2. Domestic Revenue Mobilization in Sub-Saharan Africa: What Are the Possibilities?

Domestic revenue mobilization is one of the most pressing policy challenges facing sub-Saharan African countries. While the reasons may vary according to country-specific circumstances, there are three aspects of domestic revenue mobilization that make it so important.

- First, sub-Saharan African countries need to increase their resources to invest in programs that support the achievement of the Sustainable Development Goals. This includes efforts to reduce poverty and inequality, ensure adequate health and education, and develop basic infrastructure to support more inclusive growth. Despite recent progress, the region still faces massive development challenges. The chapter highlights that the region as a whole could mobilize about 3 to 5 percent of GDP, on average, in additional revenues. This would represent about $50–80 billion, substantially more than the estimated $36 billion in official development assistance received by sub-Saharan African countries in 2016.

- Second, at a time when public debt levels have been rising rapidly, domestic revenue mobilization should be a key component of any fiscal consolidation strategy. Absent adequate efforts to raise domestic revenues, fiscal consolidation tends to rely excessively on reductions in public spending, which can have a more negative impact on growth (IMF 2017) and can become politically more difficult to implement in practice and sustain over time.

- Third, developing adequate capacity to collect taxes is also a way to strengthen institutions and build state capability. Since tax collection is one of the most basic functions of the state, developing capacity in this area can also support institutional development in other areas (Gaspar, Jaramillo, and Wingender 2016). This can operate through several channels. For example, an emphasis on clear and fair tax laws and regulations can support a related focus on public finance management to convince citizens that government taxation will be used to fund reasonably efficient and transparent spending programs. Similarly, establishing a revenue authority with highly trained professional staff can support organizational innovations as countries extend successful reform efforts to other government areas.[1]

This chapter analyzes revenue collection efforts in sub-Saharan Africa compared with other regions, with a special emphasis on nonresource revenues.[2]

The chapter argues that sustained revenue mobilization is difficult because it requires consistent institutional development over time as well as attention to basic processes and reforms where reversals are frequent. In addition, robust reforms are those that focus not only on ways to increase revenue collection, but also take into account how to do so in ways that consider the efficiency and equity impact of particular policy choices. Technical assistance can support reform efforts, but it requires strong political will, usually based on a well-defined medium-term strategy. The chapter is organized in three sections.

This chapter was prepared by a team led by Alex Segura-Ubiergo and composed of Chuling Chen, John Hooley, Gabriel Leost, Toomas Orav, Miguel Pereira Mendes, Ashan Rodriguez, and Manuel Rosales.

[1] The process of development of state capability is very complex and depends on a number of factors. Low state capability is often used as an argument to justify limited state capacity to collect taxes, but the experience of some post-conflict countries (for example, Liberia and Mozambique) suggests that building tax collection institutions may produce positive institutional spillovers by helping to build state capability in other areas (for example, statistical agencies, public finance management reform groups, etc.). Research by Prichard and Leonard (2010) also supports this hypothesis.

[2] The chapter emphasizes mobilization of nonresource revenues. Resource revenues fluctuate with natural resource production levels and commodity prices, and are much less subject to control by domestic policymakers. Adequate collection and management of resource revenues pose other challenges regarding fiscal regimes and fiscal frameworks that have been studied elsewhere (for example, IMF 2012).

- The first section describes developments in revenue-to-GDP and tax-to-GDP ratios in sub-Saharan Africa compared with other regions. It shows a substantial improvement in sub-Saharan African revenue mobilization over the past three decades. However, the region still has, on average, the lowest revenue-to-GDP ratio compared with other regions. The section also shows how low efficiency of some of the most important sources of taxation, such as the value-added tax (VAT) and the corporate income tax (CIT), are significant constraints to better performance. It also discusses other potential sources of additional revenue collection, including the role of excise and property taxes.

- The second section analyzes some of the structural conditions that may account for the lower tax-to-GDP ratios in sub-Saharan Africa, including the level of development, trade openness, sectoral structure, income distribution, and institutional quality. It shows that sub-Saharan African countries could, on average, mobilize about 3 to 5 percent of GDP in additional tax collection, through a combination of reforms that improve the efficiency of current systems (including through the reduction of tax exemptions), and through institutional changes (such as improvements in governance and measures to control corruption).

- The third section analyzes lessons from revenue mobilization case studies. It emphasizes the elements of successful medium-term strategies for revenue mobilization and the importance of political economy factors, such as building broad-based support for the reform process through proactive outreach strategies to both the public and private sectors. The results are consistent with findings from other recent research in this area (for example, Akitoby and others, forthcoming).

Finally, the chapter also discusses the role of new technologies (that is, digitalization) to empower tax policymakers with quicker access to more reliable information and to deepen the tax base (Box 2.1). The section also discusses the economic impact of revenue mobilization on growth and income distribution (Box 2.2) focusing on the Central African Economic and Monetary Community (CEMAC) countries, where these issues have become particularly important since the sharp drop in commodity prices starting in 2014.

TRENDS IN REVENUE MOBILIZATION IN SUB-SAHARAN AFRICA

Steady and Widespread Progress

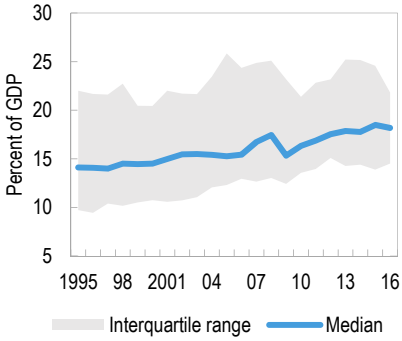
Over the past three decades, many sub-Saharan African countries have achieved substantial gains in revenue mobilization. For the median sub-Saharan African economy, total revenue excluding grants increased from around 14 percent of GDP in the mid-1990s, to more than 18 percent in 2016, while tax revenue increased from 11 to 15 percent (Figures 2.1. to 2.3).[3] These trends have been driven primarily by nonresource revenues (Figure 2.3), which have increased particularly sharply in the past 10 years. In contrast, revenues from natural resources, while representing important sources of overall revenue for many sub-Saharan African countries, have not increased substantially. These revenues have also been volatile, particularly during the episodes of commodity price swings in the late 2000s and since 2014.

Recent progress in revenue mobilization has also been broad. Since the mid-1990s, 15 sub-Saharan African countries have successfully transitioned to tax-to-GDP ratios of about 13 percent and above, the minimum ratio that recent research has suggested can be associated with a significant acceleration in growth and development (Figure 2.4).[4]

[3] Based on a fixed sample of 40 sub-Saharan African economies for which data are available from 1995 through 2016. Given the skewed distribution of revenue ratios across the region (see Figure 2.4), the median provides a more representative picture of revenue trends than the mean.

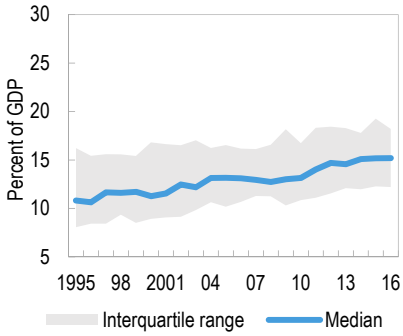
[4] The tipping point estimated in Gaspar, Jamarillo, and Wingender (2016) is a minimum tax-to-GDP ratio of 12.88 percent to enable the state to perform some of its most important functions, especially adequate spending on developmental programs. While this threshold is statistically significant, the precise number should be interpreted with caution, as it may vary country by country. With nontax revenues typically averaging 2 percent of GDP, a tax-to-GDP revenue of 13 percent, and an overall revenue ratio of 15 percent of GDP, should be viewed as a minimum threshold to allow the state to perform basic functions. Ratios should also be interpreted with care given ongoing GDP rebasing developments in some countries.

Figure 2.1. Sub-Saharan Africa: Total Revenue Excluding Grants, 1995–2016



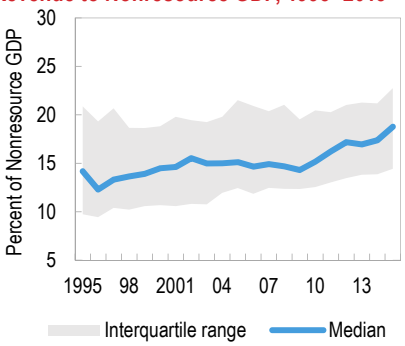
Source: IMF, World Economic Outlook database.

Figure 2.2. Sub-Saharan Africa: Tax Revenue, 1995–2016



Source: IMF, World Economic Outlook database.

Figure 2.3. Sub-Saharan Africa: Nonresource Revenue to Nonresource GDP, 1995–2015



Sources: IMF, World Economic Outlook database; IMF Fiscal Affairs Department Sub-Saharan Africa Tax Revenue database.

Two-thirds of sub-Saharan African countries now have revenue ratios above 15 percent, compared with fewer than half in 1995.

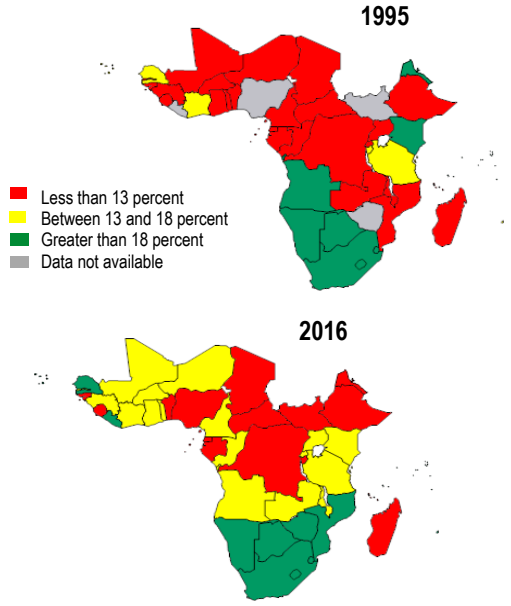
The sources of sub-Saharan Africa's gains in revenue mobilization have been mainly an increase in direct and indirect taxes (Figure 2.5). Indirect taxes have received a boost from the introduction of the VAT in several countries. In contrast, the revenue from taxes on imports has declined as a share of GDP, reflecting increased trade liberalization over the period.

Global Context

Despite sub-Saharan Africa's recent progress in revenue mobilization, the region still has the lowest revenue-to-GDP ratio compared to other regions in the world. The good news is that there are signs of convergence. Over the past three decades, the increase in sub-Saharan Africa's revenue ratio has been double that for all emerging market and developing economies (Figure 2.6).

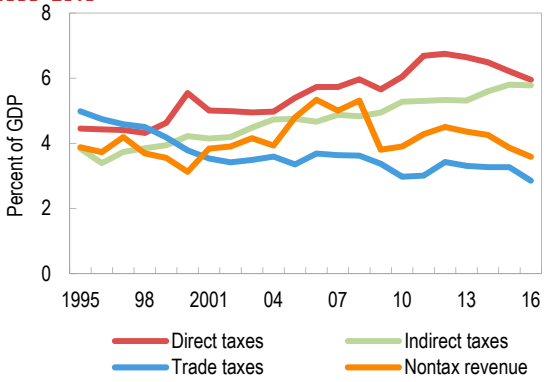
Nonetheless, the median revenue-to-GDP ratio among all emerging market and developing economies is 23 percent, 5 percentage points higher than for sub-Saharan Africa. The region performs slightly better in terms of tax revenue, with a median tax-to-GDP ratio only 2 percentage points lower than that of all emerging market and developing economies, although it still has the second lowest ratio among all regions (Figure 2.7).

Figure 2.4. Sub-Saharan Africa: Tax Revenue to GDP
(Percentage of GDP)



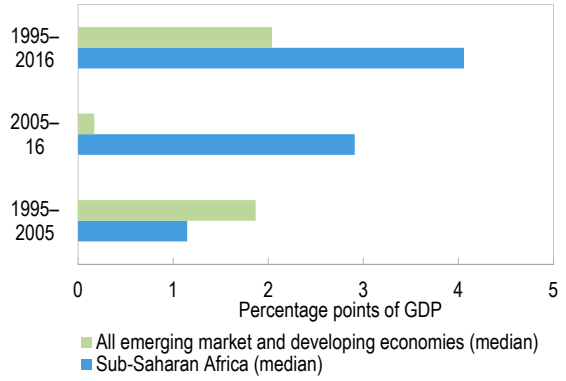
Source: IMF, World Economic Outlook database.

Figure 2.5. Sub-Saharan Africa: Sources of Revenue, 1995–2016



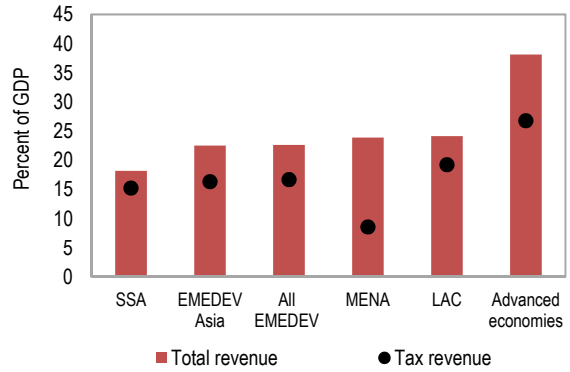
Source: IMF Fiscal Affairs Department Sub-Saharan Africa Tax Revenue database.

Figure 2.6. Change in Revenue Excluding Grants



Source: IMF, World Economic Outlook database.

Figure 2.7. Total Revenue Excluding Grants, Median, 2016



Source: IMF, World Economic Outlook database.

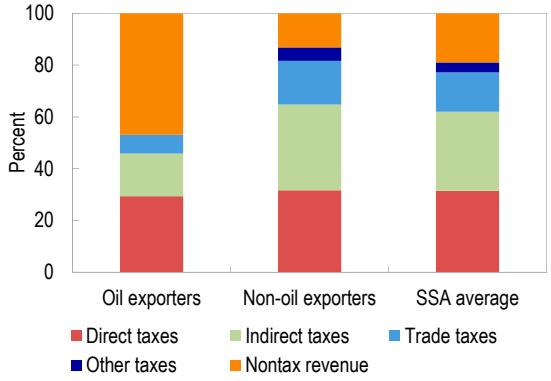
Note: EMEDEV = Emerging market and developing economies; LAC = Latin America and the Caribbean; MENA = Middle East and North Africa; SSA = sub-Saharan Africa.

Regional Context

There are different patterns of revenue mobilization among sub-Saharan African economies. Oil exporters and fragile states differ from other economies in the region in both the level and sources of their revenue collection.

- **Oil exporters.** The average revenue-to-GDP ratio was 27 percent in oil-exporting economies over 2000–16, compared with 18 percent for non-oil economies. Oil exporters tend to have lower non-resource-revenue-to-GDP ratios, possibly reflecting reduced tax effort in nonresource revenues (Thomas and Treviño 2013). But, this is more than offset by substantial resource revenues from both nontax sources (bonuses, royalties, and production sharing revenue) and direct taxes (corporate tax on oil companies' profits). On average, nontax revenue accounts for almost half of oil-exporters' revenue, compared with less than 20 percent for non-oil exporters (Figure 2.8). Revenues are also more volatile for oil exporters—during 2000–16 the standard deviation of total revenue for oil exporters was seven times that of non-oil exporters. Declines in world oil prices can dramatically affect the level of resource revenue, while nonresource revenue is difficult to mobilize quickly to offset the impact on total revenue (Figure 2.9). Indeed, the decline in the world oil price since 2014 has led to a sharp fall in the overall revenue to GDP ratio for oil exporters, from 31 percent in 2012 to 18 percent in 2016.

Figure 2.8. Sub-Saharan Africa: Decomposition of Revenue, 2016

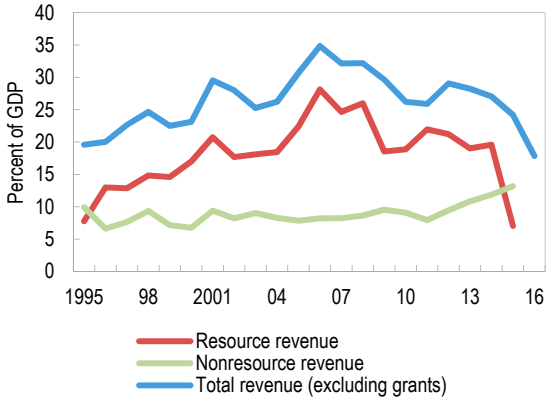


Source: IMF Fiscal Affairs Department Sub-Saharan Africa Tax Revenue database.

Note: SSA = sub-Saharan Africa.

- **Fragile states**. Revenue mobilization is particularly difficult in fragile states, where institutions are often weak and the security and governance

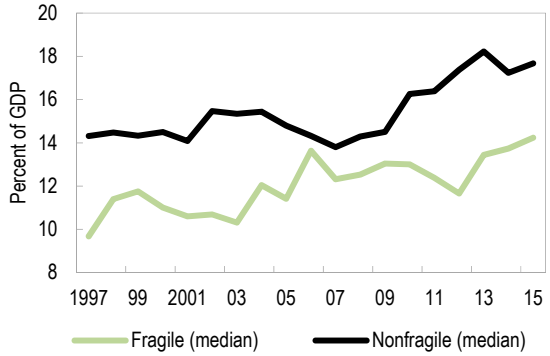
Figure 2.9. Sub-Saharan Africa: Revenue, Oil Exporters, Median, 1995–2016



Sources: IMF, World Economic Outlook database; and IMF Fiscal Affairs Department Sub-Saharan Africa Tax Revenue database.

Note: Data on resource and nonresource revenues are available to 2015 only.

Figure 2.10. Sub-Saharan Africa: Nonresource Revenue, Fragile and Nonfragile States, Median, 1997–2015



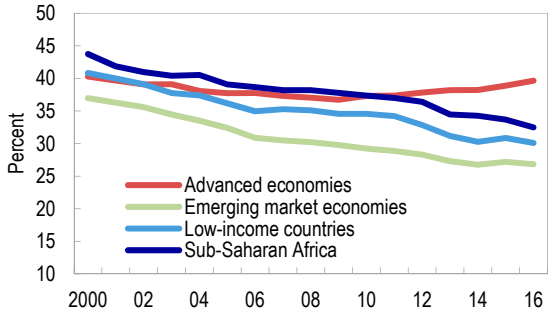
Sources: IMF, World Economic Outlook database; and IMF Fiscal Affairs Department Sub-Saharan Africa Tax Revenue database.

situation is challenging. Although several fragile states benefit from natural resource revenues, they all tend to struggle in non-resource-revenue mobilization. The median non-resource-revenue-to-GDP ratio was less than 14 percent in 2015, compared with 18 percent for nonfragile states (Figure 2.10).

Other Characteristics of Sub-Saharan African Tax Systems

In most regions of the world, there has been a trend in recent years toward reducing rates for the CIT and the personal income tax (PIT). In sub-Saharan African countries, the average top PIT rate has been reduced from about 44 to 32 percent since 2000 (Figure 2.11), while average top CIT rates have been reduced by more than 5 percentage points during the same period (Figure 2.12).

Figure 2.11. Personal Income Tax Rate, Average Top Rate, 2000–16



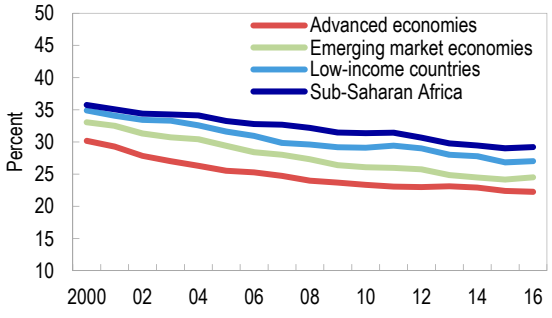
Source: IMF Fiscal Affairs Department Tax Rates database.

Despite this decline in rates,[5] total direct taxes (PIT and CIT) as a percentage of GDP have been trending upward, though substantial potential remains in this area given the low level of productivity (Figures 2.13–2.16).[6] On average, sub-Saharan African countries' CIT productivity lags that of advanced and emerging market economies.

There are substantial differences in the productivity of the CIT among sub-Saharan African countries, with some showing the highest productivity due to more streamlined tax incentives. Different fiscal regimes for special economic zones (SEZs) are among several factors (such as differences in the tax base and administrative effort) impacting CIT productivity. Some countries, such as Senegal and South Africa, offer a reduced tax rate of 15 percent for companies located in SEZs, while others with lower productivity or lower tax collection as a share of GDP offer a zero CIT rate, including Côte d'Ivoire, Rwanda, and Tanzania.

Substantial progress has also been made regarding the collection of indirect taxes. Most sub-Saharan African countries have introduced a VAT, replacing general sales taxes. The main advantage of a VAT is that it avoids tax cascading (tax paid on tax) by taxing only the value added at each stage of the supply chain. Sub-Saharan African countries that continue to rely on sales taxes should look to introduce a modern VAT. These include Angola Comoros, Guinea-Bissau, Liberia, and São Tomé and Príncipe. However, before the introduction of the VAT, countries need to develop a capacity to

Figure 2.12. Corporate Income Tax Rate, Average Top Rate, 2000–16

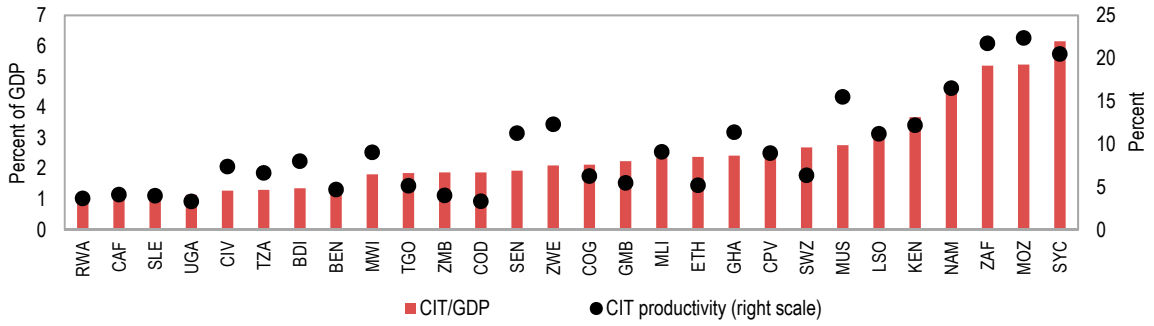


Source: IMF Fiscal Affairs Department Tax Rates database.

[5] Despite the reduction in rates, the tax burden on households can still sometimes be substantial given the existence of fees, ad hoc taxes, and contributions imposed by various levels of government and/or officials.

[6] CIT productivity is defined as the tax yield in percent of GDP relative to the standard CIT rate and given by: CIT Productivity=(CIT Revenue as a share of GDP)/(CIT rate).

Figure 2.13. Sub-Saharan Africa: CIT Productivity and CIT to GDP, 2016 or Latest Available

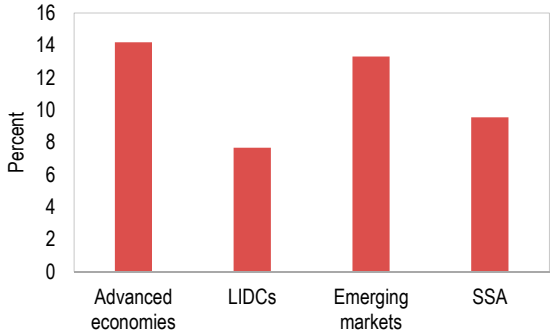


Sources: World Revenue Longitudinal database; IMF Fiscal Affairs Department Tax Rates database; and IMF, World Economic Outlook database.
Note: CIT = corporate income tax. See page 91 for country abbreviations table.

administer the credit/debit system, which suggests that the process cannot be rushed.

One advantage of focusing on the VAT is that it is more growth friendly than other types of taxes, especially direct taxes (IMF 2015a). In most cases this can be best achieved by a focus on the efficiency of the VAT, rather than through increases in VAT rates, as this is less likely to have a negative impact on growth (Box 2.2). At the same time, in countries where the rate is below 13 percent, a 2 percent rate increase would have virtually no negative impact on growth, while in countries with a rate between 13 and 18 percent, a 1 percent increase would not have much effect on economic activity. With rates above 18 percent, even small increases in the VAT rate can have a substantial negative impact on growth (Gunter and others forthcoming).

Figure 2.14. CIT Productivity, Average



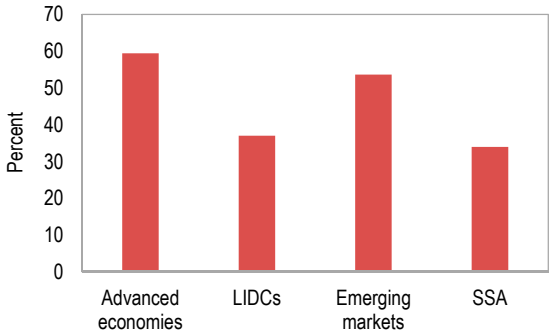
Sources: World Revenue Longitudinal Database; and IMF Fiscal Affairs Department Sub-Saharan Africa Tax Revenue database.
Note: CIT = corporate income tax; LIDCs = low-income developing countries; SSA = sub-Saharan Africa;

At the same time, the focus on the VAT also requires greater attention to pro-poor spending and social protection measures. Countries should use part of the resources raised through the VAT to ensure that any potentially negative distributional impact is adequately offset on the expenditure side.

In those sub-Saharan African countries that have adopted a VAT, its efficiency is relatively low compared with other regions (Figure 2.15) and varies widely across the region (Figure 2.17).[7] Several factors explain this performance:

- Narrow tax bases due to the proliferation of exemptions and zero rating for goods and services.[8] While all countries have some exemptions and zero-rated goods and services, there are substantial differences across countries.

Figure 2.15. VAT C-Efficiency, Average

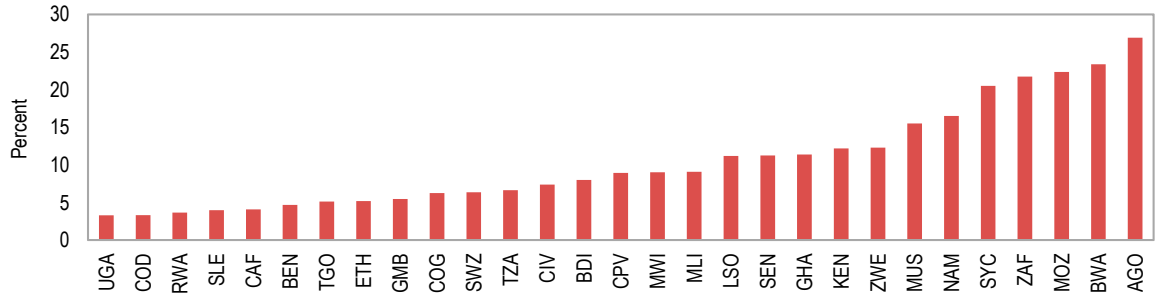


Sources: World Revenue Longitudinal Database; and IMF Fiscal Affairs Department Sub-Saharan Africa Tax Revenue database.
Note: LIDCs = low-income developing countries; SSA = sub-Saharan Africa ; VAT = value-added tax; VAT C-Efficiency = actual VAT collections as a share of potential base.

[7] VAT C-efficiency is defined as actual VAT collections as a share of its potential base (that is, consumption) and is given by VAT C-Efficiency=(VAT Revenue)/((Total final consumption net of VAT revenue)*VAT rate).

[8] Zero-rating can have a more negative impact on collections than exemptions. In this case, the final consumption good is not taxed, and the seller can claim a VAT refund for the VAT paid on its inputs. When a good is "exempt,"the government does not tax its final sale, but producers cannot claim a VAT refund for the VAT they paid on the inputs used in the production process.

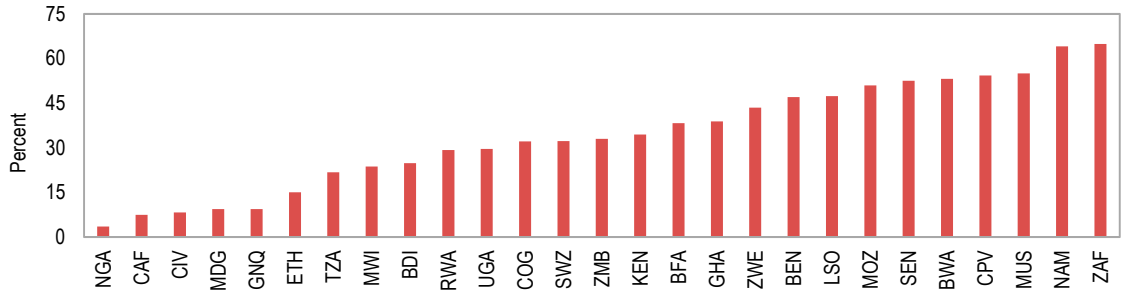
Figure 2.16 Sub-Saharan Africa: CIT Productivity, 2016 or Latest Available



Sources: World Revenue Longitudinal database; and IMF staff estimates.

Note: CIT = corporate income tax. See page 91 for country abbreviations table.

Figure 2.17. Sub-Saharan Africa: VAT C-Efficiency, 2016 or Latest Available



Sources: World Revenue Longitudinal database; and IMF staff estimates.

Note: VAT C-Efficiency = actual VAT collections as a share of potential base; VAT = value-added tax. See page 91 for country abbreviations table.

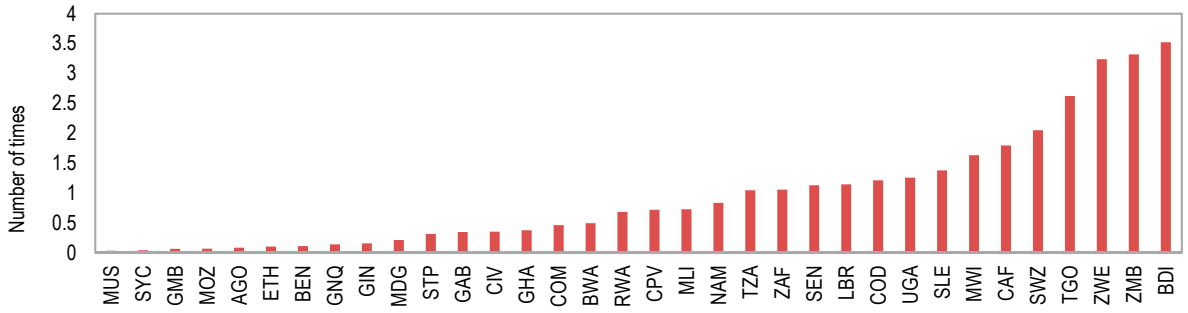
For example, Lesotho, Mauritius, Senegal, and South Africa have relatively short lists compared with countries such as Cameroon, Malawi, and Zambia, which have more extensive lists of exemptions.

- Different thresholds for which a taxpayer is required to register (Figures 2.18 and 2.19). While it is usually advisable to have a relatively high threshold to allow the tax administration to focus on the larger taxpayers, more mature tax administrations can choose lower thresholds. Substantial differences can also be observed for the PIT thresholds. Burundi, Zambia, and Zimbabwe have very generous exempted thresholds that exceed three times their per capita GDP, compared with countries such as Botswana, Senegal, South Africa, and Tanzania, where exempted thresholds are similar to the level of per capita GDP.

- Weaknesses in VAT refund systems. The VAT is a tax on consumption that requires both timely and accurate refunds. A variety of systems are used in sub-Saharan Africa, including the use of VAT credits against future tax payments (Ghana, Kenya, Madagascar, Malawi, Mali, Mozambique, Senegal), VAT refunds on a quarterly basis (Cameroon, Chad, Equatorial Guinea), and refunds following an audit verification (Mozambique, Namibia). While the latter system can help to reduce refund fraud, administrative delays can result in a buildup of unpaid claims adversely inpacting the private sector, as has been the case in Zambia and Zimbabwe. In this context, tax administrators should consider settling refunds out of gross VAT receipts by establishing escrow accounts to satisfy future refunds and mitigate potential problems in cash management. The use of risk-based audit verification approaches, whereby audits are selective and based on an assessment of risks, can help expedite the settlement of VAT refunds.

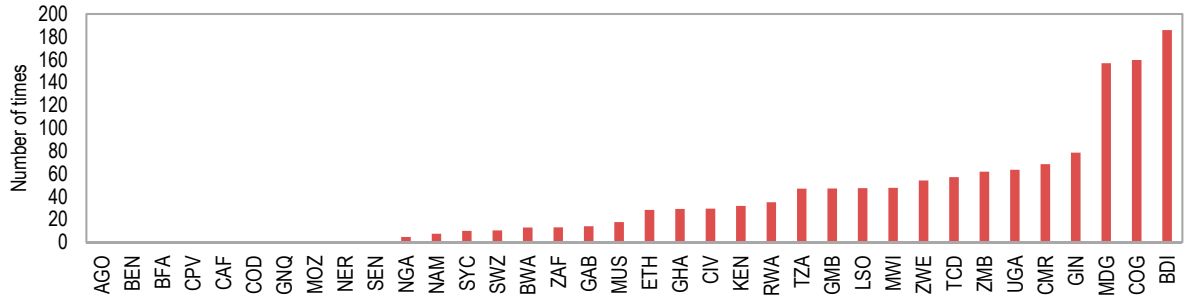
In addition to a sound VAT, sub-Saharan Africa also stands to benefit by tapping underexploited taxes, accelerating customs administration reforms, and reviewing policies regarding international corporate taxation. More specifically,

Figure 2.18. Sub-Saharan Africa: PIT Threshold Relative to per Capita GDP



Sources: IMF Fiscal Affairs Department Tax Rates database; and IMF, World Economic Outlook database.
Note: PIT= personal income tax. See page 91 for country abbreviations table.

Figure 2.19. Sub-Saharan Africa: VAT Threshold Relative to per Capita GDP



Sources: IMF Fiscal Affairs Department Tax Rates database; and IMF, World Economic Outlook database.
Note: VAT= value-added tax. See page 91 for country abbreviations table.

- The excise tax is an underexploited revenue source. In 2015, on average, sub-Saharan African countries collected 1.4 percent of GDP from all forms of excise taxes, less than half the level in emerging Europe (Figure 2.20). There are also wide differences in excise collection across sub-Saharan Africa, with several countries, including Benin, Côte d'Ivoire, Madagascar, Mozambique, Nigeria, and Sierra Leone, collecting excise revenues of less than 1 percent of GDP (Figure 2.21). While specific advice will depend on country-specific circumstances, excise taxes are relatively simple to implement and do not require fundamental changes to the tax system (IMF 2011). Countries need to evaluate the products that can be subject to excise taxes (typically petroleum, cigarettes, alcohol, motor vehicles and sometimes telecommunications) and the amount of tax levied, either through a specific tax (a monetary amount based on quantities)—which is typically better suited to address externalities, tends to produce a more predictable revenue stream and is simpler to administer—or ad valorem (based on the value or price of the product), which can in some cases result in lower consumption prices (Delipalla and Keen 1991).

- Property taxation is also underused. Property tax revenues are quite limited in sub-Saharan Africa, but the case for property taxation is clear: it provides a stable and reliable source of revenue that is less susceptible to short-term economic fluctuation, and it is difficult to evade, since property taxes can be secured by the property itself. A further benefit is improved service delivery and accountability where property taxes are collected by the local administration.[9] Previous studies (Norregaard 2013) suggest that sub-Saharan African countries can raise 0.5 to 1 percent of GDP via property taxation, and it is becoming more common across sub-Saharan Africa. Yet many countries still rely solely on one-time payments (for example, Botswana, Lesotho,

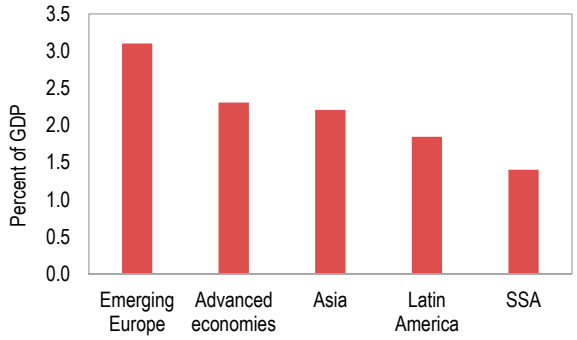
[9] In Lesotho, property taxation accounts for half of local government revenue (IMF 2011) and in Cabo Verde this is 70 percent (Norregaard 2013).

Malawi, Swaziland, and Zimbabwe, among others, depend on stamp duties or registration fees on property sales). The rollout of recurrent property taxation will require significant capacity-building around property registries and annual appraisal systems, as well as stronger coordination between central and subnational governments, but relatively rapid progress is possible in urbanized areas where information exists on ownership and reference valuations and can be supplemented by harnessing modern technology to, for example, derive geo-spatial data by global positioning systems.

- Customs administration is key. Customs administrations collect VAT on imports, trade taxes, and excise taxes on imported goods. In 2015, on average, sub-Saharan African countries collected a third of their nonresource revenue through customs at their border (Figure 2.22). With a smaller number of taxpayers involved in international trade activities—as compared with a larger number of taxpayers involved in domestic operations—customs administration reforms can deliver results on revenue mobilization in a relatively short timeframe. At the same time, better customs administration is also critical for boosting trade. Such reforms have often included the modernization of customs processes (that is, digitalization of transactions and payments) and measures to combat corruption and fraud (that is, strengthening clearance procedures and creating anti-smuggling units). Channeling goods through a few major ports with adequate custom controls can also facilitate custom administration and reduce potential for leakage.

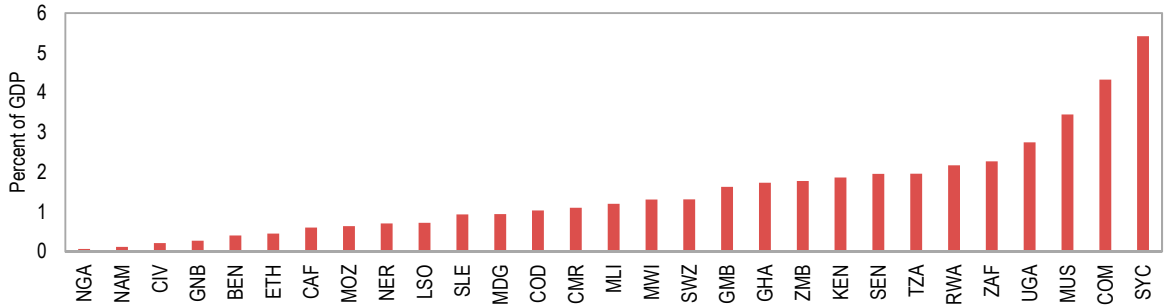
- Cross-border tax rules need to be reviewed. Sub-Saharan African countries need to stay abreast of evolving international corporate practices. With companies increasingly reliant on debt relative to equity, thin capitalization rules have been adopted to limit tax deductions on interest. By the end of 2016, thin capitalization rules across sub-Saharan Africa had set debt-to-equity (or "gearing") ratios of up to 4:1, but recent international trends suggest that countries with rules allowing for ratios above 2 could look to further limit interest deductions (Botswana, Equatorial Guinea, Namibia, Rwanda, Tanzania, Zambia, Zimbabwe). An additional international tax issue is intragroup transactions, also known as transfer pricing, which can distort taxable income. These new regulations typically embed the "arm's length" principle to ensure that transfer prices are transacted on a market-value basis. To limit tax avoidance, tax rules and monitoring frameworks covering transactions between related parties need to be introduced where they are absent.

Figure 2.20. Excise Taxes, 2015, Average



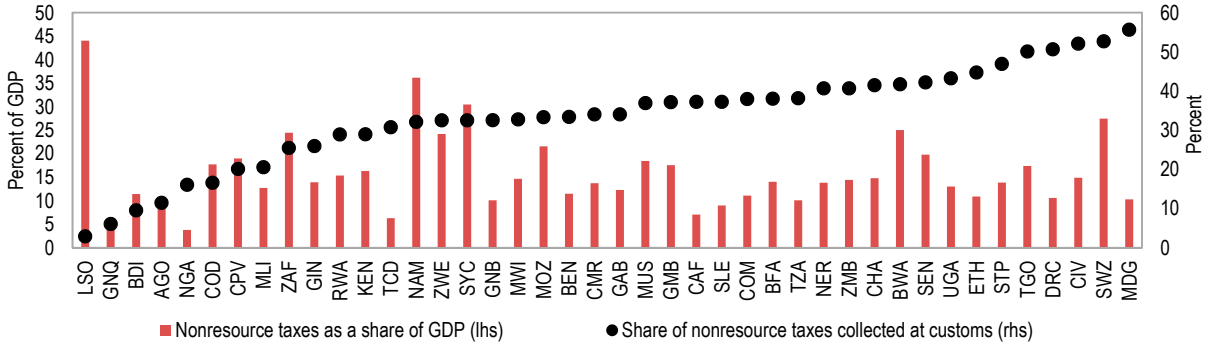
Sources: World Revenue Longitudinal database; and IMF Fiscal Affairs Department Sub-Saharan Africa Tax Revenue database.
Note: SSA = sub-Saharan Africa.

Figure 2.21. Sub-Saharan Africa: Excise Taxes, 2015



Sources: World Revenue Longitudinal database; and IMF Fiscal Affairs Department Sub-Saharan Africa Tax Revenue database.
Note: See page 91 for country abbreviations table.

Figure 2.22. Sub-Saharan Africa: Share of Nonresource Revenue Collected at Customs, 2015



Sources: World Revenue Longitudinal database; and IMF Fiscal Affairs Department Sub-Saharan Africa Tax Revenue database.
Note: lhs = left scale; rhs = right scale. See page 91 for country abbreviations table.

STRUCTURAL FACTORS AFFECTING TAX EFFORT AND POTENTIAL

One way to assess the amount of additional taxes that a state can potentially collect is to compare its tax-to-GDP ratio with that of other countries with similar characteristics, including the level of economic and institutional development. This type of analysis can be done using the notion of a "tax frontier." The tax frontier (or theoretical tax capacity) can be defined as the highest level of tax revenue (usually measured in percent of GDP) that a country can be expected to achieve given certain underlying macroeconomic and institutional conditions. The distance between actual tax revenues or tax effort and the tax frontier in a particular year measures the theoretical tax gap or tax potential. Tax potential reflects the tax revenue gains that a country could achieve through tax policy changes or improvement in the efficiency of collection. Estimates should be used with care, as they can be sensitive to modeling assumptions and estimation techniques.

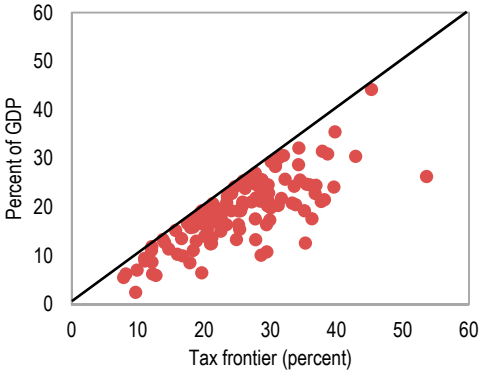
Following Fenochietto and Pessino (2010, 2013), the tax frontier for sub-Saharan African countries can be computed using a stochastic panel data model that covers 121 countries during 2002–16 (Annex 2.1). The model uses a set of independent variables commonly found to be associated with the level of tax revenue. These include income per capita, trade openness, the share of agriculture in GDP, income inequality and public spending on education. To assess the impact of institutions, some variables measuring corruption and government effectiveness are also included. Countries differ widely in the height and distance to the frontier, as explained later (Figures 2.23 and 2.26).

Consistent with other studies, the analysis finds that higher income levels, more trade openness, higher spending on education, and better government effectiveness are associated with higher tax-to-GDP ratios. Similarly, countries with lower income inequality, and lower corruption levels also tend to have higher tax ratios. These factors determine the height of the frontier for each country.

The average tax frontier for Sub-Saharan African countries is around 7½ percentage points of GDP lower than the average tax frontier for the rest of the world. This is not surprising given the fact that sub-Saharan African countries have lower levels of economic and institutional development than countries in other regions. However, deeper analysis identifies nuances in the assessment of revenue mobilization across sub-Saharan Africa.
In particular,

- The average tax gap is slightly lower in sub-Saharan Africa than elsewhere. This means that controlling for the effect of structural factors that affect tax collection, sub-Saharan African countries are not showing, on average, higher levels of inefficiency in their tax collection efforts than other regions (Figure 2.24). The average tax gap (or tax potential) for sub-Saharan African countries ranges between 3 and 5 percent of GDP. Addressing inefficiencies in sub-Saharan African countries may be a more pressing priority than in other regions given that overall tax revenues are lower and hence the cost of this inefficiency is arguably higher.

Figure 2.23. Sub-Saharan Africa: Tax Efforts

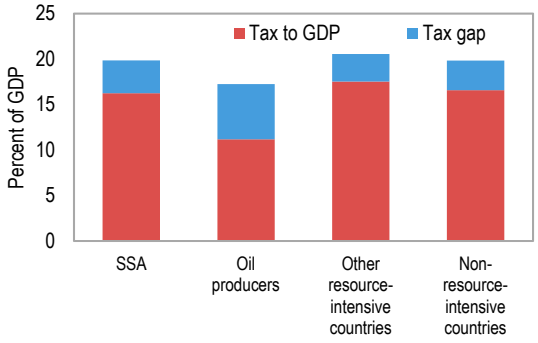


Sources: IMF, World Economic Outlook database; and IMF staff estimates.

- While improvements in the functioning of tax systems can help close tax gaps, this may not be enough to attain key fiscal objectives such as supporting higher levels of public spending to achieve the Sustainable Development Goals. Additional revenue mobilization would also require reforms to tackle the underlying structural factors—notably corruption, government effectiveness, and inequality—that are currently acting as constraints.

While the tax frontier is on average similar across country groups in sub-Saharan Africa, large variations exist in tax effort and tax gaps. Oil producers have the lowest tax effort and highest average tax potential, at 5 percent of GDP or more. This suggests that revenue performance in these countries is relatively weak, while other resource and nonresource countries show lower levels of tax potential of about 3 percent of GDP. A similar pattern exists for non–sub-Saharan countries, but with substantially different tax frontiers (Figures 2.24 and 2.25).

Figure 2.24. Sub-Saharan Africa: Tax Frontier and Gap



Sources: IMF, World Economic Outlook database; and IMF staff estimates.

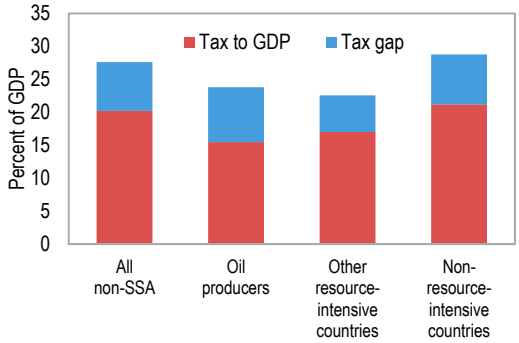
Note: SSA = sub-Saharan Africa.

The results suggest that most sub-Saharan African countries still have considerable potential to collect higher taxes through reforms (Figure 2.26). Also, the relatively lower tax frontier in sub-Saharan Africa implies that improvement in macroeconomic fundamentals and institutional factors could raise the tax frontier, and hence increase the possibilities to mobilize greater tax revenue. Regression analysis comparing the tax frontiers based on changes in income inequality, corruption, and government effectiveness show that policies addressing institutional weakness could also help boost revenue collection. This can operate through several channels, including an increase in tax compliance, as citizens realize the government is more likely to use their taxes for more transparent and efficient spending programs (IMF 2015b).

It is also useful to consider the revenue mobilization challenges facing countries with different tax collection levels.

- Countries with low tax collection levels that have not reached a minimum threshold of about 12½ to 13 percent of GDP (earlier referred to as a "tipping point") will need reforms to increase the efficiency of collection but will also need to find ways to push the tax frontier to a higher level. For example, Nigeria could double its tax-to-GDP ratio and exceed 10 percent of GDP with reforms to improve the efficiency of the system, but it would be difficult to surpass the tipping point without improving the structural factors that could push its tax frontier to a higher level. This could be achieved, for example, with policies that reduce corruption and improve

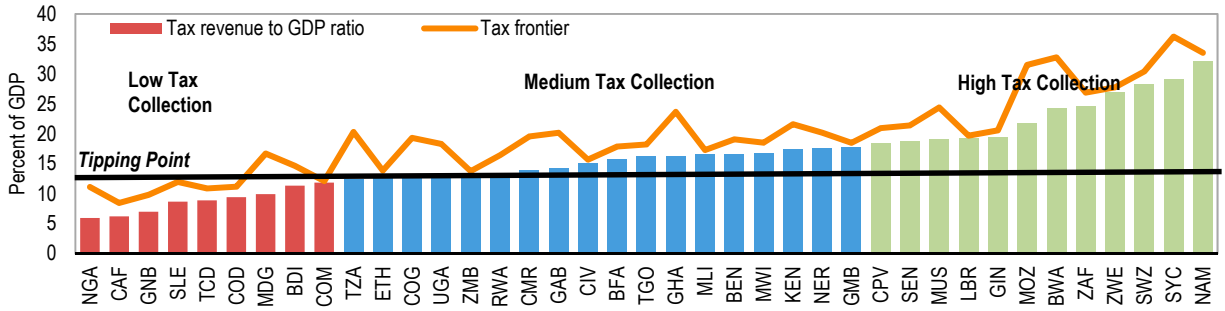
Figure 2.25. Non-Sub-Saharan Africa: Tax Frontier and Gap



Sources: IMF, World Economic Outlook database, and IMF staff estimates.

Note: SSA = sub-Saharan Africa.

Figure 2.26. Sub-Saharan Africa: Tax Ratio and Tax Frontier



Sources: IMF, World Economic Outlook database; and IMF staff estimates.

Note: Figure is computed based on 2015 data to ensure data coverage of key variables in the model. Recent GDP rebasing (for example, Liberia) has not been incorporated in the analysis. See page 91 for country abbreviations table.

governance, or by increasing the level of spending on education, which could simultaneously help to reduce inequality and create incentives to collect more taxes (for example through increases in the VAT rate) to finance the new spending levels.

- Countries with medium tax collection levels (tax-to-GDP ratio in the 13–18 percent of GDP range) tend to have larger tax gaps. These countries could mobilize, on average, about 3½ percent of GDP in additional revenues through reforms aimed at improving the efficiency of their current systems; for example, through a thorough review of existing taxes and exemptions. At the same time, there are some countries, such as Côte d'Ivoire, Ethiopia, and Mali, that seem to be relatively close to the tax frontier. In these cases, efficiency gains could produce more limited results, and the focus should also be on structural reforms to push the frontier to a higher level. While some of the factors that affect the frontier move slowly over time (GDP per capita) or are difficult to change quickly given capacity constraints, policies that focus on more inclusive growth or tackle corruption can help in this regard.

- For countries with higher tax collection levels (over 18 percent of GDP), the tax frontier is already at a relatively elevated level. As illustrated in the next section, these are countries that have already invested substantially in developing stronger tax collection institutions despite still-modest per capita income levels (Liberia, Mozambique) or that have higher levels of development and good governance (Botswana, Mauritius, Namibia, Seychelles). In this group of countries, despite having already achieved comparatively high tax-to-GDP ratios, there is still an average distance to the frontier of about 4 percent of GDP, suggesting that there is potential to mobilize additional revenues. However some countries may maintain lower taxes as a public policy choice; for example, on the desired size of government.

LESSONS FROM SUCCESSFUL REVENUE MOBILIZATION EPISODES

This section aims to identify lessons from success stories in revenue mobilization efforts. It focuses on nonresource revenues, where specific policy actions are under the control of country authorities, and finds that strong political commitment, as well as comprehensive reform strategies focused on building basic institutions and the tax base, are prerequisites for success. A simple algorithm is used to identify episodes of strong and steady improvement in nonresource revenues. In this instance, a successful episode is defined as a total increase of 2 percentage points of nonresource GDP over a three-year period, with no substantial declines in the revenue ratio within or immediately following the period.[10]

[10] To help ensure that the episode is due to underlying rather than ephemeral factors, the algorithm rules out instances where the mobilization episode is preceded by large drops in nonresource revenue, possibly suggesting a bounce-back recovery, and rules out episodes that are followed by an immediate deterioration of performance during the subsequent two years. The algorithm also excludes episodes in countries with revenue ratios above 20 percent (relatively strong performers) and those that remained below 10 percent of GDP.

Sustained revenue mobilization is difficult. Using a data set covering 44 sub-Saharan African countries from 2000–16, the analysis finds only six episodes of sustained revenue mobilization (Figure 2.27).[11] The nonresource revenue gain during the three-year episodes ranges from 2.2 to 8 percent of nonresource GDP, with an average annual increase of 1.2 percentage points and an average total revenue gain of 3.5 percentage points. In all cases, gains continued in subsequent years, with increases averaging 1 percentage point a year over the next three years. Data for 2016 indicate that the current level of revenue is at least at the same level it was at the end of the episode, and on average 3.4 percent of GDP higher than the episode end point, suggesting that the previous gains have become permanent.

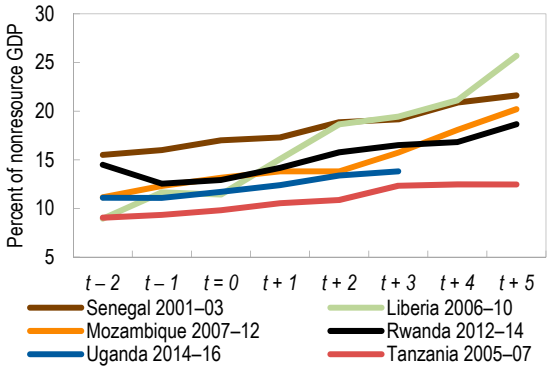
Success is possible in a variety of circumstances and initial conditions. Successful episodes reflect a diverse cross section of countries, ranging from relatively low to medium levels of tax effort (Figure 2.28), and including a range of geography, income levels, fragility, and resource intensity (Table 2.1). One common factor is that countries tended to experience robust growth during the revenue mobilization episode (possibly indicating tax buoyancy as a factor in revenue gains). However, an acceleration in growth was not required. In fact, only Liberia saw a significant acceleration in growth, while growth in other countries decelerated modestly from an average growth rate of 6.7 percent prior to the episode to 5.7 percent during the episode. Most episodes overlapped with intensified engagement with the IMF in the form of both lending and nonlending programs and substantial technical assistance efforts.

The reform process does not follow a set template, but rather seems tailored to country circumstances (Table 2.2). However, all cases point to the need for a broad range of tax policy and revenue administrative reforms prior to and during the episode.[12]

Pursuing a Comprehensive Reform Strategy

Each country in the study embarked on a comprehensive and multiyear reform strategy. There are some common elements, including a focus on basic institutions, measures to broaden the tax base, and modernization of tax administration institutions.

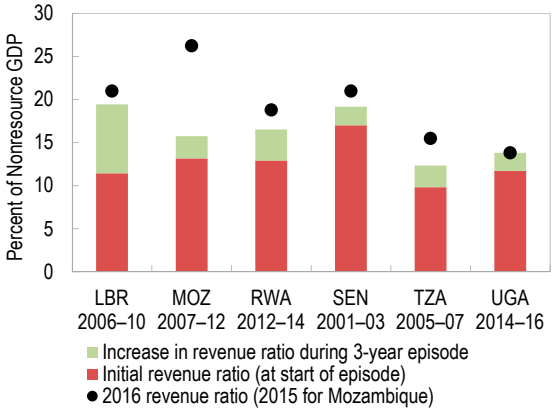
Figure 2.27 Sub-Saharan Africa: Nonresource Revenue Mobilization Episodes



Sources: IMF, World Economic Outlook database; and IMF Fiscal Affairs Department Sub-Saharan Africa Tax Revenue database.

Note: *t* + 1 is the first year of the revenue mobilization episode.

Figure 2.28 Sub-Saharan Africa: Nonresource Revenue Mobilization Episodes



Sources: IMF, World Economic Outlook database and IMF Fiscal Affairs Department Sub-Saharan Africa Tax Revenue database.

[11] Oil producers are omitted from the group of case studies in view of the potentially large spillover impact of cyclical commodity price swings on economic activity and nonresource revenues.

[12] A review of country cases where revenue mobilization exceeded 2 percentage points of GDP over three years, but where such gains were not sustained over subsequent years, suggests a variety of factors can undermine robust performance. In Benin and The Gambia (2005–07), the post-episode deterioration in revenues stemmed from the same exogenous shock, that is the 2008 global financial crisis. In the cases of Burkina Faso (2010–13), Burundi (2009–11), Malawi (2008–10), and Mali (2013–15), the reversals resulted from a combination of factors, including weakening political stability and internal security, or policy changes with a negative impact on revenue mobilization. In the cases of Comoros (2010–12) and Ghana (2009–11), endogenous factors explain the failure to sustain revenue gains, such as reduced receipts from changes to the Comorian citizenship program, and weakening tax administration in Ghana.

Table 2.1. Sub-Saharan African Revenue Mobilization Episodes: Background Information

Country	Episode	Income	Resource Intensity	Fragile	IMF Program	Real Growth		Macroeconomic Objectives	Fiscal Objectives
						Preceding 5-Year Average	In Episode		
Liberia	2006–10	Low	Other	Yes	Yes	–2.3	7.6	• Sustain economic reconstruction by creating a stable macroeconomic environment	• Strengthen revenue collection and expenditure control to channel resouces to poverty reduction; ensure transparency and accountability
Mozambique	2007–12	Low	Non	No	Yes	9.1	6.9	• Consolidate macroeconomic stability; strengthen the financial sector and improve the lending environment	• Strengthen revenue, enhance efficiency and transparency of government operations, and improve social service delivery
Rwanda	2012–14	Low	Non	No	Yes	8.0	7.0	• Consolidate macroeconomic stability while reducing aid dependency	• Maintain a sustainable fiscal position while increasing domestic revenues
Senegal	2001–03	Mid	Non	No	Yes	4.1	4.0	• High and equitable growth via better service delivery and a more attractive invesment climate	• Expand infrastructure and social services while safeguarding macroeconomic and debt sustainability
Tanzania	2005–07	Low	Other	No	Yes	6.3	6.5	• Contain inflation and support broad-based growth via infrastructure investment	• Steadily increase the revenue ratio to bolster macroeconomic performance and reduce aid dependency
Uganda	2014–16	Low	Other	No	Yes	5.9	4.2	• Support the reform agenda for growth, focused on institutions, financial sector, and invesment climate	• Scale up investment; broaden and deepen tax base; PFM effectiveness; preparing for oil

Sources: IMF Article IV Reports; IMF Techical Assistance Reports; IMF Staff Memorandum; and IMF World Economic Outlook database.
Note: PFM = public financial management.

A key element was an emphasis on the basic building blocks of the tax system. The apparatus of national taxation can be conceived of as a pyramid, where foundational institutions provide the base for more complex administrative and technological transformations (Figure 2.29). While the sequencing depends on country circumstances, all the countries invested significant effort in the basic building blocks of an effective and modern tax policy and administration, such as a taxpayer identification number, a semiautonomous revenue authority, the VAT, and taxpayer segmentation. Ex post assessments have found that the introduction of such reforms has been associated with increased revenue in a wide range of sub-Saharan African countries (Ebeke, Mansoor, and Rota Graziosi 2016). These institutions were largely well entrenched before the revenue mobilization episodes. The exceptions were Liberia and Mozambique, two countries emerging from prolonged internal conflict. Liberia was still in the incipient stages of rebuilding, but quickly embarked on a broad reform agenda to introduce several elements of these building blocks. Mozambique was more advanced, having pursued a broad reform agenda since the mid-1990s that started with overhauls of customs and domestic indirect taxes and introduction of a VAT, before shifting to establishment of a revenue authority and a large taxpayer unit early in the episode. Although these institutions were already established in the other countries, the record indicates continued attention to improve their functioning, notably in the form of reorganizations and medium-term strategies to strengthen capacity and coverage.

Table 2.2. Sub-Saharan African Revenue Mobilization Episodes: Timeline of Tax Policy and Administrative Reforms.

	Liberia 2006–10	Mozambique 2007–12	Rwanda 2012–14	Senegal 2001–03	Tanzania 2005–07	Uganda 2014–16
Prior reforms		Outsourcing of customs administration (1996); VAT and excise taxes adopted (1999); tax incentives code (2002); reform of income tax (2003)	Revenue Authority (1998); VAT (2001); RRA functional reorganization (2003); SIGTAS (2003–07); Income tax reform (2005); excise tax amended (2006); segmentation (2009)	VAT (1980); VAT administration computerization (1999); large taxpayer unit (2000); WAEMU common external tariff (2000)	Revenue authority (1996); VAT (1998); Trade tariffs reduced (1999); Large Taxpayers Department (2001); Taxpayer ID number	Revenue Authority (1991); VAT (1996); Large taxpayers office (2005); Medium taxpayers office (2009); PIT top rate increase (2012)
2005	Created single tax operation	2004 PIT rate increased from 20 to 27.6 percent	2010 RRA starts collecting social security contributions, improving coverage	2000 Single rate VAT at 18 percent	2003 Revenue authority adopts medium-term corporate plan for modernization	2012 Roll out e-tax services to upcountry stations; taxpayer education on e-tax
2006	Strengthen large-taxpayer audit function; increase large taxpayer base	2004 Organic Law for Tax Tribunals	2011 Customer satisfaction survey to inform strategic focus	2000 Management of central and local government taxes in a single directorate	2004 New tax law: self assessment, simplify small business tax, restore capital gains tax	2013 Issuance of national IDs
2006	Web posting of financial statements of revenue-generating agencies	2006 PIT rate increased to 32 percent	2012 Revised investment code to reduce exemptions	2000 Single taxpayer registration system at tax and customs departments	2004 Double VAT threshold, increase presumptive tax	2013 Increase fuel excise and new levy on mobile money transfers
2007	Broadened tax base by voiding tax concessions and duty exemptions	2006 Established Revenue Authority, developed medium-term strategic plan	2012 Electronic single window system at customs	2001 Study on revenue impact, beneficiaries, and legal basis of tax exemptions	2004 Implement function-based large taxpayers dept, expand coverage	2013 Improve risk profiles for taxpayer segments focusing on key actors
2007	Implement new taxpayer identification number	2008 Specific taxes on fuel increased, automatic quarterly adjustment	2012 Introduced special tax regime for small and micro enterprises	2003 Integration of the IT systems of the tax, customs, and treasury directorates	2005 VAT and income tax administration under Domestic Revenue Department	2013 Transition to ASYCUDA World
2008	Reorganize domestic tax administration by taxpayer segmentation	2008 Large taxpayers unit created; expanded large taxpayer base	2012 E-filing and e-payment systems; pension and medical insurance in e-Tax system	2003 Single taxpayer ID number	2005 Amended Investment Act, limits fiscal stability clauses to at most 5 years	2014 Publication of tax exemption beneficiaries; tax procedure code
2010	Restart taxpayer audits	2009 Initiated payment of taxes through banks	2013 Medium-term revenue mobilization plan	2003 Synthetic tax for small businesses in lieu of the VAT, the CIT, and the business licensing fee	2005 Publicize beneficiaries of tax exemptions under voucher scheme	2014 National-subnational coordination on taxpayer identification
2010	Developed new Investment Act	2010 Revisions to excise taxes on alcohol and tobacco	2013 One-stop border posts	2004 Streamlined Investment Code to focus on priority industries	2006 ASYCUDA++, create risk management database and post-customs audit policy	2014 CIT expanded to eligible property, interest earned on loans to certain sectors
2010	Automated administration of tax (ITAS)	2011 Deployed registration system for VAT module of e-Tax system	2014 New property tax legislation	2004 New software for property tax base; digitization of land and forest registry	2006 Index exises on non-petrol items, e.g. alchohol, tobacco, and mobile airtime	2014 VAT gap analysis and strategy; review VAT register and ledger
2010	Customs automation (ASYCUDA) and roll out of one-stop customs at ports	2013 Simplified tax system for small taxpayers	2014 Expanding use of electronic billing machines	2005 Simplified CIT and reduced its effective rate from 35 to 33 percent	2007 Establish dedicated units at six RA offices to serve medium-sized taxpayers	2014 Eliminate specific statutory income and VAT exemptions; cut number of zero rate goods
2010	Lowered CIT/PIT from 35 percent to 25 percent, broadly aligned to region		2014 Revised exemption and zero-rating schedules under the VAT-code			2015 Higher VAT threshold
2010	Increased taxes and excise on alcohol, airlines, cell phone usage, and hotels		2014 Tax expenditure budget			2015 Established National Targeting Centre
			2014 The RRA starts collecting decentralized taxes			

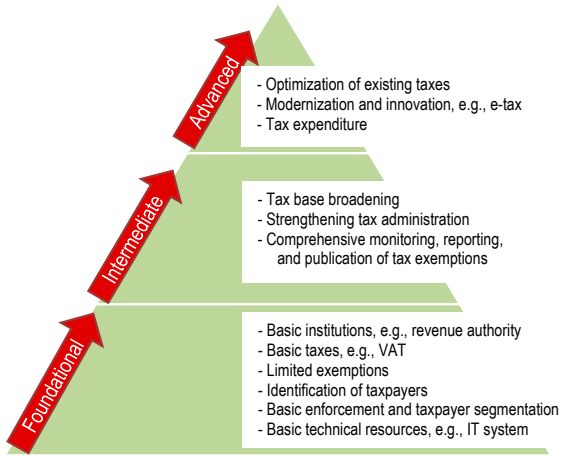
Foundational reforms

Intermediate reforms

Advanced reforms

Note: CIT = corporate income tax; PIT = personal income tax: VAT = value added Tax; ITAS = Integrated Tax Administration System; RRA = Rwanda Revenue Authority; ASYCUDA = Automated System for Customs Data; SIGTAS = Standard Integrated Government Tax Administration System; WAEMU = West African Economic and Monetary Union.

Figure 2.29 Progression of Tax Policy and Administrative Reforms



Source: IMF staff estimates.

All countries paid special attention to measures to build the tax base, simplify the tax system, and tackle exemptions and incentives. The countries in the study appear to have made limited use of tax policy rate adjustments. The focus was instead on measures to improve the effectiveness of tax policies and expand the tax base. All countries adopted measures to reduce base-narrowing exemptions by voiding or suspending certain tax exemptions (Liberia, Uganda), revising investment codes (Mozambique, Rwanda, Senegal, Tanzania), and eliminating distortions on value-added taxation (Rwanda, Senegal, Uganda). Measures were also adopted with an aim to reach certain "hard to tax sectors" by introducing simplified tax regimes for small businesses (Mozambique, Rwanda, Senegal, Tanzania), making changes to VAT thresholds to better target high-value businesses (Tanzania, Uganda), expanding the network of withholding agents (Uganda), and strengthening specialized taxes, such as those on property and investment income (Rwanda, Senegal).

A focus on institutional development and modernization was also at the core of the reform program. This included efforts to improve tax administration processes, particularly to refocus core operations, and developing effective information and communication technology (ICT) systems. This initiative included efforts to customize services and enforcement to different taxpayer segments (small, medium, and large) by deploying specialized units, among other things. In fact, all countries in the study adopted some form of taxpayer segmentation, with Rwanda, Tanzania, and Uganda dedicating resources to, and initiating specific risk-based compliance strategies for, different taxpayer segments. ICT reforms have helped these SSA countries to leapfrog from basic infrastructure to recent technologies as part of broader efforts to reduce compliance costs, and to simplify taxpayer registration, filing and payment, audit, collection enforcement, and appeals (Box 2.1). Platforms were also developed to combine domestic tax and customs operations, and to simplify customs clearance operations. All countries in the study appear to have been fast adopters of automating systems across domestic tax and customs administration. Several rolled out their first e-tax platforms during 2011–13. Rwanda further advanced with the introduction of mobile tax payments, integration of social contributions into the e-tax system, and the rollout of electronic billing machines to underpin the buoyancy of the VAT.

Need for Strong and Sustained Political Commitment

Clearly, a sound reform strategy that seeks to build effective and modern institutions is essential, but so too is political commitment to carry out reforms. Progress on revenue mobilization is usually slow, requiring perseverance to implement reforms. Transparency can be a helpful tool to maintain the momentum of reform.

Gains are usually incremental over prolonged periods of time. Countries that are rebuilding institutions following internal conflict can rebuild a fractured revenue base relatively quickly with the help of an ambitious reform plan, as was the case with Liberia, where the nonresource revenue ratio rose by 2.6 percentage points each year over three years. However, the norm appears to be that the dividend from structural reform accrues more slowly. Among this group of strong performers, where considerable progress had been made on several foundational reforms even before the revenue episode, average annual increases in nonresource revenue were about 0.9 percentage point of GDP a year during the episode. After the episode, gains tended to slow to 0.7 percentage point, although there has been considerable variation in the outcomes.

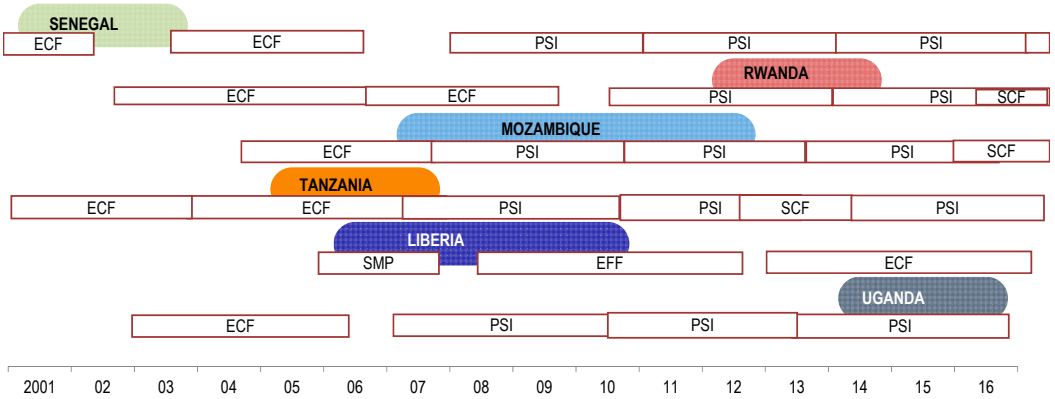
As a result, perseverance and the capacity to sustain reform momentum over time are essential. Higher and more reliable revenue streams are achieved over a period of several years. It is therefore not surprising that the countries studied here each pursued a broad range of policy and administrative reforms over a prolonged period, highlighting the importance of strong political commitment. Such reforms are ultimately a product of the political process, and are likely to face resistance from entrenched interests. Sustained commitment is needed to enact new laws, effect policy changes, and find sufficient resources for effective implementation. Elements that have supported implementation include the following:

Medium-term revenue strategies. A multi-year revenue mobilization strategy enhances the impetus and commitment for reform. Such plans were adopted ahead of, or concurrently with, the mobilization episodes in Senegal (2003), Tanzania (2003), Mozambique (2006), and Rwanda (2013). An important aspect to ensure the success of the strategy is the focus on taxpayer-centric policies to improve compliance, which typically includes more consultation with the private sector and more accountability and responsiveness of tax authorities to taxpayers.

- **Stability.** Peace and stability are preconditions for success. Fragile countries subject to frequent coups d'état, armed conflict, or the incapacity of the state to maintain law and order in a substantial part of the territory tend to have very low tax-to-GDP ratios (often below 10 percent of GDP). At the same time, consistent commitment of the political leadership to the reform strategy played a key role in several cases. While ministerial-level changes can energize reforms, they often result in delays or disruptions as plans are reassessed. The mobilization episodes in Mozambique and Senegal coincided with long-tenured ministers of finance, both in office for more than 10 years. The other case studies had at most two ministers of finance in the years leading up to and during the episode. Rapid turnover in key revenue administration staff, or inadequate attention to human resource management (for example, not providing adequate training or some degree of autonomy to the revenue authority), can also prevent progress.

- **Technical assistance and IMF engagement.** All countries received prolonged technical assistance from the IMF and maintained IMF-supported programs containing a substantial emphasis on revenue mobilization efforts (Figure 2.30). An intensified engagement with the IMF, as was the case across this group of countries, can provide a useful sounding board in the development and implementation of a strategy. However, it cannot substitute for steadfast political will. In the cases under study, there were considerable technical challenges in the implementation of revenue mobilization measures, as well as delays in implementation of structural reforms related to the elimination of tax exemptions in the cases of Liberia, Rwanda, and Uganda.

Figure 2.30. Revenue Mobilization Episodes and IMF Supported Programs, 2001–16



Source: Monitoring of Fund Arrangements (MONA) database.

Note: ECF = Extended Credit Facility; EFF = Extended Fund Facility; PSI = Policy Support Instrument; SMP = Staff-Monitored Program; SCF = Standby Credit Facility.

Transparency and outreach can play a decisive role. Explaining the importance of reform objectives to the public and private sectors can build support for the reforms and help develop a change in the taxpayers' culture and in taxpayer compliance. Several of the countries emphasized outreach strategies to help build support for key reforms. Tanzania and Uganda regularly published the names of beneficiaries of tax breaks to help support efforts to reduce the prevalence of exemptions, and Uganda published a VAT compliance gap analysis. Liberia published the financial accounts of revenue-generating agencies to address mismanagement of public funds. Rwanda and Uganda launched taxpayer education programs to foster compliance and improve service delivery.

CONCLUSION AND POLICY IMPLICATIONS

Sub-Saharan African countries could mobilize on average up to 5 percent of GDP in additional tax revenues in the next few years. Historical experience suggests that the conditions for success require attention to many factors related to policy design, institutional development, and political support. Not surprisingly, economic and political stability are preconditions for success.

Policy design is key, and inadequate tax policies cannot be offset by institutional reforms. If a country does not have a sound VAT, provides excessive tax incentives, and does not have a framework to ensure tax compliance, there is little the revenue administration can do to close tax gaps. Successful experiences in revenue mobilization have relied on efforts to implement broad-based VATs, gradually expand the base for direct taxes (CIT and PIT), and implement a system to tax small businesses and levy excises on a few key items (IMF 2011). While the specifics may vary by country, these are basic tax policy principles that have endured the test of time. Attention to contemporary issues like the role of property taxes or modern technologies is useful, but getting the basics right is a precondition for success.

Institutional development and ongoing revenue administration reforms based on a medium-term plan are essential. Countries have shown progress when they focus on adequate risk management (that is, allocating resources where revenue potential is greatest) and taxpayer segmentation (starting with a large taxpayer office). This requires developing the capacity to study which economic sectors offer the greatest potential, building a reliable registry of the largest taxpayers, and developing the capacity to conduct well-targeted audits. In countries with very low tax-to-GDP ratios, the potential gains from institutional reforms are larger, but the capacity to implement them is also more limited. However, the experience of Liberia and Mozambique, two postconflict countries, suggests that sustained reforms over time are possible even when the initial level of capacity is low.

Improving governance, controlling corruption, and focusing on the efficiency and transparency of public spending also appear to be preconditions for success. The level of tax compliance depends on the availability of mechanisms to ensure enforcement and the willingness of citizens to accept the legitimacy of the state to collect taxes. When citizens perceive that the tax system is fair (for example, it does not exclude powerful individuals and politically connected firms) and that revenues are used to finance productive spending programs, they are more likely to accept their tax obligations. Therefore, the transparent publication of who benefits from tax exemptions or incentives, as well as public financial management reforms that increase the efficiency and transparency of public spending, can be helpful instruments to support tax reform efforts. At the same time, customs and tax officials are more likely to remain professional and preserve the integrity of the system when political leaders, at the highest level show their commitment to reform through an adequate system of incentives and sanctions. This is illustrated by the case of Rwanda, a country that has one of the best track records in its anti-corruption efforts and has made remarkable progress in revenue mobilization efforts.

Finally, specific reform efforts and policies need to be defined at the country level using local knowledge, and country authorities are best placed to lead this exercise. There are, however, five steps that could usefully guide this process:

1. **Identify the taxes that offer the greatest potential**. For most sub-Saharan African countries, improving the VAT offers substantial potential given its current low efficiency in most cases. But there should be a systematic assessment of the potential associated with other taxes, including the CIT (where excessive tax exemptions/incentives have been eroding the base), the PIT (where there should be an effort to gradually expand coverage), and excise taxes. Despite the general decline in customs duties, stricter enforcement of customs rules and procedures could also help mobilize additional revenues. There is also potential in other areas, such as real estate taxes, though many countries have so far achieved limited progress in this area.

2. **Review the legal framework and tax policy design**. Once the potential of the various taxes has been established, there will be a need to align tax policies with the new objectives. In some cases, this may mean the introduction of a VAT, or the reduction of exemptions and the introduction of sanctions for noncompliance.

3. **Assess the institutional framework**. This should be done at two levels. First, there is the underlying supporting framework covering governance aspects. Countries that have weak governance are less likely to be effective in their revenue mobilization efforts. A greater emphasis on improving governance and controlling corruption seems crucial. In sub-Saharan Africa, the countries that are ranked highest in terms of control of corruption and good governance also tend to have higher levels of tax effort. And this effect is statistically significant even after controlling for the impact of per capita GDP. This finding confirms recent research on this issue (IMF 2016).[13] But there is also the operational framework, which covers institutional arrangements that have proven effective, such as the establishment of a revenue authority that follows specific principles.

4. **Define a medium-term revenue strategy**. There is consensus in the literature that this is a key step. The strategy should provide medium-term objectives and short-term goals, and could also define capacity-building needs. A convincing strategy would need to explain why the state is seeking to collect additional taxes.

5. **Build a constituency for reform**. The success of the medium-term strategy will depend on the structures of horizontal and vertical accountability. Horizontal accountability refers to the capacity of the government to convince other political parties that revenue mobilization is in the broader interest of the country. This is important to avoid reversals in cases of government changes after elections, given that revenue mobilization takes time. Vertical accountability refers to the social contract between the state and its citizens to ensure compliance. The state exercises its legitimate right to collect taxes in exchange for effective and transparent government spending. Public outreach efforts would be helpful, but they would need to be based on a credible commitment to better governance and transparency.

[13] Seven of the 10 countries that are ranked highest in the control of corruption dimension of the World Bank Worldwide Governance Indicators have a relatively high tax-to-GDP ratio (above 18 percent of GDP). These include Botswana, Cabo Verde, Mauritius, Namibia, Senegal, Seychelles, and South Africa. Rwanda also scores high in control of corruption and has made great progress in revenue mobilization. The two other countries have lower tax-to-GDP ratios associated with other factors, such as fragility (São Tomé and Príncipe) or some political instability (Burkina Faso).

Box 2.1. Looking ahead: Digital Revenue Mobilization

Digitalization has enabled a massive increase in the capacity to capture, retain, and process vast amounts of data. Its impact on tax policy and administration is multifaceted. It empowers tax policymakers with quick access to more reliable information. It reduces costs for both administrators and taxpayers, as digital infrastructure eliminates numerous manual processes related to recording, counting, and collecting tax files and payments. It can also deepen the tax base by reducing the use of cash and facilitating analysis of chains of transactions. And it can significantly benefit the business climate by clarifying tax rules and speeding up processes.

Sub-Saharan African tax authorities have seized upon digitalization as an opportunity to leapfrog from basic infrastructure to recent technologies. Several countries have already introduced online e-tax portals, mobile tax payments, and online reimbursement of value-added tax (VAT) credits. Nonetheless, progress has been uneven and halting, as implementation faces important hurdles in the region, including

- Low levels of internet penetration that limit the reach of some platforms.
- Inherent complexity, where platforms require extensive development and adaptation in a context of incomplete or low-quality data, with potentially significant financial and reputational risks.
- Sociopolitical challenges, including weak enforcement and little trust in government.

With these shared problems in mind and with a desire to design solutions appropriate to national circumstances, a number of peer-to-peer learning workshops on technology-enabled ideas and navigating the political economy of such reforms have been organized, including the 2016 Hackathon in Senegal and the 2017 Ideas Workshop in Uganda. These events brought together participants from different nations, institutions, and the private sector to identify issues and brainstorm solutions. Experts then evaluated these homegrown proposals, picking the most practicable areas for further work. In Senegal, the participants considered that expanding the menu of mobile options could help improve e-tax accessibility. In Uganda, the interest was in encouraging the deployment of electronic fiscal devices—portable and increasingly inexpensive devices that record business transactions—in order to improve compliance with sales taxes and the VAT. Participants also suggested establishing a gateway for the collection of third-party data to help identify and cross-check tax liabilities.

These initiatives suggest a useful approach to building ownership by ensuring that reforms are homegrown, driven by an intimate knowledge of local circumstances, and informed by a pragmatic dialogue among policymakers and practitioners. Indeed, in the preparation of specific medium-term revenue mobilization plans, country authorities should consider organizing similar seminars to draw on inputs and ideas from a broad range of stakeholders.

Box 2.2. Modeling the Economic Impacts of Revenue Mobilization in Resource-Rich Sub-Saharan African Countries

Application to the Central African Economic and Monetary Community

Sub-Saharan African countries need to raise revenues to support their efforts to reach the United Nations Sustainable Development Goals and ensure debt sustainability. The need for revenue mobilization is particularly important in sub-Saharan Africa's resource-rich countries, which have suffered the impact of the large drop in commodity prices since 2014, and have the lowest tax effort and biggest tax gap in the region. This box analyzes the potential economic impact of revenue mobilization in the Central African Economic and Monetary Community (CEMAC) region, which is rich in natural resources, and where these issues have become particularly important. The analysis examines two questions:[1]

- What are the main macroeconomic and distributional impacts of an improvement in non-oil revenue mobilization?
- How can undesirable distributional effects be addressed by using some of the newly created fiscal space?

Through the calibration of a theoretical macroeconomic model for the CEMAC region, the analysis first simulates how private consumption and investment, public debt, and other key macroeconomic variables are affected by two different sources of higher non-oil revenue mobilization: (1) an increase in value-added tax (VAT) rates, one of the most important sources of non-oil tax revenue in the region; and (2) an improvement in the efficiency of collection of existing taxes. The analysis then investigates how the enhanced revenue mobilization deriving from a higher VAT rate can be used to mitigate undesirable distributional effects.

The simulation analysis uses the IMF Debt, Investment, Growth and Natural Resources (DIGNAR) model developed in Melina, Yang, and Zanna (2016). DIGNAR is a real model of a small open economy with three production sectors, productive public capital, and three types of debt: commercial, external, and concessional. Importantly, there are two types of households: (1) non–financially constrained (NFC) households with access to capital and financial markets; and (2) financially constrained (FC) households, which are poor and consume all their disposable income each period.

Key results are as follows:

1. Non-oil revenue mobilization helps reduce government debt and can increase long-term growth, but with potentially undesirable distributional effects.

Figure 2.2.1. presents simulations of the macroeconomic effects of an increase in the VAT rate or an expansion of the tax base through greater efficiency. Both policy measures would increase non-oil revenues while reducing public debt and private consumption for NFC households. Initially, non-oil GDP falls, in line with the empirical literature on short-term fiscal multipliers. It recovers in the medium term, driven by an increase in private investment—in turn boosted by higher savings—and net export and reaches a higher-than-initial level in the long run when revenue gains are realized due to an improvement in tax collection efficiency.

In terms of differences between the two revenue-increasing measures, the improvement in revenue collection through efficiency allows for lower tax rates for a given level of debt. It also has more desirable distributional properties as the negative impact falls largely on the consumption of NFC and not of FC consumers. Importantly, the impact on non-oil GDP is smaller, and its recovery is stronger, when the focus is on collection efficiency rather than on increases in the VAT rate. In contrast, the increase in VAT rate negatively affects particularly the consumption of FC consumers because they have a larger marginal propensity to consume than NFC households.

This box was prepared by Giovanni Melina and Marcos Poplawski-Ribeiro with support from Mathilde Perinet.

[1] For an analysis of the economic effects of shocks on oil revenues, see Araujo, Poplawski-Ribeiro, and Zanna (2016).

Box 2.2. *(continued)*

2. Policies targeting the most vulnerable improve distributional outcomes

A second set of simulations (Figure 2.2.2) shows the effects of channeling a fraction (for example, half) of the additional non-oil revenue obtained from higher VAT rates either to targeted transfers toward FC households or to public investment. The combination of an increase in VAT rates and additional public investment is especially good at mitigating the negative effects of the fiscal consolidation on non-oil GDP. In addition, the mix of an increase in VAT rates with targeted cash transfers is a powerful tool to mitigate adverse effects on FC households.

One caveat is in order: it is possible that by channeling public investment to projects that affect the poor—projects that reduce unemployment in poor households, this policy may also act as a mitigating mechanism for inequality. This channel is missing in the DIGNAR model. Indeed, Furceri and Li (2017) empirically find that increases in public investment reduce income inequality, although Furceri and others (2018) find that total government expenditures, including transfers, have a bigger multiplier effect on inequality.

This analysis focusing on the CEMAC region reinforces some key considerations in the design of fiscal adjustment strategies: revenue mobilization is a powerful means to create fiscal space and reduce government indebtedness, but it may also generate undesirable effects on inequality that can be addressed by mitigating policies such as cash transfer programs targeted to the most vulnerable groups of the population and the choice of revenue raising strategies.

DIGNAR Model and Calibration to CEMAC

To conduct the simulation analysis the box relies on the IMF Debt, Investment, Growth and Natural Resources (DIGNAR) model of Melina, Yang, and Zanna (2016). DIGNAR is a real model of a small open economy with two types of households and three production sectors. The intertemporal NFC households have access to capital and financial markets, while the FC households are poor and consume all the disposable income each period. The modeling of two types of households allows the simulations to shed light on consumption-inequality impacts of the different revenue mobilization strategies in the region. In turn, the three production sectors include a nontraded goods sector, a (nonresource) traded goods sector, and a natural resource sector. Each period the government's total receipts consist of (1) taxes, including consumption taxes, labor income taxes, and resource revenues; (2) foreign aid; (3) bond sales; and (4) user fees on infrastructure services. The government's total expenditures consist of (1) government consumption, (2) public investment, (3) transfers to households, and (4) debt service payments. As in Buffie and others (2012), borrowing can be done through issuing domestic debt, external commercial debt, and external concessional debt. The key investment-growth link in DIGNAR is that public investment creates productive capital, which enters the production functions of traded and nontraded goods. Public investment, however, is subject to some investment inefficiency and absorptive capacity constraints. Dabla-Norris and others (2012) argue that high productivity of infrastructure can often coexist with very low returns on public investment in developing economies, because of investment inefficiencies that may be associated with corruption, among other things. As a result, all public investment spending does not necessarily increase the stock of productive capital. Similarly, absorptive capacity constraints related to administrative and management capacity and supply bottlenecks—which negatively affect project selection, management, and implementation, and raise input costs—can further reduce the efficiency of public investment and have negative effects on growth, as suggested by Esfahani and Ramirez (2003).

We calibrate the initial steady state of the main macroeconomic aggregates in the model using average values of observed variables over the last five years. The rest of the parameters are set at values appropriate for low-income countries as discussed in Melina, Yang, and Zanna (2016). Table 2.1.1 summarizes the CEMAC-specific calibration.

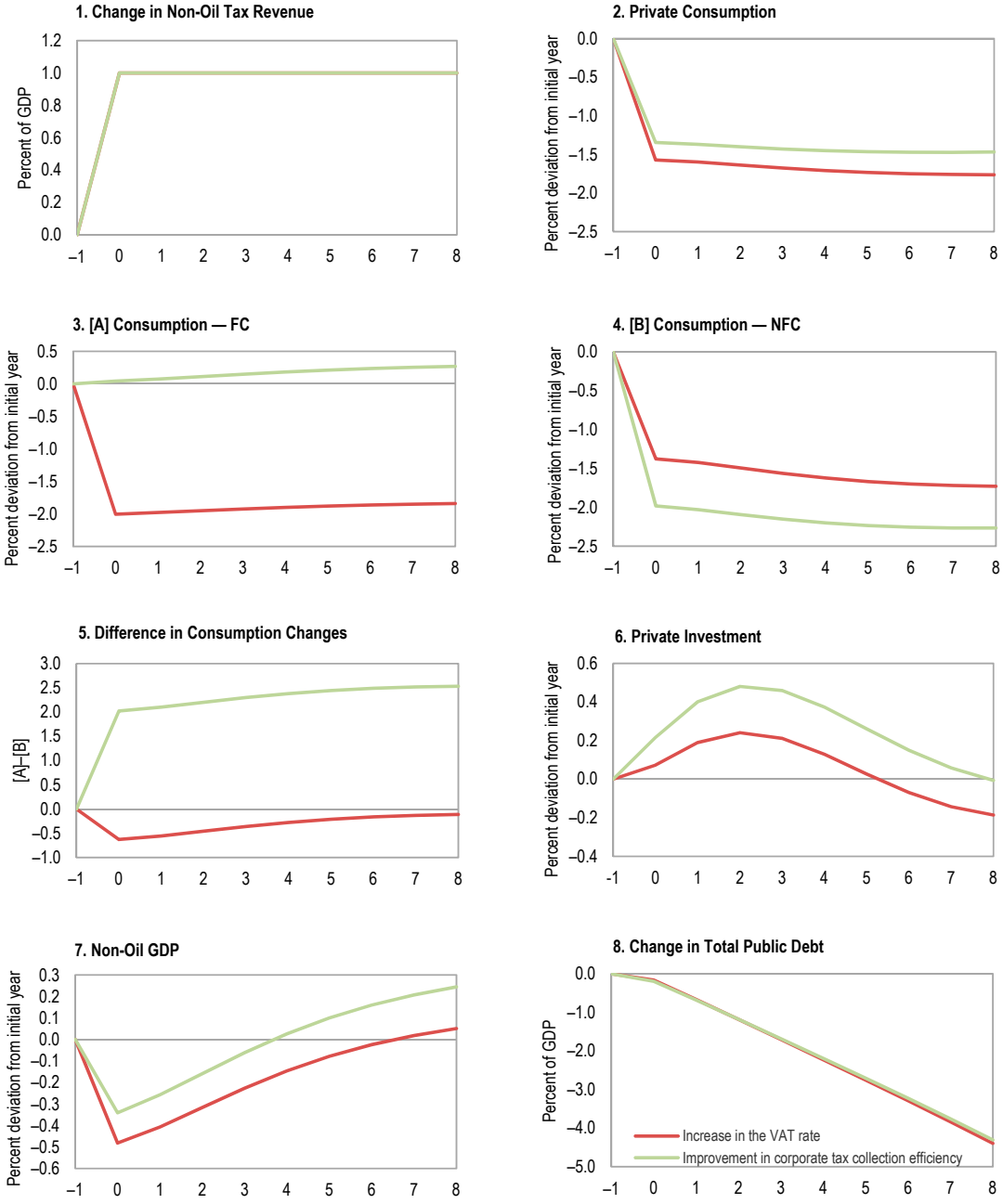
Table 2.1.1. Calibration

Target (Percent of GDP)	Value
Exports	40.1
Imports	38.7
Government consumption	14.6
Government investment	11.9
Private investment	16.2
Resource sector	24.5
Government domestic debt	12
Government external concessional debt	13.2
Government external commercial debt	10.4
Grants	0.7

Source: IMF staff calculations.

Box 2.2. *(continued)*

Figure 2.2.1. Macroeconomic Effects of an Increase In Tax Revenues through Either the VAT Rate or Corporate Tax Collection Efficiency ***(Years on x-axis)***

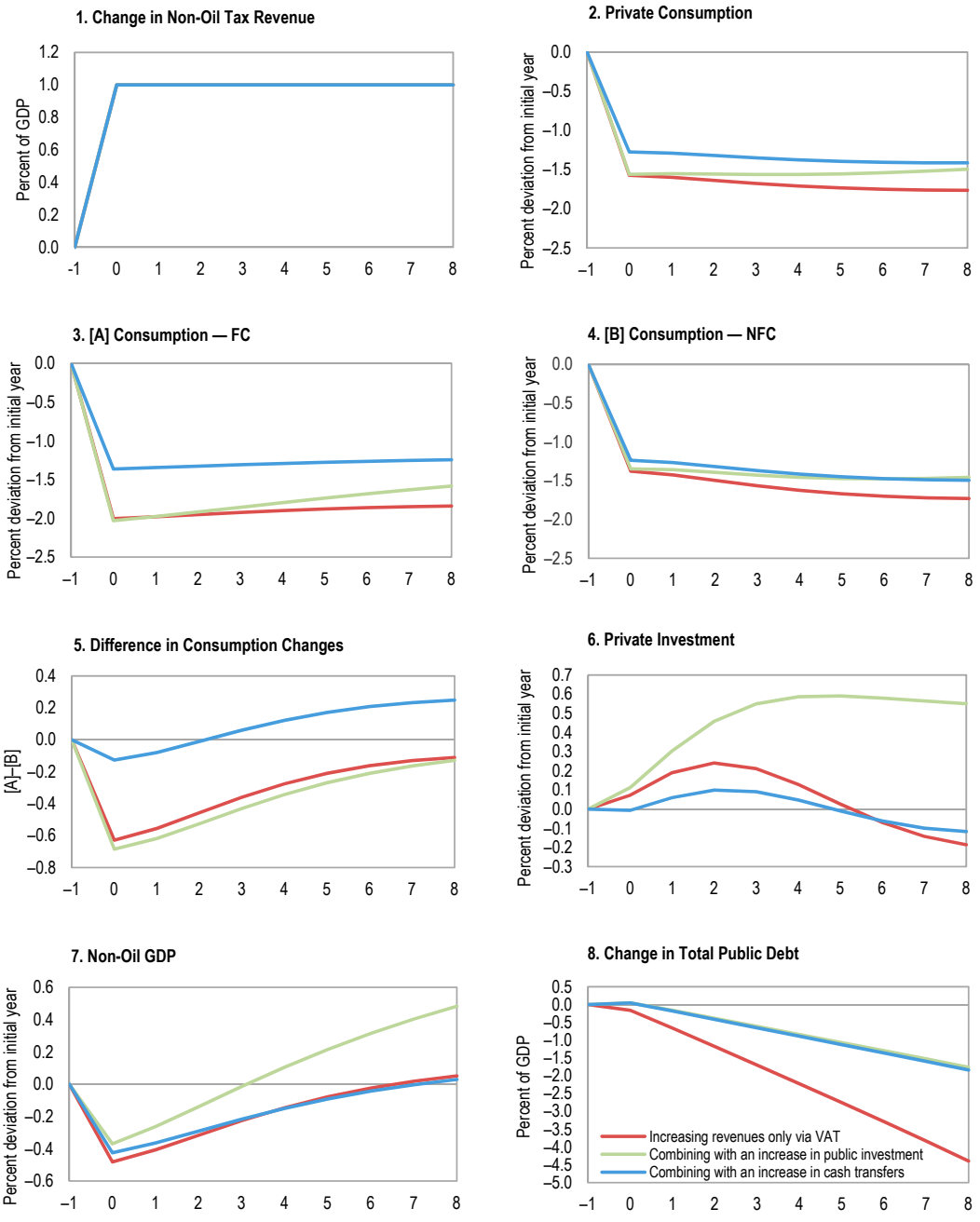


Source: IMF staff calculations.

Note: FC = financially constrained; NFC = non–financially constrained; VAT = value-added tax.

Box 2.2. *(continued)*

Figure 2.2.2. Mitigating Effects of Cash Transfers or Public Investment.
(Years on x-axis)



Source: IMF staff calculations.
Note: FC = financially constrained; NFC = non–financially constrained; VAT = value-added tax.

Annex 2.1. Estimating Tax Effort and Tax Potential

Definitions

The tax frontier is defined as the maximum theoretical level of tax revenues (measured in percent of GDP) that a country can achieve given certain underlying structural conditions (level of development, trade openness, sectoral structure, income distribution, institutions, etc.).

Tax effort is defined as the ratio of actual tax revenue to corresponding frontier tax revenue.

Tax potential reflects the distance between the tax frontier and the actual tax revenue level.

Tax potential can be achieved through higher taxation or better collection efficiency, which may be the result of specific policy choices.

Estimation Strategy

Step 1: Estimate the tax frontier from a cross-country panel data set

$$y_{it} = \alpha_i + \beta' X_{it} + \vartheta_{it} - \mu_{it} ,$$

where
y_{it} is the log of the tax revenue-to-GDP ratio for country i at period year t
X_{it} is a vector of independent variables that affect y_{it}
μ_{it} is the inefficiency, which is correlated with X_{it}, but independent from ϑ_{it}, and
ϑ_{it} is the residual, and normal distribution with $N(0,1)$

Step 2: Determine the tax effort

$$TE_{it} = \frac{\exp(y_{it})}{\exp(y_{it|\mu_{it}=0})} = \frac{\exp(\alpha_i + \beta' X_{it} + \vartheta_{it} - \mu_{it})}{\exp(\alpha_i + \beta' X_{it} + \vartheta_{it})} = ex\,p(-\mu_{it}) .$$

Step 3: Determine the tax frontier and tax potential

$$TP_{it} = TF_{it} - y_{it} = \frac{y_{it}}{TE_{it}} - y_{it} .$$

Data and Variables

Log of tax to GDP: *World Economic Outlook* (WEO)
Log of tax on goods and services to GDP: WEO
Lag of log of real GDP per capita: WEO
Lag of log of real GDP per capita squared: WEO
Trade openness—sum of imports and exports in percent of GDP: WEO
Agriculture: Value added of agriculture in percent of GDP: World Bank, World Development Indicators (WDI)
Gini coefficient: WDI
Oil: dummy for oil exporters
General Government: dummy for General Government tax revenues.
Corruption and Government Effectiveness: Worldwide Governance Indicators (WGI).

Annex Table 2.1.1. Main Regression Results

Dependent Variable: Log of tax/GDP

	All Sample			Emerging Market and Developing Economies		
Log of real GDP per capita	2.939 ***	2.866 ***	2.885 ***	2.781 ***	2.691 ***	2.716 ***
Trade openness	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***
Agriculture	–0.001	–0.001	–0.001	–0.001	–0.001	–0.001
Gini coefficient	–0.006 ***	–0.006 ***	–0.007 ***	–0.006 ***	–0.006 ***	-0.006 ***
General government	0.105 **	0.109 ***	0.110 ***	0.091 **	0.093 **	0.098 **
Education	0.015 ***	0.016 ***	0.016 ***	0.016 ***	0.018 ***	0.017 ***
Oil dummy	0.080 **	0.035	0.031	0.043	0.030	0.026
Log of real GDP per capita squared	–0.152 ***	–0.148 ***	–0.150 ***	–0.142 ***	–0.138 ***	–0.140 ***
Corruption		0.117 ***	0.083 *		0.134 ***	0.100 **
Government effectiveness			0.091 *			0.088 *
Constant	4.165 ***	4.186 ***	4.256 ***	5.279 ***	4.945 **	5.267 **
Sigma_u	0.515 ***	0.515 ***	0.516 ***	0.525 ***	0.526 ***	0.526 ***
Sigma_u	0.099 ***	0.098 ***	0.098 ***	0.106 ***	0.106 ***	0.105 ***
Number of observations	1,366	1,360	1,360	1,109	1,103	1,103
Number of countries	122	121	121	99	98	98

Dependent Variable: Log of Goods and Services Tax/GDP

	All Sample			Emerging Market and Developing Economies		
Log of real GDP per capita	2.379 ***	2.332 ***	2.353 ***	2.228 ***	2.173 ***	2.207 ***
Trade openness	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***
Agriculture	0.000	0.001	0.001	0.000	0.001	0.001
Gini coefficient	–0.008 ***	–0.008 ***	–0.008 ***	–0.009 ***	–0.009 ***	–0.009 ***
General government dummy	0.142	0.146	0.152	0.140	0.164 *	0.168 *
Education	0.003	0.007	0.006	0.004	0.009	0.008
Oil dummy	–0.642 ***	–0.626 ***	–0.634 ***	–0.646 ***	–0.581 ***	–0.587 ***
Log of real GDP per capita squared	–0.122 ***	–0.120 ***	–0.122 ***	–0.113 ***	–0.111 ***	–0.114 ***
Corruption		0.123	0.052		0.140	0.065
Government effectiveness			0.170 **			0.172 *
Constant	–0.615	–0.636	–0.615	0.621	1.258	1.075
Sigma_u	0.660 ***	0.665 ***	0.665 ***	0.667 ***	0.672 ***	0.672 ***
Sigma_u	0.162 ***	0.159 ***	0.159 ***	0.177 ***	0.174 ***	0.174 ***
Number of observations	1,152	1,146	1,146	930	924	924
Number of countries	105	104	104	85	84	84

Source: IMF staff calculations.

Note: *p < .10; **p < .05; ***p < .01.

Annex Table 2.1.2. Estimates of Sub-Saharan African Countries' Tax Frontier
(Percent of GDP)

Country	Tax to GDP[1]	All Countries			Emerging Marktet and Developing Economies			SSA Countries		
		A	B	C	A	B	C	A	B	C
Nigeria	5.9	11.1	11.1	12.0	10.7	10.4	12.0	8.1	8.3	8.5
Central African Rep.	6.2	8.4	8.5	9.7	8.0	8.2	8.8	8.1	7.9	8.8
Guinea-Bissau	7.0	9.8	9.7	9.8	9.6	9.5	9.5	10.0	9.5	9.7
Sierra Leone	8.6	12.0	11.9	11.7	11.6	11.5	11.3	11.9	11.4	11.8
Chad	8.9	10.9	10.4	11.5	10.2	10.1	11.5	9.2	9.1	9.2
Congo, Dem. Rep.	9.4	11.2	11.1	12.2	11.0	11.1	11.8	10.4	10.6	11.2
Madagascar	9.9	16.7	17.3	19.5	16.6	16.7	19.4	14.8	15.8	18.4
Burundi	11.3	14.6	15.2	13.9	14.7	14.5	12.4	12.7	12.5	11.7
Comoros	11.8	12.1	14.7	14.2	12.1	14.5	14.0	12.2	14.7	14.3
Tanzania	12.4	20.3	20.9	19.5	20.2	19.8	19.7	18.3	18.6	19.4
Ethiopia	12.7	13.8	14.2	13.2	13.9	13.8	13.1	13.3	13.3	13.1
Congo, Rep.	12.8	19.3	18.6	19.5	19.0	19.1	19.6	17.5	17.8	19.2
Uganda	13.0	18.3	19.1	22.1	18.9	18.4	21.0	18.4	17.7	20.8
Zambia	13.3	13.7	14.1	21.2	13.8	13.9	21.5	14.6	14.8	21.7
Rwanda	13.5	16.4	17.2	16.0	16.5	16.3	15.7	15.2	15.7	15.5
Cameroon	14.0	19.6	19.0	20.7	18.9	18.6	21.3	18.7	18.1	20.9
Gabon	14.3	20.2	19.3	26.6	20.3	20.6	24.1	15.2	15.6	16.0
Côte d'Ivoire	15.1	15.7	15.6	15.7	15.7	15.7	15.8	15.8	15.8	15.9
Burkina Faso	15.7	17.9	18.3	18.8	17.7	17.8	17.8	16.9	17.3	18.0
Togo	16.2	18.2	17.7	18.9	17.6	17.8	18.6	18.2	18.1	18.6
Ghana	16.3	23.7	25.2	21.4	25.0	23.9	22.0	24.8	24.3	22.9
Mali	16.6	17.3	17.2	17.4	17.1	17.1	17.2	17.1	17.1	17.5
Benin	16.7	19.1	19.2	19.2	19.0	18.8	19.4	17.8	18.1	18.9
Malawi	16.8	18.5	20.1	21.4	19.3	18.9	19.6	17.7	17.6	18.8
Kenya	17.5	21.6	22.2	19.3	22.0	21.0	19.3	22.9	21.1	20.2
Niger	17.6	20.2	20.6	20.3	20.4	20.3	18.7	18.7	18.7	18.2
Gambia, The	17.7	18.5	18.7	22.4	18.6	18.5	21.9	19.0	18.8	22.0
Cabo Verde	18.4	20.9	21.0	22.0	21.1	21.2	22.7	20.1	21.0	21.8
Senegal	18.7	21.4	21.8	22.6	21.7	21.8	22.5	20.4	21.4	22.3
Mauritius	19.2	24.4	24.2	29.3	26.0	25.7	28.5	22.3	22.5	23.8
Liberia	19.2	19.7	19.7	23.0	19.9	19.9	22.3	20.0	20.0	21.1
Guinea	19.5	20.6	21.3	24.1	20.7	20.6	23.1	20.0	20.1	22.4
Mozambique	21.7	31.5	33.4	36.1	32.7	32.3	33.9	27.5	28.5	29.9
Botswana	24.3	32.8	33.3	32.7	34.8	34.8	31.4	31.4	31.9	27.3
South Africa	24.7	26.9	26.9	31.1	27.9	27.6	30.5	25.5	25.4	26.2
Zimbabwe	26.9	27.7	27.6	27.5	27.7	27.6	27.5	27.8	27.7	27.6
Swaziland	28.3	30.4	29.8	30.1	30.4	30.4	30.5	30.3	30.4	29.6
Seychelles	29.2	36.2	34.8	49.4	39.4	39.0	48.3	34.5	34.2	37.1
Namibia	32.1	33.5	33.4	33.9	34.2	33.9	35.4	33.7	33.8	33.2
Average	16.2	19.6	19.9	21.3	19.9	19.8	20.9	18.7	18.9	19.6

Source: IMF staff calculations.

Notes: Models A, B and C are based on the specifications listed in Annex Table 2.1.1, with log of tax to GDP as the dependent variable. Model A includes institutional factors and public spending on education. Model B includes public spending on education but not corruption or government effectiveness. Model C does not include corruption, government effectiveness or public spending on education.

[1] Data correspond to 2015 in most cases, with the exception of Comoros, Seychelles, and Swaziland (all 2014), and Cabo Verde, Democratic Republic of the Congo, and Guinea-Bissau (all 2013). Year selection requires data availability for the set of independent variables in the model.

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