declined even further after 2003 exposing Chad’s economy to international oil price cycles and shocks. At the same time, large capital inflows triggered by oil production and exports may have reduced external competitiveness in other sectors through Dutch Disease dynamics giving rise to respective shifts in sector shares of GDP towards non-tradable and relatively unproductive (low skill) services.

Government interventions in markets are not calibrated to foster competition and private sector contributions to growth. While the government has been a crucial player in many sectors of the economy, either through public expenditure, regulation and/or direct participation via SOEs, the private sector appears to be comparatively small and invest little. Following a brief pre-oil boom between 2000 and 2003, private contributions to gross fixed capital formation have been decreasing. The discovery of oil and subsequent abundance of oil revenues may have aggravated the marginalization of the (non-oil) private sector, as shown by a distinct negative correlation between oil revenues and domestic credit to the private sector over time. A lack of complementarity between private investment in key markets and direct public participation in markets fueled by oil revenues has arguably contributed to crowding out the private sector. This has made growth in key non-oil sectors highly dependent on public expenditure, thereby exposing economic performance to significant fiscal risks. Uncertainty for the private sector
stemming from government interventions and policies acts as a de facto entry barrier – and adds additional risk to an already challenging overall business climate.

**Overall, growth decomposition and regression analysis strongly underline the resulting lack of productivity and structural growth.** Results from regression analysis seem to suggest that higher oil revenues during the 2000s were not used to upgrade the country’s infrastructure and invest in human and physical capital. Solow growth decomposition suggests that between 1995 and 2017 growth in Chad was largely driven by factor accumulation rather than productivity. When excluding the 2003-2005 period, Chad’s productivity was a drag on growth in contrast to selected comparator countries such as Cambodia or Bangladesh, indicating that oil gains did not translate and materialize into efficiency improvements in the non-oil economy.

C. **Potential pathways out of the labyrinth**

Chad currently lacks structural drivers, but once disentangled, the labyrinth of constraints offers major opportunities to invigorate growth in a sustainable way. This study identifies options to substantially improve economic performance and growth both through a macro and microeconomic as well as economy wide and sectoral lens. A benchmarking analysis highlights Chad’s performance vis-à-vis a selective group of comparator countries. While including oil exporters in the initial population, we focus on aspirational peers that share common economic features with Chad but have done significantly better than Chad in terms of growth performance. This would qualify them as models for a variety of growth enhancing strategies. Furthermore, a 360-degree view of the economy underlines central macro and micro growth drivers to be leveraged for faster and sustained real GDP growth. To complement, two sector deep dives provide detailed analysis of key constraints preventing agriculture and ICT Telecom from playing their strategic role in enabling a dynamic growth environment.

**Benchmarking Chad vis-a-vis aspirational peers reveals underperformance on governance, infrastructure investment as well as export diversification and above all private sector development.** Underdeveloped infrastructure appears as a binding constraint to development in Chad. For instance, aspirational peers had, on average, 56.7 more mobile phones per 100 people than Chad in 2015-2016. Likewise, while no discrepancy existed in the percentage of population who use the internet, a gap between Chad and peers of more than 14 percent opened in 2015-2016. In addition to infrastructure issues, Chad’s growth path did not follow that of its aspirational counterparts due to weak governance. Starting from similar quality of governance in 2003-2004, a significant gap has opened between Chad and its peers. Noteworthy are also the widening differences in credit-to-the private sector and export concentration index which suggest that Chad was not able to diversify its economy nor develop a vibrant private sector.

**Consequently, effective fiscal policy complemented by pro-competition policies are key necessary conditions to invigorate private investment and growth in Chad.** Macroeconomic stability, well governed institutions, competitive markets and a conducive investment climate all must interact to provide strong incentives for private investment and firm entry into productive sectors. Chad has found itself in a vicious cycle where oil dependence constrains fiscal space, low fiscal space and inefficient government participation in markets curbs competition and crowds out private investment in the non-oil economy, which in turn fuels oil dependence further. Hence, fiscal space needs to be created and efficiently used. If well targeted and strategic, public investment can gradually improve infrastructure, reduce costs of doing business and eventually crowd in private investment. However, public investment needs to be complemented by creating an adequate and conducive regulatory market environment.
Then a strategic focus on high potential growth sectors could kick start a virtuous cycle delivering sustainable and inclusive growth. In Chad, oil revenues could be leveraged to gradually increase productivity growth in key non-oil sectors such as agriculture. Sectoral contributions to real GDP growth over time reveal the oil and service sectors as main drivers, with agriculture staying well below potential. One consequence of this has been increasing inequality between 2003 and 2011, with many of the poorest rural households unable to benefit from economic growth. While the long run goal is to diversify the economy away from its current oil dependence, petroleum production and exports will remain a central source of income needed to finance recovery and support growth in the non-oil economy. Given the current structure of the economy in terms of GDP contributions, employment and productivity potential, agriculture clearly can and should play a critical role in reducing poverty and boosting sustainable and inclusive growth. More efficient supply of key inputs could induce more productive performance across primary, secondary and tertiary sectors. This mainly relates to ICT telecom because of its direct links to almost all parts of the economy from public service delivery to high skill services as intermediate inputs to financial inclusion.

Inefficiencies in agricultural markets are often induced by the government and dis-incentivize private investment and weigh heavy on productivity. The public sector plays an important role in shaping markets through two main channels. First, the government participates directly by providing crucial agricultural inputs, such as fertilizer, seeds, and machinery as well as acting as an economic agent through SOEs like CotonTchad or Simatrac or through PPPs as is the case in livestock. Second, the government influences market outcomes indirectly as a policy-maker and regulator.

Improving the regulatory framework for agricultural inputs and de-risking private sector participation could lead to sizeable benefits, notably in the cotton, livestock and sesame value chains. Key constraints to be addressed include inefficient input markets, restrictions on competition along the cotton value chain and an unlevel playing field through PPPs in the livestock value chain. First, many agricultural product markets depend on public provision of inputs but government support has favored cotton and prevented efficient resource allocation to other value chains. Second, the cotton SOE, CotonTchad, which functions as a vertically integrated enterprise that is involved in every value chain segment from input provision to export of cotton, is dominant along the value chain. It enjoys a legal monopsony for unprocessed cotton, which has translated into a de facto monopoly along the rest of the value chain, thereby preventing private entry. Ongoing privatization efforts need to address these constraints and should allow competition along the value chain. Third, the government aims to develop the livestock sector through public private partnerships (PPPs), however, the underlying rationale for government participation is weak. A level playing field in terms of taxation and assuring competitive PPP tender procedures and competitive neutrality are therefore central to minimizing distortions.

Telecommunications services are a key input for growth but the sector remains underdeveloped. High prices are an important contributor to low penetration and access rates in Chad. One the one hand, underlying high operating costs are partly driven by inefficient taxation. Taxes amounted to nearly 50 percent of operators’ revenues in 2015, but might be as high as 60 percent today. In fact, the introduction of a tax on incoming international calls of XAF 50 per minute (ca. USD 0.08) has contributed to a 27 percent decrease in international incoming traffic between 2013 and 2015, even though overall traffic has increased over the same period. On the other hand, a lack of competition might contribute to high prices even after deducting tax and regulatory fee payments. The Chadian mobile market is highly concentrated (with two key players Airtel and Tigo), which is not a problem per se if the regulatory and competition policy frameworks ensure competitive markets. However, the regulatory framework includes restrictions in key segments of the value chain and falls short of this task. For example, at the level of connectivity to the international backbone, Chad is dependent on a single gateway that is a legal public monopoly. Additionally, there is currently no regulation on the sharing of domestic infrastructure and uncertainty
regarding the use of domestic fiber optics to provide internet services; Finally, while Interconnection rates (which are perceived to be high in Chad) are currently not regulated, mobile money operations are regulated too restrictively.

D. Escaping the labyrinth: Pacing the policy race

A menu of macro and microeconomic policies (summarized in Table 1) could lead Chad towards a **dynamic and sustainable growth path**. Based on analysis presented in previous chapters, this report proposes economy-wide and sectoral recommendations in the short and long-run. The policy agenda can be anchored in the dynamic development of three key dimensions: 1. Fiscal Policy to increase resilience, free space for strategic investment and to gradually rebalance fiscal revenue sources; 2. a public-private interface increasingly fostering private investment and competitive markets; and 3. diversification of the real economy driven by sectors with large productivity enhancing potential;

Eventually, a virtuous cycle driven by synergies between public and private sectors should sustainably **power faster growth**. The entry point for policy to kick start the cycle encompasses fiscal policies targeting revenue mobilization and management – largely creating space to engage in strategic investment spending – and pro-competition market policies at economy and sector levels. These are highly complementary and sustainable private sector driven growth can only emerge if both policy areas are developed in parallel.

**Economy wide policy should focus on opportunities to reduce risk for and leverage public policies and resources to crowd in private investment.** Effective and strategic fiscal policies can increase opportunity costs of conflict and insure against exogenous shocks from commodity price volatility or weather. Managing oil revenues to smooth cycles and create buffers ready to absorb commodity price related shocks will be central. Furthermore, improving short term revenue mobilization (particularly nonoil tax revenue) will be important to create fiscal space necessary for productive expenditure/investment in the non-oil economy. Stronger governance and increased transparency are key to maintain fiscal discipline. It is essential that Chad gradually rebuilds its investment rate back to pre-2015 levels. However, given the current weak fiscal position and the high stock of public debt, the authorities should be selective and only fund projects that could yield significant long-run returns. Within this context, there is a need to leverage complementarity between the public and the private sector. This can be achieved through pro-competition regulations and policies to incentivize private sector participation by minimizing the risk of (i) restricting entry; (ii) facilitating collusion or increasing the cost of competing; and (iii) discriminating against certain players and creating an unlevel playing field.

**In addition, reforms to boost productivity and strengthen human capital are critically needed.** Reforms to improve access to electricity could boost productivity. In that regard, valuable lessons could be learnt from Bangladesh which managed to secure large increases in access to electricity over the past years. Meanwhile, improving access to and the quality of education is key to strengthen human capital. To do so, the authorities could allocate a higher share of expenditures to the education sector; target poor regions and households additionally to offset potential inequalities; designing mechanisms to fight teachers’ absenteeism and improve the management of education services.

**Increases in Total Factor Productivity (TFP) and private investment should also take root at the sectoral level.** The agricultural sector plays an important role for employment, welfare and economic growth, while telecommunications constitutes a necessary economy-wide input. Therefore, sector specific pro-competition policy in these selective sectors can go a long way to translate into private investment and faster productivity growth, gradually spreading across an increasingly diversified non-oil economy.
Sector policies should center on dynamic private sector participation and in agricultural input markets and open access international connectivity in telecommunications. To boost agricultural productivity, which has been subdued due to low use of seeds and fertilizers, the government will have to encourage private sector participation in key agricultural input markets. To facilitate the use of sustainable and productive seeds that are less vulnerable to shocks, the government could competitively tender for import and distribution of inputs, and carry out subsidization through vouchers valid for the purchase of seeds from private retailers. Moreover, the cotton sector could be reinvigorated by removing CotonTchad’s legal monopsony on unprocessed cotton and allowing private investment in ginneries and mills, opening the downstream market to competition. In the telecommunications sector, Chadian authorities are encouraged to open-up the international gateway to competition (as was originally intended) and remove legal barriers to the creation of international gateways as well as to the laying and use of fiber cables to improve the quality and reach of telecommunication services. Ensuring a level playing field between private operators and the state-owned provider will be crucial to do so. Finally, a pro-competition regulatory framework is critical to enable the development of mobile money services which could strengthen financial inclusion and facilitate the inflow of remittances from abroad.

Table 1: A menu of policy recommendations that could unleash Chad’s growth potential

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Economy-wide</th>
<th>Sector-specific</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macroeconomic shocks</td>
<td>Maintain fiscal buffers by reducing fiscal deficits</td>
<td>Boost private provision of agricultural inputs</td>
</tr>
<tr>
<td>Low opportunity cost of conflict</td>
<td>Re-orient government spending toward productive expenditures</td>
<td>Complement privatization with measures to open the market for competition</td>
</tr>
<tr>
<td>Undiversified economy</td>
<td>Strengthen revenue mobilization</td>
<td>Better target government support to address market failures</td>
</tr>
<tr>
<td>Low investment rate</td>
<td>Invest in high-return infrastructure projects</td>
<td>Use smart technologies in agriculture</td>
</tr>
<tr>
<td>Limited private sector participation</td>
<td>Ensure complementarity between the public and private sectors in markets</td>
<td>Consider opening up the international gateway to competition</td>
</tr>
<tr>
<td>Lack of economic rationale for government</td>
<td>Reconsider rationale for government participation in sectors viable for</td>
<td>Clarify regulation governing the laying and use of fiber</td>
</tr>
<tr>
<td>participation</td>
<td>private sector competition</td>
<td>Ensure competitive neutrality between Sotel and private operators</td>
</tr>
<tr>
<td>Unlevel playing field between firms</td>
<td>Ensure competitive neutrality in market regulation and state support to</td>
<td>Restrictions on the development of mobile money services</td>
</tr>
<tr>
<td>Weak governance</td>
<td>firms across the economy</td>
<td>Put in place a pro-competition regulatory framework for mobile money</td>
</tr>
<tr>
<td>Stagnant productivity</td>
<td>Design a comprehensive energy strategy</td>
<td>Reconsider rationale for government participation in sectors viable for</td>
</tr>
<tr>
<td></td>
<td>Invest in human capital</td>
<td>private sector competition</td>
</tr>
</tbody>
</table>

Source: World Bank staff.
A. LOCATING CHAD WITHIN THE LABYRINTH

Today Chad is one of the least developed and poorest countries in the world. The recent fiscal and economic crisis triggered by falling oil prices has clearly underlined the vulnerability of a highly concentrated economy unable to rely on a diversified fiscal and real fundament for macro stability and growth. With real GDP (per capita) contracting at 6.4 percent (9.4 percent) in 2016 and no fiscal space to support recovery, Chad remains at the bottom of the human development and absolute poverty distribution. It has experienced rapid population growth from 8.3 million in 2000 to 14.5 million in 2016, ranked 186 out of 188 countries in the 2015 Human Development Index (HDI) and was the sixth poorest nation in 2011 (Figure 1). In addition, regional insecurity constitutes a permanent threat to economic activity and stability. The country hosted 554,000 displaced people (among which 391,000 refugees) - the equivalent of over 3.8 percent of the national population - at end-2016, making Chad the fourth largest global host in relative terms.2

Figure 1: Chad is one of the least developed and poorest countries in the world

Source: UN, WDI and World Bank staff estimates.

To alleviate poverty and increase shared prosperity, sustainable and inclusive growth will be necessary. This study attempts to identify and analyze key constraints preventing Chad from departing on such a growth path – Chad’s growth labyrinth. Through disentangling determinants and restrictions of economic growth, a menu of dynamic, economy wide and sectoral policy recommendations is derived to provide Chad with a path out of the labyrinth and onto a sustainable and inclusive growth path. Accordingly, beyond Chapter A introducing Chad’s recent growth history and the absence of structural growth drivers, the remainder of the report is structured into 3 sections: Chapter B analyses the interaction of three key constraints as binding to sustainable growth; Chapter C identifies potential pathways towards growth; and Chapter D proposes a dynamic menu of concrete policies to escape the labyrinth and gradually ignite inclusive long-term growth.

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1 Per the UNHCR (2016), forced displaced individuals include: Refugees, People in Refugee like situations, returned refugees, IDPs protected, returned IDPs, Persons under UNHCR’s statelessness mandate and others.

Over the past three decades, growth has largely been defined by petroleum and insecurity rather than structural long-term drivers. Over the period 1990-2017, economic growth can be broadly divided into three periods, each characterized by specific political and economic developments (Figure 2). Between 1990 and 2002 output grew by an average of 4 percent per year. Despite relative political stability, internal conflict depressed growth. In contrast, the devaluation of the CFAF in 1994 arguably boosted growth, particularly because of increased competitiveness of cotton exports and subsequent large foreign aid inflows. The second period, from 2002 to 2014, was characterized by an initial major positive shock, the onset of oil production coinciding with the beginning of the oil super cycle. It allowed Chad to boost GDP per capita from US$220.8 in 2002 to US$660.2 by 2005, thus rapidly distancing itself from other low-income countries and reducing the large income gap with average Sub-Saharan Africa (Figure 3). Growth in this period, however, was interrupted by instability and conflict such as coup attempts (in 2006 and 2008) as well as adverse spillovers from Sudan’s Darfur conflict and climatic shocks. In the third and most recent period, spanning 2015 to the present, economic activity contracted sharply as it endured the intensifying fiscal and economic effects of low oil prices, aggravated by commercial external debt repayment and a tense security situation (Boko Haram).

Growth rates derived from nighttime data suggest that the gains from oil production only translated into improvements in the non-oil economy – and hence light intensity – in a partial or delayed manner. Night light data add perspective in that they do not directly and immediately reflect the GDP growth boom triggered by the onset of oil production and captured in official national account data. Large and changing discrepancies between nighttime and official GDP growth rates could indicate that the gains from oil production could not be converted directly and immediately into structural growth in the non-oil economy. The comparison with nighttime based growth estimates reveals a significant negative deviation from or upward bias of official reported GDP growth rates between 2000-2006, i.e. the key years around the onset of oil production theoretically covering capital investment pre- and booming revenues and consumption post 2003. This picture changes 180 degrees into a strong downward bias of WDI growth rates between 2017-2013. For example, in 2004, actual data reported a 33.6 percent GDP growth, while

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luminosity reflected a more moderate boom of 12.5 percent. For more detail on the underlying analysis refer to Annex 1.

*Figure 4: Relative GDP in Chad according to WDI and lights*

![Relative GDP in Chad according to WDI and lights](image)


It appears that Chad has been unable to significantly leverage any major long-term drivers of growth over the past three decades. Economic theory provides alternative narratives around key necessary conditions and long-term drivers of growth. The pioneer work by Solow (1956) stressed the importance of investment and productivity to achieve growth, while that of Romer (1990; 1986) showed that increasing human capital is essential to boost economic activity. Building on these theories, Acemoglu and Robinson (2004; 2005) and Easterly and Rebelo (1993) showed that good institutions and sound macroeconomic policies are also key to a healthier economy. In the Chadian context, the various variables that are used to capture these theories appear to have not improved over the past 30 years, particularly when compared to the Sub Saharan Africa (SSA) average (Table 1).

Notwithstanding oil inflows, human capital (category A) and infrastructure development (category B) have been limited while the macroeconomic policy environment remained weak (category C). Despite increasing over time, secondary school enrollment was only 22.6 percent in period 3 (2015-2016) compared to a 42.6 percent average in Sub-Saharan Africa (SSA). Indicators of dropout rates are also high and many community schools have poor results, casting doubts on teacher recruitment methods and the content of instruction. Education gaps are more severe among young girls who are subject to traditional practices such as early marriage, often forcing them to leave school before completing primary school. Moreover, life expectancy has barely improved over time, while the infant mortality rate dropped at a much slower pace than in SSA. Likewise, the paucity of physical capital, a key determinant of long-run economic growth (Durlauf et al., 2005; Solow, 1957), was limited as shown by the low number of fixed telephone subscriptions and the poor access to electricity. Furthermore, the literature has shown that sound macroeconomic policies are needed to provide a secure environment for investment by reducing uncertainty about the future (Bleaney, 1996; Easterly and Rebelo, 1993). In Chad, high inflation, increasing fiscal deficits and the recent debt distress do signal a weak policy environment unable to manage volatility and exogenous shocks or support sustainable recovery.

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4 See Annex 2 for a brief overview of the Growth literature.
Table 2: Over the past 30 years, Chad could not sustainably leverage major long-term growth drivers

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<td>and infrastructure</td>
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<td>16.3</td>
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<td>formation (% of GDP)</td>
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<td>2.8</td>
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<td>21.3</td>
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<td>Rule of Law (score)</td>
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<td>-1.5</td>
<td>-1.3</td>
<td>-1.7</td>
<td>-1.3</td>
<td>-1.1</td>
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<td><strong>E - Productivity</strong></td>
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<td>Real value added</td>
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<td>2.6</td>
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<td>-2.4</td>
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Source: WDI, World Governance Indicators, IMF WEO and World Bank staff.

Partly driven by insecurity and lack of competition, Chad’s weak institutional environment (category D) and limited productivity (category E) adversely affected growth. Several economic growth models have recently focused on the role of institutions in driving economic development (Acemoglu et al., 2004; Morozumi and Veiga, 2016). Here the varying measures of institutional quality reveal a weak governance setting which has not significantly improved over the years, as witnessed by the World Bank’s Country Policy and Institutional Assessment. Similarly, the real added value per worker suggests that productivity (category E) has not been a major long-term growth driver in Chad, as it only grew only during the oil boom years, particularly in 2003-2005 as shown below in Figure 25.
B. WHAT PREVENTED CHAD FROM FINDING A WAY OUT?

Micro and macroeconomic analyses identify the interaction of three major constraints as binding to faster and sustainable growth in Chad. First, fragility and regional insecurity, which are largely exogenous factors to Chad’s economy, have constantly undermined important growth drivers such as trade or investment, and kept the country from increasing its economic potential. Second, a great opportunity has been missed. Rather than leveraging the positive potential of oil production and high international oil prices for increases in productive investment and fiscal resilience, ineffective management of oil revenues has left Chad more vulnerable to oil price shocks and ultimately contributed to the severe economic and fiscal crisis in 2016 and 2017. Third, the role of government in the economy – the public private interface including fiscal incentives, regulation as well as State Owned Enterprises – has deprived Chad of significant benefits and growth dividends from private sector participation and market competition.

Fragility and conflict have constantly undermined key growth drivers

Recurrent conflicts are a major challenge in Chad. Since its independence in 1960, Chad has experienced more frequent and severe conflict than any other country in the CEMAC region (Figure 5). In fact, 61 percent of post-independence years have been characterized by conflict and violence. This percentage represents more than four times the regional average. Notably, the 30-year conflict period between 1965 and 1994 led to more than 90,000 deaths and over 100,000 internally displaced people. While this conflict was mainly triggered by tensions between the Muslim north and the Christian south, another conflict episode between 2006 and 2009 involved rebels from Sudan’s Darfur region attempting to topple the Chadian government.

Figure 5: Chad has the highest frequency of conflict among CEMAC countries

Periods of conflict are clearly associated with lower GDP growth in Chad. In the pre-oil era, the difference between average GDP growth rate in years with and without conflict is 1.2 percentage points. After the discovery of oil, however, this difference increased to almost 7 percentage points (Figure 6). In addition, using spearman’s non-parametric correlation coefficient shows a significant negative correlation of 0.62 between log GDP and conflict. Regression results further indicate that conflict contracts GDP by 7.7 percent (see Annex 1).

The main channels translating conflict into lower growth in Chad have been mainly related to inefficient public spending and trade disruptions. Collier (1999) proposed five channels through which conflict can
affect GDP: (i) destruction of human and physical capital; (ii) disruption of social order as civil liberties are suppressed; (iii) diversion of public expenditure from output enhancing activities; (iv) dissaving; and (v) flow of assets to safer countries. While all of them have been active in Chad, some had a more pronounced impact on real and potential economic growth than others.

**First, conflict increases government consumption expenditure (mainly for military compensation) which has a negative impact on long-run growth.** Indeed, the Chadian government not only needs to respond to an active conflict but also defends the country against domestic threats and war-spillovers from neighboring countries. However, increase in military spending is essentially an increase in the public-sector wage bill which is downward sticky. Moreover, this type of non-productive government expenditure is usually financed either by distortionary taxation or increased public borrowing, both of which are associated with lower growth in the long run (Afonso and Furceri, 2010; Barro, 1991; Moller and Wacker, 2017). In Chad, conflict increased total government consumption expenditure as a share of GDP from 4.2 percent in 2005 to 7.6 percent in 2009. In the same period, military spending as a share of GDP increased from 0.8 percent in 2005 to 8 percent in 2009 (Figure 7). Our correlation and regression analysis also confirms a positive significant relationship between government consumption expenditure and conflict.⁶

**Figure 7:** Military expenditure significantly increased in response to threats to Chad’s sovereignty and security in the late 2000s...

![Military expenditure vs. government consumption expenditures](chart1)

Sources: WEO and WDI

**Figure 8:** ...and may have crowded out important investments in human capital

![Military, health and education expenditures](chart2)

Sources: WEO and WDI

Second, through increasing military expenditure, conflict shrinks fiscal space, and effectively crowds out investment expenditure in output-enhancing sectors such as health, education and infrastructure. While there was almost a five-fold increase in military expenditure between 2005 and 2009, health and education expenditures decreased by 8.4 and 5.2 percentage points (Figure 8). This confirms Collier’s (1999) expenditure diversion effect. Regression and correlation analyses also indicate a significant negative relationship between gross capital formation and conflict. Prevents also crowding in of private investment.

**Third, conflict hinders trade.** One of the most visible effects of conflict is the destruction of production plants and public infrastructure which undermines production and trade. In Chad, the average trade-to-

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⁶ Collier and Hoeffler (2006) show that governments anticipate the threat of rebellion and raise military expenditure to reduce the risk. In fact, his study finds that a country with 30 percent risk of civil war during the coming five years would raise its spending by around 1.2 percent of GDP. This potentially explains the rise in military spending in Chad as the rebels involved in the post-oil conflict advanced from the neighboring Sudan-Darfur region where a war had started 2 years earlier.
GDP ratio during periods of conflict violence is about 12 percentage points lower than conflict-free periods. Conflict also hampers trade by disrupting transportation borders; for example, conflict at the Nigerian border has weakened export flows to Nigeria which is one of Chad’s biggest export destinations for livestock. Also, this border represents the passage through which goods flowed into Chad not only from Nigeria but also from Benin and Togo. Again, regression and correlation analysis show a significant negative relationship between conflict and trade.

Overall, conflict significantly constrained Chad’s ability to raise its growth potential during the oil price boom. Output growth was weaker during conflict periods, despite relatively higher oil prices (Table 3). In fact, total government revenues as a percentage of GDP rose from 11.4 percent in 2005 to 22.4 percent in 2008 (Figure 9), one of the highest in Chad’s history. This implies that Chad – in absence of conflict or insecurity - had the potential of growing above 9.6 percent. However, rather than fueling productive investments in human capital and infrastructure, booming oil revenues were channeled towards the military as Chad experienced a period of conflict violence.

Table 3: GDP growth vs Oil Prices in periods with and without conflict

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<tr>
<td>GDP growth (%)</td>
<td>2.8</td>
<td>9.6</td>
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<td>Average oil price ($)</td>
<td>72.3</td>
<td>71.6</td>
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Sources: WDI and Federal Reserve Bank of St. Louis.

Figure 9: GDP growth and government revenue show negative correlation during boom years and positive correlation during recent bust years

Sources: WEO and WDI.

**A significant oil dividend was left untapped for structural long-term growth**

Oil production has boosted growth in the short term but did not translate into sustained and structural long-term growth. Following Smith (2015) and Matta et al. (2016) we use the synthetic control method to construct a counterfactual of Chad’s economy without oil production after 2003 (a so called synthetic Chad). The results suggest that in the short-run, oil production had a very large positive impact on the economy and per capita welfare, but this effect could not be sustained over time as shown by synthetic GDP per capita recently catching up with Chad’s actual GDP per capita (Figure 10). In other words, Chad appears to have missed a great opportunity to 1) sustain a boost in GDP per capita levels and 2) translate oil revenues into permanently faster GDP growth through investment into human capital and infrastructure (increasing the slope of GDP per capita over time).

*Figure 10: Chad could not translate the positive oil shock into a sustainable growth premium*

![Chart showing real GDP per capita for Chad and synthetic Chad](chart.png)

**Source: World Bank staff estimations**

Even more so, oil has made Chad’s economy less competitive. First, export diversification declined even further with the discovery of oil, exposing Chad’s balance of payments to international oil price cycles and shocks (Figure 11). Notably, while largely focused on cotton and vegetable products pre-2003, the export profile has become even more concentrated since then with oil accounting for almost 95 percent of total exports in 2015 (Figure 12). Second, large capital inflows triggered by oil production and exports may have reduced external competitiveness in other sectors. To corroborate suspicion of Dutch Disease dynamics, more analysis would be needed (Figure 13). However, most recent estimates suggest Chad’s Real Effective Exchange Rate (REER) may on average have been overvalued to the tune of 10 percent since 2003 and 6 percent since 2011 (World Bank 2018, CEMAC Country Economic Memorandum, *forthcoming*), clearly underlining the effect of oil on the REER. This in turn may have given rise to respective shifts in sector shares of GDP towards non-tradable and relatively unproductive (low skill) services.

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8 To construct a synthetic Chad, we use country-level panel data for Chad and all the other countries available in the 2017 version of the World Development Indicators (WDI) from 1990 to 2016. However, to avoid any spillover effects which might bias our estimates, we remove all of Chad’s neighboring countries. Thus, the growth performance of the developed counterfactual, which is composed of Albania (1.7 percent), Democratic Republic of Congo (24.2 percent), Rwanda (53.6 percent), Senegal (13.6 percent) and the Solomon Islands (6.8 percent) and illustrated in Figure 4, indicates that oil production has induced a 43.3 percent increase in output per capita by 2005. Nonetheless, this rise has continuously diminished over time, particularly since 2014, and reached only 0.82 percent by 2016.

9 In contrast to constructing counterfactuals based on linear time trends or using forecasts, counterfactuals constructed using SCM capture global economic shocks that may occur in the post-treatment period.
Procyclical fiscal policy and the absence of a structural oil revenue management mechanism has left Chad vulnerable to volatility and exogenous shocks. Many resource rich economies in SSA have used resource revenues to boost procyclical spending, particularly during the oil price boom. Chad has been no exception. Given the significant role of oil in GDP and government revenues, and the absence of a functional fiscal rule or stabilization fund, no fiscal buffers were available when oil prices plunged in end 2014. The resulting recession and shortfall in revenues put serve strains on public finances, ultimately rendering the government illiquid and public debt unsustainable.
Government interventions in markets are not calibrated to foster competition and private sector contributions to growth

The Government of Chad has played a central role across key sectors of the economy, often to the detriment of the private sector and growth. While the government has been a crucial player in many sectors of the economy, either through public expenditure, regulation and/or direct participation via SOEs, the private sector appears to be comparatively small and invest little. Following a brief oil boom between 2000-03, private contributions to gross fixed capital formation, an important potential driver of sustainable growth, have been decreasing (Figure 14). This suggests that public investment continues to play a more central role in overall investment than in other countries. Only recently, as falling oil revenues have decreased the government’s share in gross fixed capital formation, have relative private contributions increased.10 Similarly, domestic credit to the private sector has been among the lowest in the region (Figure 15).

Figure 14: Private contributions to overall investment decreased after 2006 and have only recently been increasing again.

Figure 15: Credit to the private sector has been among the lowest in the region (despite a recent upward trend).

The discovery of oil and subsequent abundance of oil revenues may have aggravated the marginalization of the (non-oil) private sector. As Figure 16 and Figure 17 show, there have been opposite trends in the development of oil revenues and domestic credit to the private sector. This may suggest a lack of complementarity between private investment in key markets and direct public participation in markets fueled by oil revenues, ultimately having contributed to crowding out the private sector. This has made growth in key non-oil sectors highly dependent on public expenditure, thereby exposing economic performance to significant fiscal downside risks such as falling oil revenues due to declining global oil prices as witnessed between 2015 and 2017.

10 It should be noted that private investment as a percentage of GDP has been relatively high, most likely fueled by investment in extractive industries. Before the oil boom of the early 2000s, gross fixed capital formation of the private sector as a percentage of GDP was the second lowest in the region.
Uncertainty stemming from government interventions and policies acts as a de facto entry barrier – and adds additional risk to an already challenging overall business climate. On traditional indicators of the overall business environment, Chad generally performs poorly. On the World Bank’s Doing Business indicator, for example, Chad ranks 180th out of 190 countries and of its regional comparators only the Central African Republic scores lower. However, risks related to conditions for market competition provide additional insights into the reasons for low private sector activity in Chad. The government’s participation in markets that fluctuates based on oil revenues (e.g. in agriculture) and inconsistent policy approaches (for example in telecommunications infrastructure development) raise uncertainty and the risk for private sector investment in crucial growth sectors. This uncertainty can act as a barrier to entry for the private sector, inhibiting private investment, which could contribute to sustainable and inclusive growth.

Table 4 provides examples of government interventions that could increase risks for the private sector and act as barriers to entry. These will be highlighted in more detail in later sections. Box 1 highlights the principle of subsidiarity, a tool that might allow Chad to systematically assess the government’s participation in the economy.

11 Comparators generally include regional neighbors and countries with similar characteristics (e.g. land locked, in the Sahel region, oil exporters). These are Burkina Faso, Cameroon, the Central African Republic, Chad, Mali, Niger, and Nigeria. When additional information was available the list was expanded to include additional countries in Central, Western and Northern Africa. In rare cases where data was particularly scarce, the analysis relied on comparator countries, for which data was available.

12 http://www.doingbusiness.org/data/exploreeconomies/chad.

13 The main constraints include getting electricity (182nd), starting a business (185th) and paying taxes (188th). Improving tax collection by tackling the very high level of informality and simplifying the tax code (SCD, 2015) would increase tax revenues, thus helping Chad in diversifying its fiscal revenues away from oil. Meanwhile, access to electricity is a nationwide problem as only 8 percent of the population had access to electricity in 2014 compared to 37.4 percent in SSA. Similarly, on the World Economic Forum’s (WEF) Global Competitiveness Index (GCI), Chad ranks third-to-last among 137 economies. On the index’ pillar regarding the efficiency of goods markets, only one country ranks lower than Chad [World Economic Forum. 2017. Competitiveness Report 2017-2018. Available at https://www.weforum.org/reports/the-global-competitiveness-report-2017-2018].
Box 1: Subsidiarity could help clarify the role of government in the economy.

The principle of subsidiarity can help avoid unnecessary government presence in the economy. According to the principle of subsidiarity, if there are – or could be – private agents interested in performing an economic activity or participating in a given market, the state does not need to participate as an economic agent. Instead, it is typically more efficient and effective for the State to act as a regulator.

In Peru and Chile, the principle of subsidiarity is enshrined in the countries’ respective constitutions. In the case of Peru, the authorities conduct a subsidiarity analysis by considering whether private players would be able to supply the entire market and if there are significant barriers to entry in the market. In case an SOE engages in non-subsidiary business activities, the Peruvian Competition Authority (INDECOPI) can impose sanctions. As a result, the Peruvian subsidiarity analysis ensures that SOEs only participate in markets where their presence is necessary and where their presence does not distort market dynamics.

Table 4: Examples of government intervention that could increase risks for the private sector in Chad.

<table>
<thead>
<tr>
<th>Examples of economy-wide barriers to entry and expansion resulting from unpredictable government interventions in markets</th>
<th>Examples of sector-specific barriers to entry and expansion resulting from unpredictable government interventions in markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of competitive neutrality (i.e. equal treatment) between state-owned enterprises (SOEs) and private enterprises: some SOEs receive preferential regulatory and financial treatment, which may provide them with an undue advantage over (potential) private sector competitors and create uncertainty about the ability of private investment to compete with SOEs present in commercial markets</td>
<td>Subsidization and government-provision of agricultural inputs has raised the costs for private input providers to compete and therefore made market access difficult</td>
</tr>
<tr>
<td>Lack of competitive neutrality between private companies: Private enterprises receive tax exemptions, which have been awarded in an opaque and discretionary manner, risking the distortion of the level playing field and limit the predictability of market conditions for private investors not benefitting from discretionary tax exemptions</td>
<td>Uncertainty on the level of government provision of inputs at subsidized costs has increased the risks for private enterprises and inhibited long-term planning</td>
</tr>
<tr>
<td>A high level of single-source procurement in 2017 risks discriminating against efficient and innovative enterprises that lack political connections and increases uncertainty and unpredictability for private investors</td>
<td>The government’s management of the entire cotton value chain and uncertainty about regulatory aspects following partial privatization has precluded private investment in the sector</td>
</tr>
<tr>
<td>Government control over the international telecommunications gateway has increased the costs to compete for the private sector and created dependencies on the government for access to crucial infrastructure, increasing the sector’s business risk</td>
<td>Government control over the international telecommunications gateway has increased the costs to compete for the private sector and created dependencies on the government for access to crucial infrastructure, increasing the sector’s business risk</td>
</tr>
<tr>
<td>The government’s decision to reverse the liberalization of the international gateway has created uncertainty over regulation of the market</td>
<td>The government’s decision to reverse the liberalization of the international gateway has created uncertainty over regulation of the market</td>
</tr>
<tr>
<td>Lack of clarity/predictability regarding the use of domestic fiber connections has increased the risk of private investment</td>
<td>Lack of clarity/predictability regarding the use of domestic fiber connections has increased the risk of private investment</td>
</tr>
</tbody>
</table>

Source: World Bank staff

Advantages granted to state-owned enterprises (SOEs) and specific private enterprises contribute to an unlevel playing field and increase uncertainty for firms. Advantages available to specific players but not others tend to violate the principle of competitive neutrality, which suggests that contacts with the government or government ownership or involvement in the marketplace, in fact or in law, should not confer an undue competitive advantage on any actual or potential market participant. Given governments’ direct stakes in SOEs, they often receive preferential treatment compared to private enterprises. Box 2 below summarizes international experiences with competitive neutrality.
The country’s SOEs are numerous and economically important and pose a fiscal risk to the government. Chad has no less than 17 SOEs in at least 11 sectors although there is some uncertainty regarding the total number of SOEs in Chad. At least 17 could be identified, which are present in at least 11 markets (see Annexes 6 and 7 for complete lists). Although this number is not particularly high in comparison to other countries on the continent and elsewhere, it should be kept in mind that Chad has few productive sectors overall. 9 non-bank SOEs, for which detailed information is available, had a total turnover of XAF 381.4 bn in 2013 (USD 762.8 million), which is equivalent to 6 percent of GDP and 8.2 percent of non-oil GDP in 2013. Of the 11 SOEs, for which financial information is available, 8 were loss-making in 2013, including many operating in commercially viable sectors of the economy like cotton, telecommunications and banking.

While SOE presence is not a problem for competition per se, if certain factors are in place, it is likely that SOEs negatively affect the functioning of markets. First, the higher the SOE’s market share, the higher the likelihood that its behavior and performance can impact the overall market including potential up- and downstream segments. Second, SOEs that benefit from protections unavailable to (potential) private sector competitors are likely to outcompete competitors not based on their merits, leading to overall lower productivity, innovation and ultimately growth. However, potential negative market effects of SOEs are avoidable particularly in markets where the private sector could provide the service or good efficiently. If not, regulatory means are usually available to subject providers of goods or services (be they public or private) to market discipline to ensure efficient market outcomes. However, Chad does not provide well-defined rationales for government intervention in the economy through SOEs.

Many Chadian SOEs hold important positions in markets with actual or potential private sector participation. As Table 5 shows, SOEs hold 100 percent of the market in at least 6 sub-sectors, including some viable for private sector participation. Therefore, many Chadian SOEs are in a position to (negatively) impact their respective market.

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14 A recent audit by KPMG identified 19 SOEs, but included a regulator and an inactive SOE.

15 Société Nationale d’Electricité (SNE), Société Tchadienne de Poste et de l’Epargne (STPE), Société Tchadienne des Eaux (STE), Société des Télécommunications du Tchad (SOTEL), Société Cotonière du Tchad (COTONTCHAD), Banque Commerciale Chari (BCC), Compagnie Sucrière du Tchad (CST), Société Industrielle de Matériel Agricole et Assemblage de Tracteurs (SIMATRAC), Société de Raffinage de N’Djamena (SRN).

16 Using an average 2013 exchange rate of USD 0.002 to the XAF.

17 KPMG (2017).

18 Société Nationale d’Electricité (SNE), Société Tchadienne de Poste et de l’Epargne (STPE), Société Tchadienne des Eaux (STE), Société des Télécommunications du Tchad (SOTEL), Société Cotonière du Tchad (COTONTCHAD), Banque Commerciale Chari (BCC), Compagnie Sucrière du Tchad (CST), Société Industrielle de Matériel Agricole et Assemblage de Tracteurs (SIMATRAC), Société de Raffinage de N’Djamena (SRN), Commercial Bank Tchad (CBT), Banque Agricole et Commerciale (BAC).
As is the case in Chad, many countries provide direct and indirect financial support to public or private enterprises ("state aid"), which can lead to market distortions. State aid can take various forms. Chadian public and private enterprises, for example, benefit from tax exemptions, operational subsidies, investment subsidies and tax guarantees. Other countries show similar patterns of discriminatory support. However, the discriminatory provision of financial incentives to SOEs or select private enterprises leads to an unlevel playing field thereby violating the principle of competitive neutrality, which requires all enterprises to face the same set of rules. To avoid distortions from preferential financial access, ex ante and ex post mechanisms of adjustments and compensations should therefore be introduced to ensure that private enterprises and SOEs access financing under market terms and that they do not receive undue subsidies. In Moldova, for example, a Law on State Aid was passed in 2012, which regulates procedures for authorizing, granting, monitoring, and reporting state aid. Furthermore, the Moldovan Competition Council (CCRM) created a public online information portal and registry for all forms of state aid disbursed by government agencies. The resulting increase in transparency facilitates the access to incentives by firms that previously might have been excluded and discourages the discretionary award of benefits to certain firms.

SOEs are often most likely to benefit from undue government support, which can also take non-financial forms, such as regulatory benefits or lower corporate governance standards. Firm-level principles of competitive neutrality include the separation of commercial and non-commercial activities of SOEs to ensure that potential government subsidies are targeted at those activities that cannot be carried out by (private) competitors, so-called public service obligations (PSOs). Such PSOs often pertain to providing services in remote areas or in otherwise unprofitable circumstances. In Chad, the Universal Services Fund (USF) in the telecoms sector is intended to provide funding for network expansion to remote locations. To ensure a strict separation of subsidized PSOs from non-subsidized commercial activities, various developing countries, including India and Malaysia, have enshrined a definition of commercial and non-commercial activities in their competition acts. Going a step further in increasing transparency of SOE operations, some Brazilian SOEs have committed themselves to higher governance standards by abiding to the requirements of the Novo Mercado by the Brazilian Stock Exchange. This not only increases accountability and transparency, but also enhances the likelihood that SOEs are run like private enterprises and achieve comparable rates of return. Other countries try to mitigate potentially distortionary behavior of the government as a market participant through other means. In Botswana, for example, the competition law covers anticompetitive actions of state and public bodies and actions of public officials that facilitate anticompetitive agreements.

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19 In Romania, for example, SOEs generated only 8% of total output of non-financial corporations at end-2013, but they accounted for 50% of all tax arrears of companies. This reflects lower enforcement of tax liabilities in the case of SOEs, putting them at an advantage vis-à-vis their private competitors (See Helena Marrez, The role of state-owned enterprises in Romania, ECFIN Country Focus, Volume 12| Issue 1 | January 2015.). In India, subsidies on diesel are only available to the public sector undertakings and not to private companies and Vietnam has been subsidizing the telecom SOE Viettel, which has significantly expanded and gained market share due to this support (Competitive Neutrality: The Concept, in UNCTAD RESEARCH PARTNERSHIP PLATFORM: COMPETITIVE NEUTRALITY AND ITS APPLICATION IN SELECTED DEVELOPING COUNTRIES (2014), at 276, Available at http://unctad.org/en/PublicationsLibrary/ditcclpmisc2014d1_en.pdf.) Moldova found that the selective award of its incentive schemes was putting some enterprises at a competitive disadvantage and had negative effects on overall social welfare. Between 2009 and 2011, official statistics indicated that 12 percent of state aid targeted individual firms, although the actual number might have been considerably higher.

20 India Competition Act, 2002, No. 12 of 2003, Article 2(h); Malaysia Competition Act 2010 (Act 712).

21 Novo Mercado is a listing category introduced in 2000 by BM&F Bovespa for the trading of shares issued by companies that commit themselves voluntarily to adopt corporate governance practices that go beyond those that are required by law.

Table 5: Market position of Chadian SOEs

<table>
<thead>
<tr>
<th>(Sub-)Sector</th>
<th>SOE Market Share</th>
<th>Private sector currently operates?</th>
<th>Private sector potentially?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity generation, import, transmission,</td>
<td>100%</td>
<td>No</td>
<td>Yes, but requires regulation</td>
</tr>
<tr>
<td>distribution, supply</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post basic and courier services</td>
<td>100% (legal</td>
<td>No</td>
<td>Yes, but requires regulation/PSOs</td>
</tr>
<tr>
<td>monopoly)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water collection, treatment and supply;</td>
<td>100%</td>
<td>No</td>
<td>Yes, but requires regulation/PSOs</td>
</tr>
<tr>
<td>Operation of water transportation infrastructure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telecommunication fixed line, mobile, and</td>
<td>100% in fixed line; 4%</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>internet services</td>
<td>in mobile</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cotton</td>
<td>100% (legal</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>monopoly)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sugar</td>
<td>100% in production</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Manufacture of agricultural equipment</td>
<td>N/A</td>
<td>N/A</td>
<td>Yes</td>
</tr>
<tr>
<td>Meat</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Manufacture of refined petroleum products</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Financial service activities (except</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>central banking, insurance, and pension funding)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrocarbons</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cement</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Social Security</td>
<td>N/A</td>
<td>N/A</td>
<td>Yes</td>
</tr>
<tr>
<td>Hydraulics</td>
<td>N/A</td>
<td>N/A</td>
<td>Yes</td>
</tr>
<tr>
<td>Tobacco</td>
<td>Only producer in Chad (?)</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Source: Authors’ elaboration. Note: PSO = Public Service Obligation

Although there is no legal distinction in the treatment of SOEs compared to private enterprises, SOEs in Chad benefit from legal protections from competition as well as financial benefits. Some SOEs are protected from competition through legal monopolies, which create an absolute barrier to entry for potential competitors (e.g. in postal services or cotton). Furthermore, SOEs enjoy various financial benefits, including investment subsidies, operational subsidies, and tax guarantees. The 11 SOEs, for which financial information is available, received a total of almost XAF 3 bn (~USD 6 m) in investment subsidies between 2009 and 2013. More problematic than investment subsidies are operational subsidies, because they affect the variable costs of enterprises and thereby create advantages over potential competitors. Between 2010 and 2013, these 11 SOEs received on average XAF 33.4 bn (ca. USD 64 m) per year in operational subsidies, which is equivalent to 2.6 percent of 2013 government revenue. The majority of these (ca. 90 percent) were provided to national electricity utility, but the remaining 10 percent were distributed among other SOEs, including CotonTchad and Simatrac, which operate in sectors
that could potentially feature private sector players and do not fulfill any specific public service obligation. CotonTchad has furthermore continuously benefitted from government guaranteed credit.\textsuperscript{23}

Some private operators appear to enjoy preferential treatment as well through tax exemptions and public procurement, further un-leveling the playing field. The Chadian government has in the past provided tax exemptions to individual enterprises in a non-transparent and non-systematic way. These exemptions were not only provided by the Ministry of Finance, but also other agencies on a discretionary basis, thereby providing advantages to some enterprises over others, and un-leveling the playing field. Furthermore, procurement contracts have been awarded in the past not based on competitive procedures, but based on political connections. The Bertelsmann Foundation finds that “government contracts, for example for construction work, are dealt out in the inner circle of power.”\textsuperscript{24}

Indicators suggest that firms perceive government-induced business risks to be higher than in comparator countries. The Economist Intelligence Unit (EIU) suggests that of its comparators only Sudan is perceived as being riskier than Chad on indicators related to distortions to free market competition (Figure 18). This is driven largely by the perceived risk of vested interests and cronyism.

\textit{Figure 18: Business risks related to weak competition policies are high in Chad (by component).}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{image18.png}
\caption{Business Risks Related to Weak Competition Policies (by Component)}
\end{figure}

Source: Economist Intelligence Unit (2018)

To avoid crowding out the private sector and to maximize private contributions to sustainable and inclusive growth, the Government should ensure that interventions target specific market failures. Governments typically intervene in markets either directly as economic agents (for example as buyers or through state-owned enterprises that sell goods and services on the market) or indirectly by setting rules and regulating markets. By limiting its direct and indirect interventions to instances where the private sector is unable to work optimally due to market failures, the government can provide the space for the private sector to respond to opportunities and contribute to economic growth. Furthermore, the government can free up resources for other important policy objectives, for which there might not be private sector solutions (see Figure 19 for examples of justified ex ante government interventions given specific market failures).

\textsuperscript{23} Based on KPMG (2017).

\textsuperscript{24} Bertelsmann Stiftung (2018, p. 20).
A comprehensive competition policy framework allows reconsidering the role of the government in the Chadian economy and ensuring a complementary relationship between the government and the private sector in the long run. Such a comprehensive competition policy framework includes a set of policies and laws that ensure that competition in the marketplace is not restricted in such a way as to reduce economic welfare. In practical terms, competition policy involves: (i) the promotion of measures to enable contestability, firm entry and rivalry; (ii) competitive neutrality and state aid control; and (iii) the enforcement of antitrust laws (Figure 20). In the case of Chad this would entail reconsidering the role government in the economy and creating policy certainty to de-risk private sector investment, removing legal monopolies and other barriers to entry, promoting competitive neutrality in markets, ensuring the non-discriminatory application of public procurement rules, as well as operationalizing and implementing a competition policy framework. It is worth noting that the goal of competition policies is not to increase the number of firms in a market or to eliminate market power to achieve a theoretical state of perfect competition. Their final aim is to generate the right incentives for firms to improve their economic performance vis-à-vis their actual and potential rivals and in so doing deliver the best outcomes for consumers and the overall economy.
Currently, the competition policy framework is perceived to be weak overall. As through Figure 21 through Figure 43 below show, Chad scores lower than most comparator countries on the Global Competitiveness Report’s sub-indicators related to competition.

**Figure 21:** Relative to comparators, markets in Chad have been dominated by few businesses, ...

**Figure 22:** ... the effectiveness of anti-monopolistic policies has been weak, ...

**Figure 23:** ... and the intensity of local competition has been poor.

Given the importance of functioning markets in sectors with high growth potential, this analysis will focus on opening markets and implementing pro-competition regulation (Pillar 1 of the competition policy framework). Ensuring a pro-competition policy framework in key sectors (Pillar 1) is a priority for Chad to unlock growth through an innovative and productive private sector. The sectoral deep-dives provided in section C highlight concrete restrictions to competition in the agriculture and ICT sectors. However, pro-competition sectoral regulations need to be complemented by a level playing field (Pillar 2), which is particularly important in the presence of state-owned enterprises (SOEs) as it aims to ensure government participation in markets through SOEs and PPPs does not restrict market competition. The sectoral deep-dives will provide some examples of specific constraints on competition and market functioning resulting from SOE participation in markets.

Enforcement of the competition law to deter and detect anticompetitive behavior (Pillar 3) becomes increasingly important as markets develop – yet the legal competition framework in Chad remains weak. With developing markets and a growing private sector, the likelihood of anticompetitive conduct by firms increases. To mitigate and persecute such conduct, a functioning competition policy framework
is key. With the Loi no. 43/PR/2014 Relative a la Concurrence, Chad approved a Competition Law on December 24, 2014. However, the law has not yet been operationalized and – crucially – there is no independent competition authority. While the law aims to create a competition authority (the Conseil de la Concurrence), it has not yet been set up due to the lack of a decree and the Ministry of Commerce remains in charge of competition-related matters.\textsuperscript{25} Even if it was set up, the Conseil de la Concurrence would not be an independent institution under the law, but a “body attached to the ministry in charge of commerce”. Furthermore, fines for anti-competitive behavior are generally low and are unlikely to efficiently act as deterrents. Fines for obstructing investigations, for example, cannot exceed XAF 1 m (below USD 2,000) and fines for collusion are limited to XAF 10 m (less than USD 20,000).

The competition law covers collusive behavior and abuse of dominance but prohibits some business activities that would not typically be considered anticompetitive, potentially increasing uncertainty for firms and dampening incentives for innovation. An effective competition policy and law framework usually focuses on deterring anticompetitive behavior. The Chadian competition law, however, appears to provide the competition authority with de facto regulatory functions, for example by prohibiting enterprises from undertaking activities that are not specified in their charter.\textsuperscript{26} This is likely to dampen incentives for firms to innovate and introduce new products. Lack of clarity on how this would be enforced could also increase uncertainty for firms even before the law is fully operationalized. The competition law furthermore features provisions targeted at enforcing price regulation (e.g. electricity, gas, water, petroleum products, and pharmaceuticals) with the competition authority having power to fine firms that do not comply with fixed prices. Price controls risk removing incentives for firms to innovate or increase quality, can act as a focal point for collusion, and can lead to an inefficient allocation of resources. Once the competition authority is operationalized, this role could also divert resources from more effective activities of targeting harmful anticompetitive behaviour.

Opinions provided by the competition authority on government regulations could be valuable even in the absence of a fully-operational competition authority. According to the law, the Conseil de la Concurrence would have the mandate to analyze and provide opinions on “all questions related to competition policy in Chad, particularly on legislative projects and regulations that are likely to influence the exercise of competition on the domestic market.”\textsuperscript{27} Even though these opinions would not be binding, the Ministry of Commerce and the Conseil (once established) could use this mandate to providing insights on barriers to competition in key sectors and on the competition effects of government interventions, which could serve as valuable input to positively influence government decision-making and advocate for pro-competition reform.

\textsuperscript{25} Interview with the Director of Competition at the Ministry of Commerce on 2/16/2018.
\textsuperscript{26} Art. 23.
\textsuperscript{27} Art. 36, Loi no. 43/PR/2014 Relative a la Concurrence.
Together these constraints explain the current picture painted by analysis of growth decomposed into its most salient driving forces

A first attempt to identify growth drivers underlines the missed opportunity of significantly leveraging oil revenue for infrastructure and human capital investment (Figure 24). The analysis applies a regression model developed to explain long-term growth\(^\text{28}\) to study the extent to which per capita GDP growth can be traced to structural factors (infrastructure, financial intermediation, trade, education, government size, institutions), stabilization policies (inflation, exchange rate), and external conditions (terms of trade, export commodity prices).\(^\text{29}\) Increased trade and lower recurrent spending were identified as the main structural drivers of growth following oil discovery. The contribution of infrastructure development stood at roughly 0.3 ppts, accounting for less than 10 percent of the predicted growth per capita between 2000 and 2010. Notwithstanding Chad’s rapid growth in the 2000s, the contribution of (public) infrastructure investment was modest. Similarly, education contributed only 0.1 ppts, a negligible proportion of overall economic growth. These results seem to strongly suggest that higher oil revenues during the 2000s were not productively used to upgrade the country’s infrastructure and invest in human and physical capital.

\(\text{Figure 24: A first macro look at failure to leverage oil revenues for growth (determinants of average annual GDP per capita growth in Chad).}\)

Over the period 1995-2017, growth in Chad was largely driven by capital and labor accumulation rather than productivity improvements. Using an augmented Solow-decomposition approach with human capital, we find that investment and labor accumulation were the main drivers of economic activity in Chad (Table 6). Meanwhile, total factor productivity (TFP) was, on average, a positive contributor to overall growth over the whole period. However, non-linearities such as the significant pick-up in TFP

\(^{28}\)The growth regression model in Brueckner (2014) which has been previously used to explain long-term economic growth elsewhere (see Araujo et al. (2014), Moller and Wacker (2017), and Haile (2016) for applications in the context of Latin American countries, Ethiopia, and Tanzania, respectively) serves as a basis. To shed light on recent developments in Chad, Brueckner’s (2014) dataset is extended by one additional five-year period, namely 2010-2015, based on consistent data sources.

\(^{29}\)Infrastructure development is proxied by a composite index constructed as a weighted average of three individual indices capturing progress in phone lines, roads, and power generation capacity. Human capital development is controlled for using secondary school enrolment. The trade-to-GDP ratio accounts for openness to international trade while government consumption (in percent of GDP) serves as a measure of government size. Institutional quality is measured by the well-known Polity index. Finally, the analysis includes the share of domestic credit to the private sector in GDP.
during the onset of oil production are masked. When excluding the 2003-2005 period, Chad’s productivity was a drag on growth in contrast to its aspirational peer countries\(^3\) (Figure 25), indicating that oil gains did not translate and materialize into efficiency improvements in the non-oil economy.

### Table 6: Investment and labor accumulation boosted growth in 1995-2017.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP</td>
<td>5.8</td>
<td>4.6</td>
<td>8.1</td>
<td>-4.7</td>
</tr>
<tr>
<td>Capital Stock</td>
<td>2.8</td>
<td>4.0</td>
<td>2.2</td>
<td>-0.1</td>
</tr>
<tr>
<td>Labor</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Human Capital per Labor</td>
<td>0.2</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Total Factor Productivity</td>
<td>0.9</td>
<td>-1.7</td>
<td>3.7</td>
<td>-6.9</td>
</tr>
</tbody>
</table>

Source: World Bank staff calculations. Note: There is no data on the average years of schooling in Chad from the Barro Lee dataset. To overcome this limitation, we determined which countries which had a (+/-) 30% difference relative to Chad on the UN-education index. Then, we selected Sudan as it is a neighboring country which have similar socio-economic characteristics to Chad. Accordingly, we used the number of years of school for Chad based on the data of Sudan.

See section C.1 about the methodology to select peer countries for benchmarking.
C. POTENTIAL PATHWAYS OUT OF THE LABYRINTH

Chad currently lacks structural support, but once disentangled, the maze of constraints provides major opportunities to invigorate growth in a sustainable way. This chapter identifies options to substantially improve economic performance and growth both through a macro and microeconomic as well as economy wide and sectoral lens. First, a benchmarking analysis highlights Chad’s performance vis-à-vis a selective group of comparator countries. These aspirational peers share common economic features with Chad but differ across important growth indicators. Therefore, they could serve as models for a variety of growth enhancing strategies. Second, a 360-degree view of the economy underlines central macro and micro growth drivers to be leveraged for faster and sustained real GDP growth. Third, two sector deep dives provide detailed analysis of key constraints preventing agriculture and ICT Telecom from playing their strategic role in enabling a dynamic growth environment.

1. Benchmarking

We use a data-driven algorithm to determine Chad’s aspirational peers and identify policy areas in which Chad faces important challenges. We define Chad’s aspirational peers as countries that had a lower or equal per capita GDP compared to Chad in 2003-2004, but reached a GDP per capita level at least 10 percent above Chad’s in 2015-2016. This approach considers ex ante all countries as potential aspirational peers and identifies those which had a similar starting point as Chad at the outset of oil production, but could grow significantly faster over time. It results in the selection of Bangladesh, Cambodia and Myanmar as aspirational peers. These countries had similar socio-economic conditions as Chad in 2003-2004: (i) poor infrastructure, (iii) weak institutions accompanied by security incidents, (iii) limited private sector participation and (iv) low human development (see Figure 76 in Annex 4). The fact that none of these countries were oil-dependent in 2003-2004 underlines the potential positive effects from reforms focused on the non-oil economy (see section D for more details).

None of Sub Saharan Africa’s oil exporting countries would have qualified as an aspirational peer. We underline that a plausible ex ante strategy for benchmarking would have been to select fast-growing, oil-exporting countries that had a relatively similar output per capita as Chad at the onset of oil production. However, none of the main SSA oil-based economies (Angola, Congo. Rep, Cameroon, Gabon, Nigeria and Sudan) matched such criteria.31 In fact, they featured higher GDP per capita levels in 2003-2004, i.e. different starting points. Moreover, these countries did not experience consistently faster growth between 2005-201632 and most of them experienced slowdowns or recessions following the end of the commodity super-cycle in mid-2014 as shown by the low and even negative per capita growth rates in 2015-2016 (Table 8). Hence, these countries could not be considered as success stories for Chad to follow.

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31 Countries are defined to be oil-based if their fuel exports accounted for more than 25 percent of their total export basket between 2000 and 2014, on average.

32 In the case of Angola, the high growth in 2005-2016 was driven by GDP rebasing which resulted in a 16.3 percent per capita growth in 2005-2007. As highlighted in column (2) without this period, average per capita growth drops from 4.9 percent in 2005-2016 to only 1.1 percent in 2008-2016.
Accordingly, benchmarking Chad against selected aspirational peers highlights governance and infrastructure development as well as export diversification and private sector participation as major constraints.\(^{33}\) We examine how various growth correlates behaved over time by developing a methodology that helps us determine (and rank by order of magnitude) which factors have prevented Chad from growing as fast as its aspirational peers.\(^{34}\) Underdeveloped infrastructure clearly stands out as a major constraint to development in Chad (Figure 27). For instance, aspirational peers had, on average, 56.7 more mobile phones per 100 people than Chad in 2015-2016 compared to only 1 in 2003-2004. Likewise, the difference in the percentage of population who use internet increased from almost none in 2003-2014 to more than 14 percent in 2015-2016. In addition to infrastructure issues, Chad’s growth path did not follow that of its aspirational counterparts due to weak governance. In 2003-2004 Chad and its peers had almost the same scores on various governance indicators (rule of law, corruption and government effectiveness, among others), but this situation has changed over time as peers’ scores improved much faster. Lastly, widening differences in credit to the private sector and the export concentration index suggest that Chad was not able to diversify its economy nor develop a vibrant private sector.

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\(^{33}\) These findings strongly support the earlier descriptive results presented in Table 2.

\(^{34}\) The methodology is described in Annex 4.
Figure 27: Relative to its aspirational peers, Chad underperformed on diversifying its economy, developing its infrastructure and improving governance.

Source: WDI, IMF WEO, World Governance Indicators, UNCTAD and WB staff calculations

However, two resource-based economies – Botswana and Chile – have successfully managed their natural resources and offer selected but important insights for Chad. Botswana is an African success story that made impressive strides in economic development. At independence in 1966, Botswana was one of least developed countries in the world with a real GDP per capita of only US$ 83.7. Over the years, it has benefited from the onset of diamond production and succeeded in outperforming richer and resource-rich African countries (Figure 28). Similarly, Chile, a Latin American country that is heavily dependent on mining, which accounts for about half of total exports (World Bank, 2017), grew faster (in per capita terms) than any of its regional peers between 1973 and 2016 (Figure 29).

Figure 28: Botswana’s economy grew significantly faster than other SSA resource rich countries

Figure 29: Chile grew at the highest rate in Latin America since 1973.

Source: WDI

35 The case study for Botswana is based on the forthcoming report entitled “Fiscal Vulnerabilities in commodity-exporting countries and the role of fiscal policy”.

Source: WDI and World Bank staff calculations
Botswana managed to implement pro-growth fiscal policy linking productive expenditures to mineral revenues while saving any remaining surplus as financial assets. Botswana, together with Norway, is one of the few resource-rich countries in the world to have successfully applied the Hartwick rule (Hartwick, 1977; Solow, 1986) which states that resource revenues must be invested in financial, human or capital assets. Botswana introduced this rule by creating the Sustainable Budget Index (SBI) denoting the ratio of non-productive spending\(^\text{36}\) to non-mining revenues. In essence, Botswana’s fiscal policy was to maintain an SBI lower or equal to 1 which indicates that current government consumption is being financed entirely by non-mineral revenues, yielding a sustainable fiscal policy stance in the long-run (World Bank, 2010). Except for the 2001-2004 period, when SACU revenues dropped significantly, the SBI was constantly lower than 1 suggesting that Botswana’s fiscal policy was indeed sound and sustainable (Figure 31). In addition to satisfying the SBI rule, Botswana enjoyed 24 years of fiscal surpluses between 1980 and 2015, particularly during the 1980s and 90s. These surpluses have been accumulated as savings into the Government Investment Account (GIA) which became part of the Central Bank’s Pula Fund (PF) tasked to invest its assets in long-term instruments overseas to achieve higher returns. During periods of crises, the PF was used as a fiscal (revenue) stabilizer. For instance, when the government ran large fiscal deficits (9.4 percent of GDP in 2008-2010) following the drop in mining revenues amidst the 2007-08 global financial crisis, it financed this deficit by drawing upon savings from the PF and issuing new debt (World Bank, 2016b).

The key to Chile’s economic success story can be found in its strong institutions complemented by market-oriented, pro competition policies. Since 1973, Chile adopted open market policies — such as price liberalization and openness to foreign trade — that were complemented by a solid legal foundation known as the Competition Act (decree law No. 211/1973). This competition policy framework reduced the privileges granted to the state, ensured freedom of economic agents and encouraged fair competition (Pardo, 2009). Moreover, Chile was a pioneer in applying Public Private Partnerships (PPPs) in infrastructure in the early 1990s using the Toll Road Concessions Program (Lorenzen et al., 2001). As a result of this business-friendly environment which was strengthened over the years by strong institutions (in 2018 Chile ranked as the least corrupt country in LAC and the 26\(^{th}\) out of 180 countries in the world) and good economic policies, Chile was able to attract the second highest amount of FDI inflows (as a ratio of GDP) in Latin America between 1973 and 2016 (Figure 30).

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\(^{36}\) Non-recurrent spending “includes not only the capital budget (referred to in the public finance data as ‘development expenditure’), but also that portion of the recurrent budget used for education and health, interpreted as investment in human capital” (Lange and Wright, 2004).
2. Key constraints constitute major opportunities to unleash growth

Complementary action to foster necessary conditions for sustainable, private sector driven growth and implement dynamic sectoral as well as demand side strategies could yield significant growth. Conditions necessary for sustainable growth and private sector participation relate are macroeconomic stability, effective economic and fiscal governance including regulation, competition or tax policy, as well as the broader business and investment climate. Well governed and capable institutions should be able to deliver sustainable macro policies and safeguard open and competitive markets. Sustainable fiscal and debt policies including efficient and transparent oil revenue management allow the smoothing of cycles and managing of (sometimes exogenous) macroeconomic risk. A conducive investment climate, competitive markets and inclusive government participation in the economy should incentivize private investment and firm entry into productive sectors.

Efficient and competitive markets are an important step towards maximizing synergies between private and public sectors

Investment contributions to GDP growth lost steam after the oil boom during the first half of the 2000s. When looking at real GDP growth through an expenditure side lens (Figure 30), it becomes clear that investment had significantly contributed to growth in the run up to oil production coming on stream, i.e. in the early 2000s, but lost momentum thereafter. At the same time, consumption became a major driver of growth, with net exports driven by increasing oil production boosting growth most recently. However, the particularly dismal performance of both public and private investment since 2005 (but notably 2015 and 2016) signals major constraints and growth challenges including insecurity, lack of fiscal space and a poor investment climate. We control for 2011 as an outlier year as Chad was then affected by a severe drought which leads to a 25.3 percent contraction in the agriculture sector and a 15.8 percent drop in overall real investment.

Figure 32: Investment needs to be rekindled to sustain faster growth in the future.

Sources: World Bank staff calculations.

To increase private investment, public investment needs to contribute to the creation of a dynamic and competitive market economy. If well targeted and strategic, public investment can gradually improve infrastructure, reduce costs of doing business and eventually crowd in private investment. However, public investment needs to be complemented by creating an adequate and conducive regulatory market environment allowing private investors and firms to effectively compete with their public counterparts and each other.
A crucial step is to empower firms to efficiently allocate resources and compete. Competition in markets has been consistently shown to contribute to economic growth. Various channels translating competition into welfare and growth are empirically well documented. Firms operating in a competitive environment are more likely to innovate (Bassanini and Ernst, 2002) and to increase their productivity (Acemoglu et al., 2005; Aghion and Griffith, 2005). Competition boosts investment (Alesina et al., 2005), generates employment and ultimately speeds up economic growth and improves overall welfare. Empirical evidence strongly supports the positive effects of competition policy enforcement on productivity growth (Buccirossi et al., 2013; Voigt, 2013). Tough enforcement against the practices of cartels, based on well-designed anti-cartel laws, for example, constitutes an effective tool to reduce the negative impact of anticompetitive behavior (Symeonidis, 2008). Increased international competitiveness - and therefore more favorable terms of trade - is another important and positive effect associated with increased competition in domestic markets. Finally, consumers benefit from lower prices, direct savings and improvements in the variety and quality of goods and services. Consumers also find enhanced job opportunities and additional income as investors.

Lack of competition in key input sectors can be a particularly costly constraint to investment and economy wide productivity growth. Important network industries (such as energy, telecom or transport) as well as key sectors (such as cotton in Chad) are often characterized by significant inefficiencies, the presence of loss-making SOEs, anti-competitive product market regulation and overall noncompetitive markets. Such circumstances not only weigh heavily on constrained public resources, they also foreclose markets to private investment and ultimately entail significant negative externalities in terms of consumer welfare (inefficient pricing and quality) and public service delivery.

Information and Communication Technologies (ICT) constitute such a key input sector and studies have shown that increased competition in the ICT sector creates significant benefits for consumers. For example, it has been found that the entry of an additional operator increased mobile subscriptions by 57 percent on average for a sample of more than 40 African countries. Furthermore, market liberalization has been shown to significantly decrease prices and call volumes. One study finds that following deregulation, consumer welfare in the telecommunications market increased by a staggering USD 96 billion to USD 111 billion across OECD countries for the period from 1998 to 2008, partly due to a decline in quality-adjusted prices (World Bank and OECD, 2017). At the same time, studies show that a 10 percent increase in mobile penetration in developing economies is likely to increase productivity by 4.2 percent.38

To move towards faster and sustainable growth, Chad could leverage oil revenues to gradually increase productivity growth across key non-oil sectors

37 International experience shows that the introduction of a comprehensive national competition policy framework can bring substantial economic gains. Australia is one of the countries that serve as an example of successful implementation of a national competition policy framework. Estimates suggest that competition policy reforms boosted Australia’s GDP by at least 2.5 percent or USD 20 billion due to their effect on increased productivity and lower prices during the 1990s. Likewise, conservative estimates for the UK suggest that direct consumer savings resulting from the enforcement of competition law are worth USD 112 million a year. In the case of the Netherlands, the positive impact of the competition agency’s actions on Dutch society is estimated at USD 426 million (a 3-year rolling average). Finally, recent studies also provide evidence that budgetary commitments to competition agencies and institutions yield economic benefits in terms of higher levels of per-capita GDP growth.

38 Based on World Bank (2016a, p. 120).
The key medium and long-term challenge is to decrease oil dependency and tap into large agriculture potential while gradually allowing resources to move towards more productive secondary and higher skill tertiary sectors. Sectoral contributions to real GDP growth over time reveal the oil and service sectors as main drivers, with agriculture staying well below potential. The advent of oil production is clearly reflected in supply side contributions to real GDP growth post-2003 (Figure 31). Notably, the related service sector performance could be read considering Dutch disease dynamics outlined above. Agriculture has been a major contributor to growth pre-2003 (as reflected above in Chad’s 2002 export profile), however, has lost any importance as a key growth driver thereafter. Similarly, Chad’s secondary sector remains small and has shown little dynamic over time.

Figure 33: The key challenge will be to decrease dependence on oil while igniting contributions from agriculture in the short term and industry and high skill services in the longer term.

One consequence of this was increasing inequality between 2003 and 2011, with many of the poorest rural households unable to benefit from economic growth. The Gini coefficient rose from 0.39 in 2003 to 0.42 in 2011, almost entirely driven by worsening inequality in rural areas (World Bank, 2015). While per capita consumption fell among the poorest 35 percent of rural households (who are largely living off agriculture and livestock and are often affected by climactic shocks), urban growth was modestly pro-poor. The urban poverty rate fell slightly faster in cities (10 percentage points) than rural areas (8 ppts), however, rural urban migration only contributed marginally. In terms of job opportunities in cities this may reflect the low capacity of cities to increase human and social capital of migrants. In Chad, higher demand for unskilled labor in the construction, trade and transport service sector may have been fueled by post 203 oil rents and ultimately helped increasing urban income opportunities, but lacked a sustainable increase in productive opportunities. However, in terms of public spending, there exists a clear urban bias in terms of service delivery (particularly in health and education).

Paradoxically, oil GDP growth will be needed in the short term to finance diversification away from oil into secondary and tertiary sectors. While the long run goal is to diversify the economy away from its current oil dependence, petroleum production and exports will remain a central source of income needed to finance recovery and support growth in the non-oil economy (Figure 34-Figure 36). A linear fit on the scatter plot between log of oil price and log of tax revenue reveals a strong positive relationship, further confirmed by the statistically significant correlation coefficient of 0.87. Then, given that government 39

39 We use non-parametric correlation coefficients (Kendall’s rank correlation coefficient) to account for the small sample size.
expenditure is a key driver of non-oil GDP growth, the positive correlation between key non-oil sector growth and oil prices can be explained (Figure 37).

**Figure 34: Oil drives government revenues ...**

**Figure 35: ...the services sector...**

**Figure 36: ... and non-oil GDP sectors alike.**

**Figure 37: There is a strong and positive relationship between oil prices and tax revenues.**

Source: IMF, World Bank commodity prices and World Bank staff calculations

In the short and medium term, agriculture can play a critical role for reducing poverty and boosting sustainable and inclusive growth. Poverty rates in Chad have been decreasing over time, but rural poverty remained high at 52.5 percent in 2011 (Figure 38: Most Chadians live in rural areas where poverty is widespread.). Moreover, rural to urban migration has been extremely slow as 77.4 percent of Chadians lived in rural areas in 2016 compared to 78.2 percent a decade ago. Thus, rural areas characterized by households depending (directly or indirectly) on agriculture for their livelihood, accounted for 89.6 percent of all poor Chadians. In parallel, agriculture has steadily accounted for most of the workforce, even after some the structural change following the onset of oil production (Figure 39). This indicates that the oil-led GDP growth has failed to induce a shift of labor resources from agriculture to more productive sectors of the economy. Moreover, the concentration of the workforce in agriculture suggests that improvements in agriculture could significantly enhance inclusive growth in the future given that most households still rely on agriculture for employment.
In the long term, unlocking efficient resource allocation into productive sectors, thereby diversifying Chad’s economy for sustained growth, will be the key challenge. Beyond agriculture, a glance at its import profile shows just how diversified Chad’s imports are, maybe directly pointing towards foregone opportunities for domestic production and job creation. A more detailed look at the product space and related value chain analysis reveals potential comparative advantage in agriculture and textiles that could be exploited for export diversification and ultimately structural transformation.

Box 3: Chad’s product space and key export opportunities based on revealed comparative advantage.

Chad exports very few products with revealed comparative advantage and its current position in the product space is very sparse and limited. While this does not favor quick transformation into higher value-added supply chains, it provides some clues as to possible future paths of diversification. In 2015, Chad exported only 11 products with revealed comparative advantage. Crude petroleum and textile products, the country’s largest export sectors by value, have a peripheral location in the product space (top right and around bottom right), meaning that they do little to facilitate diversification into other products. Around center right of the product space we find Chad’s vegetable products exports of maize (corn) flour, sesame seeds and natural gum Arabic. To sum up, agricultural products like maize (corn) flour, natural gum Arabic and sesame seeds offer highly feasible
expansion opportunities. Textile also provide some opportunity in increasing its competitiveness in dyed woven fabrics and wadding of man-kind fabrics.

Source: World Bank 2018 forthcoming (Exploring Chad’s Opportunities for export diversification)

In this context, CEMAC can provide important opportunities for competitive Chadian exports in the future. Regional economic integration remains subject to significant constraints but a more active implementation of CEMAC policy by Chad and other CEMAC member states could open the door to an improved trade and business environment. The union’s external tariffs are high when compared internationally (CEMAC’s average common external tariff (CET) stands at 18.1 percent compared to 12.4 percent in ECOWAS). Furthermore, there is significant tariff divergence at the national level. There are also significant non-tariff measures that prevent intra-regional trade. For example, CEMAC’s process for the harmonization and mutual recognition of technical measures certification procedures has not advanced in practice and standards regimes tend to differ across countries. Investment and business climate reforms mainly fall under the realm of national governments, but there is also scope for regional interventions to promote regional financial stability and financial integration, while leveling playing field for investment and taxation across CEMAC.

Non-tariff barriers and non-compliance with CEMAC transit agreements are particularly visible in regional agricultural trade. Agriculture suffers from a lack of standard practices and a lack of harmonization between national policies and CEMAC policies. Within Cameroon, for example, there is no single set of regulations governing agricultural trade with CEMAC neighbors. Field work also found that official regulations often clash with border practices. At the CEMAC level, it would be important to reduce border taxes that act as non-tariff barriers, establishing a regional dialogue on SPS declaration requirements, and establish a trade regime for agricultural products that all governments can adhere to; the primary political economy obstacle towards implementing a trade regime for agricultural goods seems to be revenue generation or re-distribution from border activities. Experience from other trade blocs, including the EU, may be relevant as to how best to decrease dependency on border taxes.

Motivated by the assessment so far, we will dive deeper into two sectors central to Chad’s way out of the growth labyrinth: Agriculture and ICT Telecom. These sectors play not only an important role for large parts of Chad’s population, but are also key for inclusive and sustainable growth and could play a catalyst role in diversifying the economy.

Agriculture has a direct impact on the livelihood of most Chadians and could yield large economic gains in the long-term given Chad’s comparative advantage. Focusing on development of the agriculture sector is the most promising strategy for poverty alleviation in Chad given that 80 percent of the population live in rural areas and most Chadians still work in the sector (as shown above in Figure 39) - with women overseeing roughly 75 percent of agricultural production. In addition and as discussed in Box 3, Chad has a comparative advantage in many agricultural products, thus providing opportunities for economic expansion and export diversification. The current low levels of agricultural productivity further suggest that there is significant potential to increase productivity in the agricultural sector and the economy overall.

Meanwhile, the ICT telecom sector serves as input into virtually all economic activity and therefore constitutes a crucial horizontal driver of growth and economic development. In addition to its direct economic benefits in terms of adding value and creating jobs, all sectors within the local economy would benefit from a more efficient ICT telecom that would create positive externalities by reducing production

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40 For a detailed discussion see World Bank 2018, CEMAC Country Economic Memorandum (forthcoming).
41 Idem., p. 8.
costs, enhancing the efficiency of public and private service delivery and facilitating the adoption of new and productive technologies. Moreover, enabling competitive ICT telecom services would reduce wholesale costs and thereby boost efficiency across supply chains while ultimately increasing consumer welfare.

3. Deep Dive: Low hanging fruits in agriculture

Agricultural output growth is subject to a stark lack of sustained productivity gains. Labor and livestock continuously accumulated but stagnating productivity kept agricultural output growth at moderate levels. Between 1990 and 2014, the agriculture sector grew at an average rate of 3.4 percent, subject to very high volatility (a 1 standard deviation of 15.8 percent) reflecting vulnerability to weather and climatic shocks.\(^4^{2}\) Using the growth-accounting methodology developed by the United States Department of Agriculture (USDA),\(^4^{3}\) we confirm that agricultural growth in Chad has been largely resource-led rather than productivity-led over the 1962-2014 period (Table 8). Indeed, more than 50 percent of agricultural growth stems from intensive use of inputs (labor and livestock accumulation), while only 8.3 percent originates in productivity improvements. The remainder is largely due to extensification (land use). A comparison with other Economic and Monetary Union of Central African States (CEMAC) countries and aspirational peers shows that productivity levels in Chad have been lagging its comparators, and the gap has widened rapidly since the mid-2000s (Figure 40). With little access to capital and modern technology, Chadian farmers typically increase production by simply relying on additional labor – and more recently – additional livestock, instead of boosting productivity by investing in quality inputs such as seeds, agriculture mechanization and advanced cultivation techniques.

Table 8: A close look at source of agricultural growth in Chad reveal a striking lack of productivity growth.

| Source: USDA ERS and World Bank staff calculations |
|---------------------------------|------------------|------------------|------------------|------------------|------------------|
| **Agricultural Output**          | A=B+C+D          | 1.2              | 0.9              | 2.0              | 1.9              | 6.1              | -1.2             |
| **TFP**                         | B                | -0.2             | 0.2              | 0.8              | -0.6             | 2.1              | -1.4             |
| **Land expansion (extensification)** | C               | -0.4             | 0.0              | 0.1              | 0.1              | 2.0              | -1.2             |
| **Input intensification**        | D=E+F+I          | 1.8              | 0.7              | 1.0              | 2.4              | 2.0              | 1.4              |
| **Labor**                       | E                | 0.4              | 0.4              | 0.9              | 0.7              | 0.6              | 0.4              |
| **Capital input**               | F=G+H            | 0.7              | 0.1              | 0.1              | 1.0              | 1.0              | 0.5              |
| **Livestock**                   | G                | 0.3              | 0.0              | 0.0              | 1.0              | 0.9              | 0.5              |
| **Machinery**                   | H                | 0.4              | 0.1              | 0.0              | 0.0              | 0.0              | 0.1              |
| **Intermediate input**          | I=J+K            | 0.7              | 0.2              | 0.1              | 0.8              | 0.5              | 0.5              |
| **Animal feed**                 | J                | 0.0              | 0.0              | 0.2              | 0.3              | 0.2              | 0.2              |
| **Fertilizers**                 | K                | 0.6              | 0.2              | -0.1             | 0.4              | 0.3              | 0.3              |

\(^{42}\) In addition to severe droughts in 2009 and 2010, 8 floods occurred in Chad in the last 10 years, causing an average of 7.6 deaths per year (World Bank, 2015).

\(^{43}\) For more details about the USDA methodology, kindly refer to (Fuglie and Rada, 2013). The data can be accessed using the following link: https://www.ers.usda.gov/data-products/international-agricultural-productivity.aspx.
Figure 40: Agricultural productivity growth has recently been falling behind other CEMAC countries and aspirational peers

Source: USDA ERS and World Bank staff calculations

A key factor holding agricultural productivity growth in Chad back is the stark lack of functioning input markets. First and foremost, a lack of functioning markets through which high quality, productivity enhancing inputs can be distributed and produce be sold constitutes a key constraint. Therefore, a deeper understanding of market dynamics in the agricultural sector – as provided in the deep dive section below – is necessary to identify specific binding constraints along the value chain.

Additional constraints include a weak research environment and limited access to markets in rural areas. Further analysis of factors behind stagnating agricultural productivity in Chad builds on the existing literature relating to a SSA regional context (Block, 2014; Fuglie and Rada, 2013). Despite the paucity of data, we identified three additional drags on agricultural productivity in Chad. First, Chad lacks a sound research agricultural environment which has been shown to be a major driver of agricultural productivity growth in SSA (Block, 2014; Fuglie and Rada, 2013; Goyal and Nash, 2017). The agricultural research ecosystem suffers from a serious underinvestment as Chad invested less than 0.1 percent of its agricultural GDP on agricultural research in the 2009-2014 period. This ratio is much lower than in most SSA countries (Figure 41), and significantly below the 1 percent threshold required by the Africa Union and the UN. In addition, the lack of skilled and specialized workforce is another impediment to agricultural research (Figure 42). Second and despite some improvements achieved over the past few years, access to financial services in rural areas – where most of agricultural activity in Chad is located – remains modest when compared to the average across SSA and aspirational peers (Figure 43). The limited access to market prevents framers from (i) developing their farms, (ii) getting modern and productive technologies and (iii) efficiently market their agricultural output, among other things.

Notably, conflict has had a significant and negative impact on agricultural productivity. Agricultural productivity in Chad is negatively correlated to the severity of armed conflict as measured by the number battle deaths (Figure 44). This is not surprising given that armed conflicts usually affect agriculture

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44 Ideally, we would have used Geocoded data on crop production to empirically test whether conflict was a drag on agricultural productivity. Unfortunately, and to the best of our knowledge spatial data on crop level is not available in Chad.

45 It should be noted, however, that there is substantial lag between the time spending on R&D occurs and the time the created knowledge is incorporated into more productive agricultural products and cultivation practices.

46 The literature has relied on the number of battle deaths to proxy for the severity of armed conflicts (Lacina, 2006; Lacina and Gleditsch, 2005).
through various channels (Arias et al., 2014; Kimenyi et al., 2014). Conflicts have a direct effect as they destroy and damage agricultural land and indirect effects given that they alter household behavior towards reducing investment as uncertainty increases and markets become less efficient. While these constraints are important, it should be noted again that additional agricultural research and better access to financial markets only allows farmers and ultimately the economy to benefit if there are efficient and competitive markets in place.

Figure 41: Chad allocates a miniscule amount on agricultural spending ...

Figure 42: ... and lacks specialized agricultural researchers.

Figure 43: The percentage of rural individuals with financial accounts is still lower in Chad relative to other comparators.

Figure 44: Agricultural productivity is negatively related to the intensity of armed conflicts.

Furthermore, fiscal support to the agriculture sector has been extremely modest. Over the period 2003-2012, public expenditure on agriculture accounted, on average, for 4.1 percent of agricultural GDP (Ministry of Agriculture and Environment, 2014). This number puts Chad at the lower end of the SSA range of support for the agricultural sector and much lower than the funding allocated in other middle and high-income countries (Figure 45). Moreover, this ratio is significantly smaller than the overall share of agriculture in the economy (about 26 percent over 2003-2012), indicating that Chad spends much less of its public expenditures on agriculture than the sector’s share out of GDP. As a matter of fact, the
government did not adhere to the 2003 Maputo declaration of allocating at least 10 percent of public spending to the agriculture sector within five years as a precondition to reduce poverty (Figure 46). As discussed earlier on, the presence of conflict and related security expenditures may be directly crowding out productive investment in agriculture. It should be emphasized, however, that while spending in agriculture is crucial for the development of the sector, it is of paramount importance that this spending is carried out efficiently and sustainably. As the below analysis will show, even at relatively modest levels, Chadian government spending in agriculture has in fact contributed to inefficiencies in the sector instead of removing bottlenecks to productivity and growth.

Figure 45: Chad lags comparator countries in terms of public spending on agriculture ...

Figure 46: ... which did not reach the 10 percent of public spending as agreed in the Maputo accord.

Agriculture is a crucial stepping stone towards diversification and inclusive growth in Chad, but often government induced distortions in markets dis-incentivize private investment and weigh heavy on performance. To attain sustainable growth, Chad will need to create dynamic agricultural markets driven by the private sector. Here the public sector plays an important role in shaping agricultural markets through various means. First, the government participates directly in markets by providing crucial inputs, such as fertilizer, seeds, and machinery as well as acting as an economic agent through SOEs like CotonTchad or Simatrac or through PPPs as is the case in livestock. Second, the government influences market outcomes indirectly as a policy-maker and regulator. Partially because of the government’s role in agricultural markets, there are few private sector players in Chadian agriculture. Only one agricultural input provider could be identified for this analysis.

47 This target was reaffirmed in the Malabo Declaration in 2014 (Goyal and Nash, 2017).
Inefficient input markets hold back agricultural output growth

Distortions associated with government participation are particularly stark in agricultural input markets. For example, the Government of Chad directly provides most of the fertilizer in the country at highly subsidized rates, while market prices for fertilizer are among the highest in the region. Estimates suggest that the government is responsible for the provision of at least 90 percent of domestic fertilizers, a higher proportion than in most comparator countries (Figure 47). This analysis is based on information available outside the cotton sub-sector, where the SOE, CotonTchad, is responsible for the distribution of all fertilizers. As a result, the overall proportion is likely to be even higher than 90 percent. Subsidized fertilizer prices are roughly 25 percent of the price of the little fertilizer that is traded on the free market. Figure 48 shows that prices for freely traded fertilizers are higher than in most comparator countries for which information is available.49

Figure 47: The Chadian government most fertilizers in the country.

![Graph showing the size of the subsidized state channel as a proportion of the total market size.]

Source: ACF (2016)

Figure 48: The price of Urea in Chad is higher than most comparators.

![Graph showing the average retail price of Urea in Chad and comparator countries.]


Fiscal challenges translate into suboptimal and inconsistent provision of fertilizers and quality seeds. The uncertainty in the market created by the government is a crucial contributor to the absence of the private sector in the provision of fertilizer. The only fertilizer importer that could be identified currently imports only 30 to 40 tons per month.50 Similarly, most certified seeds are provided through subsidized channels and currently only cover about 2 percent of the country’s agricultural land.

For more intensive and productive agriculture, the use of improved inputs is required. However, fertilizer use has not significantly increased in Chad and lags most comparator countries. Low input use – partly driven by market distortions introduced by government intervention – has contributed to stagnating productivity in agriculture. As was shown in Figure 49, agricultural TFP has stagnated since the 1990s. However, the use of land has increased in Chad more quickly than in any of its comparator countries and agricultural labor has risen substantially as well, pointing to an extensification of agriculture as opposed to intensification (see Figure 50-Figure 52).

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48 Estimates based on information provided by ANADER on 2/20/2018 as well as import data from the Atlas of Economic Complexity.

49 Subsidized fertilizer prices range between XAF 6,500 and XAF 8,500 for Urea and NPK. Meanwhile, Urea and NPK traded freely cost roughly XAF 22,000 to 30,000, which is higher than in comparator countries.

50 Interview with Owiayana on 2/21/2018.
Figure 49: Chad lagged comparator countries in terms of Agricultural TFP...

Source: USDA ERS

Figure 50: ... and the use of fertilizers.

Source: USDA ERS

Figure 51: In contrast, it relied largely on labor...

Source: USDA ERS

Figure 52: ... and land accumulation.

Source: USDA ERS
Box 4: Land property rights in Chad are an important factor for agricultural productivity.

In accordance with Loi n° 24 du 22 Juillet 1967, there are two legal regimes guiding land property rights in Chad. The first regime says that land ownership can be obtained via the establishment and registration of a title deed. This document secures the land and makes it indisputable. The document can also serve as a collateral for potential lenders at the bank. Under this regime, registered properties can be transferred freely between legal Chadian Nationals.

The second regime relates to customary rights in, mainly, rural areas. All unregistered land is considered “vacant and without master” unless there is an evidence that states otherwise. This evidence can be the title deed or the official recognition of the development use of the land which varies according to region and soil exploitation. Nevertheless, the state reserves the right to: (1) register vacant land in its name; (2) seize the land and compensate the owner; (3) propose other equivalent rights to the owner. Unfortunately, this unregistered land cannot be used as collateral at the bank.

The customary rights regime places a constraint on agriculture development in Chad. First, land in rural areas is usually unregistered as they were given in accordance with family tradition. Even if the land is being cultivated, there is a huge uncertainty owing to the lack of title deeds. Hence, it can be taken over by the state or even by the so-called “Chiefs of Land”. This makes farmers less likely to cultivate on unregistered land. Second, the lack of title deeds implies less access to finance as the farmer cannot use the land as collateral at the bank. In other words, farmers are unable to acquire the necessary inputs such as improved seeds, new machinery and fertilizers to not only expand production but also boost productivity.

Property rights are important for agricultural productivity and reform will be needed in Chad in the medium term. Well defined property rights enhance productivity in various ways. As well as land titles being used as collateral to access finance required for productivity-enhancing investments, functioning markets for agricultural land can ensure a reallocation of land to its most efficient use (see Chari et al, 2017). While the increasing use of agricultural land in Chad in recent years (see figure 52) might hint that land availability has not constituted a key binding constraint to agricultural growth in the past, reform will be needed in the medium term to complement market reforms to incentivize farmers to respond to profit opportunities and to allow investments in efficient activities.

Government intervention has contributed to inefficient outcomes in the cotton value chain but privatization is no panacea

The cotton sector was the backbone of Chadian agriculture, but major inefficiencies prevent productivity gains in line with its potential. Cotton has traditionally been the most important cash and export crop in Chad. It remains one of the few agricultural value chains (if not the only one) that boasts industrial processing capacities. Even though it has lost its status as Chad’s most important export product, the government and numerous analyses suggest that it can play an important role in the future.51

Until recently, the government managed the entire cotton value through its SOE “CotonTchad”, but has been struggling to ensure performance of the chain. As a result, the value chain is currently undergoing partial privatization. Yields have been stagnant in recent years and have even decreased below levels in the 1990s (Figure 53). Partially as a result, production has decreased as well in the past years (Figure 54). From the 2016/17 to 2017/18 season, production declined by 87%, from 186,000 tons to 25,000 tons.52 Given the difficulties in the value chain, stakeholders agreed in August 2017 to liberalize the value chain and as of April 2018 the government no longer the primary actor in the value chain.

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51 See for example DTIS (2013).
52 Interview with Olam on 2/19/2018.
Low cotton yields are partially due to low use of fertilizer -the government has only been providing a quarter of recommended fertilizer amounts to farmers. Fertilizer and seeds have been exclusively provided to farmers by the SOE CotonTchad. Even though most synthesized fertilizer used in Chad has been dedicated to cotton, fertilizer provision has been insufficient. CotonTchad’s tender documents for the 2018/19 season specify the provision of 2 bags of 50kg of NPK and 1 bag of Urea per hectare. This is half of the recommended use. CotonTchad has provided even less, namely around 25 percent of the recommended amounts. Usually, CotonTchad purchases fertilizers on the international market in November of each year in preparation of the season which begins around half a year later. For the 2018/19 season, CotonTchad had not purchased fertilizer by February 2018. Private players have not been able to fill the gap in fertilizer provision left by the government since CotonTchad has been providing fertilizers at highly subsidized prices and in return for produce at the end of the season, on which the SOE maintains a legal monopsony.

Beyond input markets, the government participates directly in all steps along the cotton value chain. The government mostly intervenes through its SOE, CotonTchad, which functions as a vertically integrated enterprise that is involved in every single value chain segment from input provision to export of cotton fibers (Figure 55). CotonTchad’s dominance along the value chain is largely based on its legal monopsony for unprocessed cotton, which has translated into a de facto monopoly along the rest of the value chain in the past.

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53 Interview with Olam on 2/19/2018.
54 Idem.
55 Idem.
56 Interview with CotonTchad on 2/22/2018.
Overall, public intervention in the cotton sector has hindered market functioning and contributed to the value chain’s sub-optimal performance. CotonTchad’s management of the entire value chain has introduced significant constraints on competition and optimal market functioning. Figure 56 summarizes the key restrictions.

On-going privatization efforts risk falling short of addressing key constraints. Existing restrictions have been carried forward into the on-going privatization process, which seems to miss important opportunities to open the sector by transitioning the value chain from a monopolistic market structure to an equally inefficient one with a highly dominant private firm. In April 2018, the agriculture giant Olam
purchased 55 percent of CotonTchad and proposed several reforms to the cotton value chain in Chad. According to the proposal, one of three production areas would be managed by Olam directly, one would remain under the management of CotonTchad and one would be tendered to a third, private operator. Produce from these would be sold through Olam distribution channels. Furthermore, the only mill in the country would be owned by Olam, CotonTchad and the new third player to equal parts, but given Olam’s ownership of CotonTchad, Olam would be a de facto majority shareholder. Since Olam now owns the majority of CotonTchad and given the proposed new structure, the value chain would essentially transition from a public monopoly to a market structure with Olam as dominant player. Global and regional competition is unlikely given that Olam is the second largest cotton company globally and holds significant market share elsewhere in the region.

Notably, it remains unclear whether the monopsony on unprocessed cotton would be lifted. If CotonTchad/Olam continue to provide inputs to farmers on credit (or in return for produce at the end of the season), farmers would remain bound to one purchaser (even if the monopsony for CotonTchad is abolished), limiting farmers’ choice. At this point it is unclear whether the monopsony on unprocessed cotton currently held by CotonTchad will be maintained (and extended to the third, currently unknown market participant). Without the abolishment of the monopsony, farmers will not be able to benefit from competition for their products, limiting potential benefits of competition on their incomes. However, even if the market for buying raw cotton is more fully opened, continuation of price negotiations among industry players could serve as a focal point for collusion in the future. Lastly, it appears that CotonTchad/Olam would continue to dominate downstream value chain functions (ginning and milling), potentially hampering incentives for innovation and productivity (see Annex 6 for a summary of restrictions on competition likely to remain after liberalization).

Removing restrictions on competition in the cotton sector in the context of comprehensive market reform could lead to substantial benefits. Enabling the functioning of the input market to ensure optimal input use would lead to substantial increases in production, farmer incomes and export revenue. By raising current cotton yields through pro-competition reforms in the input market by 86.5 percent from currently 218 kg/ha to yields of 406.6 kg/ha, which corresponds to the average yield of regional leaders (Burkina Faso, Mali, Niger, Cameroon, and Ivory Coast) and assuming constant land use, production, farmer incomes and export revenue could increase by an equivalent proportion. However, increasing fertilizer use to the recommended amount at current free market fertilizer prices would exceed farmer income. As a result, the value chain requires more comprehensive reform to ensure increased prices of unprocessed cotton through competition for farmers’ produce and lower fertilizer prices through competition on the fertilizer market.

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57 Based on interview with Olam on 2/19/2018.


The government’s role in the cotton sector may negatively impact resource allocation across the whole agricultural sector

Public intervention in the cotton value chain has contributed to misallocation of scarce resources across the agricultural sector. Farmers have reportedly shifted frequently in recent years from cotton to different value chains, such as sesame, depending on relative ease of access to inputs and on their respective potential profits. Government support in favor of cotton, for example through the provision of inputs, has biased farmers’ decision making against other value chains potentially offering higher returns or more promising growth prospects. Similarly, as Figure 52 showed, land dedicated to agriculture in Chad has increased faster than in comparator countries, intensifying existing conflicts over land between farmers and pastoralists. Livestock is another crucial sector of the economy, which also has interlinkages with cotton and other crops – both in terms of the use of crop byproducts as animal feed but also in terms of the amount of land allocated to various uses. Figure 57 summarizes the relationship between the cotton value chain and the sesame and livestock value chains and highlights areas of competition between them, showing the potential effect of government support to cotton on overall resource allocation across the economy.

Figure 57: Government intervention in the cotton value chain affects resource allocation across various crucial value chains in the economy

This is particularly relevant as many agricultural product markets beyond cotton depend on public provision of inputs. ANADER, the government’s agricultural extension agency, is tasked with procuring and distributing inputs for all value chains except for cotton. In the past, the government also procured and provided agricultural machinery.\(^6\) As in cotton, inputs have been provided at highly subsidized prices, making it difficult for the private sector to compete. For a 50kg bag of NPK ANADER charges XAF 7,500 XAF and for a 50kg bag of Urea, the government charges XAF 8,500. Both prices are equivalent to roughly 25 percent of the prices charged by the few private players. ANADER extension agents are responsible for assessing demand and allocating fertilizers among farmers. However, according to ANADER, the government currently has between 500 and 600 extension workers, whose discretion determines the allocation of fertilizers. Considering information asymmetries and in-transparencies in matching scarce inputs according to the needs of farmers allocation is likely subject to large inefficiencies. Error! Reference s

\(^{6}\) For example, the government procured 5,000 tractors, of which only few remain functional today.
Box 5: Subsidies may have significant distortionary effects.

While subsidies for agricultural inputs are often put in place to achieve sound policy objectives (e.g. to enhance agricultural productivity, increase farmer incomes, increase food security, and ultimately alleviate poverty), they can have distortionary effects in the market. For example, they may distort the private sector input market, artificially driving the market price down and preventing the private sector from competing with subsidized products on a level playing field. Low costs may also induce farmers to overuse, or switch to inefficient input-intensive production systems.

In many cases, less distortive interventions to support farmer incomes are available to governments. For instance, governments might encourage and support farmers to collaborate to carry out bulk purchases of inputs. Governments can also set up demand-side voucher systems to provide for subsidized inputs. If properly administered, such schemes are generally less distortive of market systems than direct subsidies since they provide consumers with more choice of suppliers and allow supplier outcomes to be better linked to performance. Such systems have been implemented in several African countries, including Tanzania, Malawi, Mozambique and Zambia, among others, allowing for working towards the respective governments’ policy objectives as well as allowing for private sector competition in the provision of inputs.\(^{61}\)

Source: Seini et al. (2011); World Bank (2004); Takeshima and Lee (2012)\(^{62}\)

Although few formal restrictions on competition exist, direct government involvement creates risk for the private sector. Highly subsidized prices make it difficult for the private sector to compete in seasons in which the government provides fertilizers. Furthermore, the government’s inconsistent provision dependent on revenues creates uncertainty for the private sector.\(^{63}\) For a summary of regulatory restrictions to fertilizer provision, see Table 9. Similarly, the provision of seeds largely depends on government. The state-owned Institut Tchadien de Recherche pour le Développement (ITRAD) holds a monopoly on the production of pre-base and base seeds, which are multiplied either by ITRAD itself, by NGOs or by few private farmers. No license is required to multiply seeds, but only few private actors appear to multiply seeds. Similarly, no import licenses are required for seeds.\(^{64}\) While the government does not import seeds, some private players appear to do so more or less formally. Certification of seed is done exclusively by the government through the Direction des Sémences of the Ministry of Agriculture. Distribution of seeds multiplied by ITRAD is carried out through government extension services at subsidized prices. Similarly, some NGOs, sometimes supported by international donors provide seeds at subsidized prices or free of charge. The few private seed providers do so through their private channels, often selling seed at their farm following multiplication (for a summary of regulatory restrictions in the seed market, see Table 9).

\(^{61}\) See the example of the United Republic of Tanzania (2014) for a study on the National Agricultural Inputs Voucher System implemented, and Mangisoni et al. (2007) for results in Malawi, Mozambique and Zambia.


\(^{63}\) In an interview, the only formal provider of fertilizers highlighted his concern that if the government generates the revenue to re-engage in fertilizer provision, he will have difficulties staying in the market (interview with Owiayana on 2/21/2018).

\(^{64}\) This is expected to change with the expected implementation of a new seed law, which is currently being drafted.
## Table 9: Restrictions on entry as well as an unlevel playing field distort seed and fertilizer markets in Chad

<table>
<thead>
<tr>
<th>Seed</th>
<th>Fertilizer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Restrictions on entry</strong></td>
<td></td>
</tr>
<tr>
<td>The government provides seeds below market price making it difficult for the private sector to compete</td>
<td>The government provides fertilizer below market price making it difficult for the private sector to compete: ANADER, for example, charges 8,500 XAF for 50kg of Urea compared to the price of 22-30,000 XAF on the open market</td>
</tr>
<tr>
<td>The inconsistent government’s involvement in the seed value chain creates uncertainty for the private sector, which can inhibit investment and act as a barrier on entry</td>
<td>The inconsistent government’s involvement in the fertilizer value chain creates uncertainty for the private sector, which can inhibit investment and act as a barrier on entry</td>
</tr>
<tr>
<td>The government holds a monopoly in the production of pre-base and base seed, which could potentially limit the availability of certified seeds. While this is common in many countries, the government could consider allowing pre-base and base seed provision through private stakeholders under strictly monitored conditions.</td>
<td></td>
</tr>
<tr>
<td>Similarly, the government holds a monopoly on seed certification, which can lead to inefficiencies. However, this is also the case in most other countries</td>
<td></td>
</tr>
</tbody>
</table>

**Discrimination, protection of vested interests, and creation of an unlevel playing field**

<table>
<thead>
<tr>
<th>Seed</th>
<th>Fertilizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base-seed by ITRAD needs to be allocated transparently and based on merit to avoid discrimination and an unlevel playing field</td>
<td></td>
</tr>
<tr>
<td>Distribution of seeds is based on the discretion of a limited number (500-600 according to ANADER) of government extension agents instead of a market mechanism that would ensure efficiency, which risks leading to discrimination and an unlevel playing field</td>
<td>Distribution of fertilizer is based on the discretion of a limited number (500-600 according to ANADER) of government extension agents instead of a market mechanism that would ensure efficiency, which risks leading to discrimination and an unlevel playing field</td>
</tr>
</tbody>
</table>

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Recent consolidation to stem the fiscal crisis further aggravated the mismatch between public provision and demand of inputs. In fact, the government has not been able to provide any fertilizer at all and the few private importers provide only negligible amounts. After providing no public inputs in the 2017/18 season, as of February 2018, the government was struggling to supply any for the 2018/19 season. Even in years when the government did distribute inputs, it could not provide sufficient amounts. In 2015/16, ANADER imported only around 6 to 8 percent of total estimated demand. 65 The only formal private wholesaler of fertilizer that could be identified currently imports 30 to 40 tons of fertilizer per month compared to an estimated annual demand of 60,000 tons not including the cotton value chain. 66 Furthermore, there appear to be some informal fertilizer providers, which often provide just a few bags. The country does not produce any synthesized fertilizer. In 2013/14, the government provided certified seeds for only 2 percent of overall surface area and 6 percent of area dedicated to sesame production.

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65 According to ANADER, demand was estimated to be around 60,000 tons, but ANADER only provided between 3,500 and 5,000 tons (Interview with ANADER on 2/20/2018).

66 Interview with ANADER on 2/20/2018.
Therefore, improving the regulatory framework for agricultural inputs and de-risking private sector participation could lead to sizeable benefits, for example in the sesame value chain. Pro-market reforms could unleash sustainable private provision of fertilizers and significantly increase sesame yields from a currently low level of 485 kg/ha. A 106.2 percent increase in yields to 1000 kg/ha—a feasible assumption as such yields are exhibited by more efficient producers—would lead to an equivalent increase in production and farmer incomes, ceteris paribus. Unlike in the cotton value chain, the required increase in fertilizer use would be affordable to sesame farmers even if prices remained at current levels, which is arguably due to the absence of restrictions in downstream functions of the sesame value chain.

It should be noted that import restrictions do not appear to constitute a significant constraint on competition—instead it is domestic policies that seem to hinder entry. In agricultural inputs, there appear to be very few import restrictions in place at present. With the current absence of a seed law, seed can be freely imported. Similarly, there are few if any formal requirements for the import of fertilizer. This and interviews with private sector players in Chad would suggest that domestic policies—by creating uncertainty and an unlevel playing field—constitute the primary constraint to private sector participation in agricultural input markets. Box 6 provides some examples of successful pro-competition reforms in agriculture around the world.

**Box 6: A cross section of successful pro-competition reforms in agriculture.**

<table>
<thead>
<tr>
<th>Kenya</th>
<th>Issue: Monopsony on pyrethrum flowers, input to the production of pyrethrin, an organic insecticide</th>
<th>Reform: Removal of the monopsony</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In 1980, Kenya was the world’s leading supplier of pyrethrin, an organic insecticide made from the pyrethrum flower. Since then, Kenya’s share of the world market has fallen from 82 percent to only 4 percent (2009). This was in part due to the existence of a statutory state monopsony on the purchase of pyrethrum flowers for the Pyrethrum Board of Kenya, as well as a monopoly on the production of pyrethrin. The removal of the monopsony helped unlock investment opportunities in the pyrethrin sector for at least two local companies and potentially three international investors and benefits close to 40,000 farmers who will be able to grow and sell pyrethrum to new manufacturers and exporters.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Issue: Barriers to entry imposed by incumbent tea producers</th>
<th>Reform: Opening of the market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-competitive market rules in Kenya’s tea industry were preventing a valuable new product—purple tea—from getting to market. Rules governing the industry enabled incumbent tea producers to block entry of new producers into the market. The removal of this market barrier by the Competition Authority of Kenya (CAK) created an enabling environment for new investment in the purple tea market, which—according to projections—has the potential to make up 5% of overall tea exports, equivalent to USD 60 million over the next 3 to 5 years. This is likely to benefit the estimated 3 million Kenyan families who rely on tea for their livelihoods.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Honduras</th>
<th>Issue: Discretionary procedures allowed for discrimination against certain agricultural input suppliers</th>
<th>Reform: Improved procedures for the registering of new inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key agriculture inputs in Honduras are very costly and of poor quality when compared with neighbouring countries, which has partly resulted from arbitrary and inconsistent implementation of regulations. Although intended to ensure the safe use of fertilizers and pesticides, this allowed for advantageous treatment of some suppliers while limiting the competitiveness of small and new firms, thereby limiting investment in the sector. The Honduran government enforced process manuals that shortened time and improved consistency in registering new fertilizers. As a result, investment opportunities have been created: 3 times as many fertilizers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Rwanda

**Issue:** Low farm gate prices resulting from non-competitive produce purchases by two SOEs

**Reform:** Introduction of competitive bidding process between SOEs

Developing a competitive bidding process for purchases of tea leaves from farmers by two state-owned tea factories led to a 35 percent increase in the incomes of 65,000 farmers.


**Public Private Partnerships in the livestock value chain require prudent contract design to ensure a level playing field**

The livestock sector is central for employment and primary sector output in Chad. Livestock is responsible for 30 to 40 percent of employment and contributes 12 percent to GDP. However, the use of land for agricultural production directly impacts the availability of land for herding, creating significant tensions between farmers and herders.

**There are significant linkages between livestock and other value chains of the primary sector.** Many farmers, particularly in the South, complement their agricultural production with livestock rearing. Furthermore, market dynamics in the livestock sector are shaped to some extent by crops markets given the interlinkages between the two value chains. By-products of important agricultural value chains can be used as inputs to the livestock value chain. For example, cake, a by-product from the production of cotton and sesame oil, can be used as animal feed. In addition, the use of land for agricultural production directly impacts the availability of land for herding, creating tension between the use of land for crops and livestock as well as farmers and herders (see Figure 57). Thus, policies and interventions that affect the crops sector have spill-over effects into the livestock sector as they shape the availability and price of inputs for livestock.

**The government aims to develop the sector through public private partnerships (PPPs), however, the underlying rationale for government participation is weak.** The government participates in the livestock value chain through a public private partnership (PPP) in the only functioning abattoir/slaughter house at Farcha just outside of N’Djamena (with another slaughter house PPP currently planned). But government participation is not clearly motivated by economic arguments. Generally, the livestock sector does not exhibit any clear market failures justifying direct government participation.

In such an environment, competitive PPP tender procedures and competitive neutrality could minimize the risk of distortions. However, currently it is unclear whether partners in PPPs are chosen on a competitive and non-discriminatory basis (for an overview of public procurement in Chad, which given the absence of a PPP law also governs tenders for PPPs, see Box 7). To ensure competition on a level

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68 DTIS (2013).

playing field, the government-owned slaughterhouse needs to receive the same regulatory and financial treatment as (potential) private competitors (see below discussion of competitive neutrality).

**Box 7: Public Procurement in Chad.**

| The procurement law requires competitive bidding above a threshold amount. | Competitive bidding is required above a threshold of XAF 10 m (less than USD 20,000), which is relatively low in comparison regional comparators for which data is available. However, the procurement code risks affecting the level playing field by allowing the preferential treatment of domestic firms compared to foreign enterprises if the price differential does not exceed 15 percent. |

| The proportion of contracts awarded through non-competitive procedures has decreased in recent years. | As Figure 58 shows, the proportion of government contracts (both in terms of value and by number) that have been exempted from competitive procurement methods has continuously decreased in recent years. Only in 2017, the proportion has increased again, which might merit some attention. |

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**Figure 58: Proportion of procurement contracts exempted from competitive bidding (2008-2017)**

Taxation further un-levels the playing field in the Chadian livestock sector. The government discriminates exporters by taxing processed meat for export more than meat for domestic consumption. This seems to be in direct contradiction to the policy objective of export diversification. Meat for the local market is taxed at XAF 56 per kg, while meat destined for export markets is taxed at XAF 58 per kg. Furthermore, meat processed in slaughterhouses is subject to higher taxes than the equivalent slaughtered in unhygienic, often informal open-air slaughter areas. This in turn discriminates against formal players adhering to higher hygienic and quality standards.

4. **Deep Dive: Connecting ICT Telecom**

Telecommunications services are a key input for private sector development, public service delivery and overall growth in Chad, however, the sector remains underdeveloped. Chad’s ICT sector is one of the least developed in Sub-Saharan Africa. Chad has a low number of mobile telephone subscriptions and a low internet penetration rate, even by regional standards (Figure 59 and Figure 60). Globally, only the

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70 The threshold is considerably lower than in Cameroon and Angola, for example, where the thresholds are in the hundreds of thousands of dollars.

Central African Republic and Eritrea score worse on the International Telecommunication Union’s (ITU) ICT Development Index (IDI). In the region, Chad trails all countries except for the Central African Republic (Figure 27).

**Figure 59:** Chad suffers from low mobile subscriptions...

**Figure 60:** ...and extremely low internet penetration.

**Figure 61:** As a result, it underperforms vis-a-vis regional peers on the ICT Development index

**Figure 62:** Mobile cellular bundle cost as a proportion of the average monthly income are prohibitively high in Chad (shown by income group for 2014)

High prices are an important contributor to low penetration and access rates in Chad. The cost of voice service and SMS usage represented more than 20 percent of monthly gross national income (GNI) in 2014, compared to an average of 14 percent for all least developed countries.\(^\text{72}\) For the bottom 20 percent of Chadians, a voice and SMS bundle costs the equivalent of 87 percent of monthly income (Figure 62).

Underlying high operating costs are partly driven by inefficient taxation which risks hampering sector performance. Taxes amounted to nearly 50 percent of operators’ revenues in 2015,\(^\text{73}\) but might be as high as 60 percent today.\(^\text{74}\) In 2015, taxes from the mobile telecommunications sector made up 12 percent of overall government tax revenue.\(^\text{75}\) Given the high level of taxation, it is often argued that taxation is responsible for the poor outcomes in the sector. In fact, the introduction of a tax on incoming

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\(^{72}\) Deloitte. 2016. Digital inclusion and mobile sector taxation in Chad, p. 4.

\(^{73}\) Idem.

\(^{74}\) Interview with Tigo Tchad on 2/21/2018.

\(^{75}\) Deloitte. 2016. *Digital inclusion and mobile sector taxation in Chad.*
international calls of XAF 50 per minute (ca. USD 0.08) has contributed to a 27 percent decrease in international incoming traffic between 2013 and 2015, even though overall traffic has increased over the same period. It appears therefore that the government has prioritized short-term revenue generation over a vibrant private sector providing a critical input for the economy in the long run.

However, prices remain high even after considering taxes and regulatory fees, suggesting that a lack of competition might be another important factor. Even after deducting tax and regulatory fee payments, prices for the cheapest available mobile broadband 1GB remain high in comparison to other countries, for which data is available (Figure 63). The discrepancy is even larger when taking the cost of the bundle for one year as a proportion of GNI per capita (Figure 64).

**Figure 63: Mobile broadband prices in Chad are higher than in comparator countries...**

![Image](image1.png)

Source: Airtel Chad, GSMA (2016), WB (2015): South Africa Economic Update Background Note, WDI.

**Figure 64: ...and the discrepancy increases when taking the cost of the bundle as a proportion of GNI.**

![Image](image2.png)

Source: Airtel Chad, GSMA (2016), WB (2015): South Africa Economic Update Background Note, WDI.

The Chadian mobile market is highly concentrated, which is not a problem per se if the regulatory and competition policy frameworks ensure competitive markets. A comparison of Herfindahl-Hirschman Indices (HHI) shows that among Chad’s comparator countries only Mali exhibits a higher level of concentration (Figure 65). High market concentration does not automatically lead to uncompetitive outcomes (e.g. under Bertrand competition two players are enough to reach a competitive price), however, the regulatory framework and a strong competition authority with the capacity to detect and persecute anti-competitive behavior constitute important safeguards. In Chad, the sector is dominated by two players: Airtel (Bharti Airtel) and Tigo (Millicom) accounted for 96 percent of all mobile connections in 2017. The mobile market represents the most important telecoms market in Chad, accounting for almost 96 percent of the revenue of the entire sector in 2015 (XAF 172 bn out of XAF 180 bn). Providing 57 percent of mobile connections, Airtel is currently the largest provider of mobile services (Figure 66). Tigo follows with 38 percent of connections, while the state-owned operator Sotel lags the others with a market share of only 5 percent.

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76 WBG. 2017. *Information and Communications Technology (ICT) and Digital Economy in Chad.*

77 Concentration levels are classified as follows: 1) Unconcentrated Markets: HHI below 1,500, 2) Moderately Concentrated Markets: HHI between 1,500 and 2,500, 3) Highly Concentrated Markets: HHI above 2,500 (Horizontal Merger Guidelines 2010; U.S. Department of Justice and Federal Trade Commission).

78 GSMA Intelligence (2018).

79 WBG. 2017. *Information and Communications Technology (ICT) and Digital Economy in Chad.*
However, the regulatory framework includes restrictions in key segments of the value chain and is not designed to ensure competitive outcomes. Figure 67 summarizes the key constraints to competition along the telecommunications value chain, and shows that restrictions exist for most value chain segments.

At the level of connectivity to the international backbone, Chad is dependent on a single gateway that is a legal public monopoly. While it is obvious that additional international connections are necessary and Chad is currently working on bringing two additional fiber optic cables online, the potential benefits are likely to be eclipsed by the fact that a public monopoly on the international gateway raises costs and risks creating an unlevel playing field. Even though international connectivity had already been liberalized, it was turned back into a government monopoly in 2014 and is currently managed by the ICT promotion agency ADETIC through the private French contractor Aztelco. The prices for the international gateway

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80 WBG. 2017. Information and Communications Technology (ICT) and Digital Economy in Chad.
are set by ADETIC and Aztelco after consultation with ARCEP, the sector regulator. Already in 2004, the private operator Tigo had attempted to set up an international gateway, but was stopped by the government without apparently a clear legal basis. Box 8 provides an overview of experiences with opening the international gateway from other African countries.

**Box 8: Experience with opening international gateways to competition have been positive across Africa.**

The experience of African countries clearly demonstrate that opening the IGW market has the potential to deliver significant benefits, both to consumers and to the economy. It appears that consumers benefit from liberalization of IGWs either when governments allow the entry of competing IGW service providers, including mobile operators, or when competing operators provide IGW services by accessing the existing gateways of the incumbent operator. Prices tend to be lower in countries with competing international gateways than in countries with just one submarine cable. According to a GSMA study, average international call prices in countries that were liberalizing fell by as dramatic an extent as 90 percent in the years immediately following full liberalization (GSMA 2012). In Kenya, for example, international calling prices decreased by 70 percent after mobile providers obtained IGW licenses. Likewise, in Nigeria, prices fell by 90 percent. In the aftermath of IGW liberalization in Tanzania in 2005–06, international prices fell by 57 percent and mobile international tariffs by 68 percent. Evidence shows that the introduction of competition not only lowers prices, but also stimulates demand and leads to increased traffic. For example, the GSMA observed that the volume of international traffic increased by 40 percent in Kenya and by 65 percent in Nigeria after liberalization.

In addition to having a positive impact on voice services, competition in the IGW market can also lower prices for access to the Internet. Overall, the opening of the IGW market to competition increases consumer welfare by lowering prices, higher volumes of international traffic, and higher-quality telecommunications services as competition between multiple providers leads to improved and more reliable international connectivity.


Given its network industry nature, the telecommunications sector requires but is currently lacking active pro-competitive regulation. There is currently no regulation on the sharing of domestic infrastructure and uncertainty regarding the use of domestic fiber optics to provide internet services. While the regulator argues that infrastructure sharing is encouraged by the law,82 no formal regulation to that extent exists. Furthermore, the government’s stake in the SOE Sotel has led to policy uncertainty around the use of domestic fiber optic networks. When Tigo attempted to provide internet services through a fiber connection laid in N’Djamena, it was stopped by the government on the basis that Sotel was granted a legal monopoly on the use of a domestic fiber connection elsewhere in N’Djamena.83

Similarly, there is a lack of pro-competitive regulation of mobile services. Interconnection rates, which are perceived to be high in Chad, are not currently regulated, but are the result of a negotiation between the various operators. The regulator does not mandate number portability, limiting the consumers’ ability to switch operators. Mobile money operations are regulated restrictively, constraining an important service. For example, mobile money services can only be provided by operators in collaboration with a licensed financial entity, such as a bank. Access to scarce infrastructure, channels and services important for mobile money services, e.g. unstructured supplementary service data (USSD), short codes and payment switches, is not regulated. Operators are not mandated to ensure the interoperability of their systems and agents work exclusively for one operator.

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81 For example, “In Kenya, prior to liberalization of the international gateways, the incumbent subjected ISPs to sudden and enormous price as well as technical problems which, for instance, meant that the country did not have access to the global Internet for an entire weekend in August 2004” (GSMA 2012).

82 Interview with ARCEP on 2/21/2018.

83 As of February 2018, the matter was in legal recourse.
Several cross-cutting constraints on competition remain. The Universal Services Fund (USF), designed to increase coverage and penetration, is managed with limited transparency. Instead of funding its original purpose, the USF has provided funding to the SOE Sotel,84 violating competitive neutrality principles.

Implementing pro-competition regulatory reforms would yield significant benefits for Chad. As highlighted above, the empirical literature shows that competition in telecommunications increases penetration, improves quality and decreases prices. This is likely to increase productivity, welfare and thereby enhance overall growth. Given the high costs, low penetration, and poor quality of telecommunications services on the one hand and the numerous constraints on competition in the sector on the other, it stands to reason that pro-competition reforms could have a large positive impact on the Chadian economy. Box 9 highlights some examples of pro-competition reforms in the telecoms sector around the world.

84 WBG. 2017. Information and Communications Technology (ICT) and Digital Economy in Chad.
Box 9: A cross section of successful pro-competition reforms in ICT telecom.

The below examples from Kenya, Rwanda, and Colombia highlight examples of successful reforms aimed at tackling barriers to competition in the telecoms sector resulting from a lack of pro-competition government interventions.

Kenya

**Issue:** Increasing dominance of one provider of mobile money services

**Reform:** Opening the market and removing barriers to entry

Safaricom’s MPESA mobile money service grew to become a dominant player on the Kenyan market and smaller/potential competitors began raising complaints to regulators that existing regulation and Safaricom’s behavior inhibited their ability to enter and expand in the mobile money market. One key reason was the existence of exclusive contracts signed between Safaricom and its mobile money agents, barring them from offering services competing with MPESA. The Competition Authority of Kenya (CAK) reached a settlement with Safaricom that terminated agent exclusivity. Since then, the number of exclusive agents has dropped significantly, while MPESA’s competitors have been able to grow their agent networks and the profitability of mobile money agents, essentially MSMEs, has increased, particularly in rural areas. Following these initial successes, CAK has been working on removing further constraints on competition, including conditions on the market for unstructured supplementary service data (USSD; an essential facility for the provision of mobile money services) and the lack of interoperability between competitors’ services and MPESA.

Rwanda

**Issue:** High mobile termination rates benefitting the largest operator

**Reform:** Regulatory reform continuously decreasing termination rates

In Rwanda, mobile termination rates (MTR) – the fee paid by operators to terminate their subscribers’ calls on another mobile network – were up to 60% higher than in Tanzania, Kenya, and South Africa. These high MTR benefitted only the largest operator and limited pricing options for competitors. As a result, Rwandan consumers paid higher tariffs for calls and SMS than consumers in the region. In August 2017, the government gazetted regulations that will gradually reduce MTR. By January 2019, MTR in Rwanda are expected to be 2RWF/min, down from the current MTR of 20RWF/min: representing a 90% reduction that should lower consumer prices.

Colombia

**Issue:** Spectrum allocation risked increasing dominance of one operator

**Reform:** Bidding process for spectrum explicitly fostering entry of new players

The Colombian competition authority, the Superintendence of Industry and Commerce (SIC), realized in 2011 that an open, unrestricted auction of 4G spectrum would result in the continued market dominance of one single provider. As an alternative, SIC proposed breaking up spectrum into two blocks with the dominant player only able to compete for one. The other block was reserved for new entrants. As a result, the market saw the entry of two new players. The resulting increased competition stands to benefit millions of consumers in a sector that provides a significant contribution to GDP and is growing rapidly.

D. ESCAPING THE LABYRINTH: HOW TO PACE THE POLICY RACE

A menu of complementary macro and microeconomic policies could lead Chad towards a sustainable and dynamic growth path. Based on analysis presented in previous chapters, this section proposes economy-wide and sectoral recommendations with short and long-run impact that could help Chad turn key constraints into opportunities for sustainable and inclusive growth.

The policy agenda targets the critical interface between public and private sector with the ultimate objective to maximize synergies between government policy, SOEs and private firms. The Public Private interface for growth connects the real and fiscal economy through fiscal policy and public investment, market regulation and direct state participation through SOEs. The proposed selection of policies attempts creating optimal conditions for public and private sector complementarities to drive inclusive and sustainable growth. Ultimately, it can contribute to 3 growth enhancing dynamics: (a) increasing fiscal space for macro stability; b) increasing private sector participation through strategic use of public investment and competition policy to crowd in private investment; and (c) economic diversification.

Eventually, the current vicious cycle preventing private investment into the non-oil economy will be broken and a virtuous one should power faster and sustainable growth. Currently, an inefficient public policy mix entails macroeconomic vulnerability, constrained fiscal space and an expensive business environment, where little public investment crowds out private investment and both growth and fiscal revenues are largely dependent on the oil sector. The entry point for policy to kick start a virtuous cycle therefore encompasses fiscal and pro competition policies. Fiscal policy should be able to manage cycles or commodity price related volatility and target revenue mobilization and management – thereby creating space to engage in strategic investment spending. Pro-competition market policies at economy and sector levels create a conducive business and investment climate, allowing private firms to allocate resources productively and compete efficiently. These macro and micro policies are highly complementary and sustainable private sector driven growth can only emerge if both policy areas are developed in parallel.
Figure 68: Policies creating an efficient public private interface can break the vicious and kick start a virtuous cycle entailing a dynamic private sector, economic diversification and fiscal space.

**POLICY - inefficient public-private interface:**
- procyclical fiscal policy
- low, non-strategic public investment
- anti-competition regulation
- unlevel playing field between public and private sector

**POLICY - Increasing efficiency of public private interface:**
- countercyclical fiscal policy
- strategic and increasing public investment
- pro-competition regulation
- competitive neutrality between public and private firms

Source: World Bank staff
Economy wide policy recommendations

This section examines economy wide policy recommendations that could help Chad achieve a sustainable and resilient growth path. The recommendations aim to promote effective fiscal policy for macro stability and strategic public investment, strengthen good governance, and encourage private sector participation (Table 10).

Figure 69: Economy wide policies interact directly with strategic sectoral interventions, giving rise to synergies between public and private investment.

### Table 10: Policy recommendations to tackle economy-wide challenges

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Policy(ies)</th>
<th>Time dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macroeconomic shocks</td>
<td>Maintain fiscal buffers by reducing fiscal deficits</td>
<td>Short-run</td>
</tr>
<tr>
<td>Low opportunity cost of conflict</td>
<td>Re-orient government spending toward productive expenditures</td>
<td>Long-run</td>
</tr>
<tr>
<td>Undiversified economy</td>
<td>Strengthen revenue mobilization</td>
<td>Short-run</td>
</tr>
<tr>
<td>Low investment rate</td>
<td>Invest in high-return infrastructure projects</td>
<td>Long-run</td>
</tr>
<tr>
<td></td>
<td>Encourage private sector participation</td>
<td></td>
</tr>
<tr>
<td>Limited private sector participation</td>
<td>Ensure complementarity between the public and private sectors in markets</td>
<td>Short-run</td>
</tr>
<tr>
<td>Lack of economic rationale for government participation</td>
<td>Reconsider rationale for government participation in sectors viable for private sector competition</td>
<td>Short to long-run (depending on)</td>
</tr>
<tr>
<td>Unlevel playing field between firms</td>
<td>Ensure competitive neutrality in market regulation and state support to firms across the economy</td>
<td>Long-run</td>
</tr>
<tr>
<td>Weak governance</td>
<td>Adopt an open data policy</td>
<td>Long-run</td>
</tr>
<tr>
<td></td>
<td>Join the United Nations Convention Against Corruption</td>
<td></td>
</tr>
<tr>
<td>Stagnant productivity</td>
<td>Design a comprehensive energy strategy</td>
<td>Long-run</td>
</tr>
<tr>
<td></td>
<td>Invest in human capital</td>
<td></td>
</tr>
</tbody>
</table>

Source: World Bank staff.
**Fiscal policy offers opportunities to reduce risks, leverage public investment into productive nonoil sectors and kick start a virtuous cycle**

First, effective and countercyclical fiscal policies can increase resilience and assure fiscal space in face of commodity price or security shocks. As an oil exporting country, Chad can benefit from effectively managing its oil revenue stream. The lessons learnt from Botswana are but one example of potential ways to apply fiscal rules to strategically use oil revenues for the creation of macro buffers and funding growth enhancing (human) capital investment. At the same time, Chad’s relatively high incidence of conflict and security related risks since independence have undermined investment and GDP growth. Nevertheless, to (i) mitigate/smooth the negative economic impact of conflict or insecurity, and (ii) to reduce risks of future domestic insecurity, the government could aim at creating fiscal buffers to respond swiftly to shocks or increased demands on public expenditure, while gradually raising opportunity costs of conflict through assuring inclusiveness of provision of public services as well as economic opportunities and growth.

Second, improving short term revenue mobilization will be central to create fiscal space necessary for productive expenditure/investment in the non-oil economy. Several steps could be undertaken in the short-run to increase tax revenues which reached only 8.9 percent of GDP in 2015 compared to 16.2 percent in SSA. The Chadian authorities should identify taxes that offer the greatest return without damaging the poor and review the tax policy structure to eliminate inefficient tax exemptions. More importantly, there is a need to define a mid-term revenue strategy with clear targets and monitoring mechanisms over the short and medium term. As an example, the government of Cambodia made efforts to improve the efficiency and transparency of public finances by adopting, in 2014, a revenue mobilization strategy aimed at tackling tax evasion. This measure has helped boost domestic revenue collection from 15.1 percent of GDP in 2013 to 17.5 percent in 2015.

In practical terms, based on effective tax policy and administration, enabling vibrant private sector participation in the economy can be expected to translate into significant nonoil revenue gains. Currently, the private sector is highly limited in size. A key reason for this is that government interventions in markets have raised risks for private players. Government intervention in absence of market failure – prevents viable and efficient private sector activity. At the same time, lack of competitive neutrality has contributed to an unlevel playing field between public and private firms (as well as among private firms only), dis-incentivizing investment and ultimately inhibiting productivity growth and economic diversification. The policies outlined here below describe how these issues can be tackled by (i) maximizing complementarity between the public and the private sector in key markets, (ii) limiting government participation to cases where market failure requires direct intervention, and (iii) ensuring competitive neutrality, particularly in markets where the government already interacts with private competitors.

In the longer-run, it is essential that Chad increases its investment rate back to the pre-2015 levels to sustain a high real GDP growth rate and reduce poverty levels. After two consecutive years of recessions following the end of the commodity super-cycle, the output gap turned largely negative (Figure 72). This suggests that in the medium term, the economy is expected to recover as the gap closes gradually. Using the Long-Term Growth Model (LTGM) developed by Hevia and Loayza (2012) we find that if the investment-to-GDP (I/Y) ratio increases back to its 2006-2014 level (orange line in Figure 70 and Figure

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71), growth per capita would pick-up and poverty levels would decrease. However, given the current weak fiscal position and the high stock of public debt, the authorities should be selective and only fund projects that could yield significant long-term returns in the future. More importantly, the government could rely more heavily on the private sector to finance the investment gap and boost infrastructure in the country.

Figure 70: Increasing investment, productivity and human capital would yield economic gains...

Figure 71: ... and significantly reduce the percentage of Chadians living under 1.9$ per day.

Source: World Bank staff calculations

Figure 72: In 2016-2017, a negative output gap opened-up as the real GDP was below its estimated potential

Source: WDI and World Bank staff calculations.

86 The results are based on the assumptions described in Annex 5.
But to leverage public and crowd in private investment, transparent and competitive markets are needed

There is a need to leverage complementarity between the public and the private sector through procompetitive regulation and policies. To do so, it will be necessary to mitigate barriers to entry created by government interventions in key sectors of the economy. To incentivize private investment and encourage well-functioning markets, government interventions in the economy, which should be predictable and transparent, will need to minimize the risk of (i) restricting entry; (ii) facilitating collusion or increasing the cost of competing; and (iii) discriminating against certain players and creating an unlevel playing field. Signaling that the Government of Chad considers the private sector as central to economic diversification and growth and acknowledging the complementarity in the relationship between the public and the private sectors is an important first step. Particularly in markets where the private sector has an interest in operating, the government should signal restraint even when the fiscal crisis is resolved. Where the government does participate, it should ensure consistency in the level and type of activity. Interactions with the private sector through public procurement or PPPs should be transparent, fair and non-discriminatory.

Direct government participation in the economy through SOEs or PPPs should follow a clear rationale to avoid crowding out of the private sector - particularly in markets where private sector participation can be viable. This is currently the case in sectors such as cotton, agricultural equipment manufacturing, meat processing and banking. It can also create opportunity costs for the government given that SOEs often receive financial support and PPPs can require up-front government investment which could shrink the fiscal space and create a risk of implicit contingent liabilities in the future.

The principle of competitive neutrality should be implemented to avoid an unlevel playing field between firms that would dis-incentivize investment and hinder productivity growth. Regulatory and financial advantages only available to select public and private enterprises unlevel the playing field for competition. The government of Chad should therefore review the current regulatory treatment of and financial support to public and private enterprises in the form of subsidies, debt guarantees, and tax exemptions to identify sources of discrimination and ensure that any financial or regulatory support to public or private enterprises is provided in a transparent and non-discriminatory way. This type of holistic medium-term reform to the competitive neutrality framework can build on short term efforts to ensure a level playing field in crucial economic sectors (such as telecoms and cotton; see below).

Overall, stronger governance, institutions and increased transparency are central to improving the investment climate. Chad currently shows significant weakness in the Public-Sector Management and Institutions cluster assessed by the World Bank’s Country Policies and Institutional Assessment (CPIA 2017). Beyond the need to further improve the quality budget and financial management as well as tax policy and administration for efficient resource mobilization, low scores on quality in policy implementation and regulatory management as well as low transparency and accountability in the public sector constitute important opportunities with high potential returns. For example, the government could adopt an open data policy publishing budget, fiscal and national accounts data (among other things) in an openly accessible way. This would increase trust in the government and develop a culture of transparency and accountability to address corruption. Another opportunity stems from the fact that Chad is only one of fifteen countries that have not yet joined the United Nations Convention Against Corruption (UNCAC). This list includes, in addition to some very small states, countries that are perceived as highly corrupt in

87 The small states include: Barbados, Monaco, Saint Kitts and Nevis, Saint Vincent and the Grenadines and San Marino.
the world according to the 2017 Corruption Perception Index: Equatorial Guinea, Eritrea, North Korea, Syria and Somalia. These are just two of many opportunities to reduce uncertainty of doing business and send a strong signal to international investors and the private sector at large.

**Increasing investment and productivity at the same time could sustainably boost Chad’s economic potential**

Contingent on fiscal space for more investment and an effective public private interface, we provide examples of productivity enhancing investment as seen in some of Chad’s aspirational peers. We highlight two important policy areas for growth: smart tech (e.g. in agriculture) and efficient renewable energy supply.

**Raising the investment rate must be complemented by reforms that increase productivity and human capital.** As shown in section B, Chad suffers from low productivity across key sectors. The simulations based on the LTGM suggest that increasing the growth rate of productivity and human capital by 0.5 percent each in the long-run could boost economic activity further and significantly reduce the percentage of Chadians living under 1.9$ per day to about 10 percent by 2040. Improving access to electricity could boost overall productivity in Chad. In that regard, valuable lessons could be learnt from Bangladesh which managed to secure large increases in access to electricity over the past years – from 36.1 percent in 2002 to 62.4 percent in 2014 – after launching an off-grid electrification home system program in 2003 (Table 11). This program, which is considered as one of the most effective off-grid electrification programs in the world (World Bank, 2017), was successful partly because of (i) the presence of a competent local champion, (ii) the availability of solar energy and (iii) the presence of financial solutions that match the population’s ability to pay, among other things. Meanwhile, improving access to and the quality of education are key to strengthen human capital. To achieve a sustained growth in human capital, the Chadian authorities could devote a higher share of expenditures to the education sector; target poor regions and households additionally to offset potential inequalities; and invest in developing the pedagogical and subject-matter skills of teachers while at the same time designing mechanisms to fight teachers’ absenteeism. Furthermore, it is essential to improve the management of education services such as deploying teachers based on student enrollment needs and strengthen staff management in schools. These measures could have a significant impact on educational outcomes in Chad, given the low initial capacity level (Bashir et al., 2018). Finally, there is a need to provide the six essential conditions required for effective teaching and learning given that less than 5 percent of primary schools in Chad meet at least five of the six minimum conditions. (Bashir et al., 2018).

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90 According to (Bashir et al., 2018), the six essential conditions are: (i) a qualified teacher with content and pedagogical knowledge and skills; (ii) a manageable student-teacher ratio (no more than 50 students per teacher); (iii) basic services, such as toilets for girls and electricity; (iv) access to textbooks for reading and mathematics; (v) regular attendance in class by both teachers and (vi) students and a school climate free from abuse and violence.
Table 11: Chad’s aspirational peers undertook various policies to boost growth

<table>
<thead>
<tr>
<th>Growth determinant</th>
<th>Bangladesh</th>
<th>Cambodia</th>
<th>Myanmar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Outcome change</td>
<td>Policy reform</td>
<td>Outcome change</td>
</tr>
<tr>
<td></td>
<td>Access to electricity (% of population) increased from 36.1% in 2002 to 62.4% in 2014</td>
<td>Launching an off-grid electrification home system program1/</td>
<td>Access to electricity (% of population) increased from 40.9% in 2012 to 56.6% in 2014</td>
</tr>
<tr>
<td></td>
<td>Improved ICT</td>
<td>Establishing an Anti-Corruption Commission (ACC)4/</td>
<td>The rank on the Corruption Perception Index improved from 102/102 countries in 2002 to 147/180 in 2008</td>
</tr>
<tr>
<td></td>
<td>Lower corruption</td>
<td>Accessing the UN convention against corruption; Establishing the ACC rules5/</td>
<td>Designing and adopting a revenue mobilization strategy (RMS)7/</td>
</tr>
<tr>
<td></td>
<td>Government effectiveness</td>
<td>Domestic revenue collection reached 17.5% of GDP for 2015, up from 15.1% in 2013</td>
<td>Domestic credit to private sector increased from 7.2% of GDP in 2003 to 44.7% in 2013</td>
</tr>
<tr>
<td></td>
<td>Credit to the private sector</td>
<td>Domestic credit to private sector increased from 7.2% of GDP in 2003 to 44.7% in 2013</td>
<td>Adopting a national strategy on microfinance to support agriculture and reduce poverty</td>
</tr>
</tbody>
</table>

Sectoral policy recommendations

Economy wide TFP increases and private investment need to take root at the sectoral level. Given the importance of the agricultural sector for the economy and the role of telecommunications as an economy-wide input, the following section provides policy proposals that would contribute to more dynamic private sector participation and competition in agriculture and telecommunications (Table 12). This could then translate into productivity growth across an increasingly diversified non-oil economy, spurring private investment and faster GDP growth.

Table 12: Policy recommendations to tackle specific challenges in agriculture and telecommunication

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Policy(ies)</th>
<th>Time dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of agricultural inputs</td>
<td>Boost private provision of agricultural inputs</td>
<td>Short-run</td>
</tr>
<tr>
<td>Low competition along the cotton value chain</td>
<td>Complement privatization with measures to open the market for competition</td>
<td>Short-run</td>
</tr>
<tr>
<td>Misallocation of private and public resources across sectors</td>
<td>Better target government support to address market failures</td>
<td>Short-run</td>
</tr>
<tr>
<td>Low agricultural productivity</td>
<td>Use smart technologies in agriculture</td>
<td>Long-run</td>
</tr>
<tr>
<td>High international connection cost</td>
<td>Consider opening up the international gateway to competition</td>
<td>Short-run</td>
</tr>
<tr>
<td>Lack of clarity regarding rules governing fiber</td>
<td>Clarify regulation governing the laying and use of fiber</td>
<td>Short-run</td>
</tr>
<tr>
<td>Unlevel playing field in the telecom sector</td>
<td>Ensure competitive neutrality between Sotel and private operators</td>
<td>Long-run</td>
</tr>
<tr>
<td>Restrictions on the development of mobile money services</td>
<td>Put in place a pro-competition regulatory framework for mobile money</td>
<td>Long-run</td>
</tr>
</tbody>
</table>

Source: World Bank staff.

Agriculture

Enabling private sector participation in the provision of key agricultural inputs could go a long way towards optimal use of agricultural resources and technology. The low use of seeds and fertilizer have damaged the agriculture sector, particularly its productivity. To mitigate these problems, the government will have to encourage private sector participation in the agricultural input market to facilitate the use of sustainable and productive inputs that are less vulnerable to shocks. This includes considering where the private sector can participate also in the subsidized input channel (in all agricultural value chains including cotton) and potentially opening the subsidized channel to the private sector. Concrete activities could include competitively tendering for import and distribution of agricultural inputs and carrying out subsidization through vouchers valid for the purchase of inputs from private retailers.

Initiating a process to reform CotonTchad’s legal monopsony on unprocessed cotton and open the downstream market to competition could be central to reinvigorating the cotton sector. Low yields and low farmer incomes are in part the result of a fixed purchasing price, along with CotonTchad’s legal monopsony in the purchase of unprocessed cotton and various other interventions along the cotton value chain. While recent privatization efforts have led to a partial liberalization of the value chain, they have missed several opportunities to ensure the sustainable functioning of the value chain in the future. For example, farmers could benefit from competition for their products and subsequent higher prices, which
would likely result from removing CotonTchad’s legal monopsony and allowing private buyers to purchase unprocessed cotton. Various complementary measures could be implemented prior to or in parallel to mitigate against potential consequences of market opening: e.g. social safety nets, reskilling programs and reform of inputs markets (seed and fertilizer). Overall, a holistic market-friendly reform effort in the value chain will be required to ensure that competition in the sector can contribute to sustainable and inclusive growth. In addition to removing CotonTchad’s legal monopsony, the Government of Chad could explore the possibility of introducing competitions in downstream functions of the value chain by allowing private investment in ginneries and mills.

Better targeted incentives could allow productive resources to be employed most effectively and profitably across agricultural sectors, avoiding allocative inefficiencies. Empowering private investment to pursue profitable market opportunities, while at the same time ensuring that the government’s welfare-enhancing policy objectives are attained, could unlock productivity growth in agriculture overall. Government support has influenced resource allocation primarily to the cotton sector and has disrupted the ability of farmers and the private sector to allocate resources in a way that reflects underlying market dynamics. By providing highly subsidized fertilizer and seed and ensuring the functioning of downstream value chain functions, the government has been incentivizing farmers to grow cotton instead of other crops, that are potentially more profitable and fully exploit Chad’s comparative advantage. Private investment has therefore not been following the most efficient opportunities but has been guided by government interventions. To ensure Chad’s growth potential is realized, the government should ensure that its interventions are limited to addressing specific market failures and that the private sector is able to pursue the most efficient investments and to allocate scarce resources in an efficient way. To attain its policy objectives (e.g. supporting farmers through subsidies) nonetheless, the government could draw on market-friendly approaches, such as vouchers for subsidies instead of public provision. The improved targeting of government support and greater opportunities for private investment would furthermore reverberate through the entire primary sector given the linkages between some agricultural crops and the livestock sector, for example. Private capital seeking the most profitable investments may be more likely to consider these complementarities and additional benefits, which could ultimately raise the likelihood of an efficient allocation of resources.

Telecommunication

Interlinkages between ICT telecom and the economy are strong and add great importance to sector specific pro-competition policies. ICT telecom is a central input sector across a wide variety of primary, secondary and tertiary sectors. It touches the very core of feasibility and quality of public service delivery and access to finance, and can be considered a key building block of transparency, access to information and overall consumer welfare. Hence, it is not surprising that there are also significant cross sectoral linkages with agriculture, e.g. using smart technology (Figure 73). Policies able to reduce the cost of telecom services and create a conducive environment for innovation therefore may yield significant spillover effects and productivity gains through better extension services, easier access to finance or direct use of smart technology for efficient irrigation or crop and livestock management.
Figure 73: To leverage smart technologies in agriculture a flexible and innovative ICT sector will be required.

Removing the remaining restrictions on access to and competition on backbone infrastructure can help boost competition. This should not only lower prices but also unlock demand and increase penetration rates. As described in detail in section C.4, the international fiber gateway has been turned back into a public monopoly and is now managed by a private contractor on behalf of the government, which has contributed to higher international connection costs. Furthermore, there has been a lack of clarity regarding the laying and use of fiber cables. As a result, telecommunications services remain among the most expensive in the region and of poor quality. Ensuring efficient infrastructure use based on competitive principles would be necessary to improve quality and reach of telecommunications services. In that regard, the authorities are encouraged to consider opening the international gateway to competition (as was originally intended) and remove legal barriers to the creation of international gateways. Reviewing the process for setting prices for international bandwidth could be a first step to lowering cost. Furthermore, clarifying regulations on laying and using fiber cables can enable competition and allow consumers to benefit from enhanced choice, service quality and lower prices.

A level playing field between state-owned Sotel and potentially more efficient private sector providers would contribute to the performance of the sector. Sotel has been granted a legal monopoly on specific domestic fiber connections. Furthermore, the SOE has received subsidies to cover losses from the Universal Services Fund (USF), whose purpose it is to increase access to telecommunications services in Chad. Addressing these issues to create a level playing field can help to boost competition.

A pro-competition regulatory framework to enable the development of mobile money services could strengthen financial inclusion and facilitate the transmission of remittances from abroad. Regulatory
constraints on the development of mobile money services include the fact that telecoms operators are required to collaborate with licensed financial institutions such as banks to be able to offer mobile money services or that different mobile money services are not required to be interoperable. A pro-competition regulatory framework could ensure the improvement and increased penetration of such services. The ideal framework should (i) include interoperability, (i) prohibit agent exclusivity, (ii) allow fair and non-discriminatory access to Unstructured Supplementary Service Data (USSD) channels, and (iv) enable mobile service providers to operate mobile money schemes without association with a financial institution.
E. ANNEXES

1. Night-light data reveal dynamic discrepancies between WDI and luminosity based GDP growth rates in Chad and underline imperfect translation of oil production and revenues into structural growth

This Annex describes briefly the methodology adopted by Roger (2018) to obtain estimates of past growth rates that captures the heterogeneous relationship between luminosity and GDP across different SSA countries. More importantly, it summarizes the result found for Chad and put them in the context of SSA.

Human made light emissions have been found to be powerful proxies for economic growth, especially where there are concerns about the accuracy of national accounts. When averaged over a country’s area, these luminosity values turn out to be a powerful proxy of economic activity, and GDP growth in particular (Henderson et al., 2012). Roger (2018) uses night lights data (cleared of sun glare, clouds, northern lights, etc.) from the US National Oceanic and Atmospheric Administration (NOAA) and a machine learning algorithm – that helps determine country-specific characteristics governing the relationship between GDP and light emissions – to assess the growth performance in Sub Saharan Africa (SSA) countries between 1992 and 2013. He applies a two-step procedure that first uses fixed effects models to derive the determinants of each country’s propensity to emit lights, and then relies on this knowledge to derive estimates of GDP growth that take into account economic differences across countries using the elastic net estimator which helps select and weight relevant predictors of the estimated relationship between light and GDP for each country.

Land locked and resource rich African countries – such as Chad – consistently feature the largest discrepancies between official and nightlight intensity based growth rates (Figure 74). According to Roger (2018, p. 42) “the most influential economic typology of African countries is that by Collier and O’Connell (2009), who divide them into (resource-scarce) coastal, (resource-scarce) landlocked, and resource-rich countries (Collier and O’Connell, 2009, p. 126-127). For the period they consider, 1960-2000, they find that these are central defining features of the growth performance of sub-Saharan African countries and developing countries in general; while growth in SSA was disappointing during that period across all three categories, it was worst for the category of landlocked countries, a feature that is commonly considered a major impediment to the participation in international trade and economic growth.” More precisely, WDI data show a 4.42 percent average growth rate for landlocked countries between 1992 and 2013, with nightlight data being somewhat more pessimistic particularly over later years (2007 onwards).
Roger (2018) finds that average WDI growth rates for Chad over the whole period 1992-2013 to be relatively unbiased when compared to nightlight proxies, but significant discrepancies exist over subperiods. GDP estimates derived from the lights proxy confirm the overall pattern reported by official GDP data (Figure 4). Economic growth was on average 6.5 percent 1992-2013 compared to 7.5 percent according to the lights proxy. However, the luminosity proxy is somewhat more optimistic about earlier periods. Using pre-oil production (pre-2003) and post oil production to break down the sample, the discrepancy mainly emerges between 1992 and 2002, when the average actual growth rate was 2.9 percent compared to 4.7 percent according to the lights proxy. In contrast, both series are rather well aligned in later periods: the actual reported growth was 12.1 percent in 2003-2008 vis-à-vis 12.5 according to night-light data, while it averaged 6.5 percent annually in both series between 2009 and 2013.
Figure 75: Relative growth discrepancies between nightlight intensity and WDI growth do exist for Chad

(a) Whole period 1993-2013
(b) 1993-1999
(c) 2000-2006
(d) 2007-2013

Notes: Colours indicate the discrepancy between average WDI growth rates and those obtained from the luminosity proxy, with positive numbers indicating that the luminosity proxy indicates higher growth. The colour coding is capped at -5 pp and 5 pp, meaning that individual discrepancies can be larger. This is the case for MOZ, COD and BDI in panel (b), NGA, TCD and ZWE in panel (c), and ETH, TCD and CAF in panel (d) (see appendix II). Borders are obtained from maplibrary.org for illustrative purposes only, and the authors do not imply the expression of any opinion concerning the legal status of any country, area or territory.

Source: Roger (2018)
2. Economic growth theories and their empirical relevance

This Annex provides a brief review of the literature on various determinants of economic growth as outlined in Table 2 (section A). The various literature strands provided the broad framework to descriptively examine the key drivers/constraints of growth in Chad over our period of analysis: 1993-2016.

Economic mechanisms underlying growth (variations) broadly fall into two main theoretic groups: exogenous and endogenous growth models. In his seminal paper in the 1956, Solow (1956) introduced the neoclassical (exogenous) growth model which was the first attempt to provide a clear theoretical framework to analyze growth dynamics. This theory builds on the assumptions that capital and labor experience diminishing returns to scale while total factor productivity (TFP) grows at an exogenous rate of technological progress. Therefore, in absence of difference in TFP across countries, those with lower levels of capital per worker experience higher marginal products of capital as well as rates of return on investment, and tend to grow faster until they reach their steady state growth path. In a way, capital accumulation depends on the savings, depreciation and population growth rates. Equilibrium then is characterized by a constant capital-labor ratio, no more capital deepening and no per capita output growth, leaving technological progress (TFP) as the only sustainable, long run source of growth. Hence, to introduce sustainable steady state growth, human capital accumulation and/or technological progress should be endogenous. Such models were pioneered by Romer (1990; 1986) and initially - e.g. AK type models - remained close to the neoclassical growth lens. They assume that technological growth is endogenous in that it arises as a non-rival, partially excludable by-product to capital accumulation, stemming from agents’ decisions on human capital and knowledge accumulation to innovate and maximize profits. It predicts that although the stock of human capital determines the rate of growth, large populations per se are not sufficient to sustain long-term growth. What matters most is the rate of innovation within the economy driven by human capital. However, policies to incentivize optimal investment into R&D are needed to overcome the second and third best outcomes due to divergence between private and social returns to research. The following paragraphs provide a brief overview of variations of these two broad theoretic frameworks and important assumptions around them, paying attention to their empirical relevance to date.

Human capital is considered as one of the main drivers of economic growth and plays a key role in the socio-economic progress of countries. Human capital is defined by Goldin (2016) as the set of intangible skills that improve the productivity of individuals. This idea, which encompasses skills acquired through education, experience and health (Teixeira and Queirós, 2016), was explicitly incorporated into the growth literature by Mankiw et al. (1992) who added human capital to the standard Solow growth model. They showed theoretically and empirically using the percentage of secondary school enrollment that accumulation of education significantly boosts economic activity. However, recent empirical evidence indicates that, while school attainment is important, the role of human capital in boosting growth becomes stronger when the quality of education gets better (Hanushek, 2013).

There is a consensus among economists that strong institutions and political stability boost economic growth. The concept of institutions is multidimensional and has been used differently (Voigt, 2013). In one of the most cited papers in the literature, Knack and Keefer (1995) argue that institutional quality can be measured by: (i) the risk of expropriation; (ii) whether there are clear and peaceful mechanisms for judging disputes (Rule of Law), (iii) repudiation of contracts by the government, (iv) the extent of
corruption in the government and (v) the quality of Bureaucracy. However, irrespective of how institutions are measured, empirical evidence suggests a positive causal relation between strong institutions and economic growth (Acemoglu et al., 2005; Easterly et al. 2006; Hall and Jones, 1999). For instance, Góes (2016) finds that a 1 percent improvement in institutional quality leads to a 1.7 percent increase in GDP per capita after six years. The intuition on why institutions matter for growth was elegantly summarized by Demetriades and Law (2006, p. 245): “when the rules change frequently or are not respected, when corruption is widespread or when property rights are not well defined or enforced, markets will not function well, uncertainty would be high, and, as a result, the allocation of resources would be adversely affected.”

**Sound macroeconomic policies such as reduced inflation, low fiscal deficits and exchange rate stability help growth by reducing uncertainty, thus stimulating private investment.** In a seminal paper, Fischer (1993) found using a cross-country regression analysis that sound macroeconomic policies determined by low inflation and budget deficits as well as undistorted exchange rate markets lead to higher growth rate levels, largely because they reduce uncertainty which itself increases private investment and productivity growth. For instance, he found that a 1 percent of GDP increase in the fiscal balance is associated with an average 0.23 percent increase in the growth rate. These results which were further supported qualitatively by Bleaney (1996) who also found using a sample of 41 countries between 1972 and 1990 that policy-induced macroeconomic instability indeed hinders growth.

**Market competition drives productivity and ultimately growth.** Productivity growth is a key to economic growth (Jorgenson, 1991; Solow, 1956) and competition has been shown to enhance productivity through three channels. First, in a well-functioning economy, competition leads to a reallocation of resources from low to high productive firms (Arnold et al., 2011), where less productive firms either shrink or exit the market. Second, competition induces existing firms to become more efficient to survive (Aghion and Howitt, 2006; Blundell et al., 1999; Conway et al., 2006; Nickel, 1996). Greater competition incentivizes firms to make more efficient use of resources and to dynamically improve efficiency by adapting production processes or upgrading quality to achieve higher markups. As an example of this channel, Carlin et al. (2004) show, using a dataset of about 4,000 firms in 24 transition countries, that firms facing between one and three competitors saw real sales grow by almost 11 percent on average over three years, while monopolists suffered from a 1 percent decline in real sales. Similarly, Nickell (1996) found that a 10 percent increase in price markups resulted on average in a 1.3–1.6 percent loss in total factor productivity growth. In addition to increasing incentives for process innovation, promoting competition encourages product innovation aimed at “escaping competition”. Third, competition in input sectors boosts export competitiveness and innovation of downstream firms that rely on these inputs. Barone and Cingano (2011) show that in OECD countries, pro-competition reforms in input services sectors (telecommunication, transport, energy and professional services) increase value added, productivity and export growth of downstream service-intensive sectors.
3. Empirical estimation of the relationship between conflict and GDP in Chad

This Annex empirically addresses two questions: First, does GDP grow or contract during periods of conflict? Second, what are the channels through which conflict affect GDP in Chad?

A. Introduction
We adopt a log-log time-series model of 56 years to obtain log-run elasticities.

\[ \ln Y = \alpha_0 + \beta \ln X_t + \delta C_t + \epsilon_t \]

Where \( Y \) represents real GDP and \( X \) represents a matrix of explanatory variables such as: Gross Capital Formation, government consumption expenditure, trade, and credit to private sector (all percentages of GDP), foreign aid and Inflation. Variables are chosen subject to data availability. Conflict \( C \) is defined as major episodes of political violence. Specifically, these episodes are characterized by the systematic and sustained use of lethal violence by organized groups that result in at least 500 directly-related deaths. They are then scored for magnitude of societal-systemic impact on a ten-point scale where 1 implies “at least 500 deaths” and 10 means “over 10 million deaths”. (Rother et al., 2016)

B. Correlation Analysis
We begin our analysis by estimating correlation coefficients between all variables in the sample. The Spearman’s non-parametric rank correlation methodology is adopted as it is optimal for small sample sizes and robust to outliers. The results show a significant negative relationship between conflict and log GDP which gives a preliminary indication that GDP contracts during periods of conflict violence (Table 13). In addition, our analysis shows conflict increases government consumption expenditure but decreases trade and gross capital formation.

Table 13: correlation coefficients

<table>
<thead>
<tr>
<th></th>
<th>ln(GDP)</th>
<th>Conflict</th>
<th>ln(gov)</th>
<th>ln(gcf)</th>
<th>ln(aid)</th>
<th>ln(exp)</th>
<th>inflation</th>
<th>ln(credit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln(GDP)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict</td>
<td>-0.620*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln(gov)</td>
<td>-0.648*</td>
<td>0.613*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln(gcf)</td>
<td>0.650*</td>
<td>-0.637*</td>
<td>-0.302**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln(aid)</td>
<td>0.780*</td>
<td>-0.221</td>
<td>0.422*</td>
<td>0.336**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln(exp)</td>
<td>0.6*</td>
<td>-0.494*</td>
<td>-0.512*</td>
<td>0.624*</td>
<td>0.425*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>inflation</td>
<td>-0.187</td>
<td>0.044</td>
<td>-0.022</td>
<td>0.025</td>
<td>-0.192</td>
<td>0.014</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>ln(credit)</td>
<td>-0.565*</td>
<td>0.658*</td>
<td>0.516*</td>
<td>-0.443*</td>
<td>-0.180</td>
<td>-0.454*</td>
<td>-0.147</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: World Bank staff. *, ** and *** indicate that a coefficient is statistically significant at 10%, 5% and 1% level, respectively.

C. Regression Analysis
We begin with a baseline model where GDP growth is explained by changes in exports and periods of conflict. This is not far-fetched as 61 percent of our sample period has been marooned by conflict. Moreover, exports capture the agriculture and oil sectors which have been the mainstay of the Chadian economy. Since the variables are not stationary, we employ the Engle-Granger (1987) two-step approach to test the existence of a long-run relationship. In other words, we test the residuals for stationarity using the Phillips-Perron (PPerron) methodology. The results show that GDP contracts by 7.7 percent during periods of conflicts (Table 14). We also observe that Conflict has a significant negative impact on gross capital formation and exports. In addition, a percentage change in exports is associated with a one percentage change in GDP. This strengthens the importance of exports (agriculture and oil) in the Chadian economy. Credit to private sector in Chad does not significantly affect GDP in Chad.
### Table 14: Conflict regression results

<table>
<thead>
<tr>
<th></th>
<th>Dep var: ln(GDP)</th>
<th>Dep var: ln(gov)</th>
<th>Dep var: ln(gfc)</th>
<th>Dep var: ln(exp)</th>
<th>Dep var: ln(GDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conflict</td>
<td>-0.077 (0.038)**</td>
<td>0.137 (0.039)*</td>
<td>-0.199 (0.058)*</td>
<td>-0.105 (0.038)*</td>
<td>-0.002 (0.04)</td>
</tr>
<tr>
<td>ln(exp)</td>
<td>1.011 (0.175)*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln(gov)</td>
<td></td>
<td>-0.539 (0.143)*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln(gcf)</td>
<td></td>
<td></td>
<td>0.275 (0.105)**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln(aid)</td>
<td></td>
<td></td>
<td></td>
<td>0.063 (0.044)</td>
<td></td>
</tr>
<tr>
<td>inflation</td>
<td></td>
<td></td>
<td></td>
<td>-0.012 (0.003)*</td>
<td></td>
</tr>
<tr>
<td>ln(credit)</td>
<td></td>
<td></td>
<td></td>
<td>0.029 (0.137)</td>
<td></td>
</tr>
<tr>
<td>R-sq</td>
<td>0.75</td>
<td>0.32</td>
<td>0.34</td>
<td>0.20</td>
<td>0.89</td>
</tr>
<tr>
<td>Pperron</td>
<td>[0.015]**</td>
<td>[0.116]</td>
<td>[0.055]***</td>
<td>[0.096]***</td>
<td>[0.003]*</td>
</tr>
<tr>
<td>(residuals)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: World Bank staff. *, ** and *** indicate that a coefficient is statistically significant at 10%, 5% and 1% level, respectively. Newey-West standard errors are in parenthesis () while P-values are in brackets [].
4. Benchmarking analysis methodology

This Annex presents the methodology we developed to determine which factors (and rank by order of magnitude) have prevented Chad from growing as fast as its aspirational peers: Bangladesh, Cambodia and Myanmar.

The selection of growth determinants was motivated by the growth literature as highlighted in Table 2 and Annex 2. Figure 76 illustrates that Chad underperformed with respect to its aspirational peers over time on governance and infrastructure indicators as well as on export diversification and credit to the private sector.

Figure 76: Chad lagged its aspirational peers on infrastructure and governance indicators

Source: WDI, IMF WEO, World Governance Indicators, UNCTAD and WB staff calculations.

While plotted lines are suggestive, our aim is to empirically examine the evolution of Chad’s position vis-à-vis its aspirational peers on each indicator over time. To do so, we quantify Chad’s evolution relative to its peers across the various indicators illustrated in Figure 71 by adopting the following four-step methodology, where \( x_{i,t} \) denotes the value of variable \( x \) for country \( i \) (Chad, Bangladesh, Cambodia and Myanmar) at time \( t = 2003, ..., 2016 \):

1. We normalize all the variables to [0-100] to fairly compare changes across time and variables using the following formula:
$$s_{i,t} = \left[ \frac{x_{i,t} - \min(x_{i,t})}{\max(x_{i,t}) - \min(x_{i,t})} \right] \times 100 \ for \ t = 2003, \ldots, 2016$$

2. For each normalized variable and year, we compute the average value across the three aspirational peers, such that

$$s_{asp,t} = \text{mean}(s_{ban,t}; s_{cam,t}; s_{mya,t}) \ for \ t = 2003, \ldots, 2016 \ and \ s \in S$$

3. Based on the results of equation (2), we measure how distant is Chad from to its aspirational peers by calculating, for each normalized variable, the relative difference as:

$$s_{diff,t} = s_{asp,t} - s_{tcdr,t} \ for \ t = 2003, \ldots, 2016 \ and \ s \in S$$

4. Finally, we compare the average of the relative difference ($s_{diff,t}$) during the last two periods (2015-2016) with respect to the corresponding average during the first two years (2003-2004).\(^9\)

---

\(^9\) We take period averages to minimize outlier effects stemming from potential large non-economic exogenous events (e.g. natural disasters, wars, etc.) that might have happened during specific years, which could lead to misleading results.
5. Assumptions underlying Chad’s Long-Term Growth Model

This Annex describes the assumption we made to simulate the effects of a rebound in the investment-to-GDP ratio (I/Y) and improvements in productivity as well as human capital on the paths of GDP growth per capita and poverty in Chad — as presented in Figure 70 and Figure 71 of the main text — using the Long-Term Growth Model (LTGM) developed by Hevia and Loayza (2012).

We adopt four models: one baseline that reflects the current economic conditions in Chad and three different scenarios (Table 15). In the baseline (column 1), the Chadian economy is assumed to accelerate in the medium term (2018-2021) due to a low base effect after two consecutive years of recessions which created a negative output gap (Figure 72). Over the long-run (post-2021), the pace of economic activity is expected to slightly decelerate but maintain a positive and moderate per capita growth rate as productivity growth and the investment-to-GDP ratio rebound, female labor force participation rises and human capital develops thanks to improved education quality and higher participation rates. In the three additional scenarios (columns 2, 3 and 4, respectively), we add to the baseline the following assumptions cumulatively, one at a time: I/Y rises back to its 2006-2014 average and the growth rates of productivity and human capital increase by an additional 0.5 percentage points per year.

**Table 15: Assumptions used in the LTGM**

<table>
<thead>
<tr>
<th>Real Investment to GDP ratio (I/Y)</th>
<th>Baseline (1)</th>
<th>Baseline + (↑)I/Y (2)</th>
<th>Baseline + (↑)I/Y + (↑)TFP (3)</th>
<th>Baseline + (↑)I/Y + (↑)TFP + (↑)HC (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>As oil prices don’t increase significantly over time, Chad will have to consolidate its fiscal accounts and only increase investment marginally. As a result, the I/Y will gradually increase from the current low of 13.6% in 2016 to 19.1% (the average I/Y in 2015-2016) in 2021 onward</td>
<td>Increase the I/Y ratio from 19.1% (in the baseline) to 27.2% which represents the 2006-2014 average</td>
<td>Increase the I/Y ratio from 19.1% (in the baseline) to 27.2% which represents the 2006-2014 average</td>
<td>Increase the I/Y ratio from 19.1% (in the baseline) to 27.2% which represents the 2006-2014 average</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Factor Productivity (TFP) growth (%)</th>
<th>Baseline (1)</th>
<th>Baseline + (↑)I/Y (2)</th>
<th>Baseline + (↑)I/Y + (↑)TFP (3)</th>
<th>Baseline + (↑)I/Y + (↑)TFP + (↑)HC (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TFP grows at the same rate as the average across 2006-2016 and reaches gradually 1.4% in 2021 as the economy recovers and benefits from the expected oil discoveries in 2020 and 2021. After 2021, the productivity growth would decrease gradually and attains 0.2% in 2030; the average growth in 1997-2016 without the 2003-2005 period</td>
<td>Increase TFP growth relative to baseline by 0.5% per year</td>
<td>Increase TFP growth relative to baseline by 0.5% per year</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Human Capital (HC) growth (%)</th>
<th>Baseline (1)</th>
<th>Baseline + (↑)I/Y (2)</th>
<th>Baseline + (↑)I/Y + (↑)TFP (3)</th>
<th>Baseline + (↑)I/Y + (↑)TFP + (↑)HC (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HC in Chad grows at the same rate as the one in Burkina Faso because both countries had a very similar “Education Index” from the UN. As such, the initial growth rate of Chad’s HC is 1.1%. We also assume that given the low base, the HC will grow by an additional 0.15% each year until 2025 and then it starts to falten back over the long-term as the education gap shrinks</td>
<td></td>
<td></td>
<td>Increase HC growth relative to baseline by 0.5% per year</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Labor Market Participation (%)</th>
<th>Baseline (1)</th>
<th>Baseline + (↑)I/Y (2)</th>
<th>Baseline + (↑)I/Y + (↑)TFP (3)</th>
<th>Baseline + (↑)I/Y + (↑)TFP + (↑)HC (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The male labor force participation rate remains constant as around 79%. However, we assume that female participation would increase gradually as the economy develops and stabilized at 75% from 2025 onward (up from 65% in 2016)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: World Bank staff
6. List of SOEs

The table below lists identified Chadian SOEs, the sector/market in which they are active, their market share (if available) and the ownership structure.

<table>
<thead>
<tr>
<th>SOE</th>
<th>Sector/Market</th>
<th>Market Share</th>
<th>Government share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Société Nationale d’Electricité (SNE)</td>
<td>Electricity generation, import, transmission, distribution, supply</td>
<td>100% (confirmed by BTI)</td>
<td>100%</td>
</tr>
<tr>
<td>Société Tchadienne de Poste et de l’Epargne (STPE)</td>
<td>Post basic and courier services</td>
<td>100% (legal monopoly)</td>
<td>100%</td>
</tr>
<tr>
<td>Société Tchadienne des Eaux (STE)</td>
<td>Water collection, treatment and supply; Operation of water transportation infrastructure</td>
<td>100% (confirmed by BTI)</td>
<td>100%</td>
</tr>
<tr>
<td>Société des Télécommunications du Tchad (SOTEL)</td>
<td>Telecommunication fixed line, mobile, and internet services</td>
<td>100% in fixed line; 5% in mobile services</td>
<td>100%</td>
</tr>
<tr>
<td>Société Cotonnière du Tchad (COTONTCHAD)</td>
<td>Agriculture</td>
<td>100% (legal monopoly; confirmed by BTI)</td>
<td>100% (but undergoing privatization)</td>
</tr>
<tr>
<td>Banque Commerciale Chari (BCC)</td>
<td>Financial service activities (except central banking, insurance, and pension funding)</td>
<td>? (Capital: 6,000 million FCFA; 6 counters in Chad)</td>
<td>50% Government of Chad 50% Libyan Arab Foreign Bank (50% of Sudanese government according to KPMG)</td>
</tr>
<tr>
<td>Compagnie Sucrière du Tchad (CST)</td>
<td>Sugar</td>
<td>100% in production</td>
<td>8.66% according to KPMG; closed in 2012 according to BTI</td>
</tr>
<tr>
<td>Société Industrielle de Matériel Agricole et Assemblage de Tracteurs (SIMATRAC)</td>
<td>Manufacture/Agriculture</td>
<td>80% Government of Chad</td>
<td>20% CotonTchad</td>
</tr>
<tr>
<td>Société de Raffinage de N’Djamena (SRN)</td>
<td>Manufacture of refined petroleum products</td>
<td>40% Government of Chad</td>
<td>60% CNPCIC</td>
</tr>
<tr>
<td>Commercial Bank Tchad (CBT)</td>
<td>Financial service activities (except central banking, insurance, and pension funding)</td>
<td>Capital: 4,050 million; 3 counters FCFA</td>
<td>50.84% Government of Chad in BEAC statement 62% according to KPMG</td>
</tr>
<tr>
<td>Company Name</td>
<td>Industry/Activity</td>
<td>Ownership</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>--------------------------------------------------------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td>Société des Hydrocarbures du Tchad (SHT)</td>
<td>Hydrocarbons</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Société Nationale de Ciment (SONACIM)</td>
<td>Cement</td>
<td>92%</td>
<td></td>
</tr>
<tr>
<td>Caisse Nationale de Prévoyance Sociale (CNPS)</td>
<td>Social Security</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Banque Agricole et Commerciale (BAC)</td>
<td>Financial service activities (except central banking, insurance, and pension funding)</td>
<td>Capital: 3,000 million FCFA 50% Government of Chad 50% Government of Sudan (according to KPMG) 100% (according to BEAC sheet)</td>
<td></td>
</tr>
<tr>
<td>Société Tchadienne d'Hydraulique (STH)</td>
<td>Hydraulics</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Manufacture des Cigarettes du Tchad (MCT)</td>
<td>Tobacco</td>
<td>Only producer in Chad (?) 100% according to KPMG; belongs to Imperial Tobacco according to the internet</td>
<td></td>
</tr>
<tr>
<td>CNPC International Chad (CNPCIC)</td>
<td>Hydrocarbons</td>
<td>50% Cliveden (Swiss) 50% CNPCIC (according to KPMG)</td>
<td></td>
</tr>
<tr>
<td>Abattoir Farcha-N'Djamena</td>
<td>Meat</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>
## 7. Sectors with SOE presence

The below table applies the sector classification used in the OECD’s Product Market Regulation (PMR) database to Chadian SOEs. The PMR and the findings from this table are used in the comparison of SOE presence in Chad to other countries presented in section B above.

<table>
<thead>
<tr>
<th>National, state or provincial governments control at least one firm in the sector</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity generation, import, transmission, distribution and supply</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Natural gas generation, import, transmission, distribution and supply</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Telecommunication fixed line, mobile and internet services</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Post basic and courier services</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Railways transport</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Air transport</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Operation of air transportation infrastructure</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Operation of water transportation infrastructure</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Operation of road infrastructure</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Water collection, treatment and supply</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Manufacture of tobacco products</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Manufacture of refined petroleum products</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Manufacture of basic metals</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Manufacture of fabricated metal products, machinery and equipment</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Building and repairing of ships and boats</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Manufacture of railway and tramway locomotives and rolling stock</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Manufacture of aircraft and spacecraft</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Wholesale trade, incl. of motor vehicles</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Retail trade, incl. of motor vehicles</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Accommodation, food and beverage service activities</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Other urban, suburban and interurban passenger transport</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Financial service activities, except central banking, insurance and pension funding</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Insurance, reinsurance and pension funding</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Other business activities</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Human health activities</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Motion picture distribution and projection</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>11</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>
F. REFERENCES


Productivity Growth. Washington D.C.


