



## Taxes for the People or for the Government? A Global Governance Perspective

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### Abstract

The paper investigates the determinants of taxes collected net of public services for a sample of 104 countries from all over the world over 1996-2016 period. Starting from the assumption that what really matters for the taxpayer is the tax money that actually return to the society, after paying the cost of government, we introduce the concept of taxes collected net of public services as the difference between taxes to GDP ratio and general public services expenditures to the GDP ratio and investigates its determinants from governance perspective. The main determinants looked upon were worldwide governance indicators (WGI): control of corruption, government effectiveness, political stability, regulatory quality, rule of law and voice and accountability, taken from World Bank surveys. As control variable we used GDP per capita annual growth rate. We include year fixed effects in order to control for global economic crisis, and also country fixed effects to control for unobservable country-level factors that are constant over the sample period. The analysis follows the World Bank country classification on level of development: low income, lower middle-, higher middle income and high-income countries. The results show that the rule of law governance characteristic affected the taxes net of public services the most, both in terms of economic effect and of countries coverage, while the control of corruption and regulatory quality were found significant only for lower-middle income countries and low-income countries respectively. Policy recommendations were made accordingly.

**Keywords:** taxes, general public services, governance indicators.

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## 1. INTRODUCTION

“Taxes Are What We Pay for a Civilized Society” is engraved on the IRS Building in Washington D.C. These words presumably authored by Supreme Court Judge Oliver Wendell Holmes, Jr. are forgotten more often than it should when people are talking about taxes. In spite of getting access to education, healthcare, justice, infrastructure and other public services, people are always discontent about paying taxes. It is no wonder why this is happening since taxes represent money that flow out of our pockets without receiving nothing perceivable in return. Moreover, part of tax money goes for paying the government sector, of which a large share represents the tax collection process itself. In other words, not the entire amount of tax money goes to “paying for civilization”, but also for upkeeping the government sector itself, including its tax collection component.

Starting from the assumption that the taxpayer is only interested in what she/he gets back in terms of public services that represent a direct benefit for her/him, the paper assesses the share of tax money net of public services and looks upon its determinants. In doing so, we computed what we called total tax revenues net of public services (TTRN) by subtracting the general public services expenditures (GPS) to gross domestic product (GDP) ratio from total tax revenues (TTR) to GDP ratio. The resulting number provides a very informative figure for the tax money that actually go for public services for the direct benefit of the taxpayers. We made use of publicly available data concerning TTR to GDP ratio and general public services expenditures GPS to GDP ratio according to the classification of the functions of government (COFOG), thus assuring comparability over the total sample.

Ranking countries according to TTR ratio has a well-established history and much literature has been written about it. TTR ratio reflects the money that goes into the government pockets, part of this money being used for paying for the government itself, and part being used for paying for the public goods for the direct benefit of citizens. However, our TTRN figure brings a new perspective on the complex relationship between taxes and public expenditures, by providing a comprehensive image of taxes that actually go for public goods, thus allowing for efficiency assessment with regard to the government performance. Every country has a bureaucratic apparatus that includes not only executive and legislative organs, but also its financial and fiscal affairs, external affairs, general public services and related activities, etc. Minimizing these expenditures means more tax money for other functions of the government that really matter for the taxpayer. Moreover, in the context of ever-increasing budget deficits, this also means less government debt and correspondingly less interest expenses, thus ultimately meaning more money for the benefit of the taxpayer.

Consequently, we differentiate among similar studies by looking upon not on tax money that go to the government, but on the tax money that return to the society, thus bringing a new perspective in the field that potentially could reshape the debate around taxes and public services. By doing so, we link government performance in terms of maximizing tax revenue collection to government efficiency in terms of minimizing its upkeeping costs in a very simple, but informative manner that could change the taxpayer perspective, making her/him more educated in this particular matter. Moreover, if a country which has been successful in collecting a large share of GDP as tax money at the expense of excessive bureaucratic costs may have less money available for providing public services to its citizens compared to a country which gathered less tax money as a share of GDP, but with significantly less costs. Detecting such cases is in itself important, since it discloses government inefficiency issues,

thus making both the governments and the citizens more responsible and educated in this field. This issue is even more important during present hard times when countries around the world are all struggling in their fight against the COVID-19 pandemic.

Moreover, our paper investigates the determinants of TTRN by looking upon country-specific characteristics that estimate the quality of governance summarized in World Bank Worldwide Governance Indicators, namely voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, control of corruption. Therefore, our paper brings several contributions to the field: i) it looks upon taxes net of general public services as a metric that better captures the public goods for the benefit of the citizens; ii) it investigates the determinants of taxes net of public services by looking upon country-specific governance indicators in an international setting over a 18 years period.

The rest of the paper is organized as follows: [Section 2](#) reviews the literature concerning the determinants of tax revenues and government expenditures, as well as the determinants of tax performance from governance perspective, [Section 3](#) discloses the data and methodology, [Section 4](#) presents the results and the main findings, while [Section 5](#) concludes.

## 2. LITERATURE REVIEW

### 2.1 Determinants of tax revenue

In the empirical studies, several variables have been considered as determining factors of tax revenues (measured as the ratio tax revenues to GDP), such as: per capita GDP, the sectorial composition of output, the degree of trade and financial openness, the ratio of foreign aid to GDP, the ratio of overall debt to GDP, a measure for informal economy. Also, some institutional factors such as degree of political and economic stability, civil liberties, political rights and corruption are analysed as potential determinants of revenue performance.

According to [Aghion \*et al.\* \(2016\)](#), “taxation is important for many aspects of the economic and institutional environment: tax revenues fund public infrastructure, education and schools, legal systems, and much more”. Companies often rely heavily on these public goods, and higher taxation (in the case of European Nordic countries) can stimulate economic growth if it supports the stronger provision of public goods because it increases the expected returns to entrepreneurial efforts.

The empirical findings regarding the determinants of tax revenue have been mixed because of their sensitivity to the set of countries (according to their different level of development), the methodology employed and the period surveyed.

A representative paper in this field is that of [Gupta \(2007\)](#), who investigated the revenue performance of 105 developing countries for a period of 25 years. He divided the analysed variables in three different categories: structural variables, institutional variables and policy variables. He found that several structural factors like per capita GDP, share of agriculture in GDP and trade openness are statistically significant and strong determinants of revenue performance. He also analysed the impact of foreign aid and foreign debt on revenue mobilization and the results obtained indicated that although foreign aid improves revenue performance significantly, debt does not. Among the institutional factors (corruption, law and order, government stability, political stability and economic stability), he found that corruption had a significantly negative effect on revenue performance especially for low-income and middle-income countries, but not for high-income countries.

Political and economic stability also affect revenue performance, but only across certain specifications. The last group of variables included the various sources of tax revenue as a percentage of revenue, the highest corporate and income tax rate, and average tariffs and regarding this, he found that countries that depend on taxing goods and services as their primary source of tax revenue (low-income countries), tend to have poorer revenue performance. On the other hand, countries that put greater emphasis on taxing income, profits and capital gains (high-income countries), perform better.

A similar investigation has been conducted by [Angeles Castro and Ramirez Camarillo \(2014\)](#) who analysed the impact of economic, structural, institutional and social factors on tax revenue, across 34 countries (middle-income and high-income countries) from the Organisation for Economic Cooperation and Development (OECD) over the period 2001-2011. Their results showed that gross domestic product per capita, the industrial sector, and civil liberties have positive impact on the dependent variable (total tax revenue as a percentage of GDP), while the agricultural sector and the share of foreign direct investment in gross of the dependent variable enters positively in the equation and its effect is larger in high income countries. Also, the results are different across countries regardless the level of development of the economies.

Various empirical studies have been performed to investigate the determinants of tax revenues. There are several studies aiming at determining the tax revenue factors by countries. In this case we can mention the research of [Karagoz \(2013\)](#). In his study, [Karagoz \(2013\)](#) determined the effective factors on tax revenues, for the case of Turkey over the period of 1970-2010, with special attention to the sectorial composition of the economy. The sectorial composition has an important influence on the tax revenue, because some sectors of an economy are more amenable to taxation and generate different taxable surpluses. By applying time series regression analysis and using annual data, the estimation results indicated that tax revenues in Turkey are significantly affected by agricultural and industrial sector share in GDP, foreign debt stock, monetization rate of the economy and urbanization rate whereas the sign of the agricultural sector's share is negative as expected. Contrary to [Gupta \(2007\)](#), [Karagoz \(2013\)](#) highlighted that openness to foreign trade has no significant impact on tax revenues in Turkey.

Using a panel of 39 sub-Saharan African countries during 1980-2005, [Addison and Levin \(n.d.\)](#) analysed a set of determinants that can potentially influence tax revenues such as the tax base, structural factors, foreign aid and conflict. The results of their econometric regression showed that the overall tax to GDP ratio is higher in more open and less agricultural dependent economies, less populous and peaceful countries.

For the case of Sub-Saharan African countries is notable the study of [Stotsky and Wolde-Mariam \(1997\)](#). They examined 43 sub-Saharan African countries over the period 1990-1995 in order to measure the determinants of the tax share in GDP and to construct a measure of tax effort. They obtained that the shares of agriculture in GDP and mining in GDP are both negative and significantly related to the tax share, and that the export and import shares in GDP (as a measure of economy openness) are both positive and significantly related to the tax share, which means that import or export shares are an important determinant of tax share, whereas per capita income is not significant. As novelty, [Stotsky and Wolde-Mariam \(1997\)](#) investigated the impact of International Monetary Fund (IMF) programs on the tax share and they found that there is no strong link between IMF

programs and tax shares, on average, because is difficult to aggregate the objectives of IMF programs into a simple variable for use in the analysis.

Dioda (2012) examined the determinants of tax revenue for 33 Latin American countries during the period 1990-2009. His results suggest that for Latin American countries the main determinants of tax revenue are civil liberties, female labour force participation, the age composition of the population, the degree of political stability, the level of education, the population density and also the size of the shadow economy. Among economic variables taken into consideration in the research, the econometric results indicated that GDP per capita and openness of the economy are positively related to tax revenue in a significant way. Instead, the share of agriculture over GDP and the size of the shadow economy even significant are negatively associated with tax revenue. Concerning the political variables, he found that the countries with a higher degree of civil liberties and more political stability are recording higher tax revenue. Regarding the socio demographic variables, his results indicated that the level of education, female labour force participation and the population density have a positive and significant impact on tax revenue. On the other hand, the level of urbanization and the rate of population growth were not significant.

In another panel data study, Pessino and Fenochietto (2013) studied the determinants of tax revenue efforts and tax capacity of 113 countries over the 1991-2012 period. They have found that the level of development (measured by per capita GDP), trade (imports and exports as percent of GDP), and education (public expenditure on education as a percent of GDP) have exert a positive and significant influence on tax revenue (as percent of GDP). The study also indicated that inflation (CPI), income distribution (GINI coefficient), the ease of tax collection (agricultural sector value added as a percent of GDP), and corruption have negative effect on tax revenue (as percent of GDP) performance of developing countries. The authors emphasized the fact that most European countries, with a high level of per capita GDP and education, open economies (particularly since the creation of the customs union), low levels of inflation and corruption, and strong policies of income distribution, are near their tax capacity. This is particularly the case for Austria, Belgium, Denmark, Finland, France, Italy, and Sweden (with tax efforts higher than 90%) where, probably, the demand for public expenditure is a crucial determinant of the higher level of tax revenue. Considering how near these countries are to their tax capacity, they appear to be very efficient in collecting taxes (with low levels of evasion).

In 2018, Sharma and Singh (2018) tried to identify the determinants and responsiveness of tax revenue performance for the case of India. Their investigation covered a period of 25 years (1991-2015) and using a multiple regression analysis they tried to assess the Indian income tax performance. In their research, they included thirteen variables encompassing structural (labour force participation rate, GDP per capita, currency with the public, FDI inflows, trade openness, population above 65 years of age, share of agriculture sector in GDP), macro-economic/growth effectors (GDP growth rate, share of service sector in GDP, inflation, political stability) and governance dimensions of the economy (fiscal deficit and income inequality). Their results revealed that the structural dimension is found to be significantly while growth effectors and fiscal inclusivity were found insignificantly impacting the income tax revenue. The labour force participation rate, currency with the public, fiscal deficit, political stability, share of agriculture and service sector in GDP is negatively significant in affecting income tax revenue. On the other hand, per capita income,

economic growth, foreign direct investment inflows, proportion of population above 65 years of age and trade openness are positively associated with the income tax revenue.

To summarize, most studies find that per capita GDP (which is considered the best proxy for the overall level of development) and degree of openness is positively related to revenue performance, but a higher agriculture share lowers it. Also, in the mentioned papers, the authors included governance variables such as corruption, absence of violence, which we use as indicators in our study.

For the scope of our research, in which we introduce the concept of taxes collected net of public services and investigate its determinants from a governance perspective (control of corruption, government effectiveness, political stability, regulatory quality, rule of law and voice and accountability) the findings of [von Haldenwang and Ivanyina \(2012\)](#) are of particular relevance since they investigated the countries' tax performance considering different determinants, among which governance characteristics. Their sample consists of 189 countries grouped into three categories (average, high and low tax performers) and the analysis covered the period 1997-2008, including observations for 2007 and 2008 in order to highlight the distorting impact of the world economic crisis on the public finances of many developing and developed countries. Regarding their assumption that concerns the governance dimension of revenue mobilization, they consider that "different societies have different views on what states should do and how much they should cost". Thus, societies with low levels of governance are typically not in a position to choose and implement a tax system from a common interest perspective, because in these cases they assume that there are some powerful groups which are imposing a tax system according to their particular interests. They analysed four indicators from the six Worldwide Governance Indicators (WGI). The results obtained regarding WGI Voice and Accountability index suggests that only a minority of the low tax performers may have decided on their tax systems from a common interest perspective. From the WGI Government Effectiveness Index they found that only a few low tax performers have a capable public sector because thirteen of forty countries achieve scores above zero. Testing two other WGI indices, Control of Corruption and Regulatory Quality (as proxies for public-sector capability), they observed little difference – the correlation between these indices and Government Effectiveness is almost perfect. This finding allowed them to affirm that control of corruption is a major factor for tax administration and tax compliance. Also, they assumed that lower levels of governance to be more conducive to lower tax ratios.

[Daude et al. \(2012\)](#) also tried to answer to the question "Why do people pay taxes?" In their study, they offer two arguments: first, probably because they are forced to comply with regulations and secondly, at a deeper level, citizens pay their taxes in exchange for public services and goods. At the same time, they considered that this exchange legitimates the political equilibrium and the state itself. However, in developing countries, contrary to developed countries ([Aghion et al., 2016](#)), the resulting equilibrium is frequently characterised by low levels of tax revenues and consequently insufficient public goods and services (in quantity and quality).

Institutional aspects such as corruption, transparency and accountability of the public sector have also been found to have a significant impact on tax effort. In this context, we mention the paper of [Bird et al. \(2007\)](#) who analysed the tax effort for Latin America countries (which are developing countries) using cross-section data with mean values for the period of 1990-1999. They consider that developing countries need to spend more on public

infrastructure, education, health services and consequently they need to increase their tax effort if they want to grow and be less poor. After applying the model, they obtained significant results for corruption and voice/accountability which allowed them to affirm that in developing and transition countries, the mentioned institutional variables have an “important role in the determination of the level of tax effort”. These results support their conclusion that improving institutions, such as enhancing voice or accountability and reducing corruption, increase the societies’ willingness to tax themselves in order to have sufficient and better public goods.

Bird *et al.* (2008) extended the previous research from developing countries of Latin America to 25 high income countries (as defined by the World Bank) for two time periods, namely 1998 and 2000 (unbalanced panel). Both variables, control of corruption and voice and accountability are statistically significant, having impact on tax performance but it is interesting the fact that the impact of voice and accountability is stronger than the impact of corruption. Thus, in their paper, Bird *et al.* (2008) showed that high income countries have also the potential of improving their tax performance through improving their institutions.

From a governance perspective, Daude *et al.* (2012) consider that questions related to institutional aspects are probably the most relevant ones. These aspects have also been analysed by Daude and Melguizo (2010) for the case of Latin America and D’Arcy (2011) for Africa. Daude and Melguizo (2010) empirically analysed the relationship between fiscal policy, social mobility and democratic consolidation in Latin America and the Caribbean, using the 2007 and 2008 rounds of the regional Latino-barómetro survey. The authors focused on this region because is characterised by very high levels of income inequality (the highest in the world), and relatively low levels of fiscal revenues and redistribution. Their results confirmed that perceptions regarding the quality of public services (from the more global ones, to the more specific) matter for the willingness to pay taxes: a lower level of perceived corruption reduces the percentage of citizens who consider taxes too high; similarly, a high degree of satisfaction with the functioning of democracy increases the number of citizens who think that good citizens should pay taxes and reduces those who think that taxes are too high. The results obtained highlights the role of a link between better public services, better institutions, and higher tax morale, in line with the results of Torgler (2005), who consider that the relationship of citizens with their government is not just a matter of coercion, but also of trust.

In a study focused on 17 African states, D’Arcy (2011) refereed to the assent to tax and investigated what African citizens expect from their institutions of governance. Regarding corruption, D’Arcy (2011) concluded that corruption among tax officials is not a factor in the citizen’s assent to tax and they need to develop the research for more precisely results. However, the citizens give their assent to tax if the state is seen as addressing needs and improving services over time.

Important findings with respect to the relationship of tax morale and democracy and government have been assessed by Torgler (2003) for transition countries from Central and Eastern Europe (CEE) and also for former Soviet Union (FSU), Torgler (2004) for Asia, Torgler (2005) for Latin America, Torgler (2011) and Hug and Sporri (2011) for Eastern Europe.

Beginning from the assumption that “tax morale and tax compliance are important factors for guaranteeing an adequate provision of public goods” (Torgler, 2005), Torgler (2003, 2004, 2005, 2011) found that trust in government and the legal system and the satisfaction with national officials have a significant positive effect on tax morale. The

results are available for all the analysed countries and regions, even there are difference between countries regarding the level of tax morale: high tax morale values for Japan, China and India; lower tax morale found in the Philippines, in South Korea and in Taiwan; lower tax morale in CEE and FSU countries, but an interesting fact is that in CEE countries tax morale is higher than in FSU countries and this difference has increased during the transition process from centralized/planned economies to capitalism.

In 2011, [Torgler \(2011\)](#) prepared an exhaustive report for World Bank based on his previous research in order to provide an international overview regarding tax morale in tax compliance on the basis of different case studies, such as the case of Spain (as European country), the case of Russia (as transition country), the case of South Africa and Botswana (as developing countries). While he highlighted the differences between Central Eastern and former Soviet Union countries, he also stressed out the importance of accountability, democratic governance, efficient, and transparent legal structures and therefore trust within the society to enforce tax compliance and tax morale.

## 2.2 Determinants of government expenditure

In order to determine the variables that affect taxes net of public services, we review also the literature which analysed the determinants of government expenditure. Most of the studies refers to the total expenditures, but for our study is important to highlight the determinants of general public services expenditure.

In this context, we can mention the study conducted by [Sanz \(2011\)](#). The research of [Sanz \(2011\)](#) is the first study on the effects of fiscal consolidation on the composition of government expenditure by functions for the OECD - Classification of the Functions of Government (COFOG), which considers the following 11 components of government expenditures (in order of average magnitude in the OECD): social security; education; health; general public services; economic affairs (distinguishing between transport and communication and other economic affairs); defence; public order and safety; housing and community amenities; recreation, culture, and religion; and environment protection. In his study, [Sanz \(2011\)](#) investigated the relationship between the components of government expenditure and the government size during the period 1970-2007 for a sample of 25 developed countries in order to highlight how fiscal discipline might influence public spending composition. He found that health, public services, and environment protection react proportionally to changes in the size of government expenditure, because when budgetary cuts occur, population reduces the allocation to pure public goods such as public services. He also found evidence of the elderly people increasing public services and defence spending, showing a preference for security-related functions of government spending. But fiscal adjustments do not affect immediately the most rigid category, represented by defence and public services, functions in which spending is to a large extent pre-committed. His results are also consistent with governments reducing pure public goods, such as public services, economic services, defence, and cultural affairs while protecting merit goods, such as education and health expenditure, when facing budgetary cuts. As pure public goods are less visible than merit goods, by reducing the former, governments may be minimizing the political costs of fiscal consolidations.

Using a panel data set for 111 developing countries from 1984 to 2004, [Shonchoy \(2010\)](#) conducted an investigation regarding the determinants of government expenditure. In

his study take into consideration different categories of variables, such as base variables (aid per capita, total debt as % of GDP), openness as % of GDP, GDP per capita and log of population), demographic variables, fractionalization variables (ethnic fractionalization, linguistic fractionalization and religious fractionalization), political institutional variables (years of office, number of government seats, number of opposition seats, military officers, legislative election, executive election, nationalist party, regional party, and polity index - a standard measure of governance on a 21-point scale ranging from -10 (dictatorial) to +10 (consolidated democracy)); governance variables (political stability and absence of violence, control of corruption, government effectiveness, regulatory quality, rule of law and corruption perception index). The author concluded that political and institutional variables as well as governance variables significantly influence government expenditure. Corruption is found to be negatively influencing the government consumption expenditure in the developing countries. Demographic patterns of the population is found to have considerable impact on government consumption expenditure; having a positive association with younger population and a negative association with older population. On the contrary, size of the economy and fractionalization are found to have significant negative association with government expenditure. In addition, the study obtain evidence that public expenditure significantly decrease under military dictatorship compared with other form of governance.

[Shelton \(2007\)](#) tested several leading hypotheses on determinants of government expenditure. Using Government Financial Statistics data from the IMF covering over 100 countries from 1970-2000, the author examined the cross-sectional and inter-temporal variation in government expenditure and both individual categories of expenditure (such as defence, education, health care) and different levels of government (central, and local). The core exercise of this paper was to regress various measures of government expenditure on a vector of explanatory variables (openness, country size and fragmentation, income, demographics, institutions of government, income inequality and political rights) in a cross-country panel. From these variables, country size (population - larger and smaller countries) and fragmentation (ethnic fragmentation) explain the evolution of general public services expenditure. As [Shelton \(2007\)](#) showed in many categories of public spending – education, healthcare, public order and safety, and general public services – the decrease in central government expenditure associated with a larger population is partially mitigated by an increase in expenditure at the local level. The effects of country size on transportation, general public services, and public order and safety seem to be less about decentralization and more about scale effects.

[Kotera and Okada \(2017\)](#) investigated the democratization as determinant of the size and composition of government expenditure. They analysed a sample of 125 countries between 1972 and 2010. Democratization is considered as a dichotomous variable and is defined as one in the subsequent years after a country is democratized and zero otherwise (this variable is zero if a country has always had a democratic or autocratic regime). Their study is important because they focused not only on the total expenditure (as a share of GDP) but also on the composition (six subcategories of expenditure, namely expenditure on health, education, social protection, defence, economic affairs, and general public services) and they used dichotomous indices of political regimes rather than score indices. Their findings highlighted that while democratization does not have a significant impact on total expenditure, it increases expenditure on health and decreases expenditure on defence, although the result of the instrumental variables estimation is not significant. In addition,

Kotera and Okada (2017) took into consideration the time-varying effect of democratization and they observed that defence expenditure starts decreasing immediately after a regime change and health expenditure increases in the medium and long run, while they do not significantly vary before a regime change. In the case of the expenditure on general public services, they noticed that democratization negatively impacts on general public services, which decreases in all subperiods. Democratization significantly decreases the expenditure on general public services before and after regime transition. The interpretation of this result is somewhat difficult, but this may reflect the chaos in general governmental functions in the midst of a regime transition, given that the expenditure on general public services includes expenses for financial and fiscal affairs and diplomacy. On the other hand, partial democratization increases the expenditure on general public services only (has a positive effect only on the expenditure on general public services. This finding suggests that partially democratized countries, most of which are former socialist and African countries democratized in the 1990s, may hardly change their policies even after democratization. Thus, while focusing only on total expenditure does not uncover the effects of democratization, considering detailed categories of government expenditure enables us to understand how democratization influence governments' behaviours and expenditure.

Other variable considered to be evaluated in order to have impact on general public services is represented by corruption. In his study, Mauro (1998) investigated if corruption affects the composition of government expenditure which may have important implications. He found that corruption lowers expenditure on education, and perhaps on health, but not significant effect on general public services.

The same results were obtained by d'Agostino *et al.* (2016) which analysed the effect of both corruption and government spending on growth. He started the analysis with an endogenous growth model and extended it to account for the effects of corruption on components of government spending, namely military and investment spending. Thus, using model simulations on a comprehensive panel of 106 countries, no impact of corruption was found on general public services.

The existing literature provides mixed results concerning the determinants of government expenditure. The findings of Maluleke (2017) suggest that the government expenditure relationship with its determinants is significantly positive and negative. Most of the studies concluded that economic growth (per capita GDP), revenue, urbanisation and trade openness significantly have a positive effect on government spending. The results differ based on the country, methodology used, and proxy of the variables used.

However, scanning the literature we did not found the concept that we introduced as "taxes collected net of public services" defined as the difference between taxes to GDP ratio and general public services expenditures to the GDP ratio, but we found literature regarding the operating costs of tax systems defined by Evans (2008) as "the costs to the government (ultimately borne by taxpayers) of administering and collecting the taxes (usually referred to as "administrative costs". For Evans (2008), the operating costs are represented by administrative cost and compliance costs. After reviewing the literature in the field, Evans (2008) highlighted the fact that the relationship between these two types of costs can be direct (compliance costs and administrative costs move in the same direction) or inverse, and this depend upon different factors, including relevant legislation, the type of tax and tax payers involved, and other aspects of the political and economic culture

Dziemianowicz (2017) analysed the operating costs of tax systems in his paper and named them “tax transaction costs”. In his study, Dziemianowicz (2017) identified the elements of tax transaction costs as represented by tax collection costs (tax compliance costs and tax administrative costs) and excess burden of taxation. He investigated in detail the tax administrative costs in Poland in order to assess the effectiveness of the Polish tax system compared to that of other OECD countries. He found that the tax collection administrative costs in Poland are high, being one of the most expensive in the European Union and one of the highest among the OECD countries, and showing the low efficiency of the Polish tax administration which is affecting the tax money going to the people for public services.

Another study (Nemec *et al.*, 2015) investigated only the administrative costs of taxation in Slovakia during the period of 2004 and 2011 and the results showed that in Slovakia the costs of tax administration are relatively high compared to other developed countries, including its neighbours (the Czech Republic, Hungary and Poland). Nemec *et al.* (2015) considered their results are caused by subjective – speculative factors that will be addressed by ongoing tax system reforms.

Without an efficient tax system, governments cannot provide even the basic social services and infrastructure. Thus, understanding the determinants of countries’ fiscal performance has become a central topic in tax research.

von Haldenwang and Ivanyina (2010) performed an exhaustive investigation to assess the tax performance of developing countries for two additional observation periods, 1997–1999 and 2001–2003. With respect to the main determinants of total tax revenues net of public services that we considered in our study, namely the worldwide governance indicators (WGI) (control of corruption, government effectiveness, political stability, regulatory quality, rule of law and voice and accountability), von Haldenwang and Ivanyina (2010) report interesting results. For example, the combined picture produced by the Polity IV democracy index and the Voice and Accountability Index suggests that low tax performing countries are less democratic, regardless of income group, being only four low tax performers with a positive rating in both indices: Panama, India, the Dominican Republic and Timor-Leste. Regarding the government effectiveness index, von Haldenwang and Ivanyina (2010) obtained that only a few low tax performers have a public sector capable of implementing public policies in an orderly and transparent way because 13 of 40 countries achieve scores above the world mean. In the case of Corruption and Regulatory Quality, as possible proxies for public sector capability, the research of von Haldenwang and Ivanyina (2010) showed little difference – the correlation between these indices and Government Effectiveness were almost perfect. Thus, they conclude that corruption is a major factor for tax administration and tax compliance.

### 3. DATA AND METHODOLOGY

Data used in this paper comes from the World Bank. We used and compiled various sources of World Bank data, especially data on Worldwide Governance Indicators (WGI) and data on total tax revenues, general public services expenditures, GDP and GDP growth rate, inflation.

As dependent variables we used the difference between total tax revenue and general public services, both expressed as a share of GDP. This metric reflects the tax revenues that

actually go to the society after all costs of government has been paid for. The data were taken from World Bank.

As independent variables we used the Worldwide Governance Indicators (WGI): control of corruption (CC), government effectiveness (GE), political stability and absence of violence (PV), regulatory quality (RQ), rule of law (RL) and voice and accountability (VA) as defined by Kaufmann *et al.* (2010). According to the authors, the six governance indicators tackle three areas of governance, as presented in Table no. 1.

**Table no 1 - The key areas of governance and the corresponding governance indicators**

Key areas of governance	Governance Indicators
The process by which governments are selected, monitored, and replaced	Voice and Accountability Political Stability and Absence of Violence/Terrorism
The capacity of the government to effectively formulate and implement sound policies	Government Effectiveness Regulatory Quality
The respect of citizens and the state for the institutions that govern economic and social interactions among them	Rule of Law Control of Corruption

Source: Kaufmann *et al.* (2010)

*Control of Corruption* (CC) measures “perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as “capture” of the state by elites and private interests” (Kaufmann *et al.*, 2010). The greater the indicator, the smaller the corruption is. Less corruption translates into better collection of taxes and less public expenditures for general public services, therefore we expect a positive effect on our total tax revenue net of public services.

*Government Effectiveness* (GE) measures “perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies” (Kaufmann *et al.*, 2010). The greater the indicator, the greater the government effectiveness is, therefore our expected sign is also positive.

*Political Stability and Absence of Violence* (PV) measures “perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism” (Kaufmann *et al.*, 2010). The higher the indicator, the greater the political stability is. This means higher predictability in tax collection and less public money for preserving the government authority, which ultimately leads to a positive effect on our dependent variable.

*Regulatory Quality* (RQ) measures “perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development” (Kaufmann *et al.*, 2010). The higher the indicator, the greater the country's regulatory quality is. This translates into solid businesses that pay taxes on a regular basis, thus inflicting a positive effect overall on the total tax revenues net of public services.

*Rule of Law* (RL) measures “perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence” (Kaufmann *et al.*, 2010). The greater the indicator, the higher the rule of law is. With respect to the RL variable, the expected sign is ambiguous since a higher level of RL means less tax

evasion, and thus more taxes collected, on one hand, but, on the other hand, also requires more money spent for general public services in order to enforce the law.

*Voice and Accountability* (VA) measures “perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media” (Kaufmann *et al.*, 2010). Higher levels of this indicator reflect stronger voices and higher accountability of citizens. Since the effects on our dependent variable are ambiguous, we do not have any expectation regarding the sign of this variable.

Although subject to criticisms, of which the most important is that they rely on subjective perceptions rather than objective measures, these indicators reflect in an unitary manner various characteristics of governance, thus allowing comparisons over time and over countries, being up to date, the most relevant and widely accepted governance indicators.

As control variable, we used GDP per capita annual growth rate, for which, given the character of automatic stabilizers of taxes, we expect a negative sign.

The original sample covers 214 countries and territories, spanning from 1996 to 2016. 1996 is the first year for which data on WGI became available. Initially, WGI were reported once every two years (1996, 1998, 2000) and annually from 2002 onwards. Therefore, our data covers 18 years: 1996, 1998, 2000 and 2002-2016. Many of countries and territories (77) did not report any data neither for TTR, neither for GPS, while others (33) report these data for less than 7 years. Therefore, in order to have a reliable panel data set, we restrict our data to countries which have minimum 7 years of reported data concerning the dependent variable, which makes the final sample to contain 104 countries.

Descriptive statistics is presented in Table no. 2.

**Table no. 2 – Descriptive statistics**

stats	N	mean	sd	min	p1	p25	p50	p75	p99	max
TTRN	1554	12.57	9.09	-20.63	-6.17	6.10	12.82	18.02	37.38	73.47
CC	1554	0.34	1.07	-1.65	-1.44	-0.55	0.21	1.25	2.39	2.47
GE	1554	0.43	0.98	-1.60	-1.43	-0.41	0.37	1.25	2.21	2.44
PV	1554	0.14	0.99	-2.81	-2.42	-0.54	0.37	0.94	1.58	1.76
RQ	1554	0.43	0.94	-2.34	-1.64	-0.29	0.47	1.22	1.97	2.26
RL	1554	0.36	1.00	-1.90	-1.60	-0.47	0.33	1.24	2.00	2.10
VA	1554	0.29	0.94	-2.17	-1.66	-0.49	0.45	1.10	1.67	1.80
GDPCGR	1554	2.76	6.00	-23.18	-9.00	0.63	2.56	4.72	13.89	171.91

where: TTRN = Total Tax Revenues Net of general public services expenditures

CC = Control of Corruption

GE = Government Effectiveness

PV = Political Stability and Absence of Violence

RQ = Regulatory Quality

RL = Rule of Law

VA = Voice and Accountability

GDPCGR = GDP per capita annual growth rate

Source: Authors' calculations.

The tails of the distribution of our dependent variable TTRN suggest that a treatment for outliers is necessary. For instance, the minimum value of TTRN is -20.63 and the p1 percentile is -6.17, while the maximum value is 73.47 and p99 percentile is 37.38. Consequently, we winsorized the dependent variable between p1 and p99 percentiles.

Since the dataset used is panel form over the period 1996 - 2016, the panel ordinary least squares estimator is used to examine the impact of the governance indicators on total tax revenues net of public services (TTRN) after including related control variables. Use of panel estimator offers two advantages here: first, this estimator assesses the impact of governance indicators level on country-specific TTRN and thus considers cross-country variation in the governance indicators; second, this estimator also helps to shed light on how the country-specific TTRN changes over time if changes occur in governance indicators. Specifically, we estimate the following model:

$$TTRN_{i,t} = \alpha + \beta_1 \times CC_{i,t} + \beta_2 \times GE_{i,t} + \beta_3 \times PV_{i,t} + \beta_4 \times RQ_{i,t} + \beta_5 \times RL_{i,t} + \beta_6 \times VA_{i,t} + \gamma \times GDPCGR_{i,t} + v_t + \mu_i + \varepsilon_{i,t} \quad (1)$$

where:  $TTRN_{it}$  = Total tax revenues net of public services

$CC_{i,t}$  = Control of Corruption

$GE_{i,t}$  = Government Effectiveness

$PV_{i,t}$  = Political Stability and Absence of Violence

$RQ_{i,t}$  = Regulatory Quality

$RL_{i,t}$  = Rule of Law

$VA_{i,t}$  = Voice and Accountability.

$GDPCGR_{i,t}$  = GDP per capita annual growth rate

$v_t$  = year fixed effect;

$\mu_i$  = country fixed effect

$\varepsilon_{i,t}$  = error term

$i$  subscript denotes country

$t$  subscript denotes year

The benchmark models are estimated by using the fixed-effects estimator, which is chosen based on the Hausman test that suggests the fixed-effects estimator is preferable to the random-effects estimator because the regressors are shown correlated with the time-invariant bank-specific variables. We use heteroskedasticity and within-panel serial correlation robust standard errors in our estimations, and cluster standard errors at country-level.

#### 4. RESULTS

The main results are depicted in Table no. 3.

Interpretation of the results is done with respect to Model 4. The other three models (1-3) only complement the full specification (M4) which includes both year and country effects. Four out of six governance indicators (*Control of Corruption*, *Political Stability and Absence of Violence*, *Regulatory Quality*, and *Rule of Law*) were found as having an effect on total taxes net of public services, albeit at different level of statistical significance, similar to the results obtained by Gupta (2007) and von Haldenwang and Ivanyna (2012). One standard unit increase of *Control of Corruption* triggers an increase of TTRN of 2.3064

percentage points (p.p.). Also, an increment by one standard unit of *Political Stability and Absence of Violence* generates an expansion of *TTRN* by 1.1624 p.p. The effect of *Regulatory Quality* is positive and statistically significant at  $p < 0.01$ . The only governance indicator with a negative effect on *TTRN* is the *Rule of Law*. This suggest that for this particular governance indicator, the expenditure effect (through general public services expenditures) is greater than the revenues effect (through total taxes collected). Enforcing the rule of law requires a great deal of public money that more than offset the positive effects of cash inflows triggered by taxes collected.

Table no. 3 – Regression results

	Model 1	Model 2	Model 3	Model 4
CC	2.2705** (1.0761)	2.5598*** (0.9658)	1.9351 (1.4219)	2.3065* (1.3067)
GE	-0.1555 (1.3521)	0.0780 (1.3354)	-1.0865 (1.5567)	-0.8900 (1.5530)
PV	0.4369 (0.5103)	1.0660** (0.5382)	0.4534 (0.5605)	1.1624** (0.5810)
RQ	3.4833*** (0.9833)	3.1476*** (0.8766)	3.2076*** (1.1376)	2.8311*** (1.0108)
RL	-3.0376*** (1.1036)	-3.7885*** (1.0837)	-3.3532** (1.3030)	-4.1112*** (1.2229)
VA	1.0656 (0.9969)	1.2423 (0.9300)	-0.2461 (1.1815)	-0.0128 (1.0955)
GDPCGR	0.0400 (0.0329)	0.0466 (0.0354)	0.0388 (0.0327)	0.0447 (0.0351)
Constant	10.4856*** (0.6755)	8.7499*** (0.9126)	4.0636 (3.7237)	2.8214 (3.3751)
Year effects	No	Yes	No	Yes
Country effects	No	No	Yes	Yes
R-squared	0.4368	0.4540	0.8596	0.8713
N. of cases	1554	1554	1554	1554

Source: Authors' calculations.

Note: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

In terms of key areas of governance (see Table no. 1), all of them has an impact on *TTRN*, with the biggest effect belonging to key area named *the respect of citizens and the state for the institutions that govern economic and social interactions among them*, which has been found to have both corresponding indicators statistically significant (i.e. *Control of Corruption* at  $p < 0.1$  and *Rule of Law* at  $p < 0.01$ ).

In order to get insights into differences among countries triggered by their level of development, we use the World Bank historical classification of countries grouped in four categories: low (LI), lower-middle (LMI), upper-middle (UMI) and high income (HI) countries. We rerun Model 4 with respect to each group of countries and present the results in Table no. 4.

**Table no. 4 – Regression results for countries classified over their level of development**

	<b>Model HI</b>	<b>Model UMI</b>	<b>Model LMI</b>	<b>Model LI</b>
CC	0.4531 (1.7694)	2.1403 (2.6619)	6.7503* (3.8870)	0.6361 (0.6927)
GE	-0.8276 (1.7927)	-5.9444 (4.5420)	-0.1459 (2.0129)	0.6798 (1.0143)
PV	0.9247 (0.8803)	1.5721 (1.0860)	-1.0898 (1.4394)	0.2257 (0.7692)
RQ	1.4840 (1.3799)	4.1244 (2.7382)	0.3847 (1.6803)	3.0130* (1.7082)
RL	-4.6520** (2.2914)	2.1794 (2.8169)	-7.3153* (3.7569)	-5.0465*** (1.5662)
VA	-0.9908 (1.8781)	-1.7385 (2.4221)	-0.2768 (2.2197)	-1.4060 (1.5457)
GDPCGR	0.0461 (0.0565)	-0.0007 (0.0186)	0.2332*** (0.0840)	0.0688* (0.0403)
Constant	-3.8771* (2.2306)	11.7121* (6.0583)	19.1685*** (2.7708)	6.5167*** (2.5111)
Year effects	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes

Source: Authors' calculations.

Note: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Running the regressions for each group of countries reveals that *Rule of law* emerges as the most important governance characteristic which affects TTRN for all countries, except the upper middle-income ones. The effect is negative, similar to the base case scenario. Nonetheless, since this negative effect suggests that enforcing the *Rule of law* means more public spending than tax money collected, the economic effect is the lowest for high-income countries (-4.652), which supposedly already possess built-in mechanisms and institutions that efficiently protect the rule of law, while for lower-middle income and low income countries, which lacks the institutional efficiency of richer countries, the negative economic effect is greater (-7.3153 and -5.0465, respectively). Apart from *Rule of law*, *Control of Corruption* was found to have a positive effect only for lower-middle income countries, and *Regulatory Quality* was also found to have a positive effect in the case low-income countries. Without inferring too much conclusions from this, it still suggests directions to follow by developing countries in their quest for improving government governance and promoting sustainable public finance.

## 5. CONCLUSIONS

Built around the idea that what matters most for the citizens are the taxes that go to the society after paying the cost of the government, the paper introduces the concept of total tax revenues net of public services and looks upon its determinants from governance perspective. In doing so, we collected extensive data spanning over 1996 to 2016 for 104 countries all over the world, both financial and governance data. The governance data used were Worldwide Governance Indicators, which represents the most widely accepted

country-specific governance indicators up to date. Using panel data estimator with year fixed effects in order to control for global economic crisis, and with country fixed effects to control for unobservable country-level factors that are constant over the sample period, the paper found that four out of six governance indicators have an effect on total taxes net of public services.

*Regulatory Quality* and *Rule of Law* have been found to have both the highest statistical significance ( $p < 0.01$ ) and economic effect (2.83 and -4.11 respectively). *Political Stability and Absence of Violence* has been found to have a positive effect, while *Control of Corruption* has also a positive effect but at the margin in terms of statistical significance ( $p < 0.1$ ). The results have several policy implications.

First, improving the regulatory quality within a country is one of the most efficient and robust way of making money for the direct benefit of citizens. Having an adequate regulatory framework not only did make businesses work flawlessly paying their fair amount of taxes, but also requires less money to be spent from government budget to provide general public services, thus triggering a positive effect overall in terms of total tax revenues net of public services. Comparing countries on their level of development, regulatory quality emerged as an important determinant for TTRN in the case of low-income countries, which suggest that improving this governance characteristics is especially important for this group of countries.

Second, improving the rule of law characteristic, as much as counterintuitive it may seem, will trigger a reduction in taxes that go directly to the citizens. Enforcing the law costs public money which offsets the benefits triggered by higher taxes collected as a result of less tax evasion. In fact, these two characteristics (regulatory quality and the rule of law) are somehow overlapping, complementing and opposing to each other in the same time. In other words, it is more efficient to have an effective regulatory framework, which makes things go smoothly, than a non-effective regulatory framework that needs a lot of government spending to enforce it. Resuming, the motto for the governments should be: Keep it simple and efficient.

Third, from tax money perspective, it is important for countries to enjoy political stability. Frequent elections, governments' dismissal and overthrows, parliament dissolutions, riots and revolutions, consume more and more tax money, leaving less for the direct benefit of the citizens. Therefore, preserving and improving the political stability is a key factor in the total tax revenue net of public services equation.

Fourth, controlling corruption increase the tax money that goes to the citizens, especially for developing countries. From this perspective, our results are close to those of von Haldenwang (2010, 2012) and Ivanyina (2010, 2012) and of Pessino and Fenochietto (2013). Less corruption means less informal payments, more efficient public servants, less favours for interest groups, which, at the end, translate into less costs for government and more tax money for citizens.

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