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Abstract

This paper argues that the main determinant of differences in tax revenue collection across countries are differences in political regimes and institutions. The evidence based on the 8 members States of West African Economic and Monetary Union (WAEMU) over the period 90-2017, clearly supports that tax collection leads to better economic institutions and more democratic political system. Thus, handle the problem of tax collection will entail a reform of these institutions and a democratization of the political regimes. Institutions, political regimes, and democracy significantly increase tax collection while autocracy reduces it. The findings turn out to be robust accounting for the potential endogeneity of various institutions and aid intensity through 2SLS estimates.

Keywords

Political regime, Democracy, Autocracy, Institutions, Tax revenue, WAEMU

JEL Codes

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1. Introduction

Probably the most recurrent questions in public finance concern the cross-country differences in tax revenues collection levels. Why are some countries better performers than others? Why some countries tax almost half of the wealth produced in their countries while the others are struggling to take more than a fifth? Is there a tax blessing or rather a tax curse in some countries? All these questions lead to further investigation of the real reasons underlying the low level of tax collection in developing countries.

Some economists have recognized that developing countries face institutional problems in tax revenue collection [Ajaz and Ahmad, 2010, Bird et al., 2008, Thornton, 2008, Chand and Moene, 1999, Ghura, 1998, Gupta, 2007, Attila et al., 2006, Lotz and Morss, 1967, 1970]. Most of these studies focusing on the role of institutions in tax collection, argue that corruption seems to be the primary reason for the low tax mobilization in developing countries. Other studies have even revealed that corruption reduces tax revenues by more than half e.g. Bird [1990, 1992], Krugman et al. [1992], Alm et al. [1991]. But the question is whether the good institutions are only about the control of corruption? It is not so obvious. Hence, what are institutions?

According to North [1981, pp.201-202], institutions are “a set of rules, compliance, and moral and ethical behavior norms designed to *constrain* the behavior of individuals in the interests of maximizing the wealth or utility of principals”. Some definitions refer to the protection of property rights, the enforcement of rules and laws, and the control corruption. Institutions are also defined as political forms or structures that are regulated by public law, as established by legislation or custom. Note that in each of these definitions, the key word “constraints” is the most common. In addition, Acemoglu et al. [2001] argue that when constraints on the executive persist, many features of institutions change regularly.

Now, let consider institutions as the set of formal or non-formal rules that organize political, economic and social interactions among individuals. Consequently, it seems important to take into account these different dimensions of institutions in the analysis of the relationship between institutions and tax revenue mobilization.

Furthermore, a number of other studies have focused on political institutions and the level of tax revenues. Fjeldstad et al. [2000] emphasize the importance of political considerations in shaping tax policies and implementation. The literature has examined the role of institutions in tax collection through political regimes i.e. variables such as democracy and autocracy are used to explain the change in tax revenue collection across developing countries. This is the case for research such as that of Ehrhart, 2011, Cheibub et al., 2010, Acemoglu and Robinson, 2006, Cheibub, 1998. These literature suggests that the level of executive constraints, democratic regimes are able to improve the collection of tax revenues, while corruption reduce significantly tax revenues.

The present essay contributes to this literature and argue that political regimes and institutions constitute the fundamental cause of tax revenues collection differences among countries and that developing countries can raise tax revenues by building strong political, economic and social institutions. To this end, our study examines the effects of different types of institutions on tax revenues collection using ‘constraint on executive’ from Polity IV and ICRG measure of governance, which focus on bureaucratic quality, rule of law, and corruption. We also use measures of political regimes such as democracy, autocracy, and polity2 scores in order to explore the influence of political institutions on tax revenues mobilisation.

Our empirical investigation uses the panel data covering the height countries of

WAEMU on the period of 1990-2017. We used the Ordinary Least Squares (OLS) and Two-Stage Least Squares (2SLS) regressions. The OLS regressions ignores the possibility that quality of institutions may be caused by the tax levels rather than the other way around. Considering this eventual endogeneity of tax share, OLS estimates would be biased and would overrated the influence of tax on quality of institutions. Hence, we address these endogeneity problems through two-stage least squares (2SLS) estimation.

There is an active literature concerning the relationship between institutions and tax collection. The focus of our essay is on the use political regimes measured by political institutions as one of the most causes of the low level of tax collection in poor countries. The paper is organized as follows. Section 2 provides a brief theoretical background. Section 3 describes the data and empirical specification. Section 4 presents the estimation findings and the last section concludes.

2. Literature review

Over the last few decades, several studies have investigated on institutions to explain the differences in economic performance across countries. These researches emphasized the prominent role and positive effects of institutions in determining the country's growth. The pioneering studies are those of North, 1981, Huang and Xu, 1999, Rodrik, 2004, Acemoglu et al., 2001, McArthur and Sachs, 2001, Glaeser et al., 2004, Hall et al., 2010. Furthermore, economic analysis defined tax revenue as the share of a country's national income that is collected by the government through taxes, in such a way that the tax share is the ratio of total tax revenues to GDP. As a result, economic performance is subject to an increase in tax revenues, although the inverse relationship is not always apparent. Brief, as goes institutions, so goes economic output and so goes tax collection.

In the existing literature, a number of studies have been devoted to the structural factors of tax revenue. But empirical outcomes are have been mitigated due to their sensitivity of a set of countries and the analysis period. For example, Gupta [2007] concludes that structural factors such as GDP per capita, trade openness, agriculture share in GDP and foreign aid are significantly affect tax revenue collection across developing countries as well as others institutional factors including corruption and political stability. Lotz and Morss [1970] indicate that per capita income and trade share determine the tax share. Piancastelli [2001] suggests that per capita income, the ratio of trade to GDP, and the share of agriculture in GDP of the product of the agricultural sector are the most consistent explanatory variables of the tax collection. The results of Ghura [1998] concludes that the tax share increases with openness and income, but declines with the share of agriculture in GDP. These findings thus reinforced those of Tanzi [1992] that half of the change in the tax share is explained by external debt share, per capita income, agricultural share and share of importation. Aid intensity have also been identified as a factor that may explain the difference in tax collection among countries. Bräutigam and Knack [2004] find that the increase in aid ratio to GNP is associated with larger declines in tax share to GDP. They also find that political violence significantly reduces tax revenue collected. These outcomes have already been emphasized by the work of Boone [1996], Feyzioglu et al. [1998], Adam and O'Connell [1999]. Clements et al. [2004] also investigate the impact of aid on the tax effort and concludes that it depends on the composition of aid (grants vis-à-vis loans). The results show that concessional loans are associated with higher

tax collection, while the opposite effect is found for grants.

Recently, some other studies have been devoted to the impacts of institutional quality on tax revenue mobilization. The findings obtained are also sensitive to the various measures used to capture the “quality of institutions”. For instance, Bird et al. [2004] underlined the important roles of institutional factors such as rule of law, entry regulations and corruption, in tax revenue collection. Later, Bird et al. [2008] have shown through 2SLS method using panel data from developing countries over the period 1990-99 and from developed countries over the period 98-2000, that developing countries can improve tax collection by reinforcing their institution together with effective control of corruption and the enhancement of voice and accountability. Similarly, developed countries can also increase their tax collection as long as they improve their institution quality. Attila et al. [2009] analyze the relationship between corruption and public revenues using panel data of 125 countries and covering the period 80-2002. The results concludes on a negative impact of corruption on public revenues collection.

There is another strand of the literature that is focused on the impact of the type of political system on tax revenue collection. According to Fjeldstad et al. [2000], political considerations are important in shaping tax policies and implementation. The literature identifies three channels through which the type of regime affects taxation, see Garcia and von Haldenwang [2016, pp.486-488]. The first channel is about *economic growth* based primarily on the assumptions of modernization theory, while the second about *redistribution* linked to the concepts of public choice and game theory, and the third *legitimacy* which derived essentially from fiscal sociology and fiscal contractualism. Moore et al. [2018] exposed three positive connections between expansion of taxation and governments performance. They argue that, expansion of taxation can (i) create incentives for governments to promote economic growth as a way of expanding tax base, (ii) facilitate tax collection by improving the quality of public administration, and can (iii) be a catalyst for mobilising and empowering citizens to demand greater reciprocity and accountability from governments, while encouraging governments to be responsive in order to encourage tax compliance. In fact, increased tax collection may provide the spark for improving the quality of government and for building a “*fiscal social contract*’ between taxpayers and governments.

Hence, Meltzer and Richard [1981] argue that democracies are likely to be more redistributive than dictatorships because the median elector will always support a redistributive tax policy, especially in a context of increased inequalities. Indeed, a few other studies have confirmed this belief. Alesina and Rodrik [1994] affirm that demand for taxation will be strong in societies where a large part of population does not have access to capital and where the choice of policy is determined by the median voter theorem, as in democracies. In addition, Acemoglu and Robinson [2005] have modeled democracy as a dictatorship of the middle and poor classes and autocracy as a dictatorship of the rich concluded that as the rich are acting against redistribution and *de facto* against taxation, autocratic regimes have less incentive to engage in reforms for enhancing taxes. Likewise, for Boix et al. [2003], democratisation should eventually lead to higher tax revenue mobilization. Garcia and von Haldenwang [2016] confirm this outcomes in their investigation on the relationship between political regimes and tax collection. Their findings suggest that the character of the polity affects taxation, but there is no linear trend in favour of democracy. Nonetheless, these results are in disagreement with previous ones found by, for example, Cheibub [1998] that observed differences across countries regarding the level of taxes collected by the government are not due to the fact that some are under a democracy and others under a dictatorship, and therefore, concerns about the inability of democratic regimes to collect

taxes are unfounded. However, these studies did not explore how the political regime impacted the structure of taxation. To fill this gap, Kenny and Winer [2006] focused on the structure of taxation in a sample of 100 democratic and nondemocratic regimes and find that democracies rely substantially more on other income taxation, possibly because this tax source requires a higher degree of voluntary compliance. But, Mulligan et al. [2004] and Profeta et al. [2013] did not find, in contrast, any relationship between the strength of democracy and the structure of taxation.

3. Methods and Data

This paper carries out an empirical check on institutions and political regimes effects using data on West African Economic and Monetary Union countries over the period 90 – 2017. We accordingly test the assumptions that the low level of tax collection in WAEMU countries is belong to weaknesses in institutions and political systems.

For each estimated equation, the dependant variable is the change in tax share i.e. the end period value minus the initial value for the tax share. We did not use the annual variation in the data because impacts on institutions may show up with a substantial lags and because it is difficult to find a good instruments for institutions for which annual data are available, and finally because some variables contain missing values. In addition, the change in tax share may be affected by other factors such as culture and religious [Strielkowski and Čábelková, 2015]. A practical implication of using the change in the tax share from 1990 to 2017 as dependent variable is that factors such as these that are invariant over very long periods of time are unlikely to be of great importance.

Two measures of institutions were used in our empirical analysis. First, we used “ICRG *quality of institutions index*” considering that good institutions means increasing compliance to the rule of law, reducing the level of corruption and building a better bureaucracy. Hence, as suggested by Knack and Keefer [1995, pp.210-212] and Bräutigam and Knack [2004], we created an ICRG *quality of institutions index* of 16-point scale by summing two variables which are an 6-point scale including “*law and order and corruption*” and “*quality of bureaucracy*” which is an 4-point scale. The high value indicates good quality of institutions and the vice versa. Annual data are available from the *Political Risk Services (PRS) Group* and have been published from 1984 to 2017. ICRG data are not available for Benin, then the use of ICRG index reduces our sample to 7 countries. Second, following Acemoglu et al. [2001], Glaeser et al. [2004], we used Policy IV measure of “*executive constraints*” which refers to “the extent of institutionalized constraints on the decision making powers of chief executives, whether individuals or collectivities”. This variable ranges from 1 to 7 where higher values equal a greater extent of institutionalized constraints on the power of chief executives. The mean of constraints on executive is used according to Glaeser et al. [2004] that the average of such constraints over time is a good proxy for the “permanent” or “durable” constraints.

To analyze the impact of political regimes on tax collection, we use the “*Polity2 score*” from Policy IV which provides a convenient avenue for examining general regime effects. This variable is a modified version of the Polity score computed by subtracting the autocracy score from the democracy score. *Polity2 score* ranges from +10 (strongly democratic) to -10 (strongly autocratic). But, since our essay involves assumptions of varying effects of democracy and autocracy on tax collection, we also test separately “*democracy*” and “*autocracy*”.

We included a set of controls variables which have been frequently used in the tax revenue mobilization literature Lotz and Morss, 1967, 1970, Ghura, 1998, Bräutigam and Knack, 2004, Attila et al., 2006, Gupta, 2007, Ndiaye, 2014, Brun et al., 2015, Nguyen, 2019. These controls variables involves GDP per capita, the share of agriculture, the degree of openness, the size of population, the labor force participation rate, the aid intensity, all available in annual data from *World Development Indicators*, and physical capital or investment which is available from *World Economic Outlook*.

It seem important to control for “*political violence*”, otherwise estimates could produce a spurious correlation between high tax levels and political regime and either bad quality of institutions. Political instability in sense of domestic violence or conflict can destabilize political regimes and weakens intuitions, making corruption more likely, and violating of law and order. However, we use the variable “*internal conflict*” which consist in an assessment of political violence in the country and its actual or potential impact on governance. The highest rating is given to those countries where there is no armed or civil opposition to the government and the government does not indulge in arbitrary violence, direct or indirect, against its own people. The lowest rating is given to a country embroiled in an on-going civil war. The data are from *International Country Risk Guide* and range from 0 to 12.

We have also attempted to include the *initial tax share value* in order to capture the regression to the mean effects and controls for the limited possibility that countries with higher and lower rankings may increase or decrease, respectively their scores, since the tax share is bounded by 0% and 100%, the Polity score is bounded by -10 and 10 , and the ICRG index is bounded 0 and 16 . Unfortunately, we were unable to capture the mean effects because the *change in tax share* is strongly correlated with the *initial tax share*, related to the fact that over the time period of our analysis, tax share did not change significantly around initial level. Even if the expected sign of *initial tax share* was found, we did not *in fine* include it in the different equations estimated, as it biases the predicted signs of interest variable in each equations.

As suggested by Srinivasan [1986] and reply later by Bräutigam and Knack [2004], in presence of economies of scale in providing strong institutions or effective tax collection agencies, the increase in population could be associated with an increase in the *tax share* or the ICRG *quality of institutions index*. Hence, we address this possibility by including the *population growth* rather than the size of population.

Likewise, higher aid intensity is associated with larger deviation in tax share and in the quality of institutions. Hence, averages by country over the 90-2017 period were constructed for each country (see Bräutigam and Knack, 2004). The aid intensity or dependence is defined as the ratio of “Official Development Assistance” to GNP. Official Development Assistance (ODA) includes grants and loans with a grant element of at least 25%. Appendix A presents the conceptual definition of each variables of interest.

In our estimates, we address the endogeneity of variables that could be the product of reverse causation. Firstly, higher level of taxation can provide resources for investment needs and the building of strong political and economic institutions. Moreover, Ross [2004] concludes that when the proportion of public spending financed by taxes is important, government is more likely to be representative. On the other hand, aid is steered according to the recipient need and of donor interest (Bräutigam and Knack, 2004). If there is a significant relationship between aid and tax collection, then these factors that steer donor’s decisions should indirectly predict change in tax share. In these cases, OLS estimates would be likely biased. However, we tackle these endogeneity concerns though two-stage least squares (2SLS) approach. We include instruments

that have been used in Bräutigam and Knack [2004] and are available for our sample, to obtain predicted values of *quality of institutions*, *polity2*, *democracy*, *autocracy* and *aid intensity*. These exogenous instruments include *initial GDP per capita*, *initial population*, *infant mortality*, *colonial heritage dummies* (WAEMU countries are ex-colonies of one of two donor countries: Portugal and France), and *political freedoms* that data are available from Freedom House Index. We also included *external conflict* considering that separatist conflicts such as ethnic and tribal conflicts can weaken institutions and overthrow elected democratic regimes. As well, it is believed that colonial powers may also privilege one group or an ethnic group over others by directing more aid to them. Annual data are available from ICRG database.

Table 1, based on data from Central Bank of West African States, shows the changes in tax revenue ratios to GDP in the 8 countries of the West African Economic and Monetary Union (WAEMU) over the period 1990 – 2017. Five of these countries have collected more tax revenues in between 5.2 and 6.5 as a percentage of GDP in 2017 than they did in 1990. Senegal and Togo increased tax collection by 8.0% and 10.9% respectively, while Benin collected 2.8% less over the same time period.

TABLE 1.: CHANGES IN TAX SHARE IN WAEMU COUNTRIES, 1990 – 2017

Country	Change in tax share
Benin	-2,76
Burkina Faso	5,22
Cote d'Ivoire	5,57
Guinea Bissau	6,25
Mali	6,30
Niger	6,49
Senegal	8,03
Togo	10,96

Furthermore, given that data such as ICRG data and political violence are not available for Benin, the results presented in this paper include the 7 other WAEMU countries, limiting the number of observations to 196 according to the descriptive statistics in Appendix B. But a change in specification model, by omitted data from ICRG database as *ICRG index* as measure of institutional quality and *political violence* as control variable from the regressions, accounting in this case for Benin, the results are statistically quite robust.

4. Results and discussion

Table 2 shows the impact of institutional quality on tax collection. The first two columns report ordinary least squares (OLS) regression results, testing respectively the effects of the ICRG index and the executives constraints, on the tax share. The results reveal a positive significant effect of institutions of tax revenue in both regressions. The 2SLS estimator (columns 3 and 4), which controls for the potential endogeneity of institutional quality and aid intensity, confirms these results. Controlling for political violence does not change the conclusion that institutional quality improves tax collection.

Our analysis suggests also a number of patterns in the confounding variables. Population growth is positively and significantly associated with tax share in both equation.

This result is in contradictory with Bahl [2005] who had pointed out that the tax system of countries with faster growing population, may lag behind in the ability to capture new taxpayers, suggesting a diminishing population effect on tax revenue. However, it is certain that a country with a fast growing population has a potential consumer market that could generate additional consumption taxes. In addition, population growth benefits to the economic growth, and thus increases tax revenues.

As expected, the change in per capita GDP has a positive association on tax effort. GDP per capita is used as proxy for the country's level of development. This result is in confirmatory with previous ones which found that the capacity of collect and pay taxes, as well as that of demand for income elastic public goods and services, increases with the level of development [Chelliah, 1971, Bahl, 1971, Gupta, 2007]. In addition, when GDP per capita rises, people will increase spending and government can collect more tax revenue [Nguyen, 2019].

Political violence coefficient is associated with a strong significant fall in tax collection as expected. This is consistent with results in Bräutigam and Knack [2004] that political violence significantly reduces tax revenues/GDP. We can also cite the results of Aizenman and Jinjara [2008] that have argued that political stability is favourable for tax revenue collection, particularly VAT.

The share of agriculture is associated with a declines in tax revenue effort. Gupta [2007] and Bird et al. [2008] have found similar results. Different arguments have been put forth to establish the negative relationship between agriculture share and tax effort. For example, WAEMU countries are essentially agriculture-based, with a large part of a survival agriculture sector that may be hard to taxation. Likewise, countries are also exempted a large share of agriculture activities from taxes for political considerations. In addition, a larger share of agriculture sector may reduce the need to spend on public good and services, as public sector activities are urban-based according to Tanzi [1992].

Results show that trade openness are positively and significantly related to tax tax effort. Some previous studies have found the same results, for example Gupta, 2007, Aizenman and Jinjara, 2008, Nguyen, 2019, Ehrhart, 2013.

We also find a significant positive impact of physical capital on tax effort. This outcome implies that increased investment will surely generate more revenue for the government. Nguyen, 2019 has found the similar result. One standard deviation in labor force participation rate is associated with increasing tax revenue collection. This result can be due to the fact that as more people contribute to the production of goods and services, the proportion of households having income increases. For one, tax revenues increase through income tax channel as suggested by Gravelle and Marples [2014]. Also, many households will have a marginal propensity consumption boosting tax revenues through consumption. In fine, there will be an increase in national production and consequently in tax revenues.

Coefficient of aid intensity is linked to a rise in tax effort. The results in columns 1 and 2 consider aid intensity as exogenous and does not take into account the fact that aid may be influenced by tax effort and other factors relative, for example, to donors interest and recipient need. Correcting for this eventual endogeneity (columns 3 and 4) does not affect our results. One standard deviation in aid/GNP is associated with 0.41 in column 3 and with 0.49 in column 4. A number of studies have found the same results. For instance, our findings are consistent with that of Clements et al. [2004] who conclude on a positive effect of foreign aid on tax effort, contrary to those obtained by Bräutigam and Knack, 2004, Boone, 1996, Feyzioglu et al., 1998 and Brun et al. [2015]. These contradictory outcomes depend on the composition of the aid variable that is

used. Clements et al. [2004] indicated that the burden of future loan repayments may induce governments to higher tax collection if foreign aid comes primarily in the form of loans. In contrast, aid in the form of grants reduce the incentives to expand the tax base, through a moral hazard problem. In case of our study, aid intensity includes loans with a grant element of at least 25 percent, where a strong increasing effect on tax effort in the sample.

The findings then widely support our conceptual prediction that effective institutions will rely on a proficient tax system and a relatively high tax effort. A very strong institutional quality effect is found. In our preferred specification (column 4), 1 point increase in *executive constraints* is associated with 0.51 percentage point in tax revenues/GDP. That being so, other things being equal, countries may boost tax collection by implementing good institutions. This expected result raises an interesting implication. The low level of tax revenue collection in WAEMU Zone may arguably related to the weakness of existing institutions.

Results in columns 5, 6 and 7 of Table 2 show the first-stage regressions from which predicted institutional quality and aid values are generated for the 2SLS tests reported in columns 3 and 4. Following Bräutigam and Knack [2004] we use a set of exogenous instruments for predicting aid and institutional quality, including initial GDP per capita, initial population, infant mortality, political freedoms, colonial heritage dummies, and ethnic tensions. Bräutigam and Knack [2004] conclude that GDP per capita, population size and colonial origins are a significant predictors of aid. In addition, the evidence in Acemoglu et al. [2001] had showed a close connection between initial population density, colonial identity and creation of good economic institutions. The results in column 6 and 7 show that all exogenous instruments include are significant predictors of institutional quality and aid controlling for other factors, excepted political freedoms. But, in column 5 using ICRG index to capture institutional quality effect, political freedoms a significant predictors as well as other instruments used except initial GDP per capita.

The standard overidentification test of Stock and Yogo [2005] reveals that exogenous instruments are jointly valid, since the F-test statistic is higher than 10 in columns 5 to 7. This results indicate our exogenous instruments including initial (log) GDP per capita, initial (log) population, infant (log) mortality, political freedoms and ethnic tensions, do not significantly predict changes in tax share independently of their connection with institutions and aid (knowing that the aid is not predicted by the initial population).

Table 3 presents the results testing the impacts of political regimes on tax collection. Column 1 report ordinary least squares (OLS) regression results, using the *Polity2 score* as outcome variable, which captures the regime authority spectrum from hereditary monarchies to consolidated democracies. A positive relationship is found between tax collection and *Polity2 score* variable. This implies that, political regimes in general affects positively tax collection in the sample. This result is consistent with that of Ehrhart [2011] that has concluded on a positive and significant association between the level of democracy measured by Polity2 score and tax revenue as part of GDP.

Results from columns 2 consider the possibility that political regimes and aid levels may also be affected by tax collection, rather than the other way around. Addressing this endogeneity concern through 2SLS method, the evidence indicates that the findings remain unaltered. *Polity2 score* coefficient is larger than in the OLS regression. The *Aid* coefficient in 2SLS regression indicates that one percentage point increase in aid intensity increases the tax share by 0.32 percentage point. A one standard deviation in Polity2 score is associated with 0.26 percentage point in tax share. These

TABLE 2.: ESTIMATION OF INSTITUTIONAL QUALITY EFFECT ON TAX COLLECTION

Variables	OLS METHOD		2SLS METHOD		FIRST-STAGE REGRESSIONS		
	ICRG index (1)	Exec. constr. (2)	ICRG index (3)	Exec. constr. (4)	ICRG index (5)	Exec. constr. (6)	Aid (7)
Constant	-14.032*** (0.00)	-18.755*** (0.00)	-14.894*** (0.00)	-21.040*** (0.00)	-19.551* (0.06)	-22.229*** (0.00)	307.214*** (0.00)
Change in GDP Capita	1.847*** (0.00)	3.185*** (0.00)	-1.193 (0.19)	3.500*** (0.00)	-0.486 (0.58)	-0.656*** (0.00)	-19.090*** (0.00)
Population growth	3.763*** (0.00)	2.955*** (0.00)	6.476*** (0.00)	3.323*** (0.00)	-2.905*** (0.00)	-0.187*** (0.00)	-4.735*** (0.00)
Political Violence	-0.380*** (0.00)	-0.324*** (0.01)	-0.648*** (0.00)	-0.400*** (0.00)	0.137** (0.04)	-0.029*** (0.00)	-0.338** (0.02)
Physical Capital	0.107*** (0.00)	0.086*** (0.00)	0.088*** (0.00)	0.068** (0.01)	-0.041*** (0.50)	-0.001 (0.14)	-0.047 (0.14)
Trade Openness	-0.006 (0.81)	0.042 (0.16)	-0.052 (0.18)	0.080** (0.02)	0.058*** (0.00)	-0.007*** (0.00)	-0.061** (0.02)
Agriculture share of GDP	-0.122*** (0.00)	-0.129*** (0.00)	-0.295*** (0.00)	-0.203*** (0.00)	0.110*** (0.00)	0.006** (0.03)	0.157*** (0.00)
Labor force participation rate	0.135*** (0.00)	0.169*** (0.00)	0.202*** (0.00)	0.192*** (0.00)	0.041** (0.03)	-0.040*** (0.00)	-0.567*** (0.00)
Initial (log) population					0.791*** (0.00)	0.821*** (0.00)	-4.722*** (0.00)
Initial (log) GDP per Capita					1.078 (0.19)	1.811*** (0.00)	-25.717*** (0.00)
Ethnic Tensions					1.099*** (0.00)	0.268*** (0.00)	4.745*** (0.00)
Infant Mortality in 1990					-0.030** (0.02)	0.049*** (0.00)	-0.101*** (0.00)
Political freedoms					-0.300*** (0.00)	-0.007 (0.52)	-0.298 (0.10)
Aid	0.356*** (0.00)	0.378*** (0.00)	0.408*** (0.00)	0.497*** (0.00)			
Quality of institutions	0.301*** (0.00)	0.505* (0.06)	1.496*** (0.00)	0.512* (0.06)			
Observations	196	196	189	189	189	189	189
R-squared	0.659	0.653	0.443	0.637	0.715	0.981	0.900
Number of countries	7	7	7	7	7	7	7
Stock and Yogo F Test					693.79	29.99	45.21

NOTE.— Robust p-values in parentheses. For these estimates, Aid, ICRG index and Executives constraints are treated as endogenous. Exogenous instruments in 2SLS include initial (log) population, initial (log) GDP per capita, political freedoms, infant mortality in 1990, ethnic tensions and settler origins. Settler origins is dropped because of collinearity. Missing country in regressions is Benin since its data are not available in the ICRG database.

* Indicates significance at 10%

** Indicates significance at 5%

*** Indicates significance at 1%

results are as expected.

We also observed a number of regularities in coefficients of controls variables. Increase in GDP per capita has a positive correlation with tax revenue/GDP as expected. Population growth and labor force participation are also associated with increasing tax revenue mobilization. So does physical capital. Political violence and the share of agriculture are associated with decreasing tax effort. However, trade openness is found to be positively correlated with the tax effort as expected, but this effect is not statistically significant.

The results in the last two columns show the first-stage regressions through which we generate *Polity2 score* and *Aid* predicted values for 2SLS regression. The F-Test statistic of Stock and Yogo [2005] overidentification test supports the validity of our instruments. Exogenous instruments for *Polity2 score* and *Aid* include ethnic tensions and different measures of recipient need and of donor interest, that have been earlier used in Bräutigam and Knack [2004] as instruments of aid and quality of governance. Of these, ethnic tensions, initial infant mortality and political freedoms are a significant predictors of political regime controlling for other factors. All instruments include are significant predictors of aid.

Since various types of political regimes may be distinguished, we also wonder whether there are different patterns in democracy and autocracy. The theoretical liter-

TABLE 3.: ESTIMATION OF POLITICAL REGIME EFFECT ON TAX COLLECTION

Variables	OLS	2SLS	FIRST-STAGE REGRESSIONS	
	Column 1	Column 2	Polity2	Aid
Constant	-16.084*** (0.000)	-16.425*** (0.000)	51.132 (0.23)	42.351*** (0.00)
Change in GDP Capita	2.902*** (0.000)	3.023*** (0.000)	2.933 (0.33)	0.704** (0.02)
Population growth	3.017*** (0.000)	2.746*** (0.000)	-0.162 (0.87)	0.413*** (0.00)
Political Violence	-0.367*** (0.001)	-0.414*** (0.000)	0.159 (0.36)	-0.075*** (0.00)
Physical Capital	0.080*** (0.002)	0.057** (0.024)	-0.066 (0.10)	0.008* (0.08)
Trade Openness	0.030 (0.283)	0.034 (0.254)	0.068 (0.15)	-0.024*** (0.00)
Agriculture share of GDP	-0.112*** (0.001)	-0.099*** (0.001)	-0.098* (0.05)	-0.018*** (0.00)
Labor force participation rate	0.162*** (0.000)	0.186*** (0.000)	-0.338*** (0.00)	-0.069*** (0.00)
Initial (log) population			-0.008 (0.99)	0.572*** (0.00)
Initial (log) GDP per Capita			-4.291 (0.21)	-4.104*** (0.00)
Ethnic Tensions			-2.601*** (0.00)	0.138* (0.08)
Infant Mortality in 1990			0.176*** (0.00)	0.075*** (0.00)
Political freedoms			-1.997*** (0.00)	0.062** (0.01)
Settler origins			0.521 (0.77)	-17.717*** (0.00)
Aid	0.363*** (0.000)	0.315*** (0.000)		
Polity2 Score	0.136** (0.011)	0.258*** (0.000)		
Observations	196	189	189	189
R-squared	0.667	0.647	0.706	0.998
Number of countries	7	7	7	7
Stock and Yogo F Test			56.90	6078.18

NOTE.— Robust p-values in parentheses. For these estimates, Aid and Polity2 are treated as endogenous. Exogenous instruments in 2SLS include initial (log) population, initial (log) Gdp per capita, political freedoms, infant mortality in 1990, ethnic tensions and settler origins. Settler origins is a dummy variable equals 1 for french colonies and 0 otherwise i.e. Guinea-Bissau which is a Portuguese colony. Missing country in regressions is Benin since its data are not available in the ICRG database.

* Indicates significance at 10%
** Indicates significance at 5%
*** Indicates significance at 1%

ature suggests that democracy regimes have incentive to enhance tax collection while autocracy is associated with a deteriorating effect. Thus, we test separately the impact of democracy and autocracy regimes on tax effort. The results in Table 4 that there is a positive and significantly connection between tax revenue mobilization and democratic regimes (column 3). In contrast, autocratic score are decreasing with tax effort (column 4). Accounting for a endogeneity of democracy and autocracy, confirms these outcomes. Our findings are in line with some previous studies such as Ehrhart, 2013, 2011, Meltzer and Richard, 1981, Alesina and Rodrik, 1994, Acemoglu and Robinson, 2005 and Boix et al. [2003] which argue that democracies are likely to be more redistributive and thus lead to increase tax revenue/GDP, contrary to autocracies which have less incentive to perform tax collection. A one standard deviation in democracy score rise tax revenue/GDP of 0.4 percentage point while one point increase in autocratic score reduces tax revenue/GDP of 0.6 percentage point. Some specific controls variables have a few significant association with tax effort in the sample (columns 3 and 4). For example, one standard deviation in variables including change in per capita GDP, population growth, physical capital, and labor force participation rate is lead to increase tax revenue/GDP. However, variables such as political violence and the share of agriculture have some negative and significant effect on tax revenue/GDP. Trade openness have no significant impact.

The first-stage regressions for predicted values of endogenous variables including democracy, autocracy and aid are presented in columns 5 to 7. Exogenous instruments also jointly valid according to the F test statistics greater than 10. Ethnic tensions, infant mortality and political freedoms are a significant predictors of *democracy*. Except initial population and settler origins, the other instruments are a significant predictors of *autocracy*. In column 7, results reveal that all instruments predict significantly aid. Therefore, settler origins and initial population are not a significant predictors in columns 5 and 6. Initial GDP per capita appears to be non-significant in column 5. The implications of the validity of exogenous instruments indicate that they do not predict significantly changes in tax collection independently of their impact respectively on *democracy*, *autocracy*, or *aid*.

TABLE 4.: ESTIMATION OF VARIOUS POLITICAL REGIMES ON TAX COLLECTION

Variables	OLS METHOD		2SLS METHOD		FIRST-STAGE REGRESSIONS		
	Democracy (1)	Autocracy (2)	Democracy (3)	Autocracy (4)	Democracy (5)	Autocracy (6)	Aid (7)
Constant	-15.566*** (0.000)	-13.858*** (0.000)	-16.650*** (0.000)	-13.432*** (0.000)	20.760 (0.43)	-35.121* (0.06)	40.881*** (0.00)
Change in GDP Capita	2.666*** (0.000)	2.402*** (0.000)	2.891*** (0.000)	2.377*** (0.000)	1.314 (0.42)	-2.062 (0.16)	0.573* (0.05)
Population growth	2.609*** (0.000)	2.827*** (0.000)	2.300*** (0.000)	2.685*** (0.000)	0.060 (0.92)	0.314 (0.59)	0.481*** (0.00)
Political Violence	-0.287** (0.011)	-0.322*** (0.005)	-0.322*** (0.002)	-0.377*** (0.000)	0.001 (0.99)	-0.107 (0.23)	-0.080 (0.00)
Physical Capital	0.070*** (0.006)	0.069*** (0.010)	0.049** (0.043)	0.050* (0.057)	-0.057** (0.01)	0.046** (0.04)	0.013*** (0.00)
Trade Openness	0.034 (0.241)	0.029 (0.332)	0.042 (0.159)	0.031 (0.342)	0.052* (0.08)	-0.040* (0.08)	-0.029*** (0.00)
Agriculture share of GDP	-0.131*** (0.000)	-0.129*** (0.000)	-0.124*** (0.000)	-0.120*** (0.000)	-0.050* (0.06)	0.020 (0.49)	-0.016*** (0.00)
Labor force participation rate	0.169*** (0.000)	0.165*** (0.000)	0.193*** (0.000)	0.186*** (0.000)	-0.195*** (0.00)	0.165*** (0.00)	-0.063*** (0.00)
Initial (log) population					0.208 (0.71)	0.371 (0.38)	0.627*** (0.00)
Initial (log) GDP per Capita					-1.597 (0.46)	2.939** (0.05)	-4.023*** (0.00)
Ethnic Tensions					-1.266*** (0.01)	1.439*** (0.00)	0.183** (0.02)
Infant Mortality in 1990					0.118*** (0.00)	-0.066*** (0.00)	0.071*** (0.00)
Political freedoms					-1.152*** (0.00)	1.045*** (0.00)	0.071*** (0.00)
Settler origins					0.795 (0.49)	-0.457 (0.59)	-17.865*** (0.00)
Aid	0.347*** (0.000)	0.339*** (0.000)	0.311*** (0.000)	0.298*** (0.000)			
Autocracy		-0.323** (0.013)		-0.582*** (0.000)			
Democracy	0.214** (0.014)		0.402*** (0.000)				
Observations	179	179	173	173	173	173	189
R-squared	0.598	0.605	0.582	0.588	0.703	0.694	0.998
Number of countries	7	7	7	7	7	7	7
Stock and Yogo F Test					65.01	41.80	6878.18

NOTE.— Robust p-values in parentheses. For these estimates, Aid, democracy and autocracy are treated as endogenous. Exogenous instruments in 2SLS include initial (log) population, initial (log) Gdp per capita, political freedoms, infant mortality in 1990, ethnic tensions and settler origins. Settler origins is a dummy variable equals 1 for french colonies and 0 otherwise i.e. Guinea-Bissau which is a Portuguese colony. Missing country in regressions is Benin since its data are not available in the ICRG database.

* Indicates significance at 10%

** Indicates significance at 5%

*** Indicates significance at 1%

5. Concluding remarks

A number of recent studies have investigated the cross-country differences in tax revenues mobilization. Some of them have emphasized the role of economic institutions in tax collection while others have interested to political institutions effect. In our study we are interested in exploring how these various types of institutions are affecting tax collection in West African Economic and Monetary Union (WAEMU) Member States. We believe that two key lessons can be drawn from this analysis.

First, the main explanations of cross-country differences in tax revenues collection levels are differences in institutions. Our findings revealed a robust statistical relationship between tax collection and institutional quality, particularly when we correct for recipient need and donor interest, and for differences in economic institutions. The results are robust with the two different variables used as proxy for the quality of institutions. However, the low levels of tax collection in WAEMU countries are related to the weak quality of institutions. The weakness of the institutions in WAEMU reflects the origins of the settlers amplified by the lack of political freedom and ethnic tensions. This statement is not unhistorical. It may appear illogical if we do not refer to the West African history. Prior to colonization, there were already empires from which Ashanti, Dahomey, Manding, Mossi and Songhai empires that were organized in such a way as to extract resources from the majority of the population for the profit of a minority. In reality the settlers simply inherited these existing institutions in order to extract resources easily, without any worries to develop effective institutions that can enable colonies to take over the path of economic development. That is why, for long periods of time, institutions have not contributed significantly to increasing compliance to the rule of law, reducing corruption, building a better bureaucracy or constraining the decisions making powers of chief executives. Investigating the causes of low tax revenue mobilization involves understanding the instruments that can be used to strengthen the quality of institutions.

Second, the status of political regimes also explains the differences in the levels of tax collection across countries. Political regime in general improves tax collection, although the results differ depending on the type of political regime. Democracies collect much more tax revenue than autocracies. Yet, the results remain consistent after controlling for predictors of political institutions and aid intensity. Ethnic tensions and lack of political freedom weakens democratic political institutions and strengthens autocratic ones.

The evidence is at most evocative. It does suggest that, from the idea of understanding the cross-country differences in tax revenue collection, it is unavoidable for West African Economic and Monetary Union countries, to build strong institutions and establish more democratic regimes. Hence, our investigation poses challenging issues for WAEMU countries. Constantly, countries with better economic, social and political institutions are better perform tax collection than the others. Tax revenues raise because strong institutions and democratization require more constraints on the power of chief executives, a better bureaucracy and quality of governance, increase compliance to the rule of law, reduce corruption, build a fiscal social contract between taxpayers and governments, and all this, in a context of a large political freedoms and ethnic ties consolidation.

Overall, our evidence confirms that differences in political and economic institutions appear to be the strong factor underlying the differences in tax revenue collection across country. Nevertheless, until today, WAEMU Zone still one of the parts of world where institutional and political reforms are urgently required with no debate. The

ongoing sociopolitical and economic conflicts that persist in this zone bear witness to this fact. Having said that, our analysis does not appear to be consistent with the belief of tax blessing in some countries or tax curse in others. The better institutions, the better democracies, the better tax collection will be.

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Appendix A. Conceptual definitions and scores of variables of interest

Variables	Conceptual definitions
Bureaucracy quality (0-4), ICRG	High scores are assigned to countries where the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services, and which are autonomous from political pressure and to have an established mechanism for recruitment and training.
Law and Order (0-6), ICRG	Is a single component of two elements scored from zero to three points. “Law” is an assessment of the strength and impartiality of the legal system while “Order” is an assessment of popular observance of the law.
Control of corruption (0-6), ICRG	Is an assessment of corruption within the political system that distorts the economic and financial environment, reduces the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability, and generate instability in political system.
Measures of institutions	
ICRG insitutional quality index	Is the sum of the three ICRG indicators above and is an 16 point scale, including bureaucracy quality, law and order, and corruption in government. Higher scores indicates good quality of institutions and lower scores indicates bad quality of institutions.
Executive constraints (1-7), Polity IV	Refers to the extent of institutionalized constraints on the decisionmaking powers of chief executives, whether individuals or collectivities. This variable ranges from 1 to 7 where higher values equal a greater extent of institutionalized constraints on the power of chief executives.
Measures of Political Regimes	
Polity2, Polity IV	This variable is a modified version of the Polity variable added in order to facilitate the use of the Polity regime measure in time-series analyses. It modifies the combined annual POLITY score by applying a simple treatment, or “fix,” to convert instances of “standardized authority scores” i.e. -66, -77, and -88. (see Marshall et al., 2018 for details of the treatment). The variable ranges from -10 to +10.
Democracy (0-10), Polity IV	This variable is a measure of the degree of democracy and is an 11-point scale which is derived from codings of the competitiveness of political participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive. (see Marshall et al., 2018 for details of the coding).
Autocracy (0-10), Polity IV	This variable is a measure of the degree of autocracy and is an 11-point scale which is derived from codings of the competitiveness of political participation, the regulation of participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive. (see Marshall et al., 2018 for details of the coding).

Appendix B. Summary statistics

Variables	N	Mean	Std. Dev	Min.	Max.
Change in Tax share	224	5.76	3.65	-2.76	10.96
Change in ICRG index	196	-1.33	2.14	-4.75	1.00
Executive Constraint	224	4.08	0.94	2.27	5.00
Polity2 Score	224	2.23	4.71	-8.00	8.00
Democracy	206	4.24	2.87	0.00	8.00
Autocracy	206	1.79	2.11	0.00	8.00
Aid share of GNP	224	12.31	6.63	5.55	28.05
Initial Tax Share	224	10.27	5.01	2.79	19.15
Population growth	224	2.84	0.46	1.83	3.91
Change in GDP Capita	224	0.33	0.33	-0.03	1.01
Political Violence	196	7.90	1.58	3.33	11.00
Physical Capital	224	18.64	7.93	3.92	49.52
Agriculture share of GDP	224	31.87	9.88	11.98	61.42
Trade Openness	224	34.25	8.27	17.84	68.32
Labor force participation rate	224	71.53	9.36	47.65	85.10