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CHAPTER 6: THE TAX EFFORT IN BENIN: HOW CAN TAX GAPS BE REDUCED?

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Abstract

Using a database providing information on tax revenue over the period 1980–2015, covering 42 sub-Saharan African (SSA) countries, we analyse the efforts by Benin to raise tax revenue, in regard to structural characteristics, and we explore possible determinants of, and the scope for, a greater domestic revenue mobilisation and for tax policy and administration reforms. First, the analysis aims to compare the non-resource tax-to-GDP ratio in Benin with its peers, to identify whether Benin is near to, or far away from, its tax frontier. We conclude that the tax effort in Benin has remained relatively stable during the period: collected tax revenue rises on an average to 63.5% of potential total tax revenue over the period, ranked Benin 14th out of 42 countries. The analysis identifies a higher tax effort in Togo, which exhibits a tax effort of 69.9% on average, ranking it fifth out of 42 countries. Second, we study the effect of some economic and institutional variables on tax effort. Using a logistic regression, we analyse in particular the impact of natural resources, aid, political regime and stability, transparency, corruption and accountability. Third, we investigate several ways to reduce the tax gaps in Benin. In particular, if the tax policy seems relatively constrained by reference to the West Africa Economic and Monetary Union (WAEMU) Tax Directives, the Togolese experiment of switching to a semi-autonomous revenue authority and comparison with other WAEMU countries may provide guidance to find some room to improve domestic revenue mobilisation. In particular, Benin should review the management of human resources in the tax and customs administrations, and the scope of derogatory regimes which generate tax expenditures.

1 Introduction

The 2015 Addis Ababa Conference highlighted the central role of domestic revenue mobilisation for financing development in the context of the Sustainable Development Goals. Improving tax revenue contributes not only to the financing of public spending, but also to reinforcing the accountability of the government (see Brautigam *et al.*, 2009).

With a tax revenue to GDP ratio equal to 13.5% in 2017 (International Monetary Fund (IMF), 2018a),¹ Benin remains below the WAEMU criterion of 20%. Meanwhile, at the same date, Togo, a neighbouring country managed to raise 18.3% of its GDP in terms of tax revenue. Such a gap (between Benin and Togo) is not temporary, but seems to be lasting and has even increased in recent years (see Figure 1).





Both countries inherited the same tax law, the French Tax Code, when they gained their independence – on 1 August 1960 for Benin and on 27 April 1960 for Togo. Both countries belong to the same customs and monetary union, WAEMU. The WAEMU Commission has produced several tax Directives, covering the main taxes (corporate income tax, value added tax, excises etc.), which aims to bring about tax harmonisation or coordination among the eight member states² (see Mansour and Rota-Graziosi, 2013). These Directives strictly limit any potential divergence of Beninese and Togolese tax laws after 1960. However, some discrepancy may still emerge not only in the enforcement of these tax laws by the tax and customs administrations, but also as a result of the scope of derogatory regimes (for instance, the investment code), which generate tax expenditures.³

An important difference between Togo and Benin relates to the administrative side. In 2014, Togo transformed its tax and customs administrations into a single revenue authority (the Office Togolais des Recettes), while Benin has a more 'classic' organisation for French-speaking countries, with two separate administrations: the tax and customs administrations.⁴

¹ Total revenue, including tax arrears and telecommunications royalties, reached 15.4% of GDP.

² The original member countries are Benin, Burkina Faso, Côte d'Ivoire, Mali, Niger, Senegal, and Togo; Guinea-Bissau became the eight member on 2 May 1997.

³ Tax expenditures are tax revenue losses due to tax exemptions or tax rate reductions, for instance (see Organization for Economic Co-operation and Development (OECD), 2010). They may total 3% to 5% of GDP. In 2015, the WAEMU Commission produced a Decision committing member states to assessing their main tax expenditures and publishing these in an appendix of their respective finance law. This exercise is still ongoing in Benin and Togo.

⁴ Burundi is the only other French-speaking country which has experimented with the switch to a Semi-Autonomous Revenue Authority (SARA).

First, using a database providing information on tax revenue over the period 1980–2015, covering 42 SSA countries⁵, we analyse the efforts by Benin to raise tax revenue, as relates to its structural characteristics. The analysis aims to compare the non-resource tax-to-GDP ratio in Benin with its peers, to identify whether Benin is near to, or far away from, its tax frontier, before exploring possible scope for greater tax revenue raising and for tax policy and administration reforms.

We conclude that the tax effort in Benin has remained relatively stable during the period, with an average of 63.5% of its total potential tax revenue over the period, ranked 14th out of 42 countries. A tax effort of 63.5% means that the level of non-resource tax revenue is at 36.5% of the country's maximum capacity. Knowing that, on average, Benin collects 11.45% of its GDP in non-resource tax revenue and is at 63.5% of its capacity, it would have raised 18.03% of its GDP as non-resource tax revenue if it had used all its potential, given its characteristics. The estimated gap is higher than that estimated by Barhoumi *et al.* (2016) which was 1.5–2% of GDP based on a sample of SSA countries for the period 1995–2011.

The analysis identifies a higher tax effort in Togo, which exhibits a tax effort of 69.9% on average and is ranked fifth out of 42 countries. Togo would have mobilised 21.61% of non-resource tax revenue as a percentage of GDP if it had made the maximum tax effort. This result appears intuitive. Indeed, Togo has a lower GDP per capita than Benin (\$6,280 for the former and \$6,480 for the latter) and its agricultural share is more important (35.73% of GDP in Togo; 35.11% in Benin) (Figure 2). These characteristics penalise the mobilisation of non-resources tax. At the same time, Togo mobilises more non-resources tax revenues (15.11% of GDP in Togo; 11.45% in Benin). Hence, unfavourable characteristics of Togo, combined with its relative success in mobilising revenues, translates into a higher tax effort of Togo with respect to Benin.

⁵ The country list is provided in appendix in Table A1.





2.b. GDP per capita

Figure 2: Non-resources tax revenues and characteristics of Benin and Togo

2.a. Non-resources tax revenues (% GDP)





Second, we study the effect of some economic and institutional variables on tax effort. While the calculation of the tax effort includes only structural supply factors of the tax pressure as inputs in the stochastic frontier analysis, we then study the effect of demand factors on the estimated level of tax effort.⁷ Using a logistic regression, we study in particular the effect of the presence of natural resources, aid, transparency, corruption and accountability, and the political regime and stability. We find that aid is associated with a lower probability of belonging to a quartile of high tax effort, while institutional quality – measured by the Country Policy and Institutional Assessment (CPIA) index – increases the probability of belonging to an efficient quartile in terms of tax effort. If the effect of the political system is not clear, political stability is strongly and positively associated with a greater likelihood of having a high tax effort.

Third, we analyse the potential policy and administrative sources of the tax gaps. We shed light in particular on the human resource policy of the tax administration⁸ and the remuneration mechanisms, which may be obsolete.

The chapter is structured as follows: Section 2 presents the tax effort estimation; Section 3 proposes an empirical study of the effect of some institutional and economic factors on the estimated tax effort scores; Section 4 reviews some tax policy and tax administrative issues and proposes reforms, with a view to improving tax mobilisation; and Section 5 concludes.

⁶ As a result of a change in the national accounts, the share of value added in GDP fell sharply (from 36.6% to 23.2%) between 1998 and 1999 in the original series. To avoid potential biases due to this measurement error, the series has been adjusted by applying the growth rates for agriculture and GDP to the 1998 figures. ⁷ The distinction between supply and demand factors is made in Bird, Martinez-Vazquez, and Torgler (2014).

⁸ Similar information was not available for the customs administration.

2 Empirical estimation of tax effort in Benin: a stochastic frontier analysis

We define tax effort as the extent to which the actual tax revenue collected is near the maximum level of tax resource that could be collected. In other words, tax effort in Benin is the extent to which Benin makes use of its potential of tax revenue regarding its tax base and its structural supply characteristics.

The empirical analysis is based on a sophisticated stochastic frontier analysis in which commonly used supply factors driving government tax revenue are considered as the inputs and the total non-resource tax revenue as the output (see Box 1). The rationale behind these methods is that an economic agent cannot exceed an 'ideal frontier', which is the optimal level of output, given the limited endowment of inputs. The tax frontier refers to the tax capacity, which represents the maximum tax revenue that a country could raise given its structural characteristics. The model used in the study of Kumbhakar, Lien, and Hardaker (2014) makes it possible to distinguish country effects, persistent inefficiency, and time-varying inefficiency. Hence, we control for country effects – which capture the effect of time-constant variables for each country – and obtain a total level of inefficiency that is the result of an identified persistent inefficiency and of a time-varying inefficiency for each country.

In the first stage of the estimation, countries' tax ratio is regressed on a vector of structural explanatory variables. The calculation of the tax effort includes only structural supply factors of the tax pressure as inputs in the stochastic frontier analysis. Demand factors are excluded from the estimation of the tax effort: the impact of these factors on the level of tax effort is studied in the second part of the analysis. Based on the relevant literature on the determinants of government tax revenue, we introduce the following set of inputs in the stochastic frontier analysis:

- i. The level of development: Countries' tax capacity is positively associated with the level of economic development (proxied by real GDP per capita), which is linked to the efficiency of tax administration, the degree of economic and institutional sophistication, and the demand for public goods and services (see Lotz and Morss, 1967; Tanzi, 1987; Pessino and Fenochietto, 2010; Crivelli and Gupta, 2014).
- ii. Agriculture value-added (% GDP): In addition to the numerous sectoral tax exemptions and tax holidays typically provided in developing countries, agriculture is often considered hard to tax in developing countries. Focusing on SSA countries, Stotsky and WoldeMariam (1997) emphasise that the share of value-added of this sector in GDP is negatively associated with tax revenue.
- iii. Trade openness: Trade liberalisation policies implemented in most developing countries in the early 1970s have substantially increased trade volume in these countries. Therefore, trade openness expressed as total trade (imports and exports) as a share of GDP is expected to influence tax revenue, in particular through households consumption and domestic corporate profits (Stotsky and WoldeMariam, 2006; Pessino and Fenochietto, 2010; Keen and Perry, 2013 among others).
- iv. Financial development: A high financial development combined with high access to credit allow individuals and firms to finance profitable projects, which favour tax collection (Gordon and Li, 2009). On the other hand, in the presence of an ineffective

financial system, firms can successfully evade tax payment by conducting business in cash, which is harder for tax administrations to monitor.

Figure 3 gives a scatter plot of non-resource tax revenue against each of the explanatory variables introduced as inputs in the stochastic frontier analysis. Table 1 displays the pairwise correlation between interest variables. As expected, all variables are positively associated with non-resource tax revenues, except the agriculture sector, which is significantly and negatively correlated with non-resource tax revenues. The detailed sources and definitions of variables are provided in the appendix (Table A2).

Box 1: Estimation strategy: stochastic frontier analysis

An approach that is increasingly being used to capture countries' tax effort is the stochastic frontier method, which was introduced in the seminal work of Aigner *et al.* (1977) to model firms' production behaviour (see Pessino and Fenochietto, 2010; Fenochietto and Pessino, 2013; Langford and Ohlenburg, 2015). The literature proposes several parametric and non-parametric models for stochastic frontier estimation. Data envelopment analysis (Charnes, Cooper, and Rhodes, 2013) and the free disposal hull (Deprins, Simar, and Tulkens, 1984) are the two main – and increasingly popular – methods used for non-parametric stochastic frontier models. The main disadvantage of such methods lies in the fact that the production function is more heavily influenced by outliers, and thus more vulnerable to measurement errors (Clements, 2002).

We draw on a parametric model to estimate the tax effort as we are dealing with a single output (the total non-resource tax-to-GDP ratio). In panel data analysis, parametric models can be categorised into five groups: (i) time-invariant technical inefficiency models; (ii) time-varying technical inefficiency models; (iii) models that separate firm heterogeneity from inefficiency; (iv) models distinguishing persistent and time-varying inefficiency; (v) and models separating firm effects, persistent inefficiency, and time-varying inefficiency. We use the model by Kumbhakar, Lien, and Hardaker (2014) that makes it possible to distinguish country effects, persistent inefficiency, and time-varying inefficiency. We estimate the following equation:

$$NRTAX_{i,t} = \alpha + X_{i,t-1}\beta + \psi_i + \phi_{it}$$
(eq. 1)

where
$$\begin{cases} \phi_{it} = \epsilon_{it} - \eta_i - \mu_{it} \\ \mu_{it} > 0; \ \eta_i > 0 \end{cases}$$
(eq. 2)

The dependent variable *NRTAX*_{*i,t*} (eq. 1) represents the natural logarithm of total nonresource tax revenue. The subscripts *i* and *t* denote country and time dimensions, respectively. *X*_{*i,t-1*} is a vector of structural and institutional factors explaining countries' tax ratios, which are one period-lagged to mitigate endogeneity issues and to account for delays in their effect on non-resource tax revenue. Time-invariant country-level characteristics that could potentially affect government non-resource tax revenue are captured by ψ_i . The last term ϕ_{it} , is a three-component error term (eq. 2) including the time-invariant tax inefficiencies, η_i (i.e. persistent tax inefficiencies owing, for instance, to sociological, cultural, religious, or geographical factors) and time-varying tax inefficiency, μ_{it} (e.g. tax losses due to tax policy, tax administration, or tax officials qualifications, which can change over time). Thus, the model makes it possible to identify persistent and timevarying factors determining SSA countries' tax effort. The combination of (eq. 1) and (eq. 2) can be rewritten as follows:

$$NRTAX_{i,t} = \alpha_0^* + X_{i,t-1}\beta + \alpha_i + \vartheta_{i,t}$$
 (eq. 3)

with:

$$\alpha_0^* = \alpha - E(\eta_i) - E(\mu_{it}) \tag{eq. 4}$$

$$\alpha_i = \psi_i - \eta_i + E(\eta_i) \tag{eq. 5}$$

$$\vartheta_{it} = \epsilon_{it} - \mu_{it} + E(\mu_{it}) \tag{eq. 6}$$

Equation 3 is then estimated following a three-stage procedure: (1) In **stage 1**, the $\hat{\beta}$ is estimated by performing a random-effect-based regression (eq. 3). This stage gives the predicted values $\hat{\alpha}_i$ and $\hat{\vartheta}_{it}$ of α_i and ϑ_{it} , respectively; (2) In **stage 2**, the time-varying tax inefficiency, μ_{it} , is estimated using the predicted values $\hat{\alpha}_i$ and $\hat{\vartheta}_{it}$ from the first stage. To do this, (eq. 6) is estimated by performing a standard stochastic frontier technique. Using Battese and Coelli's (1988) model, this procedure gives the prediction of the time-varying tax effort, $exp(-\mu_{it}|\vartheta_{it})$; (3) Finally, in **stage 3**, the persistent tax inefficiency component, η_i , is estimated by performing a stochastic frontier model on (eq. 5) as in the previous stage. The persistent tax effort is then predicted and given by: $exp(-\eta_i)$. Hence, the overall tax effort is obtained by the product of the time-varying tax effort and the persistent tax effort.

Figure 3: Correlation between total non-resource tax revenue and input variables

3.a. Non-resource tax and percentage of GDP

4 Agriculture, value added (% of GDP) 5% Cl Fitted values Log Nonresource Taxes

3.c. Non-resource tax and trade openness



3.b. Non-resource tax and agriculture share



Table 1: Pairwise correlation between interest variables

	[1]	[2]	[3]	[4]	[5]
(1) Non Resource Taxes (% GDP)	1				
(2) GDPPC (constant 2010 USD)	0,51*	1			
(3) Total Trade (% of GDP)	0,43*	0,63*	1		
(4) Agriculture, value added (% GDP)	-0,54*	-0,62*	-0,62*	1	
(5) Financial development index	0,62*	0,37*	0,37*	-0,59*	1

Note: *Coefficient significant at 10% level.

Table 2 presents the summary statistics for the full sample and for Benin and Togo. Benin is generally below the mean for the full sample (except for the agriculture share). It is slightly above the average of its income group, the low-income countries. Benin and Togo have very similar characteristics. As we noted, however, the ratios of tax and non-resource tax over GDP are higher on average in Togo than in Benin (Figure 1), while Benin has a higher GDP per capita and a lower agriculture share, which should facilitate tax revenue mobilisation. Although Togo has a higher trade openness and a better financial development index, this is not sufficient to explain the far higher tax over GDP ratio for Togo relative to Benin. While Benin's performance is growing relatively steadily, Togo's performance is more unstable (Figure 3). Except over the period 1992–2002, the ratio of tax and non-resource tax over GDP has been lower in Benin than in Togo.

3.d. Non-resource tax and financial dev.

Table 2: Descriptive statistics

Variable	Mean	SD	Median	Min	Max
Full sample	·		·		
Total taxes (% GDP)	16.19	8.97	13.79	0.57	53.33
Non-resource taxes (% GDP)	12.46	6.67	11.14	0.55	49.85
GDPPC (constant 2010 USD)	6.92	1.06	6.68	4.87	10.16
Agriculture, value added (% GDP)	27.42	15.70	28.37	0.89	72.03
Total trade (% of GDP)	73.97	47.07	60.98	6.32	531.74
Financial development index	0.11	0.08	0.10	0.00	0.64
Benin					
Total taxes (% GDP)	11.92	2.57	12.45	6.76	16.04
Non-resource taxes (% GDP)	11.46	2.29	12.02	6.36	14.96
GDPPC (constant 2010 USD)	6.50	0.09	6.48	6.36	6.70
Agriculture, value added (% GDP)	30.41	4.26	31.92	24.12	37.86
Total trade (% of GDP)	55.37	8.00	56.24	38.30	76.53
Financial development index	0.09	0.01	0.09	0.07	0.11
Тодо					
Total taxes (% GDP)	16.89	5.96	15.28	7.71	30.15
Non-resource taxes (% GDP)	15.11	4.57	15.07	6.27	26.17
GDPPC (constant 2010 USD)	6.26	0.09	6.26	6.01	6.53
Agriculture, value added (% GDP)	35.73	4.22	35.20	26.96	44.14
Total trade (% of GDP)	90.22	15.61	92.32	56.48	125.03
Financial development index	0.10	0.01	0.10	0.07	0.12

Table 3 presents the three-stage estimation results. The first-stage estimation involves regressing countries' tax ratio on a vector of explanatory variables. All variables have the expected sign and are strongly significant at the 1% level: per capita real GDP, trade openness, and financial development are positively associated, while the share of the agriculture sector is negatively and significantly correlated with non-resource tax revenues (Table 3 A). The level of development measured by the per capita real GDP has a significant effect on countries' non-resources tax ratio: one percent increase in real GDP per capita is associated with a 0.243 percentage point increase in non-resource tax revenue.

From that first stage, the Kumbhakar, Lien, and Hardaker (2014) model determines the maximum tax potential for each country, given its structural characteristics, estimates the persistent and time-varying inefficiencies, and computes the total inefficiency. On average in

the period, SSA countries are at 53.96% of their potential, so that they have room for about 46.04% additional non-resource tax revenue (see Table 3 D). Knowing that, on average, countries collect 12.46% of their GDP in non-resource tax revenue, **they would have raised 23.09% of their GDP as non-resource tax revenue if they achieved their maximal capacity, given their characteristics**. The differences in total tax effort across SSA countries are mainly driven by persistent factors: the full sample average stands at 0.8005, 0.6724 and 0.5396 for the time-varying, the persistent, and the total tax effort, respectively. That room includes both tax administration (e.g. corrupt tax officers, tax evasion, inadequacy of tax administrations, tax exemptions, etc.) and tax policy. It is hard to determine whether persistent and variant inefficiencies are attributable to a tax gap or an administrative gap. If there is a tendency to associate the persistent inefficiencies with an administrative gap, and time-varying inefficiencies with a tax policy gap, significant administrative reforms may be implemented over time while tax policy may experience some persistence over time. In any case, the persistent factors – whether they come from administrative or tax policy inefficiencies – explain the major part of the inefficiencies.

Table 3: Three-stage estimates of the tax effort in SSA countries

Dependent variable		N	[1] RTAX			
Log GDPPC ₍₋₁₎ (constant	2010 USD)	0.235***	(0.0331)			
Agriculture, value added ₍₋₁) (% of GDP)	-0.056***	(0.0141)			
Total Trade ₍₋₁₎ (% of GDF	?)	0.018***	(0.0042)			
Financial development ₍₋₁₎		0.526***	(0.1238)			
Constant		0.622***	(0.247)			
	Observations	1190				
	R-squared	0.1994				
	Nb. of countries	39				
	Country FE	yes				
B) Second stage, estimation	ation of the time	e-varying tax	x inefficiency (s	stochastic fro	ontier)	
					Nu	mber of obs = $1,190$
					Wal	d chi2(1) = 430.30
Log likelihood = 73.1133					Pro	b > chi2 = 0.000
	error	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
frontier	one	0.238***	0.0114	20.74	0.000	0.2159 0.2609
usigmas	_cons	-2.385***	0.0911	-26.16	0.000	-2.5637 -2.2064
vsigma	_cons	-3.875***	0.1076	-36.02	0.000	-4.0862 -3.6645
C) Third stage, estimati	on of the time-v	varying tax i	nefficiency (sto	chastic front	tier)	
					Nu	mber of obs = $1,190$
					Wal	d chi2(1) = 1447.19
Log likelihood = -543.512					Prol	b > chi2 = 0.000
	error	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
frontier	one_te	0.509***	0.0133	38.04	0.000	0.482 0.535
usigmas	_cons	-1.009***	0.0584	-17.27	0.000	-1.124 -0.894
vsigma	_cons	-3.463***	0.1078	-32.12	0.000	-3.6747 -3.2520
D) Summary of the estir	nation results					
	Obs.	Mean	Stand. Dev.	Min	Max	
Time-varying tax effort	1190	0,8005	0,1043	0,1689	0,9577	
Persistent tax effort	1190	0,6724	0,1702	0,0444	0,9307	
Total tax effort	1190	0,5396	0,1548	0,0218	0,8268	

A) First stage random-effect estimates

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Country	Average Tax Effort	Rank	Country	Average Tax Effort	Rank
Lesotho	0.767	1	Swaziland	0.555	21
Burundi	0.758	2	Uganda	0.547	22
Malawi	0.72	3	Seychelles	0.545	23
Ethiopia	0.704	4	Mali	0.539	24
Тодо	0.699	5	Cabo Verde	0.524	25
Gambia	0.695	6	Ghana	0.495	26
Senegal	0.669	7	Guinea	0.484	27
Mozambique	0.669	8	Cameroon	0.474	28
Namibia	0.658	9	South Africa	0.462	29
Kenya	0.658	10	Sierra Leone	0.446	30
Zambia	0.656	11	Mauritius	0.405	31
Cote d'Ivoire	0.652	12	Guinea-Bissau	0.384	32
Rwanda	0.649	13	Botswana	0.366	33
Benin	0.635	14	Congo Rep.	0.331	34
Comoros	0.615	15	Gabon	0.274	35
Niger	0.6	16	Chad	0.274	36
Burkina Faso	0.598	17	Nigeria	0.257	37
Central African Republic	0.583	18	Angola	0.219	38
Madagascar	0.579	19	Equatorial Guinea	0.033	39
Tanzania	0.571	20			

Table 4: Full sample tax effort-based ranking

Table 5: Full sample tax effort over time

Year	AGO	BDI	BEN	BFA	BWA	CAF	civ	CMR	COG	сом	CPV	ETH	GAB	GHA	GIN	GMB	GNB	GNQ	KEN	LSO	MDG	мц	MOZ	MUS	MWI	NAM	NER	NGA	RWA	SEN	SLE	swz	SYC	тср	TGO	TZA	UGA	ZAF	ZMB	Year_Av g
1981		0.64	0.71	0.49	0.43	0.6	0.73	0.55	0.38	0.53	0.51			0.29			0.45		0.64	0.74	0.61	0.52	0.66	0.46	0.76	0.63	0.64	0.27	0.62	0.59	0.52	0.54	0.61	0.2	0.8		0.12	0.34		0.54
1982		0.77	0.72	0.49	0.42	0.64	0.73	0.55	0.4	0.54	0.52			0.26			0.45		0.61	0.72	0.63	0.55	0.68	0.45	0.75	0.55	0.63	0.27	0.58	0.59	0.45	0.42	0.62	0.17	0.82		0.49	0.35		0.54
1983		0.67	0.65	0.46	0.41	0.62	0.71	0.54	0.39	0.59	0.5			0.25			0.43		0.58	0.73	0.61	0.52	0.73	0.47	0.76	0.58	0.6	0.27	0.55	0.61	0.32	0.51	0.62	0.14	0.79		0.52	0.39		0.53
1984		0.76	0.54	0.43	0.42	0.63	0.67	0.47	0.39	0.59	0.49			0.34			0.4		0.6	0.8	0.64	0.5	0.68	0.47	0.75	0.63	0.62	0.22	0.57	0.63	0.3	0.48	0.62	0.21	0.82		0.54	0.37		0.53
1985		0.76	0.57	0.43	0.37	0.59	0.65	0.37	0.39	0.57	0.47			0.42			0.38		0.58	0.81	0.6	0.54	0.49	0.46	0.77	0.68	0.61	0.25	0.65	0.62	0.24	0.51	0.63	0.25	0.82		0.54	0.41		0.53
1986		0.82	0.6	0.54	0.33	0.53	0.72	0.35	0.38	0.64	0.48			0.5			0.26		0.58	0.8	0.56	0.55	0.59	0.45	0.8	0.72	0.62	0.3	0.71	0.59	0.17	0.51	0.64	0.21	0.8		0.46	0.43		0.54
1987		0.77	0.57	0.56	0.32	0.57	0.74	0.34	0.37	0.55	0.46			0.51	0.45		0.43		0.6		0.61	0.51	0.64	0.45	0.78	0.69	0.58	0.25	0.66	0.6	0.28	0.48	0.65	0.21	0.76	0.62	0.31	0.41		0.52
1988		0.76	0.54	0.56	0.3	0.55	0.73	0.39	0.36	0.63	0.47			0.5	0.32		0.43		0.63		0.6	0.52	0.71	0.45	0.74	0.69	0.54	0.23	0.66	0.64	0.25	0.5	0.66	0.24	0.72	0.61	0.39	0.42		0.52
1989		0.78	0.42	0.52	0.3	0.55	0.7	0.37	0.34	0.58	0.48			0.5	0.36		0.26		0.61		0.55	0.41	0.75	0.45	0.8	0.74	0.56	0.21	0.65	0.58	0.28	0.48	0.65	0.28	0.72	0.65	0.35	0.45		0.51
1990		0.74	0.48	0.5	0.34	0.64	0.68	0.33	0.33	0.65	0.5			0.45	0.4		0.42		0.58		0.58	0.41	0.57	0.44	0.82	0.7	0.55	0.24	0.61	0.64	0.39	0.45	0.65	0.29	0.71	0.65	0.45	0.48		0.52
1991		0.81	0.51	0.51	0.32	0.58	0.7	0.33	0.38	0.57	0.5			0.49	0.35		0.27		0.59		0.43	0.5	0.6	0.45	0.78	0.71	0.5	0.25	0.62	0.67	0.37	0.57	0.63	0.27	0.63	0.66	0.52	0.48		0.52
1992		0.78	0.57	0.46	0.39	0.57	0.7	0.35	0.38	0.67	0.55			0.42	0.35		0.15		0.61		0.53	0.5	0.67	0.43	0.8	0.68	0.5	0.22	0.6	0.68	0.46	0.54	0.64	0.28	0.54	0.67	0.44	0.49	0.69	0.52
1993		0.79	0.58	0.47	0.4	0.51	0.62	0.31	0.38	0.65	0.55			0.5	0.36		0.24		0.61		0.51	0.5	0.74	0.42	0.68	0.68	0.5	0.2	0.57	0.62	0.51	0.5	0.64	0.25	0.39	0.6	0.54	0.46	0.65	0.51
1994		0.82	0.59	0.58	0.36	0.52	0.64	0.44	0.33	0.66	0.56			0.54	0.39		0.43		0.73		0.51	0.43	0.7	0.41	0.77	0.65	0.43	0.24	0.28	0.59	0.52	0.5	0.63	0.23	0.56	0.62	0.57	0.49	0.74	0.53
1995		0.83	0.61	0.62	0.3	0.61	0.67	0.47	0.37	0.62	0.56			0.51	0.42		0.3		0.73		0.51	0.48	0.7	0.4	0.52	0.67	0.53	0.28	0.53	0.62	0.45	0.5	0.61	0.28	0.63	0.63	0.61	0.49	0.71	0.54
1996	0.15	0.75	0.62	0.65	0.28	0.48	0.67	0.48	0.37	0.62	0.55			0.53	0.4		0.33		0.71		0.52	0.56	0.61	0.36	0.62	0.65	0.53	0.28	0.63	0.66	0.5	0.54	0.57	0.31	0.61	0.65	0.63	0.49	0.72	0.53
1997	0.18	0.74	0.66	0.66	0.27	0.57	0.66	0.49	0.26	0.68	0.54			0.51	0.47		0.39		0.69		0.56	0.57	0.66	0.39	0.73	0.69	0.57	0.29	0.68	0.68	0.34	0.56	0.54	0.32	0.62	0.66	0.63	0.49	0.71	0.54
1998	0.23	0.81	0.68	0.64	0.29	0.61	0.63	0.51	0.37	0.57	0.53			0.52	0.45		0.17		0.71		0.59	0.58	0.65	0.38	0.78	0.67	0.6	0.29	0.69	0.69	0.42	0.57	0.54	0.32	0.62	0.55	0.63	0.5	0.71	0.54
1999	0.18	0.76	0.67	0.68	0.29	0.61	0.64	0.53	0.27	0.6	0.51			0.5	0.46		0.42		0.7		0.63	0.57	0.62	0.39	0.72	0.7	0.6	0.3	0.66	0.69	0.43	0.55	0.55	0.32	0.58	0.46	0.64	0.5	0.75	0.54
2000	0.17	0.77	0.66	0.66	0.32	0.61	0.61	0.53	0.24	0.55	0.54			0.52	0.45		0.44		0.7		0.63	0.55	0.64	0.38	0.76	0.66	0.61	0.3	0.63	0.7	0.53	0.57	0.53	0.32	0.55	0.45	0.62	0.5	0.75	0.54
2001	0.25	0.79	0.65	0.64	0.33	0.59	0.63	0.53	0.33	0.54	0.55			0.51	0.51		0.43		0.69		0.57	0.54	0.6	0.35	0.8	0.64	0.63	0.31	0.69	0.7	0.54	0.55	0.46	0.32	0.65	0.47	0.62	0.49	0.76	0.55
2002	0.24	0.79	0.66	0.66	0.31	0.64	0.64	0.53	0.29	0.61	0.57		0.29	0.52	0.54	0.53	0.36		0.69		0.48	0.55	0.57	0.34	0.5	0.59	0.65	0.3	0.72	0.71	0.54	0.52	0.45	0.33	0.62	0.47	0.62	0.48	0.7	0.53
2003	0.25	0.8	0.67	0.66	0.35	0.55	0.61	0.51	0.32	0.66	0.55		0.29	0.55	0.52	0.5	0.38		0.69		0.61	0.59	0.63	0.38	0.58	0.6	0.65	0.31	0.64	0.71	0.53	0.53	0.52	0.31	0.76	0.47	0.63	0.48	0.69	0.54
2004	0.24	0.77	0.67	0.68	0.38	0.58	0.65	0.51	0.29	0.69	0.56		0.29	0.57	0.52	0.69	0.38		0.69		0.62	0.61	0.62	0.38	0.62	0.62	0.67	0.29	0.71	0.67	0.53	0.55	0.49	0.27	0.75	0.48	0.63	0.47	0.69	0.55
2005	0.26	0.76	0.68	0.67	0.39	0.57	0.61	0.53	0.25	0.66	0.56		0.26	0.57	0.56	0.68	0.44		0.7		0.59	0.6	0.64	0.43	0.65	0.64	0.6	0.26	0.71	0.72	0.51	0.63	0.47	0.21	0.72	0.54	0.63	0.48	0.66	0.55
2006	0.25	0.72	0.7	0.67	0.39	0.6	0.62	0.53	0.23	0.63	0.57		0.26	0.57	0.53	0.74	0.42	0.02	0.66		0.61	0.59	0.61	0.38	0.66	0.68	0.51	0.23	0.7	0.72	0.52	0.67	0.44	0.22	0.76	0.54	0.63	0.49	0.62	0.55
2007		0.71	0.72	0.68	0.42	0.57	0.62	0.53	0.26	0.61	0.56		0.27	0.56	0.56	0.75	0.41	0.03	0.66		0.62	0.56	0.65	0.38	0.71	0.69	0.6	0.25	0.7	0.73	0.51	0.65	0.41	0.28	0.77	0.59	0.63	0.49	0.61	0.55
2008		0.7	0.71	0.66	0.43	0.6	0.6	0.53	0.26	0.62	0.57		0.25	0.55	0.58	0.74	0.4	0.02	0.67		0.62	0.54	0.65	0.39	0.7	0.65	0.65	0.25	0.71	0.7	0.54	0.66	0.38	0.31	0.74	0.58	0.61	0.49	0.59	0.55
2009		0.72	0.69	0.69	0.43	0.65	0.63	0.52	0.3	0.64	0.52		0.29	0.54	0.58	0.74	0.44	0.03	0.67		0.57	0.57	0.7	0.39	0.74	0.63	0.69	0.27	0.68	0.71	0.54	0.65	0.44	0.31	0.73	0.57	0.58	0.49	0.53	0.55
2010		0.75	0.7	0.68	0.43	0.65	0.63	0.52	0.27	0.64	0.53		0.29	0.56	0.57	0.7	0.46	0.03	0.68		0.62	0.57	0.75	0.38	0.74	0.57	0.67	0.17	0.7	0.73	0.53	0.56	0.46	0.31	0.74	0.57	0.59	0.46	0.57	0.55
2011		0.79	0.67	0.00	0.41	0.62	0.5	0.55	0.20	0.62	0.54	0.7	0.27	0.50	0.56	0.75	0.45	0.05	0.08		0.01	0.50	0.77	0.37	0.74	0.64	0.67	0.27	0.7	0.74	0.54	0.57	0.52	0.3	0.72	0.55	0.59	0.47	0.04	0.55
2012		0.78	0.67	0.68	0.41	0.65	0.64	0.53	0.31	0.65	0.5	0.7	0.25	0.55	0.59	0.72	0.45	0.04	0.67		0.58	0.55	0.78	0.37	0.68	0.67	0.65	0.25	0.71	0.72	0.53	0.66	0.47	0.31	0.72	0.55	0.58	0.47	0.59	0.56
2013		0.74	0.69	0.7	0.43	0.53	0.62	0.53	0.35	0.65	0.5	0.73	0.27	0.53	0.59	0.71	0.44	0.03	0.69		0.56	0.59	0.79	0.30	0.7	0.67	0.68	0.23	0.72	0.71	0.52	0.65	0.45	0.32	0.75	0.57	0.61	0.47	0.56	0.56
2014		0.72	0.67	0.68	0.41	0.46	0.67	0.54	0.57	0.64	0.40	0.72	0.27	0.55	0.59	0.75	0.40	0.04	0.0		0.61	0.67	0.8	0.50	0.74	0.7	0.69	0.25	0.75	0.72	0.5	0.65	0.46	0.52	0.74	0.59	0.61	0.40	0.59	0.50
2013	0.22	0.05	0.62	0.62	0.42	0.50	0.65	0.35	0.22	0.61	0.51	0.07	0.20	0.49	0.39	0.77	0.47	0.04	0.65		0.52	0.62	0.76	0.30	0.75	0.66	0.00	0.10	0.75	0.75	0.45	0.56	0.45	0.31	0.78	0.50	0.05	0.46	0.66	0.50
Average	(rank:	0.76	(rank-	(rank:	(rank-	(rank-	(rank-	(rank:	(rank-	(rank-	(rank-	0.7	(rank-	(rank:	(rank-	0.69	(rank:	(rank-	(rank:	0.77	(rank-	(rank-	0.67	(rank-	0.72	(rank-	(rank:	(rank-	(rank-	0.67	(rank:	(rank-	(rank-	(rank:	0.7	(rank:	(rank-	(rank-	(rank-	0.54
AACI 986	38)	(rank: 2)	14)	16)	33)	18)	12)	28)	34)	15)	25)	(rank: 4)	36)	26)	27)	(rank: 6)	32)	39)	10)	(rank: 1)	18)	24)	(rank: 8)	31)	(rank: 3)	10)	16)	37)	12)	(rank: 8)	30)	21)	22)	36)	(rank: 4)	20)	22)	29)	10)	0.34

Source: Authors' calculation





Table 4 provides a country ranking over the period studied based on their total tax effort scores and Table 5 gives the tax effort over time for the full sample. Lesotho, Burundi, and Malawi appear to be the most efficient countries, while Equatorial Guinea, Angola, and Nigeria record the lowest tax efforts. As shown in Figure 4.a, the tax revenue ratio as a percentage of GDP is high in efficient and low in non-efficient countries. At the same time, Angola and Equatorial Guinea have GDP per capita levels well above the average (Figure 4.b). Thus, Angola and Equatorial Guinea's poor performance are the result of the combination of low output and advantageous inputs. These two countries are rich in natural resources and the effort made to raise non-resource tax revenues appears to be very low. By contrast, Burundi manages to raise more revenues than the average while its characteristics are very unfavourable. Over the most recent subperiod, Togo emerges as the top performer, with a tax effort score of 0.78 in 2015 (rank 1).

The average tax effort score for the full sample – which amounts to around 54% – remained on average relatively stable (Figure 5) during the period. Starting in the late 1980s for Benin and early 1990s for Togo, the performance in terms of tax effort for both countries has improved. The trend for Togo is more one of boom and bust but the gap in performance between the two countries stands around 6 percentage points. Togo has 9 percentage points more than Benin at the end of the period and ranks first among all countries. However, with a total tax effort level of 0.78 and 0.69 in 2015, Togo and Benin have not recovered their level of tax effort of the beginning of the period. Nigeria, Côte d'Ivoire, Cameroon, or Malawi also experienced an overall decline in performance during the period. Togo has experienced an increase in the last 15 years (Figure 6). By contrast, Benin's tax effort has declined over the same period.











Source: Authors' calculation

We extend the analysis by estimating the tax effort by type of tax: value added tax (VAT), corporate income tax, personal income tax, trade tax, and excise (Table 6). These results should be interpreted with caution. Indeed, tax revenue determinants of the different taxes (inputs) may differ. At the same time, comparison would be complex if a different model were determined for estimating the tax effort for each type of tax. We therefore chose to maintain the same model.

The tax effort is heterogeneous according to the type of tax. In particular, Benin appears relatively better ranked in terms of VAT (rank 4) and corporate income tax (rank 13), than in terms of trade tax (rank 28), excise (rank 15), and personal income tax (rank 14). The tax effort for VAT is 0.686 and 0.666 on trade tax, and only 0.344 and 0.396 on average for corporate income tax and personal income tax. The ranking in terms of Togo's performance is more homogeneous but the values of the tax effort vary according to the type of tax: from 0.676 for trade tax to 0.504 for corporate income tax and only 0.452 for personal income tax. These results tend to corroborate those of Barhoumi et al. (2016) which show an underperformance in terms of income tax relative to the performance in terms of trade tax in Benin.

Table 6: Tax effort by type of tax

VAT	TE	Rank	Corporate income ta	TE	Rank	Personal income tax	TE	Rank	Trade tax	TE	Rank	Excise	TE	Rank
Angola	NA	NA	Angola	NA	NA	Angola	NA	NA	Angola	0.683	5	Angola	NA	NA
Burundi	NA	NA	Burundi	0.712	2	Burundi	0.544	2	Burundi	0.663	31	Burundi	NA	NA
Benin	0.686	4	Benin	0.344	13	Benin	0.396	14	Benin	0.666	28	Benin	0.739	15
Burkina Faso	0.677	6	Burkina Faso	0.326	14	Burkina Faso	0.445	10	Burkina Faso	0.677	10	Burkina Faso	0.748	6
Botswana	0.634	12	Botswana	0.169	33	Botswana	0.14	35	Botswana	0.677	9	Botswana	NA	NA
Central African Rep	0.469	27	Central African Rep	0.184	31	Central African Rep	0.456	6	Central African Rep	0.657	37	Central African Rep	0.739	16
Cote d'Ivoire	0.479	25	Cote d'Ivoire	0.24	27	Cote d'Ivoire	0.339	22	Cote d'Ivoire	0.673	15	Cote d'Ivoire	0.708	28
Cameroon	0.664	9	Cameroon	0.279	22	Cameroon	0.315	23	Cameroon	0.669	25	Cameroon	0.746	7
Congo, Dem. Rep.	NA	NA												
Congo, Rep.	NA	NA	Congo, Rep.	0.199	29	Congo, Rep.	0.197	32	Congo, Rep.	0.662	33	Congo, Rep.	NA	NA
Comoros	0.446	30	Comoros	0.283	20	Comoros	0.208	30	Comoros	0.671	19	Comoros	0.738	17
Cabo Verde	0.709	3	Cabo Verde	0.282	21	Cabo Verde	0.299	26	Cabo Verde	0.683	4	Cabo Verde	NA	NA
Ethiopia	0.61	15	Ethiopia	0.666	4	Ethiopia	0.273	28	Ethiopia	0.67	21	Ethiopia	0.734	20
Gabon	0.476	26	Gabon	0.177	32	Gabon	0.142	34	Gabon	0.697	2	Gabon	NA	NA
Ghana	0.571	21	Ghana	0.296	19	Ghana	0.39	18	Ghana	0.678	7	Ghana	0.738	18
Guinea	0.569	22	Guinea	0.105	37	Guinea	0.186	33	Guinea	0.663	32	Guinea	0.731	22
Gambia, The	0.669	8	Gambia, The	0.574	5	Gambia, The	0.446	9	Gambia, The	0.68	6	Gambia, The	0.723	25
Guinea-Bissau	0.462	29	Guinea-Bissau	0.157	34	Guinea-Bissau	0.202	31	Guinea-Bissau	0.67	22	Guinea-Bissau	0.727	24
Equatorial Guinea	0.236	33	Equatorial Guinea	0.031	38	Equatorial Guinea	0.018	38	Equatorial Guinea	0.651	39	Equatorial Guinea	NA	NA
Kenya	0.595	17	Kenya	0.729	1	Kenya	0.519	3	Kenya	0.667	27	Kenya	0.748	5
Lesotho	NA	NA	Lesotho	0.267	24	Lesotho	0.394	16	Lesotho	0.726	1	Lesotho	NA	NA
Madagascar	0.587	18	Madagascar	0.301	18	Madagascar	0.307	24	Madagascar	0.672	17	Madagascar	0.744	12
Mali	0.643	11	Mali	0.271	23	Mali	0.348	21	Mali	0.675	12	Mali	0.703	29
Mozambique	0.679	5	Mozambique	0.478	7	Mozambique	0.449	8	Mozambique	0.669	24	Mozambique	0.741	14
Mauritius	0.318	31	Mauritius	0.141	35	Mauritius	0.136	36	Mauritius	0.666	29	Mauritius	0.662	30
Malawi	0.608	16	Malawi	0.69	3	Malawi	0.546	1	Malawi	0.667	26	Malawi	0.745	10
Namibia	0.677	7	Namibia	0.35	12	Namibia	0.426	11	Namibia	0.684	3	Namibia	0.728	23
Niger	0.581	19	Niger	0.386	11	Niger	0.393	17	Niger	0.671	18	Niger	0.733	21
Nigeria	0.315	32	Nigeria	0.265	25	Nigeria	0.125	37	Nigeria	0.669	23	Nigeria	0.71	27
Rwanda	0.624	14	Rwanda	0.435	10	Rwanda	0.473	5	Rwanda	0.66	36	Rwanda	0.746	8
Senegal	0.715	2	Senegal	0.303	17	Senegal	0.36	20	Senegal	0.675	13	Senegal	0.742	13
Sierra Leone	0.463	28	Sierra Leone	0.26	26	Sierra Leone	0.42	13	Sierra Leone	0.664	30	Sierra Leone	0.737	19
Sao Tome and Princip	ŧNA	NA	Sao Tome and Princip	ŧNA	NA	Sao Tome and Princip	€NA	NA	Sao Tome and Princip	ŧNA	NA	Sao Tome and Princip	€NA	NA
Swaziland	0.646	10	Swaziland	0.212	28	Swaziland	0.305	25	Swaziland	0.673	16	Swaziland	0.712	26
Seychelles	0.749	1	Seychelles	0.304	16	Seychelles	0.298	27	Seychelles	0.677	8	Seychelles	0.756	1
Chad	NA	NA	Chad	0.141	36	Chad	0.362	19	Chad	0.67	20	Chad	NA	NA
Тодо	NA	NA	Togo	0.504	6	Togo	0.452	7	Togo	0.676	11	Togo	0.745	9
Tanzania	0.553	23	Tanzania	0.323	15	Tanzania	0.423	12	Tanzania	0.662	35	Tanzania	0.744	11
Uganda	0.581	20	Uganda	0.19	30	Uganda	0.213	29	Uganda	0.674	14	Uganda	0.748	4
South Africa	0.532	24	South Africa	0.456	9	South Africa	0.394	15	South Africa	0.662	34	South Africa	0.749	3
Zambia	0.627	13	Zambia	0.46	8	Zambia	0.48	4	Zambia	0.657	38	Zambia	0.75	2
Zimbabwe	NA	NA												

3 The determinants of tax effort: a logistic regression analysis

Using a logistic regression, we now study the effect of some variables – natural resources, aid, institutional quality, political regime, and political stability – on tax effort.

As a first step of the analysis we present some general descriptive statistics. We can observe that non-resource rich countries and non-fuel exporters have higher tax effort scores than their resource-rich peers (Figure 7). This may support the view that governments in resource-rich countries have less incentive to mobilise tax revenues when they have resource rent. Similarly, landlocked countries make a more intense tax effort and countries that are considered as offshore financial centres have low performance in terms of tax effort. East African Community (EAC) and WAEMU member countries appear to have better performance than CEMAC and South African Community (SAC) countries. If we look at the evolution of tax effort in the WAEMU and CEMAC countries (Figure 8), it appears that WAEMU countries are on average better performing, which lends some support to the arguments in favour of regional harmonisation (of both customs and domestic tax policies).

Benin has little room to increase tax revenues unless it addresses the reasons why it is below weak taxable capacity by conducting institutional reforms to expand its tax revenue potential. Using the International Country Risk Guide (ICRG) database and following Frankel *et al.* (2013), we compute an index of institutional quality based on an average of four normalised variables: investment profile, corruption, law and order, and bureaucratic quality. Higher values of the index are associated with better economic and political institutions that should favour tax revenue collection. As Figure 9 shows, tax effort appears to be positively correlated with the ICRG index.



Figure 7: Tax effort by country category



Figure 8: Tax effort in UEMOA and CEMAC countries



Figure 9: Tax effort and ICRG index

In order to study rigorously the determinants of tax effort, we carry out an econometric analysis to complement the previous statistical analysis. Based on an international comparison, we examine the effect of some variables on tax effort scores. Our focus here is on the effect of natural resources, official development assistance (ODA), transparency, corruption and accountability (CPIA indicator), and the political regime and stability.

The analysis of the factors explaining the level of tax effort is based on a logistic regression. Tax effort scores range from 0 to 1, the most efficient countries having the highest scores. The ranking is grouped in quartiles according to the score obtained: we have four classes, from Q_1 to Q_4 . Thus, the observations with the lowest scores belong to the first quartile while the observations with the highest scores are in the fourth quartile. These quartiles are considered as the dependent variable. Using quartiles allows us to estimate the effects associated with each group of countries.

As the dependent variable is thus an ordinal variable, we use a mixed-effects ordered logistic model (see Liu and Hedeker, 2006; and Rabe-Hesketh and Skrondal, 2012). This model is an ordered logistic regression containing both fixed and random effects. The identification strategy makes it possible to control for the characteristics of countries that can affect the evolution of efficiency over time. We use a two-tier model. For M countries, the cumulative probability that a Y_{it} observation belongs to an efficiency quartile greater than q is given by:

$$Pr(Y_{it} > q | X_{it}, \varphi_q, u_i) = H(X_{it}\beta + Z_{it}u_i - \varphi_q)$$

with X_{it} a set of covariates, φ_q a set of cut points⁹, and u_i a set of random effects (i=1,...,M country, each i has a given number of occurrences in time t=1,...,n occurrences). H() is the cumulative logistic distribution function that represents the cumulative probability. The X_{it} vector of dimension 1*p represents covariates for fixed effects with β coefficients. The 1*q

 $^{^9}$ The cut-off points ϕ are ϕ 1, ϕ 2, ϕ 3 because we have four efficiency groups (quartiles).

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vectors of Z_{it} are covariates corresponding to random effects and can be used to represent intercepts and random coefficients.

While the estimation of tax effort scores requires focusing on structural supply variables, we now consider the potential effect of demand factors on the estimated level of tax effort: natural resource rent, aid, institutional quality (transparency, corruption, and accountability), political regime, and political stability.

The effect of natural resource rent on tax revenue ratio is widely evidenced in the literature. Natural resource endowment is associated with lower non-resource tax revenue, suggesting a natural resource curse (Sachs and Warner, 2001; Eltony, 2002; Melou *et al.*, 2017). In particular, during commodity prices upswings, governments in resources-rich countries have less incentive to mobilise tax revenues so that resource rent crowds out tax revenue. We consider in our model total natural resources rents (% GDP) as the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents¹⁰.

ODA can also modify government behaviour (Bahl, 2000; Bird and Smart, 2002). The literature highlights several effects. Among the most documented, the flypaper effect is an empirical regularity: any increase in transfers/aid leads to greater public spending than an equivalent rise in the private revenue of the population (Hines and Thaler, 1995). In a context of informational asymmetries, aid challenges the fiscal discipline of recipient governments by raising a moral hazard problem (Pisauro, 2001; Kornai, Maskin, and Roland, 2003): it can be perceived as a kind of windfall resource, which crowds out own-source revenue by reducing the willingness of governments to improve their tax effort. More broadly, aid dependency seems to erode governments' accountability, a prerequisite for the quality of public expenditures and taxpayers' voluntary compliance. Hence, we consider in our model 'Net ODA' (source: World Bank). It consist of 'disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients'¹¹.

Institutional quality may also play a key role in mobilising resources. Indeed, it can improve tax policies and administrations' ability to collect revenues, as well as taxpayers' voluntary compliance. In particular, the degree of transparency, accountability, and corruption in the public sector determine the extent to which citizens can hold the executive accountable for its use of funds, and for the results of its decisions and actions. It also determines the extent to which public employees within the executive are required to account for administrative decisions, use of resources, and the final results obtained. Using the 'CPIA transparency, accountability, and corruption in the public sector rating' variable makes it possible to account for these potential effects. The three main dimensions assessed in that indicator are 'the accountability of the executive to oversight institutions and of public employees for their performance, access of civil society to information on public affairs, and state capture by narrow vested interests' (Wold Bank, 2009, page 301).

Beyond the institutional aspects, the political regime in place may explain the level of tax effort. A growing body of literature suggests that political regime type matters in determining taxation. Garcia and Von Haldenwang (2016) identify three different causal mechanisms that

¹⁰ World Bank estimates based on sources and methods described in 'The Changing Wealth of Nations 2018: Building a Sustainable Future' (Lange *et al*, 2018).

¹¹ It includes loans with a grant element of at least 25% (calculated at a rate of discount of 10%).

affect the relation between regime type and taxation: economic growth, redistribution, and legitimacy. First, based on a positive link between democratic rule and economic growth, democracy should lead to higher tax collection because of growing taxable income. Second, based on the median voter theorem (Milanovic, 2000; Acemoglu and Robinson, 2006), the expansion of suffrage induced by democracy should lead to higher levels of redistribution and more public services, which may impact the level of taxation. Third, tax contractualism emphasises the importance of legitimacy and credibility in bargaining processes and tax compliance (Moore, 2008; Timmons, 2005; Levi and Sacks, 2007; Bates and Lien, 1985; Mahdavi, 2008). In this context, democracy should lead to higher tax collection, as taxpayers can be more confident that fiscal resources are spent for the common good and that the distribution of the tax burden is fair. Empirical research on the relationship of political regimes to taxation yields mixed results and it appears that there is no linear trend in favour of democracy. To test for these potential effects, we use a modified version of the 'Polity' variable proposed by the Center for Systemic Peace (CSP) that allows the use of regime measure in time-series analyses. This variable captures political regime authority spectrum on a 21-point scale ranging from -10 (hereditary monarchy) to +10 (consolidated democracy)¹².

Tax effort may also be influenced by political instability. An important literature shows that political stability determines the level of taxation (Cukierman *et al.*, 1992; Aizenmana and Jinjarak, 2008; Melo, 2011). A rise in the level of political instability generates a decrease in the resources available and public expenditure in the next period. Moreover, the risk of radical policy changes in the future can have a detrimental effect on the tax behaviour of governments and on tax compliance. We include in the empirical analysis a variable from the World Bank that measures 'perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism. [The e]stimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from -2.5 to 2.5'.

Table 7 displays the pairwise correlation between tax effort and interest demand variables. It appears that the total tax effort is negatively associated with natural resource rent and ODA, while it is positively correlated with CPIA and political stability. The correlation between tax effort and political regime is not significant.

	[1]	[2]	[3]	[4]	[5]	[6]
(1) Tax effort	1.0000					
(2) Natural resource rent	-0.1357*	1.0000				
(3) ODA	-0.3594*	0.0013	1.0000			
(4) CPIA	0.1955*	-0.3599*	0.1307*	1.0000		
(5) Political stability	0.3089*	-0.3430*	-0.2669*	0.5086*	1.0000	
(6) Political regime	0.1759	-0.2727*	-0.1079*	0.1255	0.2633*	1.0000

Table 7: Pairwise correlations between total tax effort and its potential determinants

Source: Authors' calculation

¹² The Polity scores can also be converted into regime categories in a suggested three-part categorisation of 'autocracies' (-10 to -6), 'anocracies' (-5 to +5 and three special values: -66, -77 and -88), and 'democracies' (+6 to +10). The performance score is from 0 to 100. The highest score reflects the best situation.

Table 8 presents the results of the regression of the logistic model. We regress successively each of the interest variables (columns 1 to 5) and then all these variables at the same time (column 6). Aid is associated with a lower probability of belonging to a quartile of high tax effort while institutional quality (measured by the CPIA index) increases the probability of belonging to an efficient quartile in terms of tax effort. If the effect of the political system is not clear, political stability is strongly and positively associated with a greater likelihood of having a high tax burden. When the model is regressed across all variables, the effects of aid, institutional quality, and the political system appear to be significant.

Quartiles of tax effort	(I)	(II)	(III)	(IV)	(V)	(VI)
	-0.001***					-0.001*
ODA	(0.000)					(0.000)
Natural resource rent		0.048				-0.003
Natural resource rent		(0.017)				(0.032)
CPIA			1.626***			1.030*
OTIA			(0.203)			(0.770)
Political regime				-0.027		-0.060**
1 olitioal regime				(0.022)		(0.026)
Political stability					0.617***	-0.207
r Onlical Stability					(0.160)	(0.386)
Cut1	-2.351***	-1.501***	0.418	-1.891***	-1.833***	1.549
Cull	(0.305)	(0.263)	(0.966)	(0.489)	(0.258)	(2.596)
Cut2	-0.554*	0.176	2.316**	-0.064	-0.106	3.696
Cuiz	(0.296)	(0.258)	(0.972)	(0.481)	(0.251)	(2.613)
Cut3	0.567*	1.286***	3.769***	0.821*	1.093***	5.222**
Cuio	(0.299)	(0.262)	(0.981)	(0.484)	(0.255)	(2.620)
Var (Const)	1.475*	1.474***	1.454***	1.465***	1.453***	1.515**
	(1.097)	(0.203)	(0.260)	(0.345)	(0.212)	(0.842)
Observations	851	845	684	288	864	216
Number of groups	24	24	19	8	24	6
Log-vraisemblance	-779.05	-795.29	-662.16	-261.35	-801.82	-223.43

Table 8 : Logistic regressions results

Source: Authors' calculation

4 Tax policy or revenue administration reforms

In this section, we review some tax policy and tax administrative issues in Benin, and suggest some reforms to improve tax mobilisation

4.1 Tax policy and tax expenditures

The Beninese government sets the tax policy under the control of the legislative authority and following the WAEMU tax Regulation (*Réglement* in French), Directives, or Decisions.¹³ WAEMU tax Directives define the rates and bases of the main taxes: VAT, corporate income tax, excises, portfolio incomes, etc. Therefore, WAEMU member countries share a similar set of tax laws, which are encompassed in their respective national tax codes. However, tax effort analysis highlights the leading role of Senegal, which belongs to WAEMU too. Senegal displays a tax effort above 70%, meaning a tax gap less than 30% of potential tax revenue over the most recent period (2015).

A potential explanation of this discrepancy between Benin and Senegal (or Togo) is derogatory tax regime, such as the Investment Code (IC). Indeed, all the WAEMU countries, like almost developing countries, provide some tax incentives through their IC (or Act). Such a policy, sometimes suggested by the World Bank, aims to attract foreign direct investment. The main issue is in the details of these incentive schemes, which may also reflect the effects of lobbying.

The comparison of the Beninese IC, enacted in 1990 and modified in 1998 and 2008, with the Togolese one (in force since 2012), yields the conclusion of a greater generosity towards investors in Benin. Indeed, the Beninese IC offers a complete corporate income tax exemption over a period from five to 9 years (even 15 years if the investment is located in remote areas). Moreover, tax advantages and their duration increase with the investment amount. Meanwhile, the Togolese IC does not provide such a corporate income tax break, but only a 50% rebate on corporate income tax owed. Moreover, this advantage is limited to five years and does not apply to some sectors, such as mobile phone companies, banks, insurance companies, retailers, or firms in charge of seaport and airport infrastructure. Another noticeable difference between the Beninese IC and the Togolese one concerns the importation of second-hand materials necessary for projects: Togo raises a unique 5% tax for VAT and duty purposes, while Benin provides a complete exemption.

If the efficiency of such incentives in attracting foreign direct investment remains uncertain (see Van Parys and James, 2010), tax revenue losses captured through tax expenditure assessment are more obvious.¹⁴ Consequently, despite similar tax laws between Benin and Togo, tax expenditures such as these provided in ICs may differ significantly, partly explaining the gap in tax effort between these two countries. Yearly tax expenditure assessments and publications contained in the appendices to finance laws, in accordance

¹³ These three regional legal texts do not have the same power of enforcement. While the WAEMU Regulation has immediate force of law and must be transferred into national legislation, WAEMU Directives and Decisions can be interpreted when they are integrated into the national laws.

¹⁴ Anderson (2008) defines tax expenditures as 'provisions of tax law, regulation or practices that reduce or postpone revenue for a comparatively narrow population of taxpayers relative to a benchmark tax.' The assessment of tax expenditures usually follows such a revenue loss approach, which involves assuming unchanged (investment or consumption) behaviour: the investor (consumer) would have invested (consumed) the same amount with or without the derogatory tax regime (see OECD, 2010). Such an assumption may induce an overestimation of tax expenditure.

with the 2015 WAEMU Decision, would contribute to streamlining these incentives, and improving the tax effort by reducing the policy gap.

4.2 Tariff policy and informal trade with Nigeria

Beyond tax policy, an important component for Benin is the tariff policy, which is determined by the WAEMU Commission and, officially since 2015, by the Economic Community of West African States (ECOWAS) Commission. ECOWAS is a customs union with 15 members.¹⁵ The ECOWAS Common External Tariff implementation is still ongoing, but it will impact Benin's tax revenue, given the weight of the transit activity in this country. Tax revenue collected at the border represented almost half of total tax revenue in 2015: 4.41% of GDP for trade taxes and 2.64% of GDP for VAT collected at the border.

A large part of Beninese importations is not for the domestic market, but for the Nigerian one, and for landlocked countries (Burkina Faso, Mali, and Niger). Indeed, Nigeria has developed a protectionist trade policy by banning the importation of some goods (e.g. poultry meat, beer, used clothes, tires, used cars, etc.) or raising high tariff rates on some other goods (e.g. 50% on rice or sugar). This trade policy fuels smuggling activity in Benin and Togo. The former manages to extract significant tax revenue from this activity, which is estimated at 14% of total tax revenue, or equivalent to 2.4% of GDP in 2008 (see Golub, 2012; and IMF, 2012). Despite a geographical advantage for Benin, given the common border with Nigeria, there is competition between Benin and Togo to attract this illegal transit activity. This competition may seriously limit efforts to improve domestic revenue mobilization, at least at the border. For instance, despite or because of the WAEMU Common External Tariff in place in Benin and Togo since 2000, competition takes place on the reported value of imported goods for the Nigerian market. Such competition does not respect the World Trade Organization transaction value principle. Hence, special attention should be given to tariff policy in Benin, taking into account the existence of the informal trade with Nigeria.

4.3 Administration capacity

Tax effort is closely related to the tax and customs administration capacity. Benin still has a 'classic' organisation of these administrations, while Togo implemented a SARA in 2014. While it may be too early to assess the efficiency of such a reform in this particular case, Mansour *et al.* (2015) found a significant positive impact of SARA on domestic revenue mobilisation: an increase by 4 percentage points of GDP. A natural question, then, would be whether Benin should switch to a revenue agency.

First implemented in Africa by Ghana in 1985, the SARA is a drastic reform, which can be understood as a strategic delegation of taxing power to an autonomous agent. The autonomy, which differs significantly across countries, is a signal of a more credible audit policy, since control occurs, at least theoretically, without any political interference. Two main advantages of SARAs are advanced in the literature. First, SARAs involve the merger of tax and customs administrations in order to: (i) exploit synergies, in particular for VAT on imports (Keen, 2008); and (ii) save costs by combining operational functions in tax collections (World Bank, 2010). The second advantage is the human resource management. Recruitment, promotion, and dismissal do not have to respect civil service rules, allowing a number of

¹⁵ In addition to the eight WAEMU members, ECOWAS gathers also Cabo Verde, Gambia, Ghana, Liberia, Nigeria, and Sierra Leone.

flexibilities, such as higher wages (Fjeldstadt and Moore, 2009; and Moore, 2014). Table 9 and Figure 9 show preliminary evidence of a positive correlation between public sector wages and salaries¹⁶ and estimated tax effort.

Table 9: Correlation between civil service wage bill and tax effort

Correlation between payroll and tax effort

	[1]	[2]	[3]	[4]
Payroll [1]	1.0000			
Total tax effort [2]	0.1766*	1.0000		
Time-varying tax effort [3]	0.1473*	0.9697*	1.0000	
Persistant tax effort [4]	0.1423*	0.3395*	0.1017	1.0000

Note: *Coefficient significant at 10% level

Figure 9: Correlation between civil service wage bill and tax effort



Switching to a SARA is a radical reform and the transition may be costly and risky, as it involves the replacement of a significant share of the staff. Alternative reforms may focus on the payment and incentive mechanisms in place in the Beninese tax and customs administrations. In 2016, the Beninese tax administration numbered less than 500 staff¹⁷ (there are more than 1,500 in Togo and there are 1,200 in Senegal). These staff receive several premiums in addition to their wage: prime de rendement, prime d'incitation, prime d'impulsion, and potentially risk premium. A large part of these premiums remains collective, reducing their incentive dimension. Several empirical studies have highlighted the advantage

¹⁶ Data concerning civil service wage bill come from the Banque Centrale des Etats d'Afrique de l'Ouest (BCEAO) database: <u>https://edenpub.bceao.int/index.php</u>

¹⁷ Data are not available for customs administrations.

of reviewing such incentives. For instance, Khan *et al.* (2016) show that a rewarding scheme based on collected revenue significantly improved property tax revenue in Pakistan. However, they emphasise also that the revenue gain resulted from a small number of properties, the values of which were reassessed, and that a risk of higher bribes emerged with the increase in collectors' bargaining power because of this new incentive mechanism. Thus, the introduction of individual performance contracts may be necessary, but is not sufficient to reduce the risk of corruption. As with a SARA, this mechanism should be complemented by extensive and effective monitoring (see Fjeldstad, 2003).

In 2017, Benin carried out a reform of its tax administration through a significant reorganisation,¹⁸ which follows the segmentation approach of taxpayer population. It introduced a risk analysis for its audit policy and human management based on results. The details of this reform are unknown and the previously described incentive mechanisms seem to remain.

The 2017 tax administration reform also established a tax policy unit. This unit is in charge of defining the tax policy, forecasting expected tax revenue and the effect of tax reforms, and assessing tax expenditure. If the creation of a tax policy unit is an improvement in designing the Beninese tax system, the location of this unit inside the tax administration itself may seriously limit the efficiency of such a reform. First, it reflects a common inconsistency in French-speaking countries, and even in France, in which the tax administration not only collects taxes, but also designs the tax policy. Moreover, given the role of the tax policy unit in forecasting tax revenue, the tax administration seems to have complete control over the goals to be achieved in terms of tax revenue, and the bonuses to be distributed to its staff. Second, customs remains an important tax collector and should be included in any tax reform and tax expenditure assessment. A natural location of the tax policy unit would have been 'above' both revenue administrations, headed by the special tax adviser of the Ministry of Finance. There is a need to clarify the role of each stakeholder: the revenue authorities, which collect taxes, and the Ministry of Finance, which designs the tax policy, with parliamentary control.

¹⁸ Decree N°3005/MEF/DC/SGM/DGI/SP.

5 Conclusion

Based on a large database covering 41 SSA countries and the period 1980–2015 we analysed the effort by Benin to raise non-resource tax revenue in light of its structural characteristics. The stochastic frontier analysis, by comparing non-resource tax-to-GDP ratio in Benin with its peers, identified whether Benin was away from the tax frontier: the tax effort in Benin remained relatively stable during the period, with an average of 65.1% over the period and a rank of 13 out of 42 countries. A tax effort of 65.1% means that the level of non-resource tax revenue is at 34.9% of the country's maximum capacity. Knowing that, on average, Benin collects 11.14% of its GDP in non-resource tax revenue and is at 65.1% of its capacity, it would have raised 17.11% of its GDP as non-resource tax revenue if it had used all its potential, given its characteristics. Hence, Benin has little room – insufficient to reach the WAEMU criterion of 20% of tax revenue to GDP – to increase tax revenues, unless it addresses the reasons for the weak taxable capacity and conducts institutional reforms to expand its tax revenue potential.

In order to study rigorously the determinants of tax effort, an econometric analysis then complemented the previous statistical analysis. Based on an international comparison, we examined the effect of natural resources, ODA, transparency, corruption and accountability (CPIA indicator), and the political regime and stability on tax effort scores. We found that aid is associated with a lower probability of belonging to a quartile of high tax effort while institutional quality (measured by the CPIA index) seems to increase the probability of belonging to an efficient quartile in terms of tax effort. Political stability appears to be strongly and positively associated with a greater likelihood of having a high tax burden.

Analysing potential policy and administrative sources of these tax gaps, we shed light on the human resource policy of the tax administration and the remuneration mechanisms, which may be obsolete. The payment and incentive mechanisms in place in Beninese tax and customs administrations should be reviewed and associated with an extensive and effective monitoring to improve tax effort and limit the risks of corruption. The 2017 tax administration reform may improve tax revenue through a more efficient organisation of departments and divisions. However, it also raises a critical issue of providing the decision-making power in tax policy to the tax administration through the creation of a tax policy unit.

Appendix

Table A1: Country list

Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo, Dem. Rep., Congo, Rep., Cote d'Ivoire, Equatorial Guinea, Ethiopia, Gabon, Gambia, The, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe.

Table	A2:	Data	sources	and	definitions	

Variables	Definition	Sources		
Total non-resource tax (% GDP)	Total tax revenues excluding resource rent	Mansour (2015)		
Tot. nat. res. rent (% GDP)	Sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents over GDP			
GDP per capita (constant 2010 US \$)	Volume of imports and exports divided by GDP	World bank World Development Indicators		
Total trade (% of GDP)	Volume of imports and exports over GDP			
Agriculture, value added (% GDP)	Net output of forestry, hunting, and fishing, as well as cultivation of crops and livestock production, after adding up all outputs and subtracting intermediate inputs, divided by GDP			
Financial development index	Aggregate of nine indices that summarise how developed financial institutions and financial markets are in terms of their depth, access, and efficiency.	Svirydzenka (2016)		

	1991	1995		1996-	2000	2001-2005			2006-2010					
Country	Nr tax revenu over GDP	Rank	Country	Nr tax revenu over GDP	Rank	Country	Nr tax revenu over GDP	Rank	Country	Nr tax revenu over GDP	Rank	Country	Nr tax revenu over GDP	Rank
Angola		-	Angola	4,89	39	Angola	7,72	35	Angola	7,71	36	Angola	6,97	39
Benin	9,34	23	Benin	11,74	15	Benin	12,17	17	Benin	13,98	14	Benin	13,42	22
Botswana	11,76	16	Botswana	9,24	24	Botswana	12,18	16	Botswana	19,23	7	Botswana	18,80	8
Burkina Faso	7,30	27	Burkina Faso	10,44	19	Burkina Faso	10,88	22	Burkina Faso	11,88	22	Burkina Faso	13,03	24
Burundi	15,23	9	Burundi	13,17	14	Burundi	13,54	14	Burundi	12,59	18	Burundi	13,35	23
Cabo Verde	13,48	12	Cabo Verde	14,18	12	Cabo Verde	17,34	7	Cabo Verde	19,46	6	Cabo Verde	18,16	10
Cameroon	6,85	30	Cameroon	9,93	22	Cameroon	10,84	24	Cameroon	11,42	24	Cameroon	11,89	26
Republic	7,67	26	Republic	7,81	32	Republic	7,69	36	Republic	8,17	35	Republic	7,50	38
Chad	3,75	39	Chad	5,52	37	Chad	4,94	40	Chad	4,73	41	Chad	5,62	40
Comoros	11,23	17	Comoros	9,98	21	Comoros	10,89	21	Comoros	10,57	28	Comoros	11,36	30
Rep,		-	Rep,	0,55	42	Rep,	3,38	41	Rep,	6,96	38	Rep,	9,36	35
Congo, Rep,	10,47	19	Congo, Rep,	8,21	31	Congo, Rep,	8,13	34	Congo, Rep,	7,12	37	Congo, Rep,	11,57	27
Côte d'Ivoire	15,15	10	Côte d'Ivoire	15,04	8	Côte d'Ivoire	13,93	12	Côte d'Ivoire	14,40	12	Côte d'Ivoire	13,89	21
Equato rial Guinea	9,78	21	Equatorial Guinea	4,16	41	Equato rial Guinea	1,92	42	Equatorial Guinea	1,25	42	Equatorial Guinea	1,51	42
Ethiopia	6,63	32	Ethiopia	8,92	28	Ethiopia	10,94	20	Ethiopia	10,82	26	Ethiopia	11,90	25
Gabon	10,08	20	Gabon	10,77	17	Gabon	10,78	25	Gabon	10,18	30	Gabon	9,98	32
Gambia, The	13,30	14	Gambia, The	11,21	16	Gambia, The	10,43	27	Gambia, The	14,45	11	Gambia, The	15,27	14
Ghana	8,20	25	Ghana	9,41	23	Ghana	11,94	18	Ghana	12,50	19	Ghana	14,02	17
Guinea	5,69	36	Guinea	6,65	35	Guinea	8,58	32	Guinea	10,55	29	Guinea	13,89	20
Guinea-Bissau	3,56	40	Guinea-Bissau	4,56	40	Guinea-Bissau	5,55	39	Guinea-Bissau	6,37	39	Guinea-Bissau	8,17	37
Kenya	14,51	11	Kenya	14,86	9	Kenya	14,29	11	Kenya	14,37	13	Kenya	15,46	13
Lesotho	30,07	1	Lesotho	31,24	1	Lesotho	30,88	1	Lesotho	44,52	1	Lesotho	39,73	1
Madagascar	7,28	28	Madagascar	9,22	25	Madagascar	9,08	31	Madagascar	10,62	27	Madagascar	9,61	34
Malawi	12,88	15	Malawi	13,43	13	Malawi	10,53	26	Malawi	12,89	17	Malawi	14,01	18
Mali	6,65	31	Mali	8,95	27	Mali	10,28	28	Mali	9,88	31	Mali	10,60	31
M auritius	15,70	7	Mauritius	14,23	11	Mauritius	14,70	10	Mauritius	16,55	9	Mauritius	16,61	11
Mozambique	8,90	24	Mozambique	8,50	29	Mozambique	9,60	29	Mozambique	11,90	21	Mozambique	20,53	7
Namibia	25,03	3	Namibia	25,84	2	Namibia	23,32	3	Namibia	27,62	3	Namibia	32,06	2
Niger	6,27	35	Niger	7,64	34	Niger	9,36	30	Niger	9,43	33	Niger	11,54	28
Nigeria	4,30	38	Nigeria	6,07	36	Nigeria	7,09	38	Nigeria	4,88	40	Nigeria	5,08	41
Rwanda	6,95	29	Rwanda	9,06	26	Rwanda	10,84	23	Rwanda	11,65	23	Rwanda	13,99	19
Principe	5,35	37	Principe	7,75	33	Principe	12,63	15	Principe	13,58	15	Principe	14,47	16
Senegal	13,36	13	Senegal	14,85	10	Senegal	16,29	8	Senegal	17,99	8	Senegal	18,43	9
Seychelles	29,10	2	Seychelles	23,37	4	Seychelles	24,61	2	Seychelles	23,45	4	Seychelles	27,93	3
Sierra Leone	6,60	33	Sierra Leone	5,40	38	Sierra Leone	8,36	33	Sierra Leone	8,29	34	Sierra Leone	8,71	36
South Africa	17,84	5	South Africa	20,15	5	South Africa	20,25	4	South Africa	22,65	5	South Africa	22,65	6
Swaziland	16,04	6	Swaziland	17,58	6	Swaziland	19,37	5	Swaziland	28,16	2	Swaziland	26,69	4
Tanzania	10,72	18	Tanzania	8,45	30	Tanzania	7,11	37	Tanzania	9,57	32	Tanzania	9,92	33
Togo	9,49	22	Togo	10,56	18	Togo	13,68	13	Togo	15,22	10	Togo	16,02	12
Uganda	6,36	34	Uganda	10,06	20	Uganda	11,42	19	Uganda	11,33	25	Uganda	11,39	29
Zambia	15,70	7	Zambia	17,25	7	Zambia	16,15	9	Zambia	13,07	16	Zambia	14,89	15
Zimbabwe	21,38	4	Zimbabwe	24,49	3	Zimbabwe	18,67	6	Zimbabwe	12,26	20	Zimbabwe	24,97	5

Table A3: Tax-to-GDP ratio-based country ranking (sub-period averages)

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Discussion of the 'The Tax Effort in Benin: How can tax gaps be reduced ?'

The article by Emilie Caldeira and Gregoire Rota-Graziosi presents the tax collection situation in Benin in comparison with the performance of tax collection in Togo. The text is clear and easy to read. However, there are some observations to make:

- The theoretical question is whether the increase in the tax burden is an end in itself. Is a lower tax burden not an incentive to invest? The question needs to be asked. The United States has a lower tax burden than Denmark, but it has a per capita income and higher productivity. The tax burden should not be viewed as an absolute goal.
- 2. In practical terms, the study would be more useful for both Benin and Togo if it indicated the causal relationship between the various indicators cited and the difference in tax collection rates between the two countries. The study cites as possible causes: corruption, motivation of staff, the merger of the tax and customs administrations, the status of the staff (contract or civil servant), etc. If the government of Benin seeks to use this document to correct its tax policy, it will not know what lever to act to improve the tax return.
- The bibliography contains no items by authors from the countries concerned and more generally from French-speaking West African countries. The only bibliographical references are to authors from/writing about English-speaking countries in Africa.

1 Overall point of view

The study choses the institutional perspective as an angle of analysis regarding the issue of brakes on and adjuvants to growth for development in Benin. In this regard, we can advance ideas that complete the comparison between Benin and Togo, especially on the tax issue. Togo has created a revenue office and this has improved tax revenues. The Togolese scheme, which is similar to those in place in Rwanda and Burundi, addresses a major obstacle in Benin: the power of the trade unions in the finance sector (customs and taxes). The government has reduced by law n ° 2017-05 of 29 August 2017 the rights of workers by limiting to 10 per year the annual statutory period of walkout. The unions are therefore reduced to grumbling without a real threat capacity as regards the continuity of public services. However, there is reason to fear a similar manoeuvre to that adopted by Burkina Faso trade unionists in the finance sector, which led to the departure of their minister of guardianship and a ministerial reshuffle after a zeal strike (presence at the office but actually working throughout the entire period), in February 2019. For its part, the Government of Benin has shown no intention of going in the direction of a revenue agency. On the other hand, it has strongly oriented its administrative policy towards the creation of agencies in all sectors. In general, the agency as a management institution appeared in the course of the reforms undertaken with the advent of new public management in the 1980s. The goal is to apply the managerial methods of the private sector to allow public administrations to become more competitive while guaranteeing a guality public service. Countries like Sweden, the United Kingdom, New Zealand, Japan, Canada and many others have followed this path. An agency makes it possible to combine the advantages of a public administration (regulatory power, power of constraint, general interest) with the managerial flexibility enjoyed by private

individuals: a merit pay system, recruitment according to need, simplified dismissal, ease of appreciating individual and collective performance.

In the space of three years of government, the new President of the Republic, elected in 2016, has created about 50 agencies. In the particular field of taxes, the National Agency of Domain and Land was created (by decree n° 2015-10 of 29 January 2015). This agency deals with cadaster issues and facilitates upstream collection of property tax.

The question of the modernisation of public administration goes back a very long time (as mentioned by Pisani, 1956, 'Management Administration, Mission Administration'). Today we speak more often of development administration, in the logic of what we could call the 'government by corporations'. The dynamics of differentiation present the attraction of the flexibility of management rules, the ease with which they are recruited and the rules of public accounting. Development administration resembles a management administration in the durability of its existence and its power of constraint. On the other hand, it is closer to mission administration is more concerned with performance. The question of the performance of administrations is evident in the massive 'agenciation' underway in Benin, which is the beginning of a solution to the problem of administrative institutions and their impediment to growth in Benin. By multiplying agencies in Benin, the government provides solutions to two types of problems:

- 1. First of all, the large numbers of general administration with profiles that often do not correspond to job positions. Public administration is often a refuge for incompetent people who cannot find jobs in the private sector. Very often, offices are cluttered with staff who work little because they are five or 10 in a position that only one person can occupy with adequate working means. This overpopulation of the public administration goes hand in hand with insufficient staffing for certain managerial or hitech positions. We are thus witnessing a contradictory phenomenon where on the one hand some people get bored at work, and on the other hand other agents are on the verge of burnout.
- 2. The question of motivation of the staff could also be regulated by the 'agenciation'. Indeed, public officials receive premiums and are subject to a promotion system that is usually based on seniority and not on the quality of work. This is the standard contained in the General Code of the Civil Service (Law No. 2015-18 of 02 April 2015 on the General Statute of the Civil Service). In an agency, staff should be periodically evaluated on their professional performance, results achieved, innovations made, quality of work done (attendance, relations with colleagues, etc.). This evaluation of the agent could be sanctioned by bonuses, promotions, and many other things. Poor performance should lead to punishments, downgrades, and even dismissal if necessary. The agent in an agency knows that he or she is recruited because of his or her skills and abilities, and not because of his or her relationships.
- 3. Then comes the question of recruitment and dismissal: officials are guaranteed employment and can only be dismissed from their job in extreme circumstances. They are safe from economic redundancy and even if the nurse receives only two patients in the day for her village infirmary, this work is enough to guarantee her salary at the end of the month. The notion of return has no place in public administration. Officials obey the rules of the public service of the state. Labour productivity is not evaluated, and neither is yield. The agency offers the possibility to

its leaders to leave the administrative framework of the civil service. Recruitment is carried out on the basis of a need for staff. The employment contract which binds the agent to his or her agency will be able to continue on two conditions: first, if the agent fulfils his or her professional obligations correctly. He or she does what he or she must do on time and perfectly, under the appreciation of his or her managers. Then, the overall performance of the agency will justify the maintenance of the agency or not. An agency that is not performing can be dissolved, merged with another, or its team renewed entirely to give it a new lease of life. The fate of an agency is not very different to that of a private company, and nor is its management.

4. Finally, there is the question of remuneration: civil servants are considered to be poorly paid and are not motivated at all to do quality work. It is popularly believed that the state pretends to pay officials and officials in turn pretend to work. The management of an agency makes it possible to combine an optimum workforce, satisfactory remuneration, and good motivation of the agents. It is total quality management.

2 'Agenciation' of the revenue services in question

In the African countries that have adopted this approach (Togo, Rwanda, Kenya, etc.), the 'agenciation' of the services responsible for collecting taxes (domestic taxation and door taxation) has had consequences for:

- 1. the motivation of staff;
- 2. a synergy effect that favours revenue optimisation; and
- 3. the system of corruption.

Benin has not chosen this solution of 'agenciation'. The option is to be able to push on other levers to achieve the same results regarding staff motivation and the system of corruption.

- 1. The promotion of results-based management: the African Center for Training and Administrative Research for Development pleaded in 2010 for accountability and transparency in tax administrations. These are values promoted by governments in general government. The African Union has adopted the Public Service Charter (2001) to highlight the concepts of productivity, objectives, and evaluation. For its part, the General Tax Directorate of Benin has started to apply a results-based management system: defining objectives, issuing mission letters, evaluating performance, and implementing positive and negative sanctions. The record of this policy is mixed but the method may have a more convincing impact with the development of other managerial techniques, notably the dematerialisation of procedures.
- 2. The dematerialisation of procedures: The dematerialisation of procedures means that the IT tool is used to reduce contact between tax and customs agents and users. At the customs port of Cotonou, the importer does all of his or her own operations, without ever encountering a customs officer. Import documents are entered into the electronic platform and the amount of customs duty is generated automatically. Payment of tax and customs is made in a commercial bank. The number of the payment receipt is entered into the computer system, which immediately issues the notice with the right to remove the goods. However, customs posts at land borders

are not yet equipped with this computer system. As for the Directorate General of Taxes, it has also started a system of dematerialisation of these procedures of calculation and payment of the tax. The immediate consequence is the reduction of opportunities for contact between users and the tax administration. This should reduce the risk of corruption involving tax officials.

3. **Saving time**: Dematerialisation must also enable time savings in the execution of formalities with the tax authorities. According to the 2017 Paying Tax Report, it takes 908 hours (37 days) to fulfil tax obligations in Nigeria, 630 hours (26 days) in Cameroon, 124 hours (5 days) in Rwanda, and 82 hours (3.5 days) in Djibouti. Time management is related to the management of paperwork. It has a cost for the tax administration and generates additional costs for taxpayers. In South Africa, the use of electronic platforms has improved tax revenue mobilisation and reduced the cost of corporate tax compliance by 22.4%.

3 Conclusion

The Government of Benin is using the technique of 'agenciation' to modernise the public administration and to make it more efficient.

Curiously, the same government seems not to be moving towards 'agenciation' with respect to tax management. We understand that the decision is to achieve the same results that allows the 'agenciation' using other managerial techniques: the promotion of results-based management, the dematerialisation of procedures, and the reduction of the time that taxpayers dedicate to their tax obligations.

4 List of active agencies in Benin

- 1. Agence des grands projets urbains (Agence GPU)
- 2. Agence du cadre de vie pour le développement du territoire (Agence CV-DT)
- 3. Agence nationale d'approvisionnement en eau potable en milieu rural (ANAEPMR)
- 4. Agence des services et systèmes d'information (ASSI)
- 5. Agence pour la promotion des investissements et des exportations (APIEx Bénin)
- 6. Agence pour le développement intégré de la zone économique du lac AHEME et ses chenaux (ADELAC)
- 7. Agence nationale des migrations et de la diaspora (ANTD)
- 8. Agence nationale de surveillance des systèmes financiers décentralisés (ANSSFD)
- 9. Agence nationale du domaine et du foncier (ANDF)
- 10. Agence béninoise de gestion intégrée des espaces frontaliers (ABeGIEF)
- 11. Agence nationale de protection civile (ANPC)
- 12. Agences territoriales de développement agricole (ATDA)
- 13. Agence de développement de la mécanisation agricole (ADMA)
- 14. Agence de promotion des aménagements hydro-agricoles (APAH-SA)
- 15. Agence nationale de la sécurité sanitaire des aliments (ABSSA)
- 16. Agence nationale pour l'emploi (ANPE)
- 17. Agence nationale de vaccination et des soins de santé primaires (ANV/SSP)
- 18. Agence nationale pour la transfusion sanguine (ANTS)
- 19. Agence nationale de l'assurance maladie (ANAM)
- 20. Agence nationale de la gratuité de la césarienne (ANGC)
- 21. Agence béninoise de valorisation des résultats de recherche et de l'innovation technologique (ABeVRIT)
- 22. Agence Bénin presse (ABP)
- 23. Agence béninoise des services universels, des communications électroniques et de la poste (ABSU-CEP)
- 24. Agence nationale des transports terrestres (ANaTT)
- 25. Agence nationale de l'aviation civile (ANAC)
- 26. Agence pour la sécurité de la navigation aérienne en Afrique et à Madagascar (ASECNA)
- 27. Agence nationale de la météorologie (METEO Benin)
- 28. Agence nationale de la propriété intellectuelle (ANaPI)
- 29. Agence de normalisation, de métrologie et du contrôle qualité (ANM)
- 30. Agence nationale des petites et moyennes entreprises (ANPME)
- 31. Agence béninoise d'électrification rurale et de maitrise d'énergie (ABERME)
- 32. Agence de contrôle des installations électriques intérieures (CONTRELEC)
- 33. Agence nationale pour le développement des énergies renouvelables (ANADER)

- 34. Agence de bassin de l'Ouémé (ABO)
- 35. Agence de bassin du Mono-Couffo (ABM)
- 36. Agence de bassin de la Volta-Pendjari
- 37. Agence de bassin du Niger-Mékrou-Alibori-Sota
- 38. Agence béninoise pour l'environnement (ABE)
- 39. Agence pour la réhabilitation de la cité historique d'Abomey (ARCHA)
- 40. Agence pour la réhabilitation de la ville de Porto-Novo (ARPN)
- 41. Agence foncière de l'habitat (AFH)
- 42. Agence nationale de traitement (ANT)
- 43. Agence pour le développement du numérique (ADN)
- 44. Agence nationale de promotion des patrimoines et de développement du tourisme (ANPT)
- 45. Agence de développement de la cité internationale de l'innovation et du savoir (AD-CIIS)