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Macro-Fiscal Gains from Anti-Corruption Reforms in the Republic of Congo

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Abstract

This paper argues that oil revenue management and public investment in Congo are vulnerable to corruption as a result of limited transparency and accountability. Corruption has potentially contributed to poor macro-fiscal outcomes. The paper acknowledges the authorities' anti-corruption efforts made so far and proposes further critical reforms to reduce remaining vulnerabilities. Using a dynamic stochastic general equilibrium model results show that, depending on the reforms adopted, the potential additional growth can range between 0.8 to 1.8 percent per year over the next 10 years, and debt can decline by 2.25 to 3 percent of GDP per year over the same period. These results suggest that macro-fiscal gains from anti-corruption reforms could be substantial even under conservative reform scenarios.

I. INTRODUCTION

The Republic of Congo is the third largest oil producer in sub-Saharan Africa (SSA). Oil production is estimated at an annual average of 86 million barrels between 1990 and 2018. Between 2007 and 2017, oil generated on average around 70 percent of fiscal revenues and accounted for 85 percent of merchandise exports. Between 1991 and 2015, it generated close to US$3 billion in annual rents, or $687 in rents per capita every year.[2] However, oil fiscal receipts in Congo collapsed from an average of 51 percent of the value of oil production in 2005–14 to less than 30 percent in 2015. The ratio of oil revenues to exports also deteriorated from 53 percent in 2014 to 30 percent in 2016-2018, well below the average of SSA oil exporters which stand at around 45 percent. This decline in oil revenue has coincided with a change in in the legal framework governing oil production.

Large windfalls financed a surge in public investment, bringing capital spending from an average of 29 percent of GDP in the 1990s to a peak of 48 percent in 2014, far above the ratio in other LIDCs and sub-Saharan African countries. Meanwhile, the ratio of the stock of public capital to GDP has not kept pace with the rapid scaling-up of investment (figure 1). Moreover, this large investment spending was not necessarily the most efficient as IMF estimates public infrastructure investment efficiency of in Congo at 0.35, well below the 1.00 threshold (IMF, 2015).

Figure 1. Nominal Investment and Capital Stock (percent of GDP)

Source: IMF staff calculations
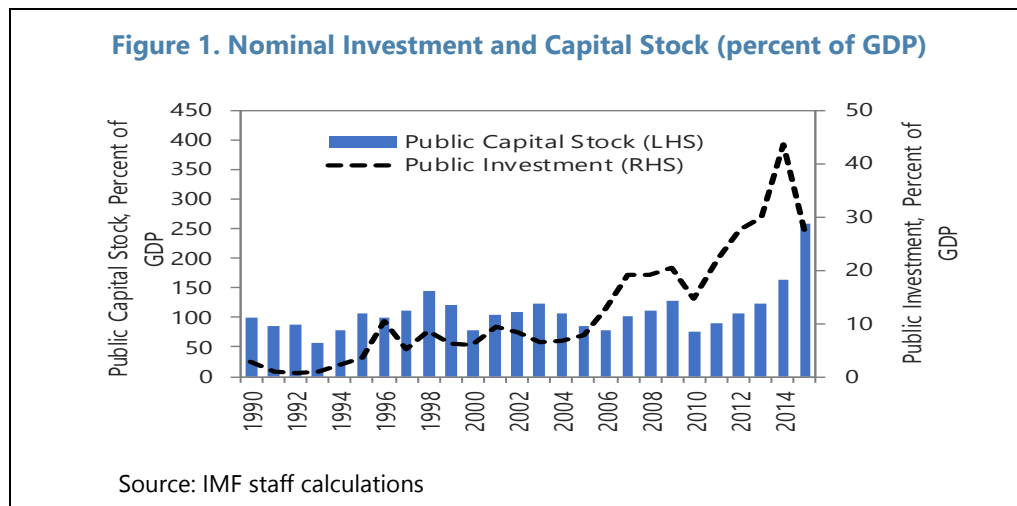
Meanwhile, oil revenue management and public investment spending occurred in a context where corruption is perceived to be prevalent as measured by a range of internationally recognized indicators relative to other countries in the SSA regions (figures 2a and 2b). Their potential of the oil wealth and public investments to contribute to poverty reduction and growth did not fully materialize. Overall socio-economic performance has been dismal. GDP per capita growth, remained below other SSA countries with lower or no resource wealth (Figure 2c). Other symptoms of weak performance include volatile growth, debt overhang and deep-rooted poverty (Figures 2d, 2e, and 2f). Despite some reduction in poverty observed between 2005 and

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[2] Rent is defined as the difference between the value of crude oil production at world prices and the total costs of production.

2011, cross-country comparisons suggest that the level of poverty in Congo is much higher than in comparable middle-income countries (World Bank, 2017a). Finally, with a Gini coefficient estimated at 0.465 in 2011, Congo remains among the most unequal societies in the world (World Bank, 2017a).

In this context, this paper has two objectives. First, it explores the transmissions channels between vulnerabilities to corruption and macro-fiscal outcomes in Congo. The paper focuses on these two sectors because they involve the management of massive flows of public funds, and the interaction between the public and private actors. With limited transparency and accountability in those sectors, collusive institutional arrangements between public and private actors could enable corrupt practices that undermine macro-fiscal outcomes.

Second, the paper uses the use of Debt, Investment, Growth and Natural Resources (DIGNAR) model to assesses macroeconomic gains from anti-corruption reform in Congo. This dynamic stochastic general equilibrium (DSGE) model developed for resource-rich developing economies by Melina and others (2016) is used to simulate the impact of anti-corruption reforms on macro-fiscal outcomes. This model, also used in IMF (2018a), captures problems that tend to arise during investment surges such as investment inefficiency, limited absorptive capacity and learning-by-doing externalities that affect total factor productivity in the tradables sector, contributing to Dutch disease effects. Relative to similar models developed by van der Ploeg (2012), Buffie et al. (2012) and Berg et al. (2013), DIGNAR allows simulations where investment is financed with both resource revenue and debt creation.

The findings of this paper are timely as authorities in the Republic of Congo have come to recognize the need to fight corruption as a development priority. They prepared and published a Report on Governance and Corruption" (RGC) to inform their anti-corruption reform agenda[3], where they acknowledged that their efforts to date have not been effective and the need for a new policy of "breaking with the past" (RGC, 2018). The report identifies governance and corruption vulnerabilities in the rule of law, PFM systems, financial sector oversight, market regulation and the business climate, AML/CFT, and the anti-corruption framework (Box 1). It also suggests policy measures to address these challenges.

The remainder of the paper is structured as follows. Section II provides a brief literature review on oil wealth and corruption. Sections III and IV explain corruption vulnerabilities in oil revenue management and public investment respectively. Using a DSGE model, Section V simulates the potential impact of anti-corruption reforms on Congo's growth and public debt. The last section concludes and suggests possible reforms to reduce corruption risks.

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[3] The report applied the framework of IMF (2018).

Figure 1. Corruption Perception Indicators and Macro-Fiscal Outcomes in Congo

a. *Corruption perception scores have been persistently poor*
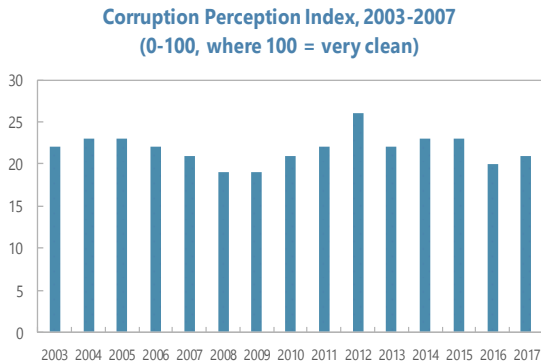
b. *And worse than in other SSA countries*

Corruption Perception Index, 2003-2007
(0-100, where 100 = very clean)

WGI: Control of Corruption, 2016
(Score; -2.5 to 2.5, where 2.5=best)
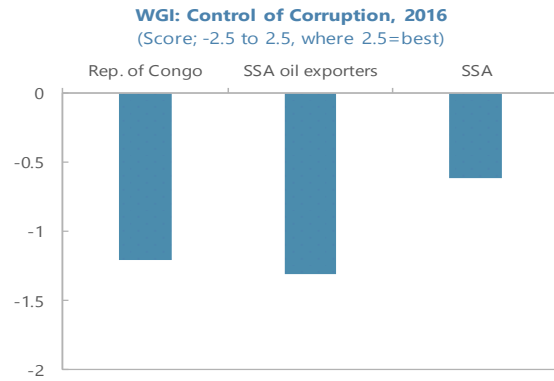
c. *Growth has been low*

d. *And highly volatile*

Oil Rents and Growth, Average, 1991-2015

Oil rents (% of GDP) ◆ GDP per capita growth (annual %; RHS)

World: Corruption and 5-year Growth Volatility, 2013-17

5-year growth volatility

Corruption Perceptions Index score, 2017
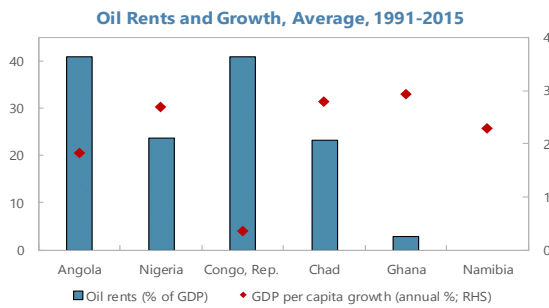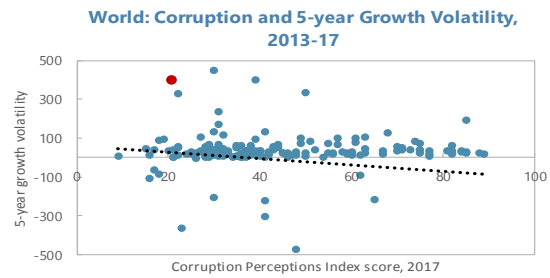
e. *Debt stock is large*

f. *And poverty is high.*

SSA: Debt[1] and Corruption

Debt (percent of GDP)

Corruption Perceptions Index score, 2017

World: Poverty and Corruption

Poverty rate

Corruption Perceptions Index score (100=best)
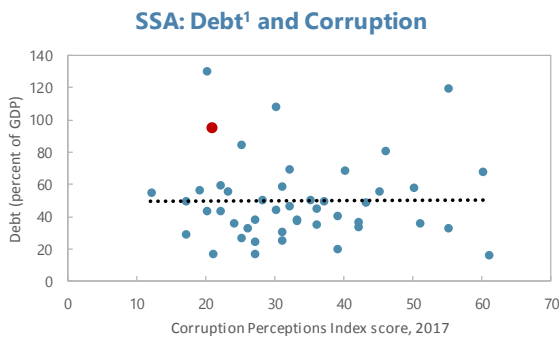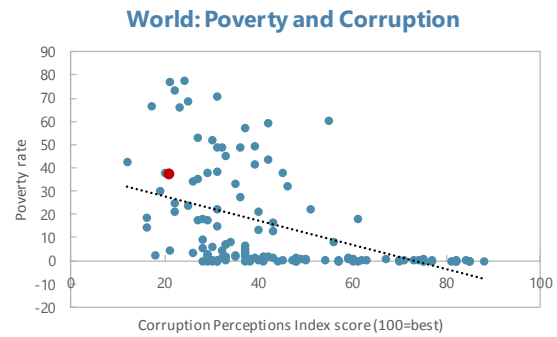
1. Debt is given as the average debt from 2013–17.
Note: TPI indicators reported in the figures may be subject to uncertainty. The red dot in figures d, e and f refers to Congo. The Corruption Perceptions Index is scored from 0 – 100, where 100 = best.

Sources: Transparency International, World Development Indicators, Worldwide Governance Indicators, IMF World Economic Outlook and staff calculations.

Box 1. *Report on Governance and Corruption (RGC)***: Summary of Main Findings**

There are significant challenges in implementing and enforcing the rule of law. Congo's governance system suffers from implementation deficit, reflected by a failure to enact implementing regulations, weak institutions, or by simple inaction. There is also a significant shortfall in transparency and public data reporting. Congo is one of the few countries where the central government does not have an official website. Finally, the enforcement of claims remains a significant challenge, with public trust in the legal system, notably the courts, being particularly weak.

There is ample scope to strengthen governance in PFM and address corruption vulnerabilities. On the revenue side, in relation to natural resources (especially oil), governance challenges result in a significant leakage of revenues before they reach the national budget. Weaknesses in procurement— e.g., lack of due diligence in contracting and sanctioning systems, as well as frequent opportunities for circumventing formal processes—result in significant losses. Excessive spending has been a major factor in the significant increase in the debt stock (from 20 percent of GDP in 2010 to 118 percent in 2017). Internal control systems are very weak. Both the internal and external audit agencies are insufficiently empowered to perform their functions effectively. Other structural weaknesses include poor control of the public-sector wage bill.

Governance challenges also affect market regulation and the business climate. The government recognizes the diverse challenges, including the hurdles and costs to start a business, the weakness of public registers of land and companies, and the many-layered tax services, and the potential for abuse of these services.

Governance vulnerabilities are inadequately addressed through the Anti-Money Laundering (AML) framework, which is weak. As a signatory to UNCAC, ROC has enacted laws intended to address AML weaknesses, but these have significant limitations. Also, agencies created to detect and investigate the laundering of the proceeds of corruption have not been properly staffed or trained, lack coordination, and do not have the necessary powers to carry out their legal mandates.

The anti-corruption efforts need significant strengthening to address these governance vulnerabilities. The current weaknesses lie principally in gaps in the statutory framework, and in the ineffectiveness of the institutions tasked to implement anti-corruption laws, both specially tasked institutions (such as the CNLCCF) and the regular enforcement agencies. The anti-corruption agencies are not independent and lack legal enforcement powers.

Source: RGC, 2018.

II. Literature Review

The early literature on economic growth in resource-rich economies attributed their disappointing economic performance to a "curse" which refers to the paradox that countries with an abundance of natural resources often fail to grow as rapidly as those without such resources

(Sachs and Warner, 1994).[4] The initial interpretation of the curse rested on pure economic grounds arguing that large resource windfalls lead to Dutch disease, overall macroeconomic volatility and debt overhang, among other ills (Corden, 1984; and Ploeg and Poelhekke, 2009).[5] The subsequent literature claimed that oil wealth reduces growth because it can generate corruption and rent-seeking activities—a voracity effect—which adversely affects long-run growth (Tornell and Lane, 1999). The link between oil and corruption becomes clearer during resource booms which tend to divert resources towards less productive and/or rent-seeking activities such "white elephants" which are investment projects with a negative social surplus (Robinson and Torvik, 2005 and Collier and Goderis, 2007). Arezki and Brückner (2011) provide empirical evidence that oil rents increase corruption in oil-exporting countries with a high share of state participation. Using a panel of 29 SSA countries for the period 1985–2007, Arezki and Gylfason (2013) provide evidence that larger resource rents lead to more corruption.

Recent strands of the literature show that the relationship between oil wealth, growth and corruption depend on the quality of institutions, especially the presence of a system of checks and balances that limit the abuse of political power and the misuse of resource rents (Bhattacharyya and Hodler, 2009 and Elbadawi and Soto, 2016).

Corruption can also lead to collusion between public and private agents when existing institutional arrangements facilitate rent extraction. Such arrangements persevere when there is lack of transparency about oil-related financial transactions and limited accountability of public officials for such transactions. As governments do not have incentives to implement adequate policies for project selection and public procurement, they are likely to discretionally allocate spending allocations to favor projects that allow them to collect bribes and/or with which political incentives are aligned (Rose-Ackerman, 1996 and World Bank, 2007). This results in a misallocation of public resources including investment spending which is not allocated to the most productive and efficient projects (Mauro, 1996 and Tanzi, 1998). Meanwhile, private agents with vested interests also have incentives to maintain poor governance (Kaufmann and Wei, 1999). They often have the power to influence the design of sector policies including the enactment of laws, the awarding of exclusive rights, and tax breaks in a manner intended to derive political or personal gains at the public expense (World Bank, 2007).

III. OIL REVENUE MANAGEMENT

Large oil rents could create incentives to "grand corruption" at various stages of the oil value chain including exploration, development, and production and trading. If left unaddressed, these vulnerabilities could result in the misappropriation of public sector funds. This section identifies

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[4] The term resource curse is attributed to Auty (1993).

[5] Dutch Disease occurs when the appreciation of the real exchange rate due to increased resource revenues spent on non-tradable goods leads to a decline in the competitiveness of the non-resource sector, thus reducing manufacturing (Corden, 1984).

three main sources of corruption risks in oil revenue management in Congo, namely,[6] (i) the Production Sharing Agreements (PSAs); (ii) inadequate budget reporting and misallocation of oil funds; and (iii) the national oil company, the Société Nationale Pétroliere du Congo (SNPC) (Figure 3).

Figure 3. Corruption vulnerabilities in Oil Revenue Management

Oil Sector Fiscal Revenues and Expenditures

Production-Sharing Agreements (PSAs)

- Lack of transparency about PSA implementation
- Absence of audit of costs claimed by oil companies
- Local content requirments

Government Agencies

- Weak forecasting of oil production
- Poor reconciliation of financial flows between SNPC and Treasury
- Off-budget operations including to finance oil-bartered investments
- Lack of transparency in subsidies to local refinery
- Weak supervisory capacity including on AML

SNPC

- Opacity about oil sales and traders
- Weak corporate governance
- Lack of internal control and external audit
- Ability to acquire debt without parliamentary approval

A. Production Sharing Agreements

Production Sharing Agreements (PSAs) allow Congo to retain ownership of its oil resources but grant the rights of exploration and production within a specified area, and for a limited period, to a private oil company or consortium (the contractor). The contractor assumes all costs that are later recovered against a share of oil production. Production sharing terms between the oil companies and the government determine the oil share that each party will receive from total production and therefore how much revenue will flow to the Treasury.

The 2016 Hydrocarbons Code (enacted by Parliament but still lacking implementing regulations) provides a more transparent basis for the awarding of licenses in the petroleum sector, as well as guidance on the main production-sharing fiscal terms—royalties, cost recovery, profit-sharing,

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[6] Important players in the oil sector include the Ministry of Hydrocarbons, the Ministry of Finance, SNPC, international oil companies, and oil traders.

and taxation. The Code also requires the Parliament to approve all PSAs and requires that they are published in the official gazette. Yet, a lack of transparency about some contractual terms (such as the amount of the signature bonus) may disguise illegal payments to public officials. Moreover, exemptions granted to oil companies are not published at the end of each fiscal year and operating costs claimed by them are not audited. If exemptions are too high or these costs overestimated, then these terms would lower the share of oil supposed to accrue to the government.

Moreover, the specific terms of PSAs are negotiated on a case-by-case basis between the government and private sector oil companies. These negotiations are complex and are recognized by the authorities to be open to abuse by the companies. The opacity of these negotiations may also create incentives for corruption. For example, the authorities offered more generous fiscal terms to oil companies in 2015 (Table 1).

These revised terms—which have affected about half of oil production since 2015—increased the ceilings for

Table 1. Republic of Congo: Old and New PSA Terms (% of Production)

	Old fiscal terms	New fiscal terms
Government shares		
Royalties	12%	15.0%
Cost Stop	50%	50%
TP (US$/bbl)	42	56
Excess oil	50%	50%
Profit oil	60%	50%
Super profit oil	70%	66%
Cost oil ($/bbl)	45	45
Oil companies' share		
Excess oil	50%	50%
Profit oil	40%	50%
Super profit oil	30%	34%

Sources: Authorities' data and staff's estimates.

costs recovered by the companies and lowered the government's share of profits. The new terms were meant to compensate oil companies for relatively higher costs in a low-oil price environment, and to attract interest in Congo's maturing oil fields and inaccessible deep-water fields where exploration and development operations are expensive. However, they have significantly reduced the government's share of oil production from 57 percent in 2012–14 to only 43 percent in 2015 and to around one-third in later years thus depriving the state of substantive fiscal revenue (Figure 4a). Simulations show that if the government had retained the old fiscal terms, the oil price decline would still have reduced the government share from oil production but only to an average of 52 percent of total production (Figure 4b). The new terms, which are unfavorable to the state on almost all accounts, principally benefit private sector oil operators in the upstream oil market. The latter is dominated by two international oil companies which control more than 70 percent of Congo's oil production.

Figure 4. Fiscal Receipts and Distribution of Oil Production in Congo, 2012–17

a. *New fiscal terms under low oil prices*

b. *Old fiscal terms under low oil prices*

Note: Oil production shares were estimated by staff based on PSA terms. Scenario B reflects a simulation based on oil fiscal terms.

Sources: Authorities and IMF staff calculations

The introduction of local content requirements under the 2016 Hydrocarbons' Code is another potential source of corruption risks. The Code requires that national companies (defined as companies based in Congo where more than 50 percent of shares are held by individuals with Congolese nationality) hold a 10 percent share in new joint ventures but subjects them to the same obligations as other contractors. Moreover, oil contractors must employ Congolese personnel and give preference to equipment and services of Congolese origin, if the price of this labor and equipment is no more than 10 percent higher than that of foreign equivalents. Moreover, at least 25 percent of the development and operational costs of oil fields must be sourced locally. If these requirements are not met, the companies are not allowed to recover any additional costs incurred. While such requirements can support diversification, they represent a significant risk of rent-seeking if not implemented under a transparent framework. The provisions could be a potential source of corruption if they are used to favor local companies with political connections, and/or to channel and conceal "kickback" schemes to public officials (World Bank, 2007).

B. Misallocation of Oil Funds and Inadequate Budget Reporting

The uncertainty of estimates of oil receipts stemming from commodity price volatility complicates oil revenue management. The forecasting of oil revenues suffers from substantial weaknesses. The General Directorate for Hydrocarbons, and the Natural Resources Office of the Cabinet of the Ministry of Finance work closely with the SNPC and selected international oil

companies to validate projections of oil production. However, there is no clear methodology used for oil forecasting, and there are inconsistencies between the estimates of oil production and oil revenues produced by the oil companies at the end of the year and the data collected by the Ministry of Finance. Moreover, reconciling the value of production from oil sales based on PSAs terms with amounts received by the Treasury has been problematic.

A reconciliation exercise done with assistance of IMF staff for the period 2014–17 helped identify substantial amounts of off-budget oil revenue. These amounts relate primarily to oil-backed pre-financing arrangements contracted by SNPC with oil traders (US$2.3 billion), and special contracts with oil companies which were repaid with the equivalent of at least US$ 0.5 billion in annual withholdings of government oil. They were largely used to finance infrastructure projects including a power station (EITI, 2014). The oil reconciliation exercise also identified additional oil revenue (about US$250 million per year) that bypassed budget processes. These amounts were reportedly used to finance transfers to the oil refinery as well as payments of the government's share in the operating costs of the five oil fields in which it participates.

Finally, the lack of enforcement of the repatriation and surrender of foreign exchange provisions associated with the Anti-Money Laundering (AML) framework is another concern. According to CEMAC regulations, export proceeds received in foreign currencies must be repatriated by companies and surrendered to the regional central bank within one month of collection. The authorities have indicated that multinational companies tend to evade this requirement. Compared to peer countries, Congo shows below-average performance on a range of AML indicators and the trend in these indicators shows little to no improvement over time (RGC, 2018).

C. The Role of the SNPC

Created in 1998, SNPC has been a key player in the oil sector.[7] It has the dual mandate of managing its own share of production received through stakes in oil fields from joint-ventures with oil companies and managing the state's oil share on behalf of the government. In its latter capacity, SNPC represents the state's interests in all third-party contractual negotiations, signs PSAs on behalf of the state and receives the state's in-kind share of oil. Yet, the regulations governing the management of the state's oil resources are loosely implemented by the SNPC which may conceal corruption risks.

SNPC also remits the proceeds of oil sales—net of its fees—to the Treasury on a quarterly basis (EITI, 2015). Yet, accounting for oil revenue flows and related financial transfers between the government and the SNPC remains inadequate. EITI reported being able to reconcile the quarterly oil transfers between oil producers and SNPC based on PSAs. Yet, it has not been able to reconcile the quarterly transfers disclosed by SNPC with those received by the Treasury.
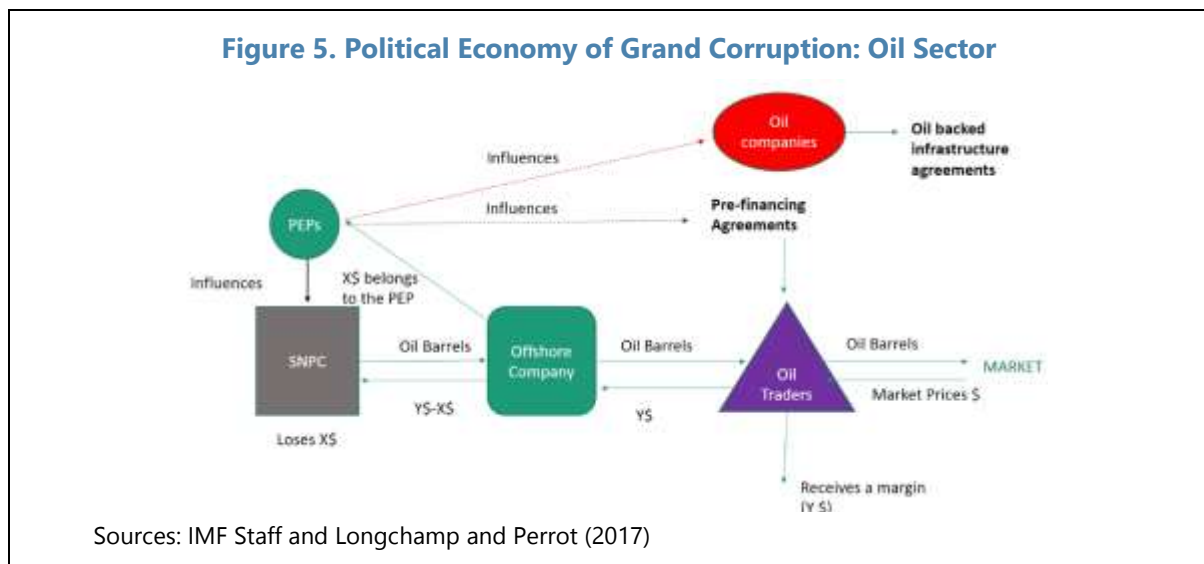
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[7] SNPC has five subsidiaries (Sonarep, SFP, ILOGS, CORAF, CRS-Distribution) covering the entire oil industry value chain.

In part, this may be explained by weak capacity but in larger part, they can be explained by corruption vulnerabilities as a result of weak corporate governance in SNPC.

Figure 5 describes the key corruption vulnerabilities surrounding SNPC. Politically Exposed Persons (PEPs) can influence decisions related to oil trading transactions conducted by the SNPC on behalf of the government including through pre-financing and oil-backed infrastructure agreements (Longchamp and Perrot, 2017).[8] In the absence of full transparency and sufficient oversight, proceeds of these transactions may have been channeled abroad to companies had obscure beneficial ownership or which could be related to a PEP or someone in his patronage network (Longchamp and Perrot, 2017).[9]

These vulnerabilities persist against a backdrop of lack of transparency about SNPC's oil trading operations lack transparency. There is a severe lack of published timely and regular information on (i) regulations for competitive public tenders for the sale of oil, (ii) objective criteria for the selection of buyers or pre-qualification of local suppliers, (iii) a list oil buyers and/or traders, and (iv) the volume of oil sales and their pricing. The opacity of oil trading transactions also raises concerns about potential mispricing of these transactions, which may allow the buyers to resell oil to traders at an inflated margin. World Bank (2007) reports that financial audits uncovered that SNPC was selling the state's share of crude oil production at prices that were 5 to 6 percent below market.

Figure 5. Political Economy of Grand Corruption: Oil Sector

Sources: IMF Staff and Longchamp and Perrot (2017)

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[8] According to the Financial Action Task Force, a PEP is an individual who is or has been entrusted with a prominent function. Many PEPs hold positions that can be abused for laundering illicit funds or other predicate offenses such as corruption or bribery.

[9] See the case of cases Philia and Vitol in Longchamp and Perrot (2017).

IV. PUBLIC INVESTMENT AND PUBLIC SERVICE DELIVERY

Congo's public investment program had the potential of filling the infrastructure gap and enhance the provision of basic infrastructure and public services such as infrastructure in transportation, energy as well as health, and education. As noted in the RGC, this rapid scaling-up of public investment has occurred in a poorly-managed, non-transparent, inefficient environment and with strong perceptions of corruption (figure 6a).[10] This section identifies corruption vulnerabilities in public investment spending.

Public investment surges could often result in poor project efficiency, waste or fraud in public resources if not carried out under transparent and adequate public financial management (PFM) systems. Otherwise, opportunities for corruption can arise at various stages of the investment project cycle starting from initiation and planning, allocation of resources, to implementation and procurement (see Figure 7).[11] During the planning phases, corruption risks stem from two aspects. First, limited available information on the government's public investment plans including for its PPP strategy suggests that programming and budgeting processes for public investment are weak and not well-coordinated. Second, there are no clear guidelines (or an underlying regulatory framework for PPP) to guide the planning and management of projects, and no clear and objective criteria for project selection. As such, projects are not systematically subject to a rigorous technical, economic, and financial appraisal which may raise concern about their overall efficiency (RGC, 2018). To the extent that such appraisals are done, they do not undergo independent external review and are not published. Major projects (including those funded by development partners and through PPPs) are not scrutinized by a central ministry, with input from an independent agency or experts prior to inclusion in the budget.
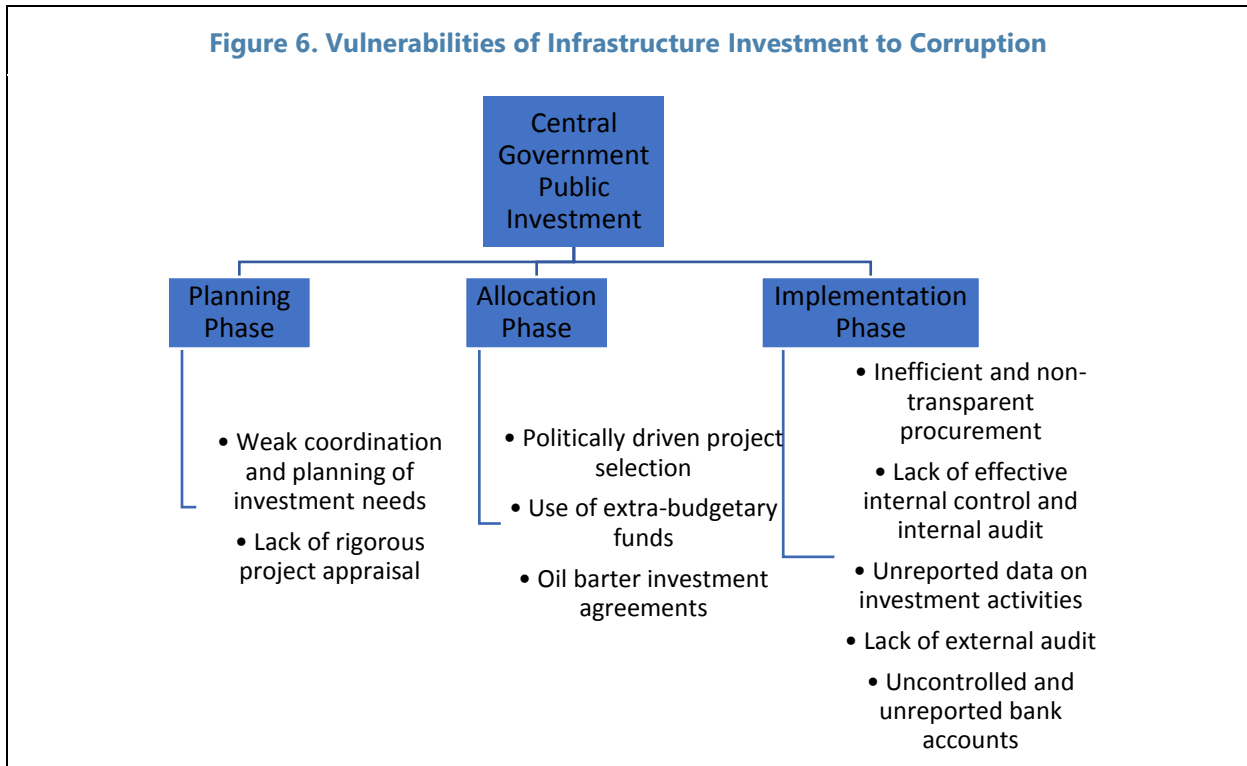
The lack of transparency during the project allocation phase provides opportunities for influence by PEPs who may financially benefit from the projects. Anecdotal evidence suggests that construction contracts are often allocated to members of the governing coalition, particularly if these contracts involve projects that provide high-value consumption goods to the Congolese elite (Bertelsmann Transformation Index (BTI), 2016). Firm survey data shows that around 75 percent of firms were expected to give gifts to secure a government contract. Against a lack of transparency and accountability for budget execution, discretionary extra-budgetary investment spending has occurred as it was the case of oil barter agreements explained in section III. The corruption risk associated with such agreements is that the selected infrastructure projects have bypassed official budget processes for selection, qualification and monitoring.

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[10] The analysis builds on the RGC's discussion of inefficiencies in public investment.

[11] A diagnostic tool, the Public Investment Management Assessment (PIMA), has been developed by the IMF to assess the efficiency of public investment management during each phase of the investment cycle. PIMAs have now been carried out for more than 50 countries, not including the Congo. See IMF, 2015, and 2018b.

Figure 6. Vulnerabilities of Infrastructure Investment to Corruption

Central Government Public Investment

- Planning Phase
- Allocation Phase
- Implementation Phase

Planning Phase:
- • Weak coordination and planning of investment needs
- • Lack of rigorous project appraisal

Allocation Phase:
- • Politically driven project selection
- • Use of extra-budgetary funds
- • Oil barter investment agreements

Implementation Phase:
- • Inefficient and non-transparent procurement
- • Lack of effective internal control and internal audit
- • Unreported data on investment activities
- • Lack of external audit
- • Uncontrolled and unreported bank accounts

During implementation, weak procurement processes and internal controls may create widespread opportunities for sub-optimal decision making and misuse of public funds.[12] Public procurement is particularly susceptible to corruption if it endows excessive discretion to public officials when selecting private sector vendors or bidders, if processes are not transparent and the underlying the legislative, regulatory, and institutional frameworks are weak. Projects are sometimes tendered in a competitive process, but the public does not have access to complete, reliable and timely procurement information. However, there is no available data on public tendering versus direct procurement. Other corruption risks include insufficient controls of the procurement process; the absence of mechanisms to impose sanctions when the regulations are breached; and weak capacity of civil servants responsible for conducting procurement transactions in line ministries. Only a limited number of procurement audits have been conducted in recent years, and these excluded high-value contracts.

These weak PFM processes often mean that the selected projects are not the most productive or efficient and are carried out at excessive costs (RGC, 2018).[13] They may not necessarily have a significant impact such as improved access to electricity (figure 6b–6d). Moreover, the poorest

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[12] This section is based on the discussions between IMF staff and the authorities in December 2017 and April 2018. Other sources of information include PEFA (2014), European Commission. 2013, IMF (2017b), EITI (2016, 2014), RGC (2018) and World Bank. 2015, 2016a, 2017b, 2017c, 2017d).

[13] Examples of investments deemed inefficient by CSOs and other stakeholders are the Kintélé National Stadium, the Imboulou Dam Project, and the Congo Power Station. For a discussion of inefficient investments in Congo, See World Bank (2015).

10 percent of the population has no access to electricity. Also, only half of those in the poorest quintile have access to safe water compared to 90 percent for the richest quintile (World Bank, 2017a).

Some progress was made with the introduction of a new procurement law in 2009, the establishment of a complaint's mechanism review for monitoring and processing appeals, and the operationalization of the existing Public Procurement Regulatory Authority. Even though the law requires that procurement complaints be reviewed by an independent body, it is not known whether such reviews have been carried out or are rigorously enforced.[14] Beyond public investment, public sector corruption is perceived to be a major obstacle to doing business. Findings from the 2009 Investment Climate Assessment (ICA) survey for Congo also suggest that 65 percent of firms perceive corruption to be a major constraint to business (Figures 8a and b).[15] It generates costs when investors interact with various government administrations. Survey data indicate that informal payments or bribes are made by Congolese firms during tax inspections (Figure 8b). Close to 40 percent of firms have experienced at least one bribe request and were expected to give gifts to tax officials. This ratio increased to 82 percent for public officials. Also, investors face corruption when applying to obtain basic public services. Survey findings suggest that some firms were expected to make informal gifts or payments to apply for electricity or water connection, which may contribute to the high costs of doing business in Congo (Figure 8c and 8d).
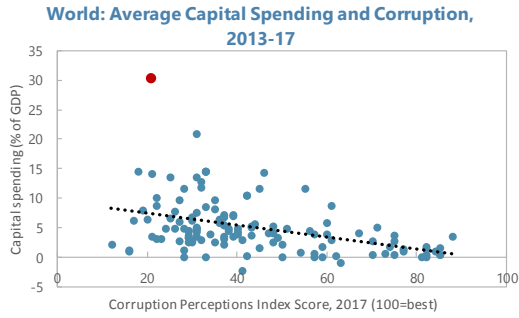
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[14] This section draws from discussions with authorities and from the RGC.
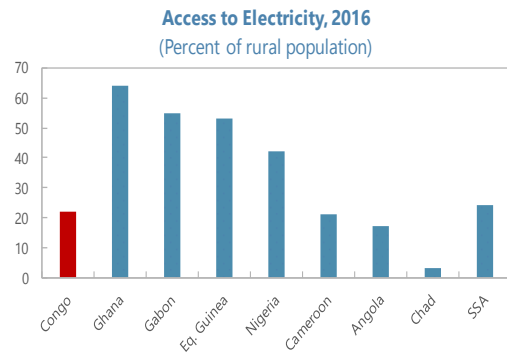
[15] In an opinion survey carried out in Congo by the World Bank in 2015, close to half of the respondents identified that public sector governance/reform should be a key development priority for the country. Around a quarter perceived that implementing governance reforms would help reduce poverty (World Bank, 2016b).

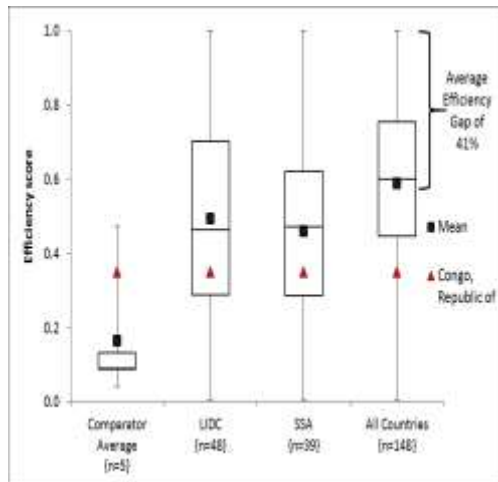## Figure 7. Corruption Perception Indicators and Public Investment Delivery and Efficiency in Congo, 2010–17

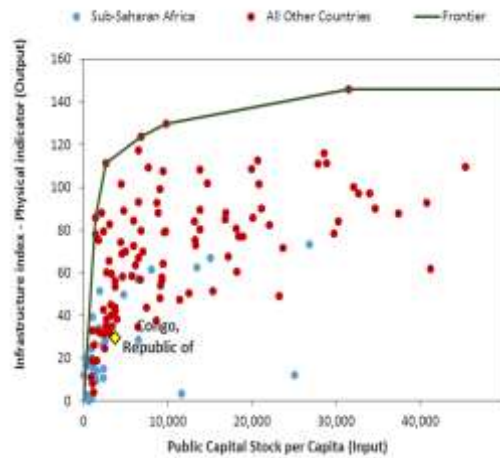*a. Excessive capital spending amid poor corruption perceptions*

World: Average Capital Spending and Corruption, 2013-17

Capital spending (% of GDP)

Corruption Perceptions Index Score, 2017 (100=best)

b. Public investment has not improved access of electricity

Access to Electricity, 2016
(Percent of rural population)

Congo, Ghana, Gabon, Eq. Guinea, Nigeria, Cameroon, Angola, Chad, SSA

c. Low efficiency of physical infrastructure

Efficiency score

Average Efficiency Gap of 41%

■ Mean

▲ Congo, Republic of

Comparator Average [n=5], LIDC [n=48], SSA [n=39], All Countries [n=148]

d. relative to more efficient frontiers

● Sub-Saharan Africa   ● All Other Countries   — Frontier

Infrastructure index - Physical indicator (Output)

Congo, Republic of

Public Capital Stock per Capita (Input)

Note: TPI indicators reported in the figure 2a may be subject to uncertainty. The red dot in figure 2b refers to Congo.
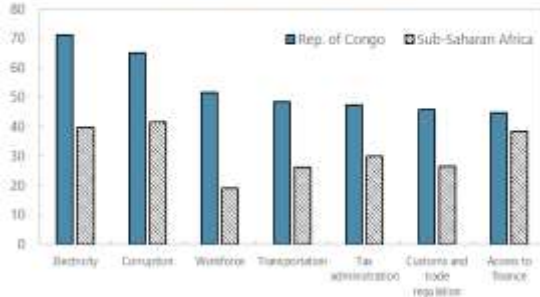
Sources: Transparency International, IMF (2015), and World Bank Development Indicators.

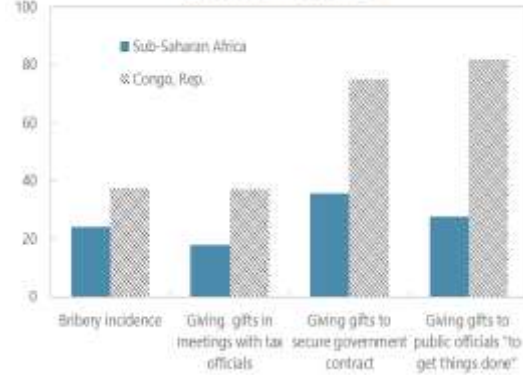**Figure 8. Perception of Corruption in the Public Sector and Doing Business in the Republic of Congo**

a. Corruption is perceived to be a major obstacle to doing business

b. Public sector corruption is reported to be high

c. The cost of getting electricity is inflated
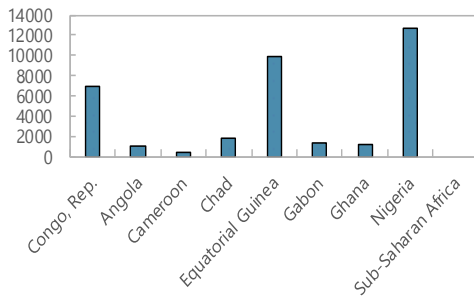
d. and contributes to higher cost of business procedures.
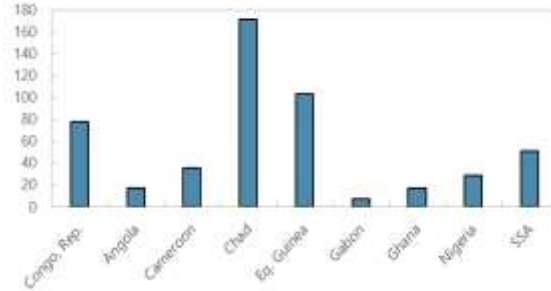
Note: The latest available Enterprise survey data are from 2009.

Sources: World Bank Enterprise and Investment Climate Assessment (ICA) survey results and World Bank Doing Business 2018.

V.   DIVIDENDS FROM ANTI-CORRUPTION REFORMS

This section uses the DIGNAR model to simulate the impact of anti-corruption reforms on macroeconomic and fiscal outcomes in Congo (Melina and others, 2016). The model was initially conceived to analyze the macroeconomic and debt sustainability effects of scaling-up public investment in resource-rich developing countries. It is a real dynamic neoclassical open economy model with traded, non-traded, and natural resource sectors. It accounts for problems that may be arise during investment surges in resource-rich economies such as investment inefficiency, limited absorptive capacity and learning by doing externalities that can deliver Dutch disease effects.

The DIGNAR model is extended to simulate the impact of anti-corruption reforms on output, private investment, private consumption and debt, along the lines of the analysis presented in the new IMF framework for enhanced engagement on governance (IMF, 2018a). It incorporates anti-corruption reforms to address corruption vulnerabilities described in sections III and IV through: (i) a reduction in bribery of public officials and other distortions (captured by an implicit tax similar to a bribe rate) which would boost private sector investment, (ii) an improvement in public investment processes which would raise public investment efficiency and translate into a larger capital stock [16] (iii) a more efficient government bureaucracy which would reduce tax evasion, widen the tax base and increase tax revenues, and finally, (iv) an improvement in oil sector governance that would correct mispricing of Congolese crude oil exports which would lead to higher oil fiscal revenues.

Three different reform scenarios are calibrated. The baseline scenario captures the effect of an ambitious but realistic reform package that would advance Congo within the distribution of SSA countries. The second scenario assumes a partial reversal of reforms as commitment to governance reforms may falter over time. Finally, a more conservative scenario is calibrated with less ambitious reforms.

Under the baseline scenario, the reforms are calibrated such that: i) the reduction of bribes would boost private sector investment within ten years from 14 to 16 percent of GDP, advancing Congo by a decile in the distribution of SSA countries; ii) public investment efficiency would rise from 0.43 to 0.58, which is the median level of SSA countries[17]; iii) non-oil revenue would increase by 2 percentage points of GDP[18]; and iv) the mispricing of Congolese crude oil exports would be corrected resulting in an additional 7 percent of total oil revenues.[19]

Baseline simulations show that these reforms can increase the level of real non-oil output by 18 percent in 10 years, implying approximately an additional growth of 1.8 percent per year on average, with a crowding-in effect on private consumption and investment (Figure 9). Anti-corruption reforms would also reduce public debt at a rate of about 3 percent of GDP per year. Moreover, 10 percent of the increase in growth and almost one third of the reduction in public debt is the outcome of improved oil sector governance.

The large growth dividends can be explained by Congo's poor initial conditions including very low investment efficiency. They are also of the same order of magnitude as average simulation results for other developing countries, as well as cross-country empirical estimates reported in IMF (2018a).

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[16] More details on the technical aspects of the model and its calibration to Congo are provided in the Annex.

[17] Improvements in public investment efficiency captures the idea of "investing in investing" suggesting that it can be a powerful output enhancing channel. (Berg and others, 2015).

[18] FAD estimate for an efficiency index ranging between 0 (worst) and 1 (best). This is a somewhat conservative assumption as PFM reforms can improve revenue mobilization by a more significant margin.

[19] This indicative figure is derived from an oil reconciliation exercise undertaken by staff. If Congolese crude oil were sold at Brent prices, the government would be able to accrue an additional 14 percent of oil revenue. If around 7 percent of revenues are due to the lower quality of the Congolese crude, then the remaining 7 percent could capture revenues lost to corruption.

Finally, these reforms are only a subset of possible reforms that Congolese authorities may choose to pursue. It is reasonable to conjecture that coupling governance reforms with broader fiscal reforms is likely to deliver much larger growth dividends.

Figure 9. Baseline Scenario: Macro-Fiscal Gains from a Comprehensive Anti-Corruption Reform Package
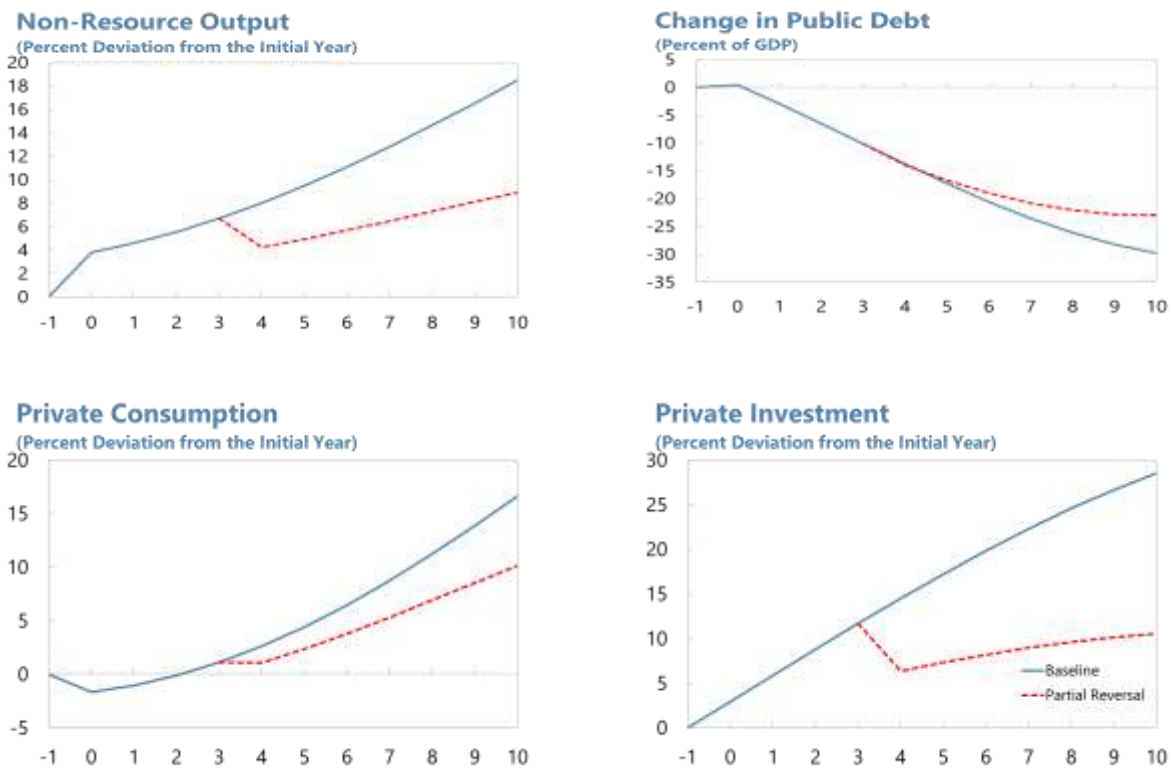
Notes: x-axis reflects years. Policy changes occur in year 0. Red line refers to a scenario when there is partial reversal of reforms in year 4.

Sources: DIGNAR model simulations and IMF staff calculations.

Table 2 reports the average annual effects of each reform in isolation. A few observations can be made. First, given the general equilibrium and nonlinear features of the model, the combined effects of the comprehensive reform package are somewhat greater than the sum of individual effects obtained in isolation. Second, reforms that reduce distortions (e.g. bribery) constraining private sector investment and that improve public investment efficiency account for the largest impact on growth. Meanwhile, reforms that boost GDP and therefore widen the tax base account for most of the reduction in the government debt to GDP ratio. Third, reforms that target the correction of oil mispricing help improve debt sustainability to a significant extent, but they have a rather moderate effect on growth. Finally, improving revenue mobilization has a limited impact on both growth and debt given the conservative assumption applied.

Table 2. Republic of Congo: Average Annual Effects of Anti-Corruption Reforms over a 10-year Horizon (percentage points)
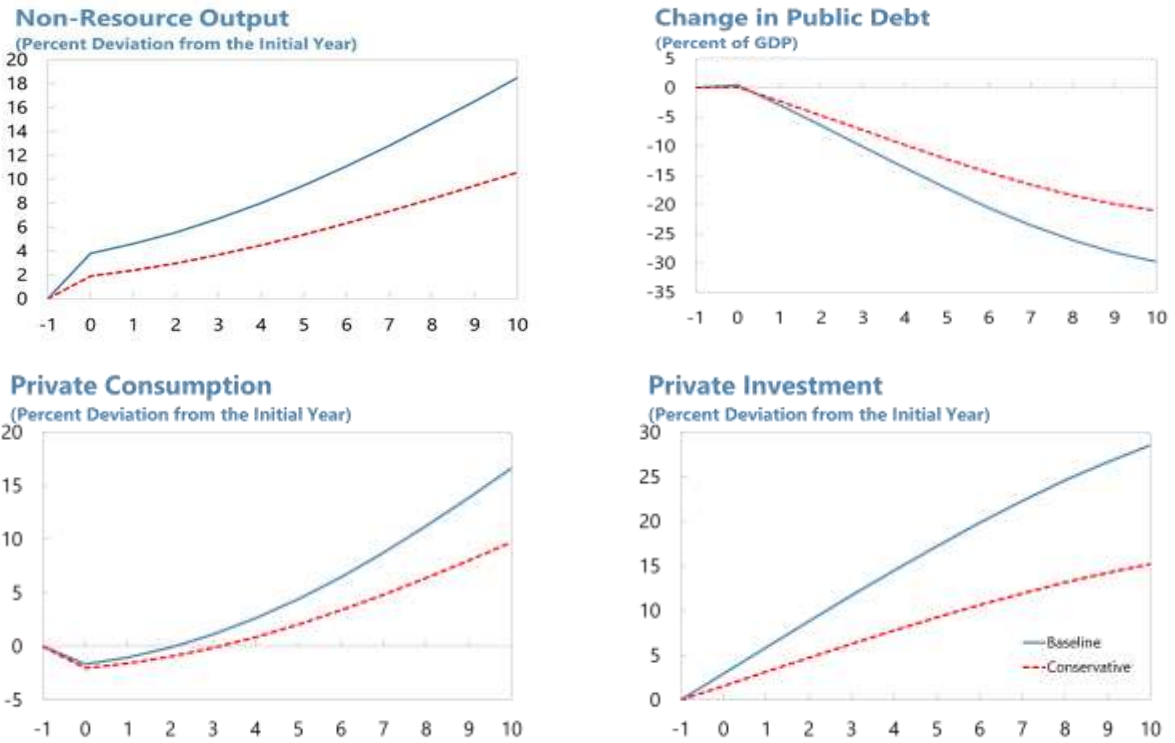
	Reducing Firms' distortions	Enhancing Public investment efficiency	Enhancing revenue mobilization	Correction of oil mispricing
Additional annual GDP growth	0.9	0.4	0.2	0.2
Average annual reduction in the public-debt-to- GDP ratio	0.8	0.6	0.2	0.8

Additional simulations suggest that economic dividends from anti-corruption reforms remain significant even under a partial reversal of reforms or the adoption of less ambitious reforms (Figures 9 and 10).

The second scenario assumes that gains are partially reversed after three years. This reversal is captured by the following assumptions: a decline in private investment to 14.5 percent of GDP, a deterioration of public investment efficiency to 0.47, a decline in non-oil revenue by 0.5 percentage points of GDP and oil fiscal revenues by 1.75 percent. The calibration shows that anti-corruption reforms would yield an average increase in non-oil growth would be 0.8 percent per year and a decrease in public debt by 2.25 percent of GDP per year.

In the third more conservative scenario, the reforms are calibrated to lead to: i) an increase in private sector investment from 14 to 15 percent of GDP; ii) an increase in public investment efficiency to 0.5375; iii) an increase non-oil revenue mobilization by 2 percentage points of GDP; and iv) oil revenues would be 3 percent higher. This scenario yields an average increase in non-oil growth of about 1 per year and reduces public debt by 2 percent of GDP per year (Figure 10).

Figure 10. Conservative Scenario: Macro-Fiscal Gains from a Comprehensive Anti-Corruption Reform Package

Non-Resource Output
(Percent Deviation from the Initial Year)

Change in Public Debt
(Percent of GDP)

Private Consumption
(Percent Deviation from the Initial Year)

Private Investment
(Percent Deviation from the Initial Year)

— Baseline
--- Conservative

Notes: x-axes in years. Policy changes occur in year 0. Red line refers to a scenario when there is partial reversal of reforms in year 4.

Sources: DIGNAR model simulations and IMF staff calculations.

VI. CONCLUSION

This paper argues that oil revenue management and public investment in Congo are vulnerable to corruption because of limited transparency and accountability. Collusion between public officials and private actors facilitate corrupt practices, including the misappropriation of funds and actions that reduce the efficiency of public investment, with potentially damaging macro-fiscal consequences.

The paper shows that the potential economic growth dividends could be significant if anti-corruption reforms focus on reducing bribes to public officials, improving transparent public investment processes, reducing tax evasion, and improving oil sector governance. Depending on the magnitude of the reforms adopted, growth could increase by up to 0.8 to 1.8 percent per year over the next 10 years, and debt could decline by 2.25 to 3 percent of GDP every year over the same period. Improvements in oil sector governance alone account for around 10 percent for the increase in growth and one-third of the reduction in public debt

The authorities have already undertaken concrete measures to signal their stricter stance towards the control of corruption. They published a government-approved diagnostic study on governance which informed their own governance and anti-corruption strategy. To support this strategy, the government is preparing draft laws that will establish an anti-corruption commission with investigative powers and introduce asset declaration requirements for senior political figures.

The government has also identified several measures to improve public investment efficiency including reforms in public accounting, budget execution, and internal and external controls. They have already committed to i) publish detailed information on the level and composition of public investment; ii) conduct an investment tracking survey to improve the efficiency of public investment; iii) strengthen external controls by adopting a law on the organization and functions of the supreme audit institution of Congo (*Cour des Comptes et Discipline Budgétaire*, CCDB) as well as its implementing regulations; and iv) restructure the internal audit system and establish a mechanism to coordinate the work of the internal and external audit institutions.

Improving oil sector governance is essential to help the government realize the full revenue potential from national oil wealth, especially as oil production is forecasted to decline as of 2020. The authorities have taken several encouraging steps to improve oil sector governance and enhance the accountability of the SNPC. The Council of Ministers issued a decree in 2017 which introduced revised statutes for the SNPC, clarifying accountability for functions performed on behalf of the state.[21] Efforts were also taken to increase the transparency of information exchanged between the Ministry of Finance, the Ministry of Hydrocarbons, and the SNPC. And the government submitted to the Parliament in late 2018 draft amendments to the law requiring the SNPC and its subsidiaries to publish their audited financial statements. The company has already published online oil production

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[21] Article 59 of the 2017 Statutes for SNPC.

sharing agreements and has agreed to publish oil-backed contracts that give other companies rights to the government's share of oil production.

While these reforms should contribute to greater transparency and better corporate governance, the benefits will depend on how well they are implemented and how compliant stakeholders are with reporting obligations under the new framework. Moreover, the measures should be combined with a reform of the PSA terms and measures to reduce the risks of corruption in oil trading. The expiry of some PSAs over the next few years offers an opportunity for the authorities to renegotiate these contracts with better terms for the government.

Additional reforms of the oil sector should be considered. First, the state should audit the recovery costs claimed by oil companies. Second, to reduce the corruption risks related to oil trading, the SNPC should publish detailed information on oil volumes, prices, sales and buyers These measures should be complemented by an enhanced AML framework that deters and detects illicit transactions related to oil trading. In addition, subjecting all financial flows between the SNPC and the state general budget to independent audit and oversight would help increase the government's accountability for the use of oil revenue.

If implemented effectively, those measures should reduce the Congo's vulnerabilities to corruption and help the country reap the expected growth dividends. The President's speech in December 2017 demonstrated strong leadership at the highest level and sent a clear message that corruption will not be tolerated. Commitment at all levels to the government to its medium-term governance strategy is critical if the macro-fiscal costs of corruption are to be significantly reduced. The issues discussed in this paper can guide reforms in other CEMAC or SSA countries that face similar challenges.

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Appendix: Key Model Features and Calibration to Congo

The Debt, Investment, Growth and Natural Resources (DIGNAR) model developed by Melina and others (2016) is used to capture reforms in the four areas of governance along the lines of IMF (2018a): (i) a reduction in bribes and other distortions that discourage firms from investing and creating jobs; (ii) an increase in public investment spending efficiency; (iii) a decline in tax evasion; (iv) an elimination of mispricing in the oil sector.

The model

The DIGNAR model is a macroeconomic model that allows analyzing growth implications of various reforms jointly with fiscal sustainability. DIGNAR is a real dynamic open economy model with traded, non-traded, and natural resource sectors. It is Neoclassical in the sense that it abstracts from nominal rigidities and assume perfectly competitive markets. The model puts together several crucial pieces to analyze debt sustainability in developing economies, with an emphasis on the linkages between public investment, growth, and debt. These crucial pieces are essentially three. First (*investment-growth nexus*), public investment increases can translate into more public capital, which in turn raises the marginal productivity for private capital (and labor) and, through this channel, stimulates private investment. Inefficiencies in public investment and absorptive capacity constraints capture the challenges that governments—especially in LICs—have faced historically in making productive investments. Second (*fiscal reaction function*), the models consider different government financing options and state explicitly the fiscal policy reactions for different tax (and transfer) instruments that attempt to ensure debt sustainability. While grants and concessional borrowing are exogenously given, external commercial borrowing and domestic borrowing to help finance the public investment surge, with taxes and transfers responding to stabilize debt levels over time. Third (*private sector response*), private investment and private consumption respond to policy actions. The response of the private sector to increases in public investment and to fiscal adjustment is summarized by the associated crowding-in and crowding-out effects. The model highlights that while in the long run there is always crowding-in if the projects are good, in the transition crowding out may dominate, especially early on and if there is not enough foreign financing.

Along the lines of the analysis presented in the new IMF framework for enhanced engagement on governance (IMF, 2018a), the model is extended to account for four aspects of governance, as follows:

First, a share of economic output is lost because of weak governance. Such loss could represent, for example, the time and resources lost by entrepreneurs to bribe government officials to obtain required authorizations. As a result, firms are discouraged from investing and hiring. For simplicity, the

loss is assumed to be proportional to the level of production and it is assumed to be transferred as a lump-sum to optimizing households.[4] Let the firm's production function be:

$$Y_t = f(K_t, L_t, K_t^G), \tag{1}$$

where Y_t is output, K_t is the stock of private capital, L_t is labor, K_t^G is the stock of public capital and $f(\cdot)$ is an increasing and concave function of the private factors for production and of public capital. The firm's profit, Π_t, is given by:

$$\Pi_t = (1 - \kappa_t)Y_t - w_t L_t - R_t^k K_t, \tag{2}$$

where $\kappa_t \in (0,1)$ is the percentage of output wasted owing to weak governance, w_t is the real wage, and R_t^k is the gross return to private capital. Standard profit maximization implies that the real wage and the return to private capital are equalized to the marginal products of labor and capital, respectively:

$$w_t = (1 - \kappa_t)\frac{\partial f(\cdot)}{\partial L_t}, \tag{3}$$

$$R_t^k = (1 - \kappa_t)\frac{\partial f(\cdot)}{\partial K_t}. \tag{4}$$

Waste caused by weak governance creates a wedge $(1 - \kappa_t) < 1$ between the real wage and the marginal product of labor, and between the gross return to private capital and the marginal product of capital. For given w_t and R_t^k, an increase in κ_t requires $\frac{\partial f(\cdot)}{\partial L_t}$ and $\frac{\partial f(\cdot)}{\partial K_t}$ to increase in equilibrium, and hence the demands for labor and capital to decline, given diminishing marginal returns. This will translate into lower employment, lower investment, and thus lower output.

Second, weak governance reduces the efficiency of public investment (the fraction of government capital expenditures that translates into productive public capital). The law of motion of public capital will thus be:

$$K_{t+1}^G = (1 - \delta^G)K_t^G + \epsilon_t I_t^G, \tag{5}$$

where δ^G is the depreciation rate, $\epsilon_t \in (0,1)$ is public investment efficiency and I_t^G is public investment expenditure. The stock of public capital available at the beginning of period $t + 1$ equals the stock of capital that has not depreciated up to the end of period t, plus effective public investment $\epsilon_t I_t^G$ (weak governance causes a fraction $1 - \epsilon_t$ of public investment spending to go wasted). Lower public investment efficiency translates into a lower stock of public capital being accumulated and, via equation (1), lower output.

Third, inefficiencies lead to loss of tax revenues. A fraction of taxes due fails to reach the government budget. To reflect this point, the law of motion of government debt in real terms may

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[4] DIGNAR assumes two types of households. The intertemporal optimizing households have access to capital and financial markets, and the rule-of thumb households are poor and financially constrained, consuming all the disposable income each period.

be expressed as follows (for simplicity, the only expenditure is for public investment and the only source of revenue is a consumption tax):

$$B_{t+1} = R_t B_t + I_t^G - (1 - \vartheta_t)\tau_t^C C_t, \tag{6}$$

where R_t is the real gross rate of interest on government bonds, B_t; τ_t^C is the consumption tax rate; C_t is private consumption and $\vartheta_t \in (0,1)$ is the share of revenue lost owing to weak governance. For a given level of tax revenue, a higher ϑ_t would result in higher debt; alternatively, to keep debt at a given level, a higher ϑ_t would necessitate a higher tax rate, thus curbing private demand and output.

Fourth, pricing practices in the oil sector lead to a loss of revenues for the government. In the model, government revenues from the oil sector are proportional to the value of oil production. A loss is applied to this source of revenues as follows:

$$Rev_t = (1 - \rho_t)s_t \tau^O p_t^O y_t^o, \tag{6}$$

Where ρ represents the loss due to governance issues, s_t is the real exchange rate, τ^O is a royalty tax rate calibrated to match a certain oil revenue, p_t^O is the relative price of oil and y_t^o is the quantity of oil produced.

Calibration to Congo

The initial steady state of the model is calibrated to capture salient features of the Congolese economy in the past five years (2013–17 averages). The following table reports the specific calibration:

Target	Value
(Percent of GDP unless otherwise indicated)	
Average GDP growth rate	1.8
Exports	63.0
Imports	82.9
Government consumption	26.2
Government investment expenditures	21.1
Private investment	13.6
Oil GDP	49.2
Government domestic debt	18.0
Government external commercial debt	25.6
Grant	0.6
Concessional debt	38.0

The choice of governance parameters is discussed in Section IV. Remaining parameters, the estimates of which are not available for Congo, are set at average values for LICs and are taken from Melina and others (2016).