

# TAX BUOYANCY IN SUB-SAHARAN AFRICA<sup>1</sup>

## A. Introduction

**1. It is common practice for countries to attempt to increase GDP growth by increasing public expenditure.** However, unless these efforts are matched by policies to boost revenues, there may be risks to fiscal sustainability. This is why successful countries have emphasized tax reforms to maximize revenue increases that are generated by economic growth. The *Plan Sénégal Emergent (PSE)* envisages a similar virtuous circle but policies to achieve this are yet to be defined. This note aims to suggest some avenues for Senegal to boost revenue as high growth is achieved so that public spending can also be ramped up without risks to macro-fiscal stability. In particular, we empirically characterize the relationship between tax and economic activity in a sample of Sub-Saharan African (SSA) countries and analyze which determinants matter to maximize revenue collection. We will also use the framework to study the case of Senegal and suggest some avenues to make revenue mobilization more responsive to economic growth.

## B. Tax Buoyancy Across Sub-Saharan Africa

### Overview

**2. From the revenue side of the budget, the answer to whether growth can bring down deficits, depends on tax buoyancy:** the measure for how tax revenues vary with changes in GDP (Box 1).<sup>2</sup>

**3. Several efforts aimed at obtaining optimal fiscal policies with emphasis on the role of taxation, as an instrument of economic development, have been implemented over time.** Apart from the need to mobilize resources for revenue purposes, a study of tax buoyancy is important for: i) properly forecasting revenue; ii) analyzing the stabilizing properties of a tax system; iii) and studying the progressivity of a tax system. An examination of tax buoyancy is crucial for tax policy design and formulation since, by assessing country-specific tax buoyancy, one can ascertain if the government is taking into account the impact of economic activity on tax mobilization.<sup>3</sup>

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<sup>2</sup> A tax buoyancy equal to one would imply that an extra percent of GDP would increase tax revenue by one percent. A tax buoyancy exceeding one, however would increase tax revenue by more than GDP and potentially lead to reductions in the deficit ratio. A buoyancy greater than unity is a desirable feature of a tax system if there is increasing demand for public services and if a country would like to pursue relative financial stability. If buoyancy is low, discretionary changes may make up for it, but effects can be lagged and disproportionately high (Blanchard, Dell'Arcia and Mauro, 2010).

<sup>3</sup> Estimates of revenues elasticities abound in the literature. For example, Giorno et al. (1995), Girouard and Andre (2005), Belinga et al. (2014), estimated revenue elasticities for OECD countries, while Bouthevillan et al. (2001) studied the Euro area. Choudhry (1979) estimated the elasticity of tax revenue of the US, UK, Malaysia and Kenya. Turning to developing countries, Osoro (1993, 1995) provided tax elasticities estimates in Tanzania; Ariyo (1997) evaluated the productivity of the Nigerian tax system; Chipeta (1998) studied the effects of tax reforms on tax yields in Malawi; Kusi (1998) studied Ghana's tax reform; Bilquees (2004) studied the buoyancy of the tax system in Pakistan; Upender (2008) focused on India; and Cotton (2012) looked at Trinidad and Tobago.

### Box 1. Buoyancy Versus Elasticity

Hindrichs (1966) and Musgrave (1969) explained the role of various tax categories in determining tax effort that expresses the ratio of the actual tax collected to potential tax and used as an indicator of how much a country is utilizing its taxable capacity. In order to determine if a country has made efforts at increasing tax revenue over a period, the sensitivity and response of the tax system with respect to income should be used. The buoyancy of a tax system reflects the total response of tax revenue to changes in national income, as well as discretionary changes in tax policies over time. Though closely related to buoyancy, the elasticity of the tax system measures the responsiveness of tax revenue to changes in national income, controlling for discretionary changes in the tax structure, that is, keeping all other parameters (including tax legislation) constant (Skeete, Coppin and Boamah, 2003). When the elasticity of major revenue sources remains low (due to low base, evasion or avoidance), governments raise additional resources through discretionary measures. Hence, the growth of tax revenue comes through high buoyancy rather than through elasticity.<sup>1</sup> Lacking information on discretionary measures for our panel of SSA countries and under the assumption that the effects of these changes on revenues cancel each other out over time, then revenue buoyancy is estimated via a regression of the log of tax revenue on the log of GDP. This is the approach followed here.<sup>2</sup>

<sup>1</sup> Elasticity is more appropriate to use in estimating the impact of, say, an unexpected decline in the tax base (owing, e.g., to a natural disaster) on revenues, or the increase in, say, PIT revenues over time if brackets are not adjusted and deductions allowances remain the same. Buoyancy on the other hand, more appropriately measures past revenue developments or the combined effects of a package of reforms.

<sup>2</sup> Tax buoyancy and elasticity can be calculated using: i) the traditional model used to estimate tax buoyancy which requires GDP to be a determinant of tax revenue; ii) the proportional adjustment method which involves isolating the data on discretionary revenue changes; iii) the dummy variable method which introduces a dummy variable for each year in which there was an exogenous tax policy change; iv) the constant rate structure which involves collecting statistics on actual tax receipts and data on monetary value of the legal tax bases and corresponding revenues; the tax bracket of the base year is then multiplied by the corresponding base values and the products summed up; and v) the divisia index which introduces a proxy for discretionary tax measures.

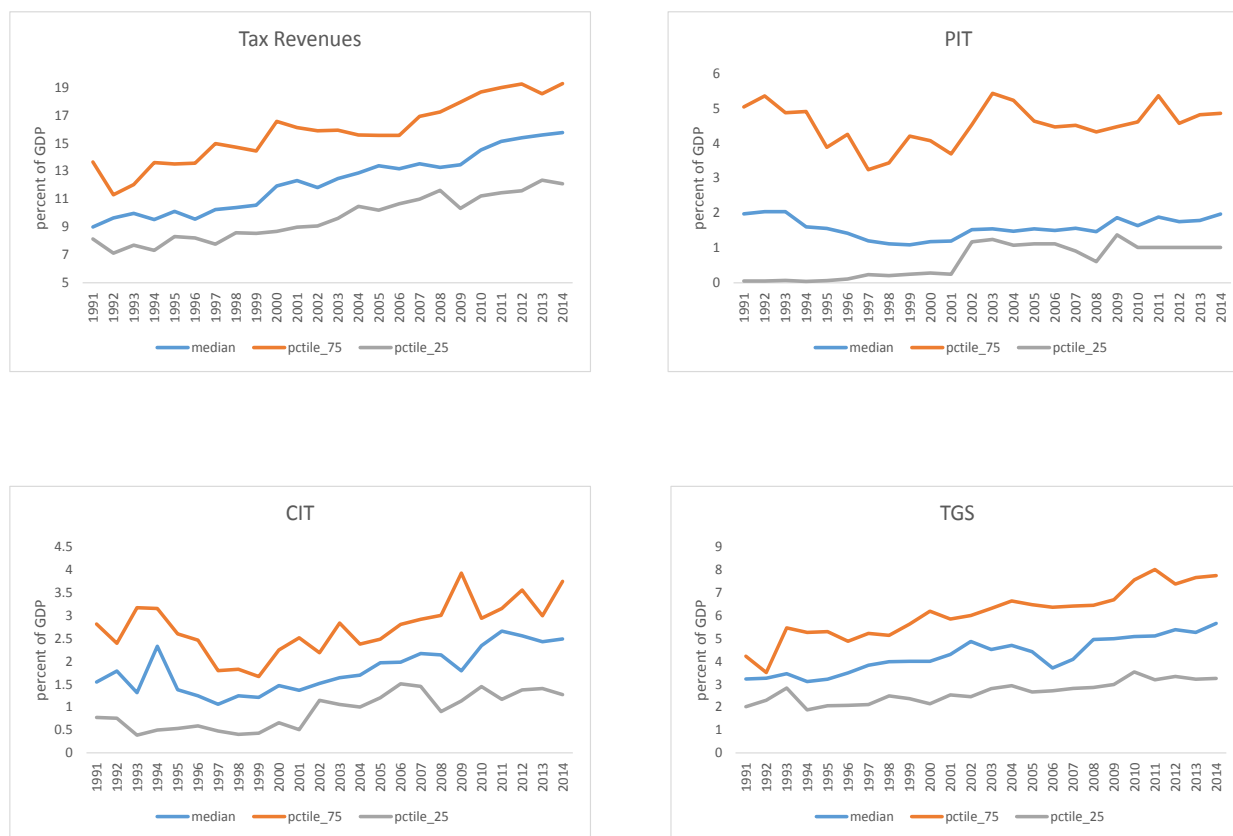
**4. Additionally, estimation of individual tax buoyancies helps shed more light on the weaknesses and strengths of the systems and allows fiscal authorities to identify taxes which have high income elasticity and are thus better reform targets when trying to increase overall tax revenue.** Moreover, understanding how and why revenues respond to the business cycle is important from the point of view of the government's intertemporal budget constraint and tax smoothing. Finally, buoyancy and its source are important in an era with increasing concern about rising inequality and its dampening effects on growth (let alone the social challenges from more inequality). As GDP grows, a good tax system needs to automatically maintain revenue as a share of GDP, whilst collecting this tax from those best able to pay and minimizing distortions that negatively impact growth.

**5. It is also important to consider the time horizon used in the analysis, since estimates of tax buoyancy can differ between the short and long run.** If tax revenue increases by more than GDP in percentage terms (meaning a buoyancy coefficient higher than one), then the tax system is considered to be a good automatic stabilizer. However, long run buoyancy is generally expected to be equal to one. If not, at least on theoretical grounds, there would come a point where revenues exceed 100 percent of their respective base. Long-run buoyancy is of relevance to assess the effect of economic growth on long-term fiscal sustainability. A coefficient larger than one would imply (*ceteris paribus*) that higher output growth positively affects the overall balance through the revenue side of the budget. In contrast, short-run buoyancy can be different from one: it can differ across revenue items and it is more closely linked to the stabilization role of fiscal policy.

**How does buoyancy differ across countries and types of taxes?**

**6. In this sub-section we empirically examine the short and long run tax buoyancies of 37 SSA countries between 1990 and 2015 using time series and panel data techniques (see Jalles, 2016 for further details).** Starting with some stylized facts, tax revenues in these countries, on average, have been increasing over the sample period, driven largely by Corporate Income Tax (CIT) and Taxes on Goods and Services (TGS)—Figure 1.

**Figure 1. Senegal: Inter-Quantile Range of Tax Revenue (percent GDP) Over Time**



Note: each panel plots the median together with the 25th and 75th percentiles.

Source: Jalles (2016).

**Table 1. Senegal: Overall Tax Buoyancy by Country**

Country	Long run buoyancy	Short run buoyancy	Speed of Adjustment
South Africa	<b>1.082***</b>	<b>1.597***</b>	-0.451***
Angola	<b>1.053***</b>	<b>1.248***</b>	-0.707***
Botswana	<b>1.114***</b>	0.645*	-0.985***
Burundi	<b>1.015***</b>	<b>0.762**</b>	-0.573***
Cameroon	<b>1.059***</b>	<b>3.705**</b>	-0.694**
Central African Republic	0.738	<b>2.268***</b>	0.060
Chad	<b>1.544***</b>	-0.060	-0.690***
Republic of Congo	<b>1.035***</b>	-0.010	-0.491***
Democratic Rep. Congo	<b>1.257***</b>	0.449***	-0.645***
Benin	<b>1.141***</b>	<b>0.936***</b>	-0.216*
Ethiopia	<b>1.287***</b>	0.494**	-0.283**
Gabon	<b>1.149***</b>	0.468**	-0.364
Ghana	<b>1.158***</b>	0.913	-0.525**
Guinea Bissau	<b>2.172***</b>	<b>1.488***</b>	-0.826***
Guinea	<b>1.229***</b>	<b>1.362***</b>	-0.452***
Cote d'Ivoire	<b>1.065***</b>	<b>1.876***</b>	-0.967***
Kenya	<b>1.134***</b>	1.074*	-0.361**
Lesotho	<b>1.136***</b>	1.671*	-0.492**
Liberia	<b>1.542**</b>	<b>2.205***</b>	-0.817**
Madagascar	<b>1.044***</b>	<b>2.253***</b>	-0.695***
Malawi	<b>1.249***</b>	<b>1.055***</b>	-0.776***
Mali	<b>0.961***</b>	0.349	-0.411**
Mauritius	<b>1.136***</b>	<b>0.809***</b>	-0.935***
Mozambique	<b>1.104***</b>	<b>0.882***</b>	-0.152
Niger	<b>1.523***</b>	<b>0.900***</b>	-0.761***
Nigeria	0.846***	0.268	-0.982***
Zimbabwe	<b>3.289***</b>	<b>5.420***</b>	-0.621**
Rwanda	<b>1.295***</b>	<b>2.198***</b>	-0.076
Senegal	<b>1.228***</b>	<b>0.839***</b>	-0.515**
Sierra Leone	<b>1.045***</b>	<b>1.716**</b>	-0.692**
Namibia	<b>1.037***</b>	0.603**	-0.257
Swaziland	<b>1.252***</b>	<b>2.452***</b>	-0.583***
Tanzania	<b>1.194***</b>	<b>2.312***</b>	-0.683***
Togo	<b>1.347***</b>	<b>1.450***</b>	-0.367***
Uganda	2.060	0.399**	-0.022
Burkina Faso	<b>1.238***</b>	<b>1.498***</b>	-0.530***
Zambia	11.115	2.817**	-0.012
Mean	1.535	1.386	
Median	1.149	1.074	
Standard Deviation	1.675	1.083	

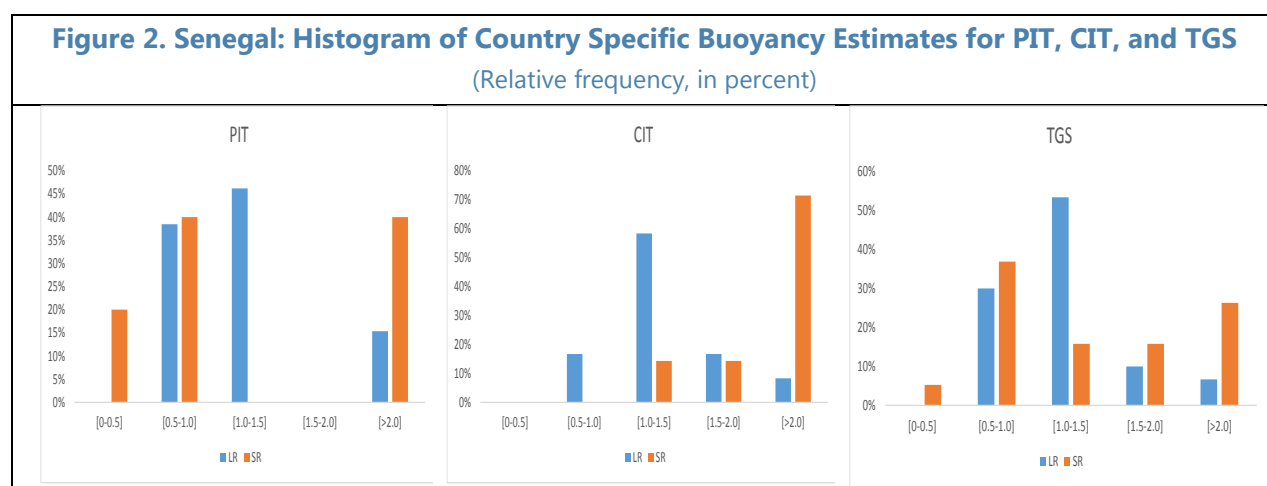
7. Using a Mean Group estimator,<sup>4</sup> Table 1 shows the results of the estimated buoyancy coefficients for total tax revenue for each country in our sample. Note first that the standard

<sup>4</sup> In our empirical analysis we consider the Mean Group (MG) estimator (Pesaran and Smith, 1995). This estimator is appropriate for the analysis of dynamic panels with both large time and cross-section dimensions, and it has the

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deviation of long-run buoyancy estimates is much larger than the one for the short run. Moreover, in 19 out of 37 countries<sup>5</sup> long-run tax buoyancies are statistically significantly higher than one, meaning that for these countries growth has improved fiscal sustainability over time.<sup>6</sup> For the rest of the countries, almost all yielded a long-run buoyancy statistically not different from unity. In only 11 out of 37 countries<sup>7</sup> the tax system has acted as a good automatic stabilizer, as evidenced by short-run buoyancies statistically larger than one.<sup>8</sup>

**8. We repeated the same estimation for the three tax components for which we have sufficiently long coverage, namely PIT, CIT and TGS, and summarize the buoyancy estimates in separate histograms—Figure 2.<sup>9</sup> We observe that for the three tax categories the long-run buoyancy mode is between 1 and 1.5, while the short-run mode is more dispersed (larger than 2 for CIT and between 0.5 and 1 for TGS).**



advantage of accommodating both the long-run equilibrium and the possibly heterogeneous dynamic adjustment process. To compute both panel and country-specific tax buoyancies we base our estimation on the following unrestricted error correction ARDL(p,q):  $\Delta \ln y_{it} = \varphi_i \gamma_{it-1} + \sum_{j=1}^{p-1} \mu_{ij} \Delta \ln y_{it-j} + \sum_{j=1}^{q-1} \rho'_{ij} \Delta \ln x_{it-j} + \sigma_i + \epsilon_{it}$  where  $\gamma_{it-1}$  is the error correction term, hence  $\varphi_i$  is the error correction coefficient measuring the speed of adjustment towards the long-run equilibrium. This is estimated for aggregate tax revenue and the three revenue categories: PIT, CIT, TGS.  $\llbracket \llbracket \rho'_{ij} \Delta \ln x_{it-j} + \sigma_i + \epsilon_{it} \rrbracket \rrbracket$  where  $\gamma_{it-1}$  is the error correction term, hence  $\varphi_i$  is the error correction coefficient measuring the speed of adjustment towards the long-run equilibrium. This is estimated for aggregate tax revenue and the three revenue categories: PIT, CIT, TGS.

<sup>5</sup> Angola, Botswana, Chad, DRC, Ethiopia, Ghana, Guinea Bissau, Guinea, Kenya, Liberia, Malawi, Mauritius, Niger, Zimbabwe, Senegal, Swaziland, Tanzania, Togo, and Burkina Faso.

<sup>6</sup> For an empirical exploration of the main determinants of tax buoyancy in SSA, please refer to section 2.3.

<sup>7</sup> Angola, Central African Republic, Guinea, Cote Ivoire, Liberia, Madagascar, Liberia, Rwanda, Swaziland, Tanzania, and Togo.

<sup>8</sup> Results (not shown) are robust to the inclusion of “discretionary” changes in policy parameters—tax rates—in particular in the cases of CIT and TGS. Moreover, tax buoyancy does not appear neutral with respect to inflation, meaning that tax buoyancy in real terms is smaller than in nominal terms.

<sup>9</sup> Only statistically significant buoyancy coefficients are included. Full results are available upon request.

**9. Finally, we also assessed how the tax system behaves around business cycle turning points.**<sup>10</sup> Tax buoyancy is larger during recessions than during times of economic expansions, in particular TGS. Hence, on average this specific tax category seems to work better as an automatic stabilizer during bad times compared to good times. During financial crises, the same is valid, with buoyancy coefficients being statistically significantly larger than those during periods of no crises. This result is confirmed by Furceri and Jalles (2016) who found that the overall impact of fiscal stabilization (measured as the amount of counter-cyclicality) is larger during recessionary periods.

### What are the main determinants of tax buoyancy?

**10. A final exercise worth exploring empirically is to consider different determinants of tax buoyancy and check whether these make a difference when estimating short and long-run buoyancies.** In line with the literature, we consider four categories of determinants, namely:

- *Structural.* In the early stages of development, the primary sector is characterized by “peasant agriculture”, in which a large number of small producers that sell their output in informal markets, sometimes in exchange for other goods, or produce for self-consumption. The poor(-er) or non-existing bookkeeping makes agriculture a difficult sector to tax. Tanzi and Zee (2000) suggest that a large share of agriculture is associated with a small PIT and TGS. In contrast, foreign trade has been traditionally a base that is easier to tax. This reflects the fact that administrative costs of monitoring, assessing, and collecting taxes on goods that go through a limited number of ports of entry are relatively low (Agbeyegbe et al 2004; Mahdavi 2008).
- *Demographic.* One would expect that generating tax revenue from existing bases becomes more cost efficient as the level of education rises. A higher level of education enables the general public to better understand and comply with tax codes (Mahdavi 2008).
- *Macroeconomic conditions.* High inflation rates, when combined with payment and collection lags, adversely affect tax revenues through several channels.<sup>11</sup> Output volatility, by shortening planning horizon and slowing down economic activity, may adversely affect the level of taxation. Higher volatility is expected to be associated with less reliance on cyclically sensitive taxes.
- *Institutions.* While supply factors matter, demand factors, such as the quality of institutions, can also have a significant impact on the determination of revenue performance (Bird et al 2008). A legitimate and responsive state – one that secures the rule of law and keeps corruption under

<sup>10</sup> To check whether tax buoyancy varies depending on the phase of the business cycle, the following alternative (STAR-type) short run regression was estimated (see Granger and Teravistra, 1993):  $\Delta \ln Y_{i,t} = \alpha_i^k + Time_t^k + \beta_k^{recession} \cdot Y(z) \cdot \Delta \ln X_{i,t} + \beta_k^{expansion} \cdot (1 - Y(z)) \cdot \Delta \ln X_{i,t} + \varepsilon_{i,t}^k$  with  $Y(z_{it}) = \frac{\exp(-\gamma z_{it})}{1 + \exp(-\gamma z_{it})}$ ,  $\gamma > 0$ , where  $z$  is an indicator of the state of the economy normalized to have zero mean and unit variance.

<sup>11</sup> For example, excise taxes on some products may be adversely affected if they do not fully adjust in a timely manner to changes in the inflation rate (Tanzi, 1989). Taxes on income, profits and capital gains may shrink in size to the extent that households try to protect their wealth against the corrosive effect of inflation by substituting towards assets that are less likely to be domestically taxed and/or postponing investment plans (Agbeyegbe et al 2004; Ghura, 1998).

control—is a pre-condition for better tax collection (Fauvelle-Aymar 1999; Ehrhard 2009).<sup>12</sup> While the political economy in SSA is complex and heterogeneous, to a greater or lesser extent, the distribution of patronage by political elites using public resources is integral to the political process in most countries. Resources for patronage can be obtained from both sides of the budget: public expenditures or revenues. One of most important channels through which resources for patronage are obtained from the tax system are tax concessions (such as income tax holidays or import duty exemptions), granted to politically favored companies on a selective basis, in circumstances where there is no strong objective rationale for granting tax incentives. Although this is often not illegal, it is done in a very non-transparent manner (Fuest and Riedel, 2009). Moreover, there is a negative correlation between tax expenditures and revenue productivity since tax incentives exhibit the capacity to erode the statutory tax base. This in turn poses a danger to compliance, especially when incentives are seen as subsidies (Kuewumi, 1996). Using the system to provide tax incentives causes a serious drain on the national treasury by conferring windfall gains on existing activities or by shifting resources to tax-preferred activities, raising concerns about issues of equity and efficiency in the tax system (Kusi, 1998).

**11. In inspecting which characteristics or factors matter the most for tax buoyancy<sup>13</sup> we found that, as far as structural characteristics are concerned, countries with a relatively larger agricultural sector show a lower (long-run) buoyancy coefficient estimate.** Human capital and institutions also seem to matter, with more literacy and higher polity corresponding to a (long-run) buoyancy statistically larger than one. In contrast, inflation and output volatility reduce the ability to maximize tax collection.<sup>14</sup>

### C. Revenue Mobilization: Putting Senegal in Context

**12. Mobilizing revenue is a complex undertaking. This is especially so in developing countries where there is a need to improve the efficiency and equity of the tax system.** A first challenge is to reduce the reliance on import duties and shift the tax burden to the domestic economy, partly to reduce the price-distorting effects of trade taxes and partly to comply with WTO agreements. Such a transition is a key factor in the rise of the VAT (Keen and Simone, 2004; Keen and Mansour, 2009), which has by and large been a success. A second challenge is to lower CIT and PIT rates to reduce related distortions. However, if such a change is to be revenue-enhancing, it requires a more than compensating expansion of the tax base, and in the presence of weak tax administration,

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<sup>12</sup> To the extent that corrupt tax collectors drive some businesses into the informal sector, corporate income and value added taxes are expected to shrink. In fact, Bahl (2003) shows that the tax effort is negatively correlated with the size of the shadow economy. More generally, Teera (2002) show that tax evasion negatively impacts the overall tax effort.

<sup>13</sup> We have re-run the equation described in footnote 6 by splitting the sample according to the cross-country median of each characteristic.

<sup>14</sup> Lack of data on tax expenditures prevent us from empirically assessing their impact on buoyancy estimates. In fact, the Open Budget Survey (produced since 2006 by the International Budget Partnership) states that the state of tax expenditure reporting in Africa is particularly poor: of the 26 countries covered in the 2010 survey, 20 were found to release no public information on tax expenditures and of the 6 that did release, only South Africa and Morocco released more than minimal details.

this has proven hard in many countries (Stotsky and Wolde-Mariam, 1997). Moreover, both buoyancy and fairness suffer when tax systems either offer significant discretion or have overly generous exemptions in the investment code or similar incentives. The privileged few with access to policy makers pay low or few taxes whilst SMEs and those without connections have to pay a larger share of their income even when they earn less.<sup>15</sup> Against this background, this section assesses Senegal's performance and challenges for efficiently mobilizing (more) revenue.

**13. Senegal has a lot of catching up to do to reach middle income/emerging status as envisaged by the PSE.** Indeed, to achieve the objectives of the PSE the growth rate needs to least double and maintained at that level for more than 20 years.<sup>16</sup> Financing and generating such growth requires massive investment, in both human capital and public infrastructure. Perhaps more importantly for long-term success, it means creating the economic space to encourage and reward individual initiative and enterprise. At the same time the expansion in public services and investment in human capital and public infrastructure needs to be financed. This requires a sharp increase in government revenue to make the spending increase sustainable and avoid risks of debt distress and economic crisis. The challenge is to put in place a tax system that will reward entrepreneurial activity whilst making everyone pay their fair share of taxes at a reasonable rate.

**14. Senegal's performance on this count has been disappointing and suggests that efforts to date to finance growth have been too limited,** with a tax system that is unfair in the way it treats, not only those with higher income, but also those with similar income who face different de facto tax rates due to discretion and exemptions. This is borne out both by the high tax expenditure in Senegal of about 6 percent of GDP and when compared to the experience of successful middle income countries. In what follows we compare the evolution of the revenue effort in six emerging countries that managed to regularly and sustainably raise their revenue-to-GDP ratio: Argentina, Uruguay, Morocco, Turkey, South Africa, and South Korea.<sup>17</sup> All of them have their own idiosyncrasies; however, these countries have enough in common with Senegal for it to draw some useful lessons to

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<sup>15</sup> According to KPMG's "Senegal Fiscal Guide 2013/14", the country has a number of exemptions: on capital gains there is a tax exemption in the case of a partial transfer of activity; on new enterprises and extension projects there are custom duty exemptions; finally, a special regime is applicable to approved export firms (e.g. exemption from duty stamps on utilitarian vehicles; exemption from taxes based on salaries paid by companies; exemption from all registration duties when registering a company; exemption from patent fee, etc.).

<sup>16</sup> To reach upper-middle income status in 20 years, Senegal would need to quadruple its current \$1000 US\$ per capita. To achieve this goal, a 7 percent average annual growth combined with no more than 3 percent in population growth would be needed. It should be noted that in the World Bank's income classification, the lower bound for upper-middle income countries has increased by about 30 percent between 1995 and 2015, which means that Senegal's current \$1000 GNI per capita may need to reach about US\$ 5320 in 2035 to reach upper-middle income status, implying that growth rates higher than 7 percent may be required.

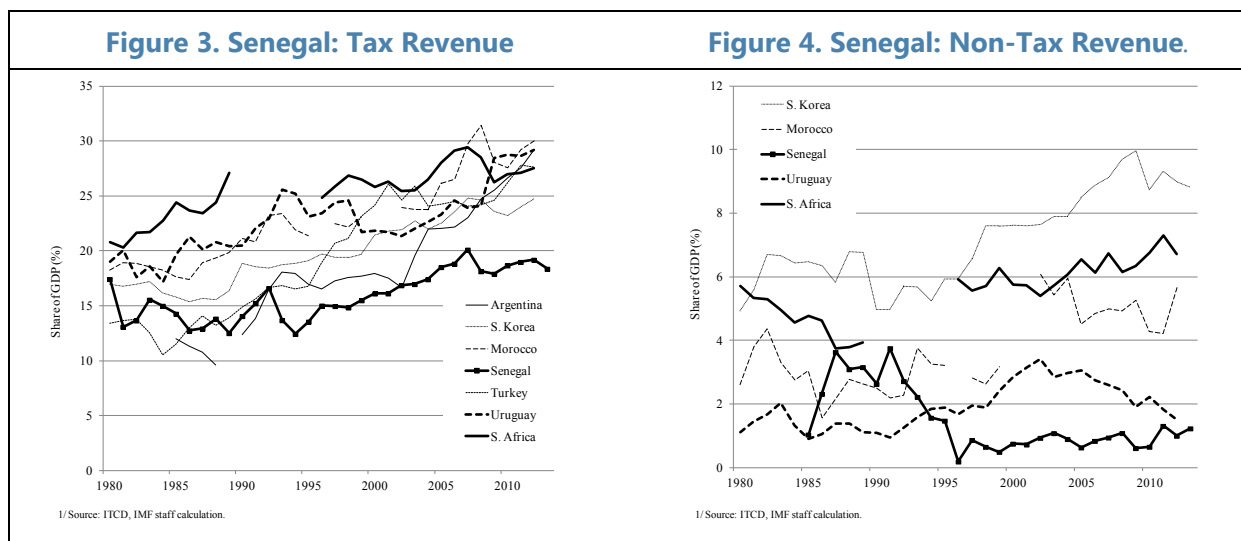
<sup>17</sup> These countries were selected using the following criteria, which highlight Senegal's objectives and intrinsic characteristics over the 1980–2014 period: i) regular and relatively smooth increase in own-revenue, across the 20 percent of GDP threshold; ii) transiting from low to at least middle income; iii) lack of significant oil revenue; iv) no island or city-states; v) no post-communist transition countries; vi) no very small countries that could be highly dependent on a large neighboring country; and vii) no very large countries, which have very peculiar dynamics.

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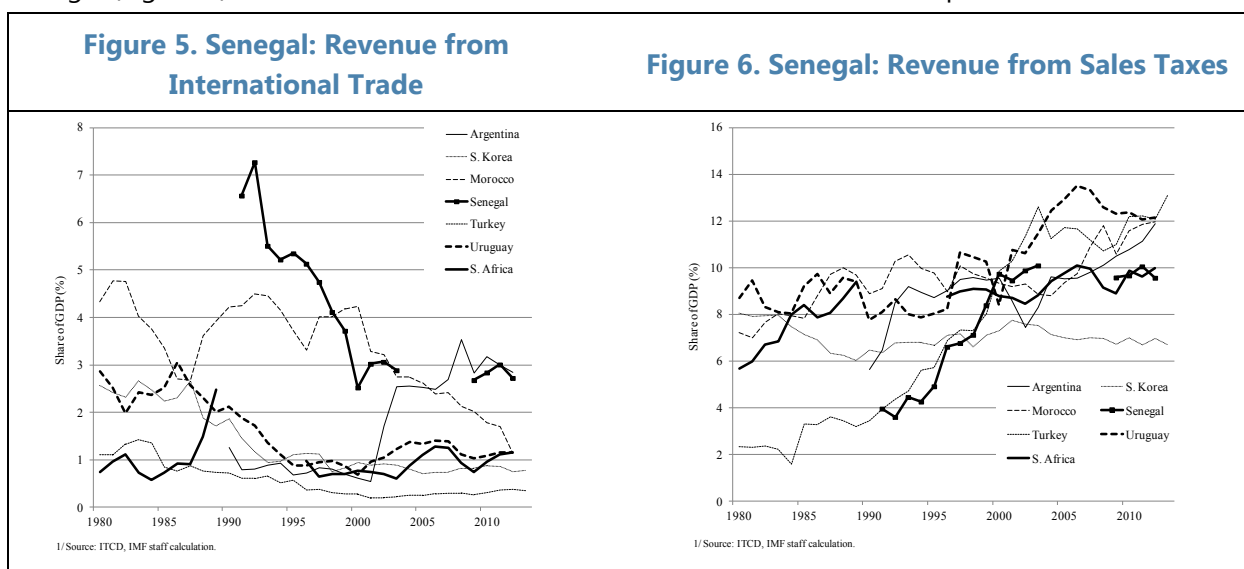


sustainably raise tax revenue above 20 percent of GDP, in line with the objective of achieving emerging country status.<sup>18</sup>

**15. From 1980 to 2014, both tax and non-tax revenue have been lower in Senegal than in comparator countries, and the gap has significantly widened (Figures 3 and 4).** The shock of the CFAF devaluation was followed by a more positive trend which stalled in the wake of the global financial crisis (GFC). Non-tax revenue collapsed in 1994 and never recovered.



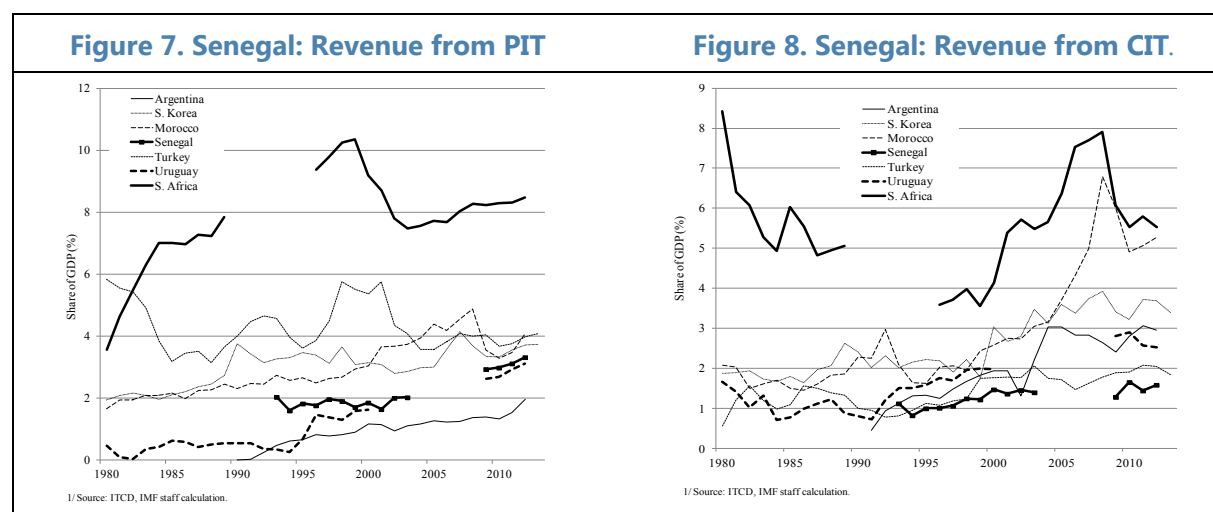
**16. The fall in international trade taxes was more than offset by the rise in indirect taxation.** All countries except Argentina saw the burden of trade taxes decrease, but the fall was most abrupt in Senegal (Figure 5). The increase in domestic sales taxes, however, reached 6 percent of GDP over the



<sup>18</sup> These countries are also ones marked by several episodes of inclusive growth (i.e. positive real GDP growth per capita with simultaneous reductions in the Gini index). On average, these countries experienced five such episodes between 1980–2013, while Senegal recorded one single episode (Mello and Jalles, 2016). With the PSE’s objectives of higher growth and lower poverty in mind, this is yet another reason for selecting this comparator country list as the appropriate benchmark.

period suggesting that the transition towards domestic taxation cannot be blamed for Senegal's poor performance. This transition, however, appears to have abruptly stopped with the introduction of WAEMU's common external tariff in 2000, while other countries (e.g. Morocco) continued to evolve towards greater reliance on domestic revenue.

**17. Relatively high statutory rates combined with high tax expenditures have introduced not only unfair treatment of different taxpayers but resulted in poor performance of income tax with poor control of this tax base.** Except for South Africa, the burden of the PIT in Senegal is similar to that of comparator countries (Figure 7). However, statutory PIT rates in Senegal range from 20 percent to 40 percent, somewhat higher than for comparators (averaging from 11 to 36 percent). This is due to a smaller base and to lack of control over the existing base because Senegal has relatively higher distortions as evidenced in both large tax expenditures and a significant informal sector.<sup>19</sup> A worse picture emerges for the CIT, where extensive exemptions result in a much lower tax burden despite having, once again, relatively higher rates (Figure 8).



**18. Social contributions have been a major source of revenue for comparator countries, but not for Senegal (Figure 9).**<sup>20</sup> In Senegal, although some statutory rates can be relatively high,<sup>21</sup> the narrow base severely limits the revenue potential of wage taxes, as they typically come from the public

<sup>19</sup> Tax expenditures have increased in Senegal in recent years. After a decline in 2008–09, tax expenditures in 2013 reached 40 percent of revenue and 7.3 percent of GDP. About 60 percent of exemptions target social objectives, 26 percent target economic development, and about 8 percent are benefits granted under the Mining Code. In many countries, particularly in SSA, tax incentives have resulted in little or no new investment. For example, the introduction of new investment codes in countries the CFA franc zone, including Senegal and the Economic Community of Central African States between 1994 and 2006, which provided more generous tax incentives, did not have any demonstrable effect on FDI (Van Parys and James, 2010). It is more efficient for Senegal to improve the investment climate rather than granting tax exemptions. Despite generous incentives and large tax expenditure, FDI and productive private investment are low in Senegal relative to similar developing countries.

<sup>20</sup> Note that, due to ongoing issues of reclassification of fiscal items under the new GFSM 2001/14, the IMF's Government Financial Statistics do not correctly display the actual figures for social security contributions in the case of Senegal.

<sup>21</sup> See [www.doingbusiness.org/data/exploreeconomies/senegal/paying-taxes](http://www.doingbusiness.org/data/exploreeconomies/senegal/paying-taxes). Some wage taxes have ceilings.

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service and large formal businesses. This highlights the urgency of opening economic space for SMEs to thrive and create formal sector employment in globally competitive activity. These moves would also open the way for a social protection system that can protect all workers instead of focusing on protecting the jobs of the privileged few in unionized sectors.<sup>22</sup>

**19. As Senegal has a large agricultural sector which does not pay much in taxes, this may appear to be a target for revenue mobilization.** However, it is not clear that it is desirable to tax this sector directly. Incomes and productivity in agriculture are generally low. It would probably be counter-productive to add disincentives via the tax system that discourage modernization and expansion of horticulture and higher value crops. Instead it may be better to indirectly tax the sector according to ability to pay by focusing on (i) property taxation in the rural areas, from which purely agricultural land that is being productively used for growing should be exempt to encourage modernization; (ii) income taxes that are paid by everyone with few exemptions and with reasonable thresholds that would fairly tax high income land owners and wealthy farmers; and (iii) consumption taxes such as VAT.

**20. In this trio, property taxes are under-used in Senegal even though they are usually considered a natural candidate to finance growing infrastructure needs, such as in the case of Senegal,** since they are progressive, administratively feasible and scale-up automatically with urban expansion. Moreover, real estate is a very efficient and equitable form of taxation (Norregaard, 2013). In all countries, including the comparators, this is a tax which tends to underperform due to resistance by those with the greatest capacity to pay who generally also have the loudest political voice.<sup>23</sup> However, Senegal underperforms far more than the comparators in this area. Moreover, this base has become increasingly important in several comparators, particularly as decentralization has taken hold (Figure 10). Ideally, property taxes require a “cadastre” —which in turn may call for many competent staff over most of the territory—as well as reliable and trustworthy notaries and good construction permit records. Maintaining this mass of information and human resources requires a large investment. However, simplified alternatives such as the National Residential Property Tax (NRPT) linked to income tax payments used by Mauritius could be considered in the absence of a “cadaster”.<sup>24</sup> With increased emphasis on decentralization of Government services in Senegal it will be increasingly important to raise at least 2 percent of GDP from this source.

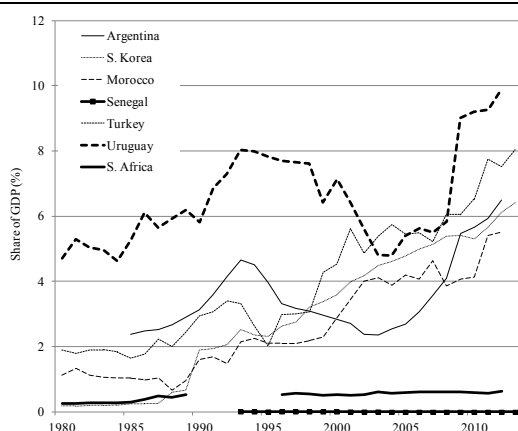
**21. All in all, the main culprits for Senegal’s poor overall revenue performance appear to be income-related taxes and property taxes.** The small base and/or the lack of control of the base through excessive exemptions also appear to play an important role.

<sup>22</sup> A more flexible system of hiring and firing in relation to economic conditions would increase the demand for formal sector employment and allow SMEs to expand. In counterpart, it would be necessary for the Government to support workers during spells of unemployment and to pro-actively help them find new jobs to minimize the period they are inactive.

<sup>23</sup> The best performing countries (USA, Canada, UK) generally collect 3 to 4 percent of GDP in real estate taxes.

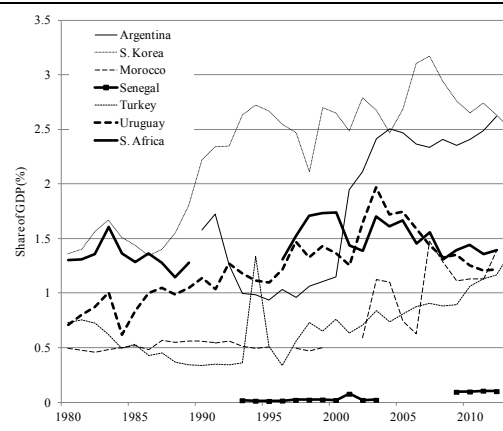
<sup>24</sup> The NRPT was levied on the basis of self-assessment and declared on the Personal Income Tax form. The tax was set at a fixed rate per square meter of residential land owned or of apartment size for properties in buildings. After 5 years, as part of electoral promises, the tax was repealed under pressure from wealthy property owners who objected to paying property tax. However, the tax worked well and was easy to administer and could be a good option for countries with limited administrative capacity and no cadastre.

**Figure 9. Senegal: Revenue from Social Contributions**



1/ Source: ITCD, IMF staff calculation.

**Figure 10. Senegal: Revenue from Property Taxes**



1/ Source: ITCD, IMF staff calculation.

## D. The Way Forward: Concluding Remarks and Policy Considerations

**22. Based on the above analysis, tax buoyancy in Senegal could be increased by both measures to reform the tax system and actions to foster building of human capital and further opening up the economy to international trade and investment.** For instance, investing in education and skills' enhancement as well as supporting actively the tradable sector are important possible steps towards improving overall tax buoyancy. Moreover, a reduction in the economy's dependence on the traditional agricultural sector would also allow higher revenue collection as would better institutions. This means increasing the contribution of new sectors including horticulture, manufacturing and globally competitive services such as tourism and making the port and airport regional hubs.

**23. However, the primary challenge is to overhaul both tax policy and tax administration through reforms that are certainly difficult but necessary.** These reforms demand a profound change of culture in revenue administration and the approach to tax policy where Government stops offering favors to the privileged few and moves away from rewarding staff on the basis of penalties and instead pays them the same amount for ensuring good compliance. Strengthening the country's administration will include:

- changing the incentive system for remunerating tax officials to make the regime more transparent and with incentives that focus on good overall compliance;<sup>25</sup>

<sup>25</sup> A key challenge for governments in developing countries, such as Senegal, is creating compensation structures for tax officials that incentivize collection without creating opportunities for over-taxation or bribery from taxpayers. Note, however, that in Senegal the DGID suffers from lack of competent personnel and, hence, there is a trade-off between increasing the tax force so as to maximize tax revenue collection and rationalize the public sector wage bill. Khan et al. (2014) evaluate the impact of compensation structures for tax officials in Punjab, Pakistan, that are based on revenue collected from property taxes. The authors find that performance-based pay yielded a substantial 46 percent increase in the growth rate of tax revenues, driven by the reassessment of a small number of high-value commercial properties.

(continued)

- providing greater autonomy to tax agencies to deliver on the basis of a performance contract for all staff and not just those interacting with tax payers;
- accelerating the move to online interaction between taxpayers and tax authorities;
- investing in additional human and physical resources, particularly to make online declaration and payment rapidly effective;
- clarifying circumstances which justify tax reductions/exemptions and uniformly providing these incentives to all who qualify on the basis of self-enforcement and ex-post verification, instead of ex-ante authorization;
- more effective use of the single taxpayer identification number to ensure that income is properly cross checked with imports;
- making better use of research and control protocols and procedures to ensure that all taxpayers pay their fair share of taxes; and
- fostering information sharing and promoting training.<sup>26</sup>

**24. In terms of tax policy, while significant efforts have been made to expand the tax base, much more needs to be done to ensure fair treatment of all taxpayers that results in everyone paying their fair share of taxes at a reasonable rate.** This means rolling back tax exemptions while lowering rates and ensuring that all those involved in economic activity are in the tax net. In a modern, transparent and well governed society there is no need for Government to have discretionary authority to favor the privileged few with exemptions. Instead, any justified tax incentives should be rules based, transparent and automatically available to all including SMEs. This rolling back of tax expenditures should set the stage for a tax reform that is revenue neutral in design and allows reducing rates to be competitive with the comparator countries. Complementary action is also needed to improve the taxation of capital income (including with capital gains taxes, improving thin capitalization rules, reviewing transfer pricing guidelines and other backstopping provisions). Equally important would be to set up a dialogue on how to raise at least 2 percent of GDP in property taxes which could be given to local authorities as one of their main tax handles under the planned decentralization. One strategy that may work well in developing countries such as Senegal with some large (and growing) cities but still heavily agrarian is to introduce a combination of capital value systems for urban places and an area-base system for more rural areas (Bahl, 2009). Recommendations could be made in time for inclusion in the 2018 budget (to be presented to the National Assembly in September 2017); however, a deeper and well-designed reform of property taxation may require more time to be put in place.<sup>27</sup>

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While performance pay may help address some major revenue collection issues, it may not eliminate or reduce corruption and collusion between tax authorities and taxpayers.

<sup>26</sup> More specifically, within customs administration, it is recommended that the authorities modernize the customs' traffic at the port of Dakar, invest in IT upgrades and facilitate the electronic connection and interface of databases between DGD and DGID, optimize human resources as well as financial and material resources, and reinforce the mechanisms fighting fraud and counterfeiting (IMF 2016).

<sup>27</sup> Some common elements of a reform strategy would ideally involve: i) an in-depth diagnostic analysis that carefully maps present capabilities and identifies policy and administrative weaknesses; ii) development of specific tax policy design, with focus on the definition of the base, the rate structure and exemption policy; iii) detailed planning of administrative reform carefully adapted to the Senegalese case; iv) reduction or phasing out of property transfer taxes;

(continued)

Finally, there is a scope to increase worker welfare, enhance growth prospects and support the emergence and expansion of SMEs by setting up a social insurance system that would marry flexibility in employment with protection of individual workers. A study of experiences in other developing countries including the comparators could be undertaken to develop recommendations for the 2017 budget. Extending the tax base through greater administrative controls represents a much greater and immediate challenge, especially in the context of low human capital. Widening the base through policy and administrative means will also reinforce the overall degree of equity of the tax system whilst making it more buoyant.

**25. Despite the diversity of experiences in tax reform in our set of six comparator countries**

(see Petit and Jalles, 2016 for details), the legitimacy of the effort in increasing the tax burden stemmed from the need to eliminate macroeconomic imbalances (Morocco, Turkey, Argentina, Uruguay) or benefitted from strong political support to improve social and economic conditions (South Africa, South Korea). While there is no "one-size fits all" strategy to copy, many self-reinforcing elements stand out: i) increased reliance on income taxes; ii) significant improvements in tax administration in order to strengthen the control of the tax base, weed out tax evasion and avoidance, and increase the number of taxpayers; iii) base broadening through the revision and streamlining of tax exemptions and other tax policy and tax administration measures, in conjunction with lower rates; iv) decentralize the tax system and administrative apparatus.

**26. Senegal has already implemented some of these measures, but still has much to accomplish if Senegal is to follow the path of emergence.** The country already completed a transition to domestic taxes and simplified its PIT system. However, income taxation needs to be improved and at least some of the tax potential of real estate needs to be tapped.<sup>28</sup>

**27. In sum, Senegal's options to improve revenue performance in the short- and medium term are:** (1) significantly improve tax administration with an emphasis on better governance, transparency and online interactions; (2) expand the tax base through administrative and policy means; (3) continue to improve the tax policy framework to tighten income taxation; (4) explore a better social deal for workers linked to labor market flexibility; and (5) increase property revenue as part of the move to greater decentralization.

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v) development of a monitoring device based on quantitative performance indicators to prevent property tax systems from falling back into disrepair (Norregaard, 2013).

<sup>28</sup> Even if a revenue mobilization strategy cannot rely strongly on real estate taxation, the poor performance of property taxes in Senegal calls for deep reforms that would better align the incentives to collect these taxes with the political benefit of the public spending that they finance.

## References

- Agbeyegbe, T. D., J. G. Stotsky, and A. Woldemariam (2004, October). Trade liberalization, exchange rate changes, and tax revenue in Sub-Saharan Africa. IMF Working Paper 04/178, International Monetary Fund.
- Ariyo, A. (1997), "Productivity of the Nigerian Tax System: 1970 – 1990", Research paper No. 67. Nairobi: African Economic Research Consortium.
- Bahl, R. (2009), "Property Tax Reform in Developing and Transition Countries", Fiscal Reform and Economic Governance Project, USAID, December.
- Belinga V., D. Benedek, R. A. de Mooij and J. Norregaard (2014), "Tax Buoyancy in OECD Countries", IMF Working Paper 110
- Bilquees, F. (2004), "Elasticity and Buoyancy of the Tax System in Pakistan", Pakistan Development Review, 43(1), 73-93
- Bouthevillan, C., P. Cour-Thimann, G. Van den Dool, P. Hernandez de Cos, G. Langenus, M. Mohr, S. Momigliano and M. Tujula (2001) "Cyclically adjusted budget balances: an alternative approach", ECB Working Paper No. 77.
- Chipeta, C. (1998). "Tax Reform and Tax yield in Malawi", AERC Research Paper No. 81. Nairobi: AERC
- Choudhry, N.N. (1979), "Measuring the Elasticity of Tax Revenue: A Divisia Index Approach". IMF Staff Papers, 26.
- Cotton, J.J. (2012), "The Buoyancy and Elasticity of Non-Oil Tax Revenues in Trinidad and Tobago (1990-2009)", Central Bank of Trinidad and Tobago Working Paper.
- Ehrhart, H. (2009). Assessing the relationship between Democracy and Domestic taxes in developing countries. CERDI, Etudes et Documents, E.30
- Fuest, C. and N. Riedel (2009), "Tax Evasion and Tax Avoidance in Developing Countries: The Role of International Profit Shifting", Paper Prepared for the World Bank Conference "The Dynamics of Illicit Flows from Developing Countries" on September 14-15, 2009.
- Furceri, D., Jalles, J. T. (2016), "Fiscal Stabilization: Determinants and Effects", IMF Working Paper (forthcoming)
- Giorno, C., Richardson, P. and P. Van den Noord (1995), "Estimating Potential Output, Output Gaps and Structural Budget Balances", OECD Economics Department Working Papers 24
- Girouard, N. and C. Andre (2005), Measuring Cyclically-Adjusted Budget Balances for the OECD Countries, OECD Economics Department Working Papers 434.
- Granger, C.W.J. and T. Terasvirta (1993). "Modelling Nonlinear Economic Relationships". Oxford University Press.
- Hindrichs, H.H. (1966) "A general theory of tax structure change during economic development", Harvard Law School International Tax Programme.

- IMF (2016), "Senegal: Reformes d'administration douanière en lien avec l'informatisation et l'interconnexion des services", IMF Fiscal Affairs Department Technical Assistance Report, July 2016
- Jalles, J. T. (2016), "Tax Buoyancy in Sub-Saharan Africa: An Empirical Exploration", mimeo.
- Khan, A., Khwaja, A., and Olken, B. (2014), "Tax Farming Redux: Experimental Evidence on Performance Pay for Tax Collectors", mimeo.
- Keen, M., Mansour, M. (2009), "Revenue Mobilization in Sub-Saharan Africa: Challenges from Globalization". IMF Working Paper WP/09/157, International Monetary Fund.
- Keen, M., Simone, A. (2004), "Tax Policy in Developing Countries: Some Lessons from the 1990s and Some Challenges Ahead". In Gupta, S., Clements, B., Inchauste, G. (eds), *Helping Countries Develop: The Role of Fiscal Policy*. International Monetary Fund.
- Kuewumi, M. (1996), "A Critique of Tax Incentives", *Nigeria Tax News Journal*, 2(1), April.
- Kusi, N. K. (1998), "Tax Reform and Revenue Productivity in Ghana", AERC Research Paper Number Seventy-four. Nairobi: AERC
- Mahdavi, S. (2008). The Level and Composition of Tax Revenue in Developing Countries: Evidence from unbalanced panel data. *International Review of Economics and Finance*, 17,607-617
- Mello, L. and Jalles, J. T. (2016), "The Elusive Quest for Inclusive Growth: What Shapes it?", OECD Working Paper Series (forthcoming).
- Musgrave, R.A. (1969), "Fiscal systems". New Haven, CT: Yale University Press.
- Norregaard, J. (2014), *Taxing Immovable Property: Revenue Potential and Implementation Challenges*. IMF Working Paper WP/13/129, International Monetary Fund.
- Osoro, N.E. (1993), "Revenue Productivity Implications of Tax Reform in Tanzania". Research Paper No. 20, Nairobi; African Economic Research Consortium.
- Osoro, N.E. (1995), "Tax Reforms in Tanzania: Motivations, Directions and Implications". Research paper No. 38. Nairobi: African Economic Research Consortium.
- Pesaran, M. H. and Smith, R. P. (1995), "Estimating long-run relationship from dynamic heterogeneous panels", *Journal of Econometrics*, 68, 79-113.
- Petit, P. and Jalles, J.T. (2016), "Reforms to Mobilize Revenue in Senegal: Lessons from six emerging countries", in *The Path to an Emerging Economy Status: What Senegal and Other LICs need to do?*, IMF Publishing (forthcoming)
- Stotsky, J. G., Wolde-Mariam, A. (1997), "Tax effort in sub-Saharan Africa". IMF Working Paper WP/97/107, International Monetary Fund.
- Tanzi, V. and Zee, H., 2000, 'Tax policy for emerging markets: developing countries', Working Paper WP/00/35, Washington, D.C.: International Monetary Fund
- Upender, M. (2008), "Degree of tax buoyancy in India: an empirical study", *International Journal of Applied Econometrics and Quantitative Studies*, 5(2).