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Domestic revenue mobilisation: A new database on tax levels and structures in 80 countries[1]

Abstract

Domestic resource mobilisation is critical to fund government services and to support development. Taxes are a critical domestic revenue source that can also impact other social or economic outcomes. Understanding differences in the level and structure of tax revenues is therefore foundational to discussions of domestic resource mobilisation and of tax reform.

This paper presents evidence on the level and structure of tax revenues in 80 countries, drawing on the new Global Revenue Statistics Database. It compares tax-to-GDP ratios and tax structures across countries, regions and over time. Links between tax-to-GDP ratios, GDP per capita and tax structures are assessed in a correlation analysis. The new database provides invaluable insights for researchers and fiscal policy analysts and offers a high level of comparability and reliability.

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Abbreviations

CIT	Corporate income tax
GDP	Gross domestic product
G&S	Goods and services
LAC	Latin America and the Caribbean
PIT	Personal income tax
SSC	Social security contributions
VAT	Value added tax

Introduction

Taxes are a critical component of government resources in almost all economies. Together with non-tax revenues, they support the role of the government in providing public services, re-distributing income and implementing other fiscal policy concerns, such as securing sustained growth and encouraging desirable socio-economic behaviour (Wahrig and Gancedo Vallina, 2011[1]). Relative to non-tax revenue sources, tax revenues are typically larger, more stable and less vulnerable to external shocks (OECD/AfDB/UNECA, 2010[2]; Te Velde, 2014[3]; European Parliament, 2014[4]; OECD, 2014[5]). As such, taxes are a critical input to governance and development. The way in which the government chooses to raise tax revenues (i.e. through the choice of taxes and their levels) itself also has social and economic implications.

For these reasons, consideration of the level and structure of taxes in an economy is a critical first step in tax policy reform and in domestic revenue mobilisation. The Addis Tax Initiative (International Tax Compact, 2015[6]) recognises the importance of measuring domestic resource mobilisation. The Global Revenue Statistics Database contributes to this goal by providing detailed comparable tax revenue data for 80 countries over the period 1990 to 2016, as well as unweighted averages in the African and Latin America and the Caribbean (LAC) regions, and across the OECD.[2] Together, these countries total nearly 60% of global GDP and provide a comprehensive basis for analysis across the four regions included in the analysis.[3]

The database includes two key comparative indicators for all countries: the tax-to-GDP ratio and the tax structure (the share of a tax category in total tax revenue). The Global Revenue Statistics Database also provides tax revenue data in national currency and in USD. These data can be used to inform tax policy or administrative reforms within a country, and to conduct cross-country comparative analysis. Examining the policies and practices and historical trends in the data, and comparisons across similar economies, can provide an initial insight into potential avenues for tax policy or administration reforms.

There is a great deal of heterogeneity across the countries included in this database and there has been a large amount of change in many countries in recent decades. A comparison of tax-to-GDP ratios for the most recently available year shows the diversity of tax revenue levels across countries and regions, ranging from 10.8% of GDP to 30.3% in Africa, 11.8% to 30.7% in Asia, 12.4% to 38.6% in Latin America and the Caribbean and 16.2% to 45.9% in the OECD. However, the range has narrowed considerably in recent decades, particularly as a result of movement at the lower end of the distribution: since 2000, nearly three-quarters of these countries have increased their tax-to-GDP ratios and countries with lower levels of taxation have increased the most. Countries with larger increases tended to be in Africa, Latin America and the Caribbean, while OECD countries, whose ratios started generally at a higher level, experienced limited increases or decreases over this period.

[2] For comparative reasons, the analysis in this working paper is based on data until 2015: the *Global Revenue Statistics Database* includes data until 2016 for the LAC and OECD countries and data until 2015 for the African and Asian countries. The paper covers the period starting from 2000, however, some analysis starts in 1990 where data are available.

[3] Source: International Monetary Fund (2017[33]), *World Economic Outlook*.

There is also a great deal of variation across regions and countries in their tax structures, i.e. the mix of taxes used to generate revenue. Across all countries, the three major sources of revenue are income and profit taxes, social security contributions (SSCs) and taxes on goods and services. Property taxes, payroll taxes and other taxes[4] represent a more modest source of revenue; although each are used to widely different degrees in individual countries.

The underlying Global Revenue Statistics Database is constructed using data from four Revenue Statistics publications: Revenue Statistics in Africa (OECD/ATAF/AUC, 2017[7]), Revenue Statistics in Asian Countries (OECD, 2017[8]), Revenue Statistics in Latin America & the Caribbean (OECD et al., 2018[9]) and Revenue Statistics in OECD countries (OECD, 2017[10]). These publications are prepared by the OECD in conjunction with a number of regional partners and with the financial support of the European Union (see Box 1 for further information). The database draws on the OECD classification of tax, which is common to all publications and harmonised with other major reporting standards including the System of National Accounts (European Commission et al., 2009[11]), the European System of Accounts (European Commission, 2010[12]), and the Government Finance Statistics Manual (International Monetary Fund, 2014[13]). All data are reported at the general level of government, which includes central, and sub-national and social security funds data[5].The database is updated four times a year as new data and country information become available.

This paper provides an initial scan of the levels and structure of taxes for the 80 countries included in the database. It provides a comparative analysis for the most recent year and across time, taking into account the different regions covered by the database. The level and structure of tax revenues in these countries is determined by a multitude of underlying factors, including government expenditure commitments, income levels, international engagement, economic structure, tax morale, administrative capability as well as resource endowments: for example, oil-rich countries tend to have low tax-to-GDP ratios due to narrow tax bases and a high reliance on revenue from the oil sector. Understanding the impact of these factors on the revenue levels and structures of each country would provide a fruitful avenue for further research, building on key studies in the literature (Koenig and Wagener, 2012[14]; Tosun and Abizadeh, 2005[15]; Xing, 2011[16]), but is not covered in this paper. However, a preliminary analysis of correlations provides some initial observations on the relationship between GDP-per-capita, tax-to-GDP ratios and tax structures.

This paper is structured as follows. Section 2 provides a brief overview of the methodology used to construct the database and its key indicators. Section 3 presents information on tax levels across the 80 countries included in the database, examining the levels of taxes in different regions and the changes across time. Section 4 examines tax structures across the 80 countries, drawing conclusions about the types of tax systems observed in the different countries. Section 5 undertakes preliminary analysis on the links between tax structure and tax-to-GDP levels, using a correlation analysis to provide initial observations and to suggest avenues for further research. Section 6 concludes.

[4] The category "Other taxes" includes payroll taxes, property taxes and other taxes that could not be classified into the main tax categories.

[5] Subnational and social security fund data are not available for a small number of countries in the database.

Methodology and indicators

The *Global Revenue Statistics Database* covers the countries and data from four *Revenue Statistics* publications which are each published on an annual basis.[6] These publications are produced to focus on domestic resource mobilisation in each of the four groups of countries. Box 1 provides further information about the individual publications and the regional partners involved in each. The four publications use the same classification system and methodology, as set out in the OECD Interpretative Guide (OECD, 2016[17]).

This section provides a brief overview of the methodology used in the underlying regional databases to produce the regional publications and the *Global Revenue Statistics Database*.

Definitions and tax classification

The classification of tax revenues set out in the OECD Interpretative Guide has been in use since the 1970s and is an international reference for policy makers, academics and researchers.[7]

The OECD Interpretative Guide defines taxes as compulsory, unrequited payments to general government. Taxes are unrequited in the sense that benefits provided by government are not normally in proportion to their payments.

In the OECD classification, taxes are classified by the base of the tax: income and profits (heading 1000), compulsory SSCs (heading 2000), payroll and workforce (heading 3000), property (heading 4000), goods and services (heading 5000), other taxes (heading 6000).

Further information on the tax concept, the classification of taxes and the basis of reporting is set out in Annex C of this paper and in the OECD Interpretative Guide

Key indicators: measuring tax levels and structures

Two main indicators in the dataset measure the tax levels and tax structures of the 80 countries in the dataset over time: the tax-to-GDP ratio and the share of each tax category in total tax revenue. The *Global Revenue Statistics Database* also provides tax revenue data in national currency and in USD.

The tax-to-GDP ratio (total tax revenues expressed as a percentage of GDP) measures the level of taxation in a country and is calculated by dividing the nominal tax revenue of a country by its nominal GDP for the same year. Main tax revenue categories are also expressed as a percentage of GDP. This is one of the key indicators used in cross-country research studies as it provides a standard way to compare tax levels across countries and over time.

[6] Please see Annex A for more details on the countries covered and the years available for each country.

[7] The Interpretative Guide sets out the classification for tax revenues. Non-tax revenues are not included in the Guide or the Global Revenue Statistics Database. However, data on non-tax revenues, and a classification, can be found in *Revenue Statistics in Africa.*

Box 1. Introduction to the *Revenue Statistics* publications

As at June 2018, there are four *Revenue Statistics* publications which cover 79 countries in total.[8]

Revenue Statistics in Africa: The first publication of the Revenue Statistics in Africa series was launched in 2016 with comparable tax revenue data for eight African countries from 1990 onwards. Sixteen African countries, together with an (unweighted) African (16) average, were included in the second edition launched in 2017. The publication is co-authored by the OECD Centre for Tax Policy and Administration and the OECD Development Centre together with the African Union Commission (AUC) and the African Tax Administration Forum (ATAF), with the financial support of the European Union.

Revenue Statistics in Asian and Pacific Countries: This publication is jointly produced by the OECD Centre for Tax Policy and Administration and the OECD Development Centre in cooperation with the Asian Development Bank and the Pacific Island Tax Administration Association, with the financial support of the European Union. It compiles comparable tax revenue statistics for seven countries in Asia (including two OECD member countries) from 1990 onwards and, from 2018, will include a number of Pacific countries (including two OECD member countries).

Revenue Statistics in Latin America and the Caribbean: This is a joint publication by the OECD Centre for Tax Policy and Administration, the OECD Development Centre, the Inter-American Centre of Tax Administrations (CIAT), the Economic Commission for Latin America and the Caribbean (ECLAC) and the Inter-American Development Bank (IDB). It presents detailed, internationally comparable data on tax revenues for 25 Latin American and Caribbean economies, including two OECD member countries, and covers the years from 1990 onwards.

Revenue Statistics: The annual publication presents detailed and internationally comparable tax data in a common format for the 35 OECD member countries, with data starting from 1965.

Tax structure is measured as a percentage of total taxation where tax revenues of individual tax categories are reported as a percentage of total tax revenue. This indicator provides insight into the relative importance of different tax types in the overall tax mix (e.g. income taxes or taxes on goods and services). It allows both a cross-country and across-time comparison of the composition of tax receipts.

Methodology: calculating tax-to-GDP ratios

The tax-to-GDP ratios in the *Comprehensive Revenue Statistics Database* show the level of total tax revenues as a percentage of GDP. The value of this ratio depends on its numerator (tax revenue) as well as its denominator (GDP), which are subject to historical revision:

[8] The 80th country in the *Global Revenue Statistics Database* is Lithuania, for which data is provided by representatives of the Lithuanian Ministry of Finance to the OECD.

- The numerator (tax revenue): Tax revenue figures used for the numerator are submitted annually by correspondents from national Ministries of Finance, Tax Administrations and National Statistics Offices or are drawn from public websites. They include subnational revenues, i.e. the revenues levied by local and provincial governments. Compulsory social security contributions paid to the general government are also included to allow comparability between countries who fund social benefits in different ways. In 69 countries, the reporting year of tax revenue coincides with the calendar year, whereas eleven countries have different reporting years. Revenues are reported on a cash or accrual basis[9], as indicated in the individual *Revenue Statistics* publications.
- The denominator (GDP): GDP figures used for the denominator are taken from the OECD National Accounts, the IMF World Economic Outlook and official national accounts data, depending on the region or country.[10] Where the reporting year differs from the calendar year, the annual GDP estimates are obtained by aggregating quarterly GDP estimates or by adjusting annual GDP figures to make them correspond more closely to the reporting year.

Tax levels: Tax-to-GDP ratios around the world

The level of taxes in an economy gives an indication of the resources available to governments to fund public services, invest in infrastructure and to redistribute income. It also provides a rough estimate of the burden placed on the economy by the tax system.

The tax-to-GDP ratio is the foundational indicator for the analysis of tax levels in an economy. It provides an indication of the scale of tax revenues against the underlying economy which generated the revenues, and permits comparisons across countries and across time. The tax-to-GDP ratio is therefore a critical starting point for discussions of government finance, tax policy reform and domestic resource mobilisation.

The level of the tax-to-GDP ratio is influenced by a number of different factors. These include economic factors, such as the level of income in a country, as countries with higher income per capita tend to have higher levels of tax revenues. Other economic factors including the level of consumption, the openness to trade, the size of the informal sector, or the composition of the economy by sectors also impact the level of the tax-to-GDP ratio (Addison and Levin, 2012[18]; OECD, 2014[5]; Profeta and Scabrosetti, 2010[19]). For example, countries with a higher share of agriculture tend to record lower tax-to-GDP ratios, whereas countries with more diversified economies often have higher tax-to-GDP ratios (OECD/AfDB/UNECA, 2010[20]). Another notable example relates to "resource-rich" countries that derive a high share of revenues from the natural resource sector. These countries also tend to have low tax-to-GDP ratios because of narrow tax bases which are

[9] Data on an accrual basis refer to data which are recorded at the time that the tax liability was created. Data on cash basis are recorded at the time at which the payment was received by government (see §20 and §21 of the Interpretative Guide).

[10] Africa: IMF, World Economic Outlook, April 2017, OECD National Accounts data for South Africa.
LAC: OECD National Accounts data for Chile and Mexico and official National Accounts data for the other countries. CEPALSTAT (ECLAC) data for Cuba. The World Economic Outlook (IMF) was used for Argentina, Bahamas, Panama, Paraguay and Venezuela.
Asia: National statistical offices, CEIC (Asia & ASEAN Economic Databases) for Indonesia, Kazakhstan, Malaysia, the Philippines and Singapore

often reliant on the resource sector. Other domestic factors that affect tax-to-GDP ratios concern the institutional capacity of a country. Weak tax administrations are not able to collect tax revenues efficiently and may suffer from institutionalised corruption, tax evasion and tax revenue leakage. Finally, the geographical location, the degree of external indebtedness, and the share of foreign aid are also important determinants of tax-to-GDP ratios.

This section provides an overview of tax-to-GDP ratios in the 80 countries included in the database, outlining first the levels in 2015 before examining changes across time, including changes in the distribution of tax-to-GDP levels across countries.

Tax-to-GDP ratios in 2015

In 2015[11], tax-to-GDP ratios varied from 10.8% to 45.9% across the 80 countries included in the database (Figure 1), with significant regional and inter-country variation within this range. On an unweighted average basis, the tax-to-GDP ratio was higher in OECD countries than in African and LAC countries.

Across the countries included in the database, Denmark and France had the highest tax-to-GDP ratios at more than 45%. About half of the countries had tax-to-GDP ratios between 20% and 35% in 2015. Tax-to-GDP ratios above 35% were found in one fifth of the countries in the database. Among the countries with the lowest tax-to-GDP ratios were the Democratic Republic of the Congo, Dominican Republic, Guatemala, Indonesia, Singapore, and Uganda with tax revenues of less than 15% of their GDP.

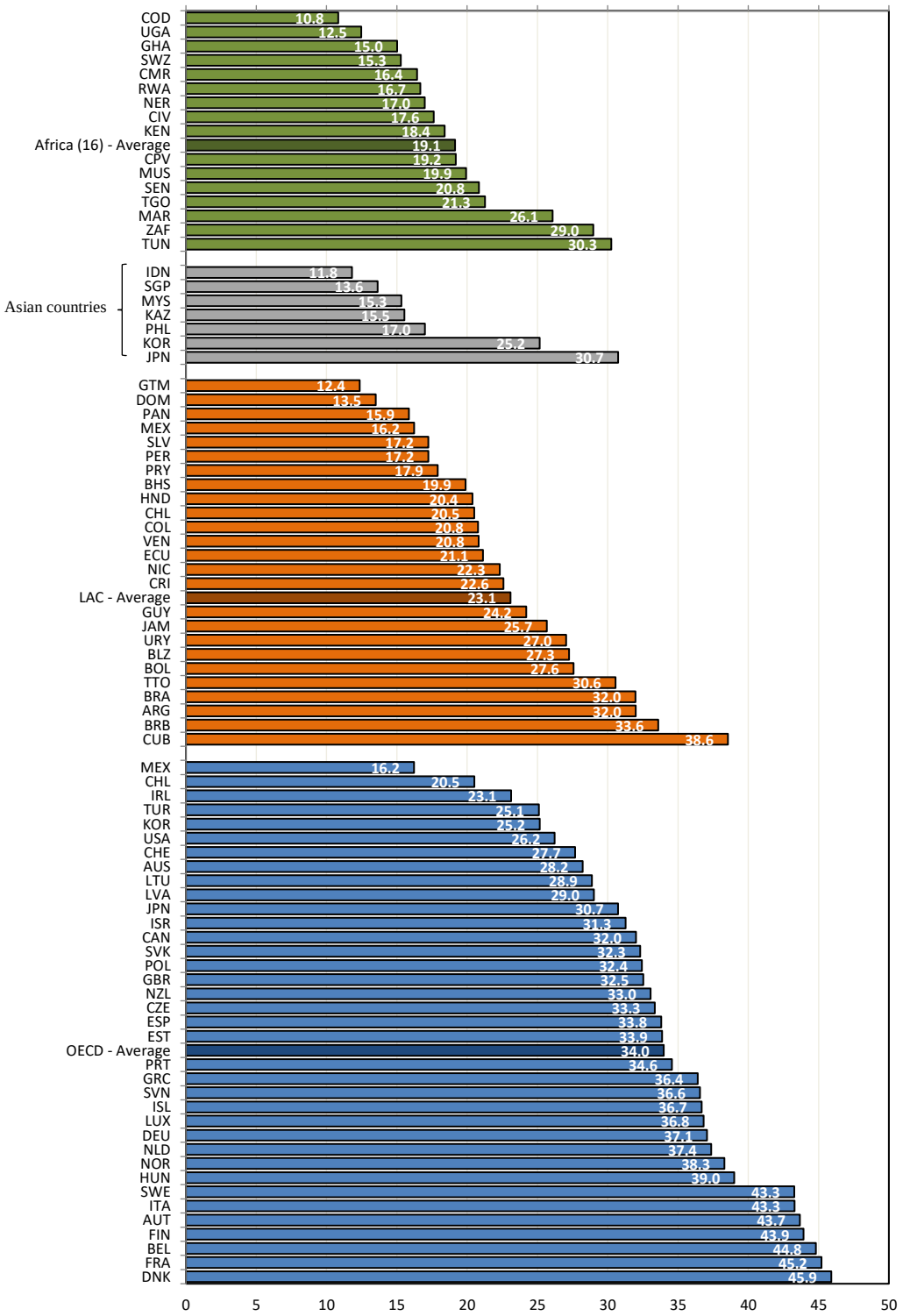
Different tax-to-GDP ratio patterns were seen in the four country groupings covered by the database with the lowest averages being found in the African, Asian and Latin American regions, and the highest average in the OECD:

- **Africa:** For the 16 African countries in the dataset, the average tax-to-GDP ratio in 2015 was 19.1% and most African countries were in the same range as LAC countries with tax-to-GDP ratios lower than 25%. Tunisia had the highest tax-to-GDP ratio among the African countries with 30.3%.
- **Asia:** Japan (also included in the OECD group of countries) had the highest tax-to-GDP ratio (30.7%) among the seven Asian countries included in the dataset, a level that is similar to many other OECD countries. Kazakhstan, Malaysia, and the Philippines had tax-to-GDP ratios between 15% and 20% and Indonesia had the lowest ratio (11.8%) among the Asian countries in 2015.[12]

[11] The most recent year for which tax revenue data (as a percentage of GDP) are available for all countries of the *Global Revenue Statistics Database* is 2015, but this will be updated to 2016 by the end of the year after the publication of *Revenue Statistics in Africa* and *Revenue Statistics in Asian and Pacific Countries* in the last quarter.

[12] *Revenue Statistics in Asian and Pacific Countries* does not include an average for Asia as the publication database covers seven Asian countries. No average is therefore available in the Global Revenue Statistics Database.

Figure 1. Tax-to-GDP ratios in 2015



Note: Chile, Japan, Korea and Mexico are displayed twice because they are part of the OECD publication, as well as of Asia or the LAC publications.
Source: OECD (2018[21]), *Global Revenue Statistics Database*, https://stats.oecd.org/Index.aspx?DataSetCode=RS_GBL

- **LAC[13]:** The LAC average tax-to-GDP ratio was 23.1% and almost three-quarters of the LAC countries had tax-to-GDP ratios ranging from 15% to 30%. Guatemala had the lowest tax-to-GDP ratio among LAC countries with 12.4%. The highest tax-to-GDP ratio in the LAC region was Cuba with 38.6%.
- **OECD:** Most OECD countries had tax-to-GDP ratios above 25%, except for Chile (20.5%), Ireland (23.1%), and Mexico (16.2%). The OECD average tax-to-GDP ratio was 34.0% in 2015.

Trends in tax-to-GDP ratios over time

The evolution of tax levels in the countries included in the Global Revenue Statistics Database has also been strongly heterogeneous between 1990 and 2016. Changes in country tax-to-GDP ratios across this period reflect the long-term changes in countries' tax levels, reflecting the combined impact of tax policy and administrative reforms, as well as business cycle developments. An increase in the tax-to-GDP ratio is the result of the overall change in tax revenues being higher than the overall change in GDP.

Within the four groups of countries covered by the database, the tax-to-GDP ratio has been increasing on average in Africa and the LAC region, whereas there have been only modest changes in the OECD average tax-to-GDP ratio (Table 1).

In Africa, the average tax-to-GDP ratio increased by approximately five percentage points between 2000 and 2015, where the average tax-to-GDP ratio increased from 14.2% in 2000 to 19.1% in 2015. In the LAC region, the average increased by 5.1 percentage points between 2000 and 2015, and by 7.1 percentage points between 1990 and 2015 from 16.0% to 23.1%. In both Africa and the LAC region, modernisation of tax systems and tax administrations, as well as tax policy reforms, have contributed to these increases. By contrast, the OECD average tax-to-GDP ratio is higher than the two other regional averages and was over 30% in all years from 1990 to 2015.

Table 1. Evolution of average tax-to-GDP ratios in Africa, LAC and the OECD

	Africa (16) - Average	LAC - Average	OECD – Average
1990	..	16.0	31.9
2000	14.2	18.0	33.9
2010	17.2	20.9	32.5
2015	19.1	23.1	34.0

Source: OECD (2018[21]), Global Revenue Statistics Database, https://stats.oecd.org/Index.aspx?DataSetCode=RS_GBL

Figure 2 shows these trends across the full time period, highlighting the different evolutions of the tax-to-GDP ratios in Africa, LAC, and the OECD.[14] The OECD average tax-to-GDP ratio is the highest over the whole period and does not vary much over time. The Africa (16) average and the LAC average tax-to-GDP ratios follow similar upward trends , although the LAC average is 3 to 4 percentage points higher than the Africa (16) average.

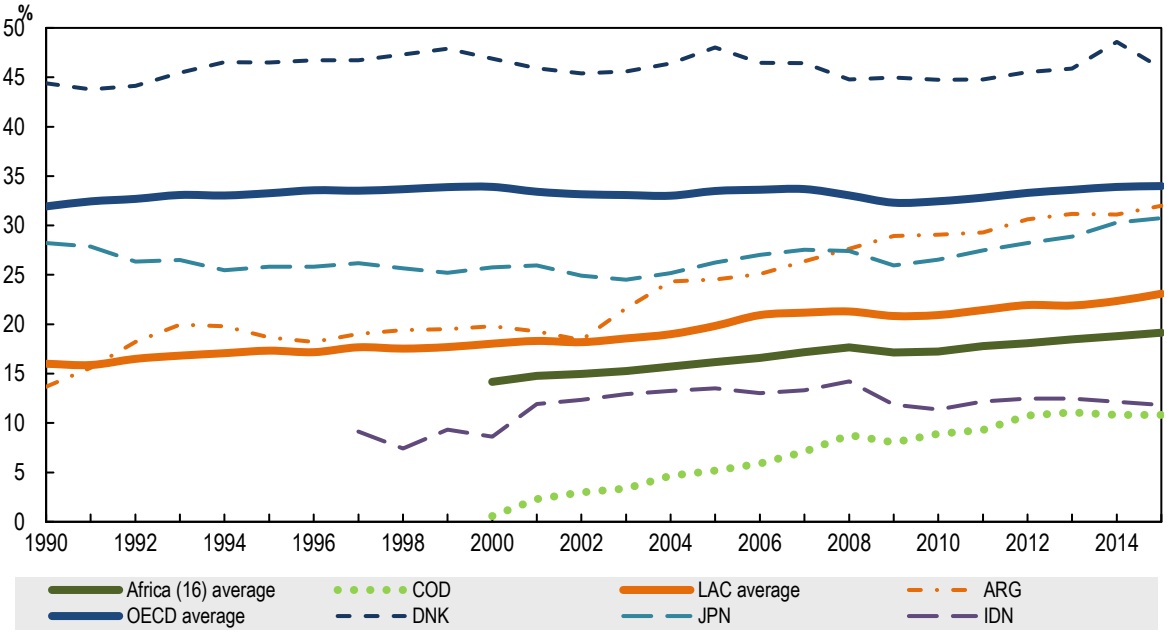
[13] LAC refers to the region of Latin America and the Caribbean and the 25 countries from this region that are included in the database.

[14] Revenue Statistics in Asian and Pacific Countries does not include an average for Asia as the publication database covers seven Asian countries. No average is therefore available in the Global Revenue Statistics Database.

In addition, Figure 2 shows the evolution of the tax-to-GDP ratio in selected countries in each region, showing countries with comparatively high or low tax-to-GDP ratios in each region:

- Denmark has the highest tax-to-GDP ratio during the whole period (1990-2015), with a minimum of 43.8% and a maximum of 48.6%.
- Among African countries, the Democratic Republic of the Congo has had the lowest regional tax-to-GDP ratio since 2000, notwithstanding a sharp increase of 10 percentage points over the period of 16 years, starting at just over 0% in 2000 and increasing to 10.8% in 2015.
- Trends of the tax-to-GDP ratios in two Asian countries, Indonesia and Japan, are presented. In Indonesia, the tax-to-GDP ratio is volatile in the first years for which data are available, ranging between 7.4% and 9.3% (1997-2000). Thereafter, until 2008 Indonesia's tax-to-GDP ratio rose to 14.2% and then decreased again to 11.8% in 2015. Japan's tax-to-GDP ratio varies between 24.5% and 30.7% and runs below the OECD average.
- In the LAC region, Guatemala has the lowest tax-to-GDP ratio in 2015. After an increase from 8.8% in 1990 to 13.9% in 2007, Guatemala's tax-to-GDP ratio decreased from 2008 onwards, in contrast to the LAC average over this time.

Figure 2. Tax-to-GDP ratios of selected countries, 1990-2015



Notes: Figure 2 displays countries with comparatively high and low tax-to-GDP ratios for each group of countries. Tax-to-GDP ratios of the remaining countries are available in the database.
Source: OECD (2018[21]), Global Revenue Statistics Database, https://stats.oecd.org/Index.aspx?DataSetCode=RS_GBL

The preceding sections have highlighted the tax levels in the 80 countries in 2015 and have examined the evolution of tax levels between 1990 and 2015. This section considers the changes in tax-to-GDP ratios in recent decades in more detail, identifying increases and

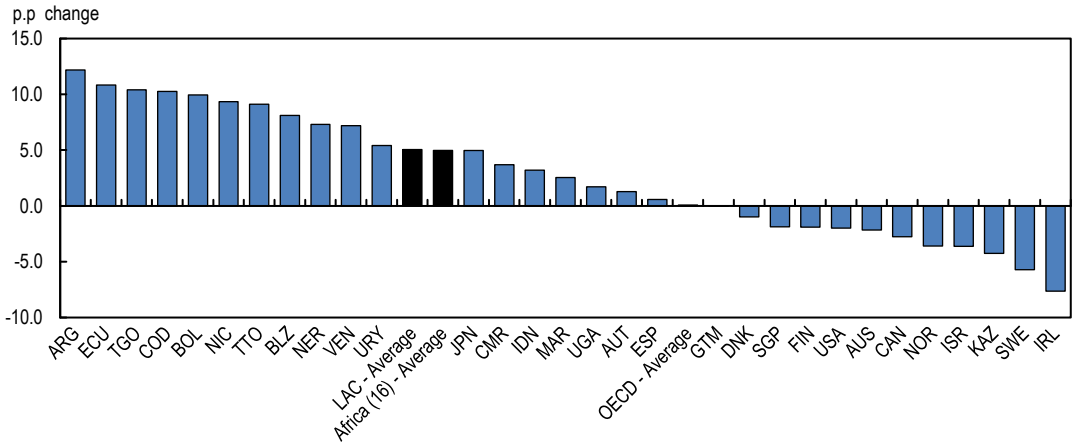
decreases in tax-to-GDP ratios in the participating countries. As not all countries in the database have provided data for the full period, this section focuses on changes from 2000.[15]

Changes in tax-to-GDP ratio levels in recent decades

As noted, there has been a great deal of variation in the evolution of tax levels in the 80 countries between 2000 and 2015. Comparing the start and end-point of this period provides a summary measure of the change in tax levels in the participating countries.

The percentage point changes in countries' tax-to-GDP ratios between the years 2000 and 2015 range from -7.6 to 12.2 percentage points (see Figure 3, which highlights the largest increases and decreases among the countries included in the database). The highest increase was in Argentina with 12.2 percentage points. In the Democratic Republic of the Congo, Ecuador, and Togo, the tax-to-GDP ratio also increased by more than 10 percentage points from 2000 to 2015. The largest decreases in the tax-to-GDP ratio have been experienced by Ireland (-7.6 percentage points), Sweden (-5.7 percentage points) and Kazakhstan (-4.3 percentage points). Tax-to-GDP ratios have increased for the Africa (16) and LAC averages by 5.0 and 5.1 percentage points, respectively. For the OECD average, there was a smaller increase of 0.1 percentage point.

Figure 3. Changes in tax-to-GDP ratios between 2000 and 2015, selected countries



Note: Countries with the highest and lowest tax-to-GDP ratio changes between 2000 and 2015 are selected from the database. Tax-to-GDP ratios of the remaining countries are all between -1.3 and 6.6 percentage points. In Ireland, the tax-to-GDP ratio decreased sharply due to an exceptional nominal GDP growth of over 30% in 2015 that was larger than the growth in tax revenue in that year.
Source: OECD (2018[21]), Global Revenue Statistics Database, https://stats.oecd.org/Index.aspx?DataSetCode=RS_GBL

The distribution of changes in tax-to-GDP ratios between 2000 and 2015 among the 80 countries shows that nearly three-quarters of the countries in the database (59 countries) increased their tax-to-GDP ratios between 2000 and 2015 (Figure 4). For half of the countries, the tax-to-GDP ratio increased between 0.1 and 4.9 percentage points from 2000

[15] Comparable tax-to-GDP ratio data are available in the database from 1990 onwards and can be used to identify trends for tax revenues. For about one-third of countries, the data is not available from 1990. Therefore, this working paper focuses on information from 2000 to 2015 as all but one country has data available across this period.

to 2015 and a further quarter had changes of more than 4.9 percentage points, primarily consisting of African and LAC countries. Of the quarter of countries that had lower tax-to-GDP ratios in 2015 than in 2000, almost all are OECD countries.

Figure 4. Distribution of percentage point changes in the tax-to-GDP ratios (2000-2015)

Note: Kenya is not included in this figure because there is no tax revenue data for 2000.
Source: OECD (2018[21]), Global Revenue Statistics Database, https://stats.oecd.org/Index.aspx?DataSetCode=RS_GBL

Convergence in tax-to-GDP ratios between 2000 and 2015

Taken together, the changes in tax-to-GDP ratios in these 80 countries have resulted in a move towards convergence in the distribution of tax levels between countries since 2000. In 2015, the distribution of tax-to-GDP ratios of the 80 countries ranged between 10.8% and 45.9% and was spread around the median at 26.2% (see red line, Figure 5). In the lower quartile, tax-to-GDP ratios range between 10.8% and 17.9% and African, Asian and LAC countries are represented. Half of the countries have tax-to-GDP ratios between 18.2% (25th percentile) and 33.2% (75th percentile) and countries from all three regions and the OECD are included in this group. The upper quartile includes countries with tax-to-GDP ratios over 33.2%, which are all OECD countries except for Cuba.

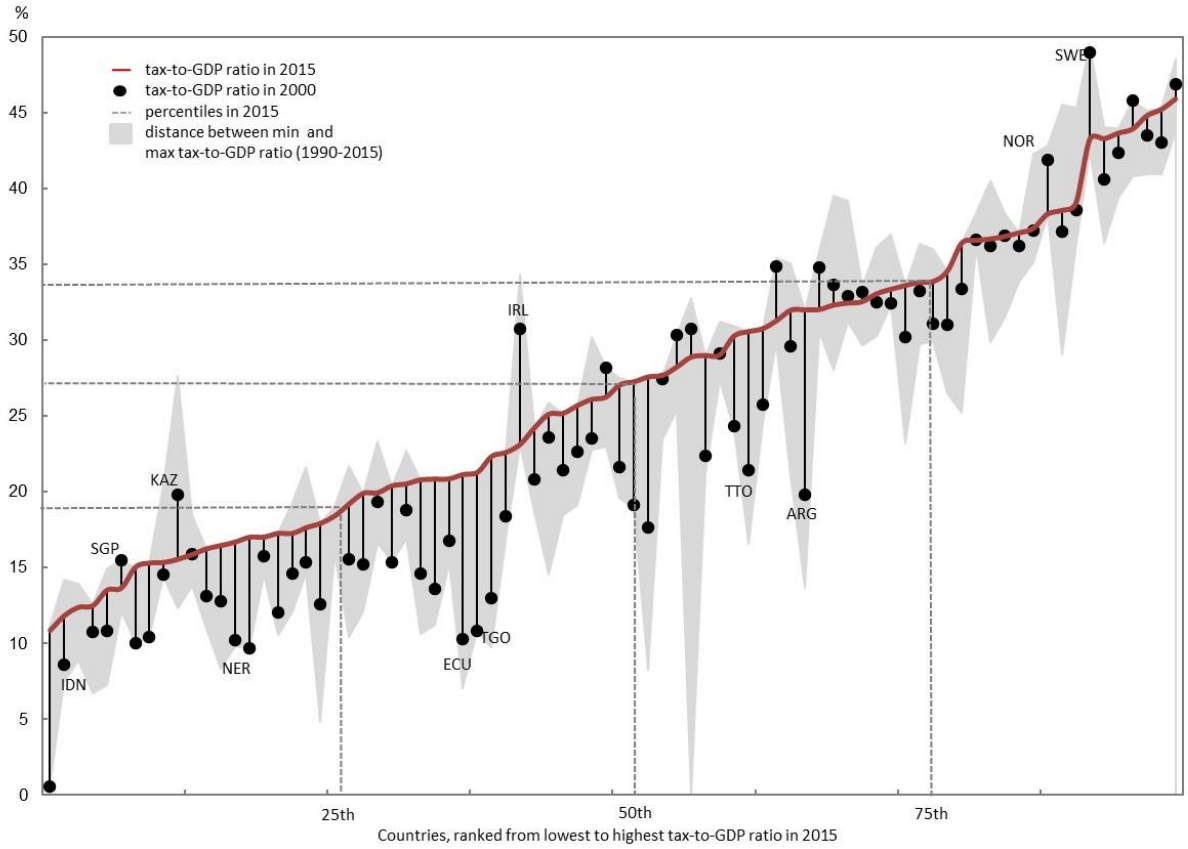
Since 2000, the tax-to-GDP ratios of three-quarters of these 80 countries have increased. This is indicated by the black dots which are below the red line (Figure 5) and which mark the tax-to-GDP ratios of the same countries in 2000. The graph shows as well the distance between the maximum and minimum tax-to-GDP ratios for each country over the course of the database (1990-2015). From 2000 to 2015, the tax-to-GDP ratios declined in 20 countries, with the largest declines in Kazakhstan, Ireland, and Sweden.

Increases in the tax-to-GDP ratio have tended to be larger for countries with low tax-to-GDP ratios and smaller for those with higher ratios, which have led to a convergence of tax-to-GDP ratios of countries over time. Almost all countries below the median tax-to-GDP ratio in 2015 had positive or near-zero changes from 2000 to 2015, with the exceptions of Kazakhstan, Ireland, and Singapore. The largest increases in tax-to-GDP ratios have been experienced by countries below the median tax-to-GDP ratio. The increases in the tax-to-GDP ratios in this lower half of countries range from -7.6 and 10.8 percentage points and amount to 3.5 percentage points on average. On the contrary, for countries in the upper quartile (i.e. those with a tax-to-GDP ratio of more than 33.2% in 2015), the value of changes in the tax-to-GDP ratio from 2000 to 2015 ranges between -5.7 and 3.5 percentage points and amounts to 0.6 percentage points on average. Hence, countries with tax-to-GDP ratios below 26.2% in 2015 had increased their tax-to-GDP ratios faster than countries with higher tax-to-GDP ratios leading to a convergence of tax-to-GDP ratios towards overall higher values.

Taken together, these changes have lowered the dispersion of tax-to-GDP ratios in the 80 countries in 2015 compared to 2000. This is seen in the coefficient of variation (the standard deviation divided by the mean) of total tax-to-GDP ratios which has decreased from 0.46

in 2000 to -0.35 in 2015 across all countries. Further analysis using the database could explore whether convergence of tax-to-GDP ratios has occurred over this period, drawing on the extensive literature on this topic (Becker, J. and M. Elsayyad, 2009[22]; Švec Busowska and Busowki, 2016[23]; Delgado, 2013[24]; Delgado and Presno, 2011[25]; Tibulca, 2015[26]).

Figure 5. Distribution of tax-to-GDP ratios in 2000 and 2015



Note: The distribution includes all 80 countries where selected countries with the largest changes in the tax-to-GDP ratio between 2000 and 2015 are labelled with their country codes.
Source: OECD (2018[21]), *Global Revenue Statistics Database*, https://stats.oecd.org/Index.aspx?DataSetCode=RS_GBL

Tax structures

Different taxes have varying impacts on the economy, the behaviour of households and businesses, and on distributional outcomes. The tax structure is therefore a second foundational indicator which provides insight into the relative importance of different tax types in the overall tax mix. In *Revenue Statistics*, tax structures are measured by the share of each tax category in the total tax revenue of each country. This section compares tax

structures across unweighted averages of Africa, LAC and the OECD[16], across countries, and over time.

Tax structures across groups of countries, 2015

The three groups of countries (Africa, LAC, and the OECD) had different tax structures in 2015 (Table 2). In Africa and the LAC region, value added taxes (VAT) and other taxes on goods and services were the largest sources of revenue as a share of total taxation, although the predominance of VAT relative to the share of other goods and services taxes was higher in the LAC region than in Africa. By contrast, in the OECD, taxes on income were a larger share of tax revenues than goods and services taxes, and SSCs were considerably more significant.

As a percentage of GDP, however, VAT and goods and services taxes were more similar across the three groups of countries, whereas the share of personal income taxes (PIT) and SSCs was considerably higher for the OECD average than in Africa and the LAC region. Corporate income tax (CIT) revenues were highest in the LAC region as a percentage of GDP (and correspondingly, PIT revenues are the lowest), whereas they were similar in Africa and the OECD on average.

These differences imply that a large part of the difference in the tax-to-GDP ratios for these groups of countries, on average, was due to higher levels of PIT and SSCs in OECD countries; whereas almost the entire difference between the African and LAC average tax-to-GDP ratios was accounted for by the difference in the level of SSCs as a percentage of GDP.

Table 2: Tax structure for the Africa (16), LAC and OECD averages, 2015

	Africa (16) - Average		LAC - Average		OECD - Average	
	% GDP	% tax	% GDP	% tax	% GDP	% tax
PIT	3.2	16.3	2.2	9.5	8.4	24.4
CIT	2.8	14.6	3.7	15.9	2.8	8.9
SSC	1.7	7.6	3.7	16.0	9.0	25.8
VAT	5.9	31.5	6.3	28.6	6.7	20.0
Other G&S	4.7	25.7	5.2	21.7	4.1	12.4
Other taxes[17]	0.8	4.3	1.9	8.3	2.9	8.5

Source: OECD (2018[21]), Global Revenue Statistics Database, https://stats.oecd.org/Index.aspx?DataSetCode=RS_GBL

The share of each type of tax in the tax structure of the three country group averages varied considerably in 2015 (Table 2). Personal income tax was the second highest share of total taxation for the OECD average (24.4% of total tax revenue) and PIT revenue was high as a percentage of GDP in 2015 (8.4% of GDP). In comparison, the share of PIT was smaller in LAC countries with an average of 9.5% of total taxation because tax revenues from other taxes were higher in terms of GDP. For the 16 African countries, the average share of PIT

[16] *Revenue Statistics in Asian and Pacific Countries* does not include an average for Asia as the publication database covers seven Asian countries. No average is therefore available in the *Global Revenue Statistics Database*.

[17] The category "Other taxes" includes payroll taxes, property taxes, unallocable income taxes between CIT and PIT and other taxes that could not be classified into the main tax categories.

amounted to 16.3% of total tax revenue which was significantly higher than the share in the LAC region, however, revenue from SSCs was lower.

By contrast, the share of CIT as a percentage of total tax revenue was significantly higher for the African (14.6%) and the LAC averages (15.9%) than for the OECD average (8.9%). However, this was primarily due to lower revenues from other taxes: when considered as a percentage of GDP, CIT was 2.8% for both the Africa (16) and the OECD averages and just less than one percentage point higher for the LAC average (3.7% of GDP).

Social security contributions play an important role in the tax structures of OECD countries, on average, and a lesser role in the other regions, notably Africa and Asia. They contribute just over a quarter of tax revenues in OECD countries on average, namely 25.8% of total tax revenue. For the Africa (16) average, SSCs play only a minor role (7.6% of total tax revenue).[18] In the LAC countries, SSCs accounted for 16.0% of total taxation on average in 2015 and have been increasing as a share of total tax revenues in recent years. The differences in the shares of total revenues were also reflected in the levels of these tax revenues: as a percentage of GDP, SSCs in 2015 amounted on average to 9.0% in the OECD, 3.7% in the LAC region and 1.7% in Africa.

Value-added taxes are an important source of tax revenues in all country group averages, and in almost every country examined. Most of the 16 African countries received the largest share of their revenue from VAT, at nearly one-third (31.5%) on average, which amounted to 5.9% of GDP in 2015. In the LAC region, VAT also formed the largest share of total tax revenue at 28.6% of total taxation and 6.3% of GDP. In the average OECD tax structure, VAT contributed 20.0% of total tax revenue which was 10 percentage points less than for the Africa and LAC average tax structure. However, as a measure of GDP, VAT revenue was slightly larger for the OECD average than for the other country group averages (6.7% of GDP), reflecting higher overall levels of taxation in OECD countries on average. Value-added tax[19] has been introduced in most countries except for Cuba and the United States which depend more heavily on sales taxes.

There has been a general trend of increasing VAT revenue over time in most countries, especially in Africa and in the LAC region. From 2000 to 2015, VAT revenue (as a percentage of GDP) has increased from 3.7% to 5.9% for the Africa (16) average and from 4.2% to 6.3% for the LAC average. Increases in VAT (as a percentage of GDP) between 2000 and 2015 took place in 13 African countries, 6 Asian countries, 22 LAC countries and 22 OECD countries. These increases are partially due to the introduction of VAT in several LAC and African countries across this period, as well as to reforms of VAT policy and administration.

The role of other taxes on goods and services is more mixed. These taxes include excises, import and export duties, other general taxes on goods and services (i.e. sales taxes) and taxes on the permission to use goods and services. They contributed on average 25.7% to total tax revenue in Africa in 2015 which was higher than the LAC region (21.7 % of total

[18] This number should be interpreted with caution because the Africa average for SSCs is based on data from 13 countries. There are no data available for SSCs in the Democratic Republic of the Congo, Togo and Uganda. In Cabo Verde and Kenya, SSCs are reported as zero.

[19] For ease of reading, the terms "value added tax" and "VAT" are used to refer to any national tax that embodies the basic features of a value added tax, by whatever name or acronym it is known e.g. "Goods and Services Tax" ("GST") in New Zealand or Australia.

taxation) and the OECD (12.4% of total taxation). However, expressed as a percentage of GDP, revenue from other taxes on goods and services was lower in Africa (4.7% of GDP) than in the LAC region (5.2% of GDP) because the overall tax-to-GDP ratio was lower in Africa. For the OECD average, revenue from other taxes on goods and services amounted to 4.1% of GDP. As with VAT, the revenue shares from other taxes on goods and services differed across the three regions, on average, when measured as a percentage of total taxation, but had similar values when expressed as a percentage of GDP.[20]

Tax structures across countries, 2015

Examining the tax structure of the 80 countries in the *Global Revenue Statistics Database* in 2015, three broad tax types account for three-quarters or more of revenues in all countries: taken together, income taxes, SSCs and taxes on goods and services (including VAT) account for more than 75%[21] of total revenues in the countries in the database (Figure 6).

As a first approach to analyse tax structures across the 80 countries, the countries in the database have been divided into three groups according to which of these tax types plays the largest role in their tax structure:

- The first group consists of 23 countries where income tax (both corporate and personal combined)[22] has the largest share of total tax revenue, ranging between 30.3% for Korea and 63.2% for Trinidad and Tobago. This group includes some oil-producing countries (e.g. Malaysia, and Trinidad and Tobago) that rely heavily on CIT from oil revenues. Commodity revenues are often an important factor influencing tax-to-GDP ratios and tax structures: resource-rich countries often rely on tax and non-tax revenues from this sector and often exhibit low tax-to-GDP ratios and a high share of CIT revenues.
- In the second group of 11 countries, SSCs play the largest role ranging from 33.6% of total tax revenue in Austria to 43.0% of total tax revenue in the Czech Republic.
- In the third group, taxes on goods and services compose the largest share of tax revenue. The group consists of 46 countries (including many African and LAC countries) in which revenues from taxes on goods and services range from 35.8% of total tax revenue in Tunisia to 78.9% of total tax revenue in Togo.

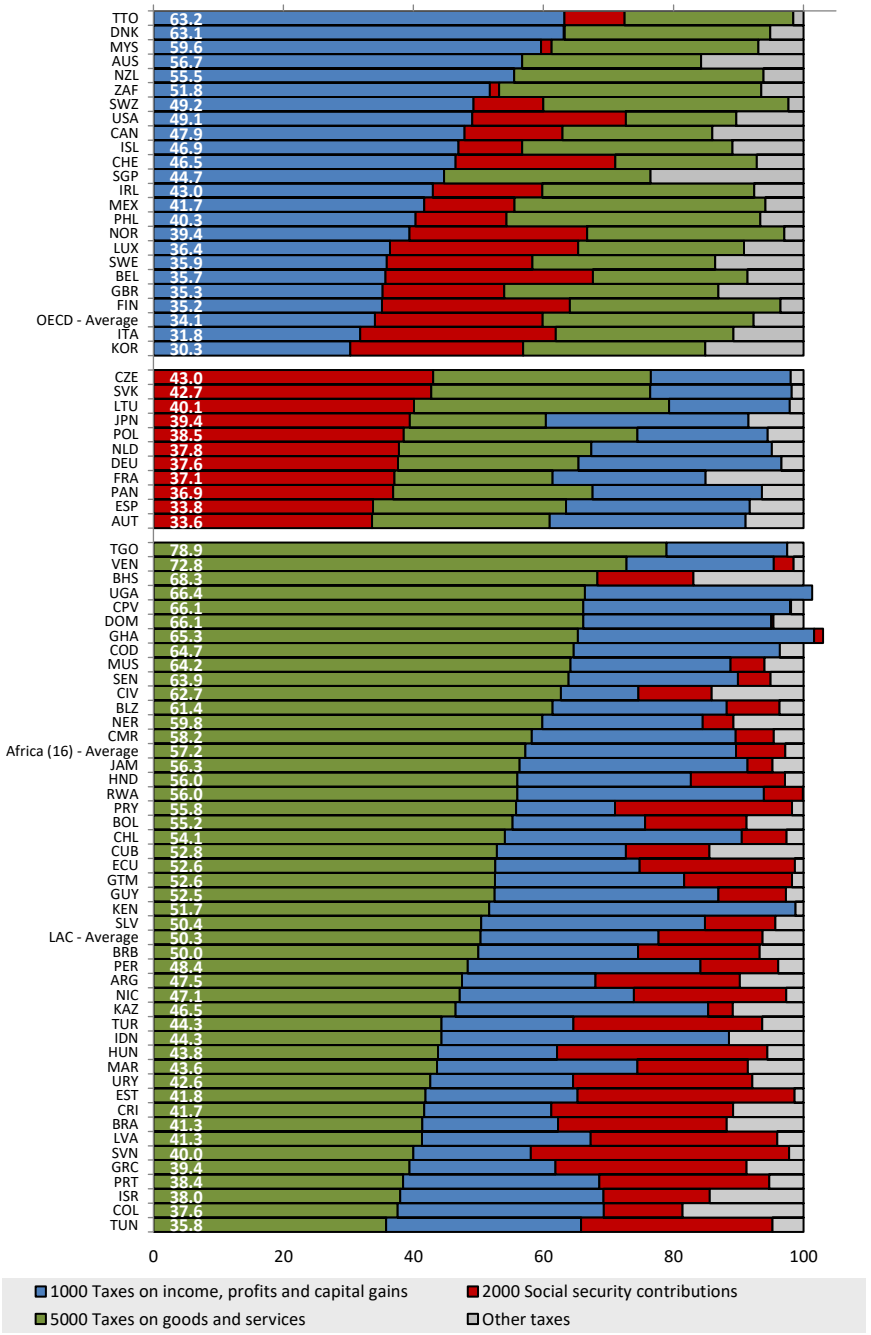
Each of these groups is discussed further below.

[20] The remaining other taxes include taxes on payroll, on property, and unallocable taxes. On average, they are about twice as high for the LAC region and the OECD than for the Africa average. In terms of percentage of total taxation, the share of these other taxes is highest in the LAC region (8.3% of total taxation), whereas as a percentage of GDP revenue from other taxes is largest for the OECD average (2.9% of GDP).

[21] Revenue from income taxes, SSCs and taxes on goods and services (including VAT) account for more than 100% in Ghana and Uganda as they exclude tax refunds - that could not be allocated in these tax categories - and are classified as falling under Other taxes.

[22] In section 4.2.1, the disaggregation of the income tax revenue of those countries between personal and corporate taxes is discussed.

Figure 6. Tax structures in 2015



Note: Countries are grouped and ranked by those where income tax revenues (personal, corporate, and unallocable) form the highest share of total tax revenues between income taxes, SSCs, goods and services taxes (including VAT) and other taxes. They are followed by those where SSCs, and those where taxes on goods and services (including VAT) form the highest share (in 2015). In 14 countries and for the OECD average, the difference between the first and second largest tax share amounts to less than 5 p.p. in 2015. The category "Other taxes" includes some tax refunds which cannot be allocated to the main tax categories in Ghana and Uganda. Thus, the "Other taxes" share is negative in those two countries.
Source: OECD (2018[21]), Global Revenue Statistics Database, https://stats.oecd.org/Index.aspx?DataSetCode=RS_GBL

Countries where income taxes form the greatest share of revenues

The first group of countries are those that receive the largest share of tax revenues from income taxes. This group includes 23 countries, where the share of income taxes ranges from 30.3% to 63.2% of total taxation. These countries are primarily from the OECD area, with six exceptions, being Malaysia, Philippines, Singapore, South Africa, Swaziland, and Trinidad and Tobago. Their tax-to-GDP levels range from 13.6% to 45.9%, with most countries around the mean of 30.5% (see Table 3).

Among these countries, PIT accounts for a greater share than CIT in 19 countries (17.2% to 55.2% of total taxation). The exceptions are Malaysia, Philippines, Singapore, and Trinidad and Tobago, for which CIT revenue is twice to three times larger than PIT revenue (25.2% to 44.0% of total taxation). The second largest source of tax revenues in these countries is goods and services taxation (17.0% to 40.3% of total taxation), with the exception of Belgium, Luxembourg, Switzerland, and the United States, where it is SSCs. Value added tax is the largest source of goods and services tax revenue in 16 of the 23 countries, with the exceptions being Australia, Malaysia, and the Philippines.

Table 3: Tax structure of countries with high share of income taxes in 2015

	PIT	CIT	SSC	VAT	Other G&S	Other taxes	tax-to-GDP ratio
Denmark	55.2	5.6	0.1	20.0	11.6	7.5	45.9
Australia	41.5	15.3	0.0	13.0	14.5	15.8	28.2
United States	40.5	8.5	23.7	0.0	17.0	10.3	26.2
New Zealand	38.1	13.8	0.0	29.7	8.7	9.8	33.0
Canada	36.9	9.9	15.1	13.2	9.9	15.1	32.0
Iceland	36.7	6.5	9.8	22.6	9.7	14.6	36.7
South Africa	33.4	16.4	1.4	23.8	16.5	8.5	29.0
Ireland	31.6	11.3	16.8	19.7	12.9	7.6	23.1
Switzerland	31.1	10.8	24.6	12.4	9.3	11.7	27.7
Finland	30.2	4.9	28.9	20.6	11.8	3.5	43.9
Sweden	29.1	6.9	22.4	20.9	7.2	13.6	43.3
Swaziland	28.7	19.7	10.7	27.5	10.2	3.2	15.3
Belgium	28.3	7.4	31.9	15.0	8.8	8.6	44.8
Norway	27.9	11.5	27.3	21.4	9.0	2.9	38.3
United Kingdom	27.7	7.5	18.7	21.2	11.7	13.1	32.5
Italy	26.0	4.7	30.1	14.2	13.1	11.8	43.3
Luxembourg	24.5	11.9	29.0	17.6	7.9	9.2	36.8
Mexico	20.6	20.1	13.9	23.9	14.7	6.8	16.2
Korea	17.2	13.1	26.6	15.3	12.7	15.1	25.2
Trinidad and Tobago	16.9	44.0	9.3	15.7	10.2	3.9	30.6
Singapore	16.6	25.6	0.0	18.6	13.1	26.1	13.6
Malaysia	14.8	42.5	1.6	15.2	16.5	9.3	15.3
Philippines	13.7	25.2	14.0	13.1	26.0	8.1	17.0

Note: Countries are ranked by the share of PIT revenues.
Source: OECD (2018[21]), Global Revenue Statistics Database, https://stats.oecd.org/Index.aspx?DataSetCode=RS_GBL

SSC revenues are a significant share (9.8% to 31.9% of total taxation) in most of the OECD countries shown, with the exception of Australia and New Zealand where they are not levied, and Denmark where they amount only to 0.1%. In five countries, SSCs account for nearly as much revenue as income taxes, i.e. Belgium, Finland, Italy, Korea, and

Luxembourg. Social security contributions are considerably smaller in the non-OECD countries and range between 1.4% and 14.0% of total tax revenue, and are zero in Singapore where SSCs do not exist.

The share of other taxes, i.e. taxes other than income taxes, SSCs and taxes on goods and services, is relatively large in this group, ranging from 2.9% to 26.1% of total taxation and is primarily comprised of taxes on payroll and property, as well as unallocable taxes. Singapore has the highest share of revenues from other taxes, of which half are levied from property taxes.

Countries with largest share of revenue from SSCs

The second group of countries receives the largest share of their total tax revenue from SSCs. For the 11 countries in this group, the share of SSCs ranges between 33.6% and 43.0% of total taxation. As a percentage of GDP, SSCs range between 5.8% and 16.8% across this group, where all countries are in the OECD except for Panama. The overall tax-to-GDP ratio ranges between 15.9% and 45.2% for these countries (see Table 4).

The second largest share of tax revenue in this group comes from taxes on goods and services for seven countries and from income taxes for three countries (Austria, Germany, and Japan). The share of taxes on goods and services ranges from 21.0% to 39.2% of total tax revenue for the 11 countries; and VAT accounts for more than half of the share of taxes on goods and services for all of these countries.

Within the income tax share, PIT accounts for a larger share of tax revenue (as a percentage of total taxation) than CIT in seven countries of this group, with the exceptions being the Czech Republic, the Slovak Republic, and Panama. Revenue from "Other taxes" is relatively small in this group, ranging between 1.8% and 15.1% of total tax revenue.

Table 4: Tax structure of countries with high share of SSCs in 2015

	PIT	CIT	SSC	VAT	Other G&S	Other taxes	Tax-to-GDP ratio
Czech Republic	10.7	10.8	43.0	21.7	11.7	2.0	33.3
Slovak Republic	9.7	11.5	42.7	21.3	12.4	2.4	32.3
Lithuania	13.3	5.3	40.1	26.7	12.6	2.1	28.9
Japan	18.9	12.3	39.4	13.7	7.3	8.4	30.7
Poland	14.4	5.7	38.5	21.6	14.4	5.5	32.4
Netherlands	20.5	7.2	37.8	17.6	12.0	4.9	37.4
Germany	26.5	4.7	37.6	18.8	9.0	3.4	37.1
France	18.9	4.6	37.1	15.3	9.1	15.1	45.2
Panama	9.7	11.3	36.9	16.4	14.3	11.4	15.9
Spain	21.3	7.0	33.8	19.0	10.7	8.2	33.8
Austria	24.1	5.2	33.6	17.7	9.6	9.7	43.7

Note: Countries are ranked by the share of SSC revenues.
Source: OECD (2018[21]), Global Revenue Statistics Database, https://stats.oecd.org/Index.aspx?DataSetCode=RS_GBL

Countries with largest share of revenue from taxes on goods and services

The third group consists of 46 countries for which revenue from taxes on goods and services is the largest share of total tax revenue. Taxes on goods and services range between 35.8% and 78.9% of total taxation in this group. The majority of countries in this group are African or from the LAC region, with the exception of 10 countries that are Asian or OECD

countries. Their tax-to-GDP levels range between 10.8% and 39.0% with half of the countries having tax-to-GDP ratios close to the mean of 23.3% (see Table 5).

The share of revenue from goods and services is predominantly derived from VAT for most countries, except for 9 countries where it is other taxes from goods and services. The VAT share of total tax revenue ranges between 12.4% and 56.0% across the countries in this group, except for Cuba where sales taxes are levied instead. As a percentage of total tax revenue, the VAT share is high in this group of countries because income tax and SSCs are low as a percentage of GDP.

For 32 countries in this group, income tax has the second largest share in tax revenue, and, in contrast to the first two groups, CIT revenue is larger than the PIT revenue share for 19 of those countries.[23] As a second source of tax revenue, 12 countries rely on tax revenues from SSCs which range between 22.2% in Argentina and 39.7% in Slovenia. For two countries (Bahamas and Côte d'Ivoire), the second largest share in the tax structure are other taxes.

The rest of the tax structure is filled by "Other taxes" which varies between -2.2% and 19.7% of total tax revenue. Colombia shows the highest share of revenues from other taxes, where 55% of this category is levied from property taxes.

Differences in individual tax types across the full group of countries

The preceding subsections have described the tax structures for groups of countries with predominant shares of revenues from income taxes, SSCs and taxes on goods and services, respectively. This subsection considers instead the differences in individual tax types across the full group of countries.

Personal income tax revenue ranges between 0.3% for Côte d'Ivoire and 55.2% in Denmark across all 80 countries. Half of the countries have a PIT share of more than 16.5%. The PIT share of tax revenue is larger for most OECD countries than for African and LAC countries; exceptions are South Africa (33.4% of tax revenue) and Swaziland (28.7% of tax revenue), where the PIT shares are relatively high. The Bahamas form an exception where income taxes are not levied.

Corporate income tax shares vary between 4.0% and 44.0% across all countries, except for the Bahamas where it is not levied. CIT shares are highest in Trinidad and Tobago and Malaysia at more than 42% of total tax revenue. Both countries rely heavily on oil corporate tax revenues; in Trinidad and Tobago, more than 50% of CIT revenue comes from oil companies.

SSCs are highest in OECD countries (on average 25.8% of total tax revenue). Exceptions are Brazil, Costa Rica, Panama, Paraguay, Tunisia and Uruguay where revenue from SSCs (as a percentage of total taxation) lay above the OECD average in 2015.

Value added tax generates a considerable amount of tax revenue collected in African and LAC countries. It forms the largest share of tax revenue in 11 African and 15 LAC countries. It is the largest component of goods and services tax revenues, except in Argentina, the Bahamas, Belize, Côte d'Ivoire, Cuba, Guyana, Jamaica and Kenya, where

[23] For Ecuador, Nicaragua and Venezuela, only data on the disaggregated income tax category (1000) are available.

Table 5: Tax structure of countries with high share of taxes on goods and services in 2015

	PIT	CIT	SSC	VAT	Other G&S	Other taxes	Tax-to-GDP ratio
Venezuela	..	..	3.0	56.0	16.7	24.2	20.8
Togo	4.6	14.0	..	44.2	34.7	2.5	21.3
Chile	9.8	21.0	6.9	40.8	13.3	8.1	20.5
Peru	10.5	23.0	12.0	40.3	8.0	6.1	17.2
Democratic Republic of the Congo	13.3	18.3	..	39.3	25.4	3.6	10.8
El Salvador	16.5	13.9	10.9	39.3	11.2	8.4	17.2
Guatemala	3.0	19.6	16.6	38.6	14.0	8.2	12.4
Paraguay	1.8	13.4	27.3	37.8	18.0	1.7	17.9
Cape Verde	17.4	14.4	0.2	37.6	28.6	1.9	19.2
Senegal	15.7	8.7	5.0	36.1	27.7	6.7	20.8
Dominican Republic	8.6	14.9	0.4	35.5	30.6	10.0	13.5
Ghana	17.1	18.4	1.4	34.9	30.4	-2.2	15.0
Mauritius	9.5	13.7	5.2	34.9	29.3	7.5	19.9
Cameroon	6.7	19.5	5.8	34.7	23.5	9.8	16.4
Honduras	9.1	17.6	14.5	34.6	21.4	2.8	20.4
Uganda	24.6	7.4	..	34.0	32.4	1.7	12.5
Bolivia	0.8	19.6	15.7	33.0	22.2	8.7	27.6
Niger	6.3	18.3	4.7	33.0	26.9	10.8	17.0
Jamaica	17.4	9.4	3.8	31.7	24.6	13.0	25.7
Barbados	14.7	7.6	18.8	31.4	18.6	8.9	33.6
Indonesia	21.5	22.7	..	31.1	13.2	11.5	11.8
Rwanda	22.3	15.6	6.0	30.8	25.2	0.1	16.7
Ecuador	..	..	23.9	30.0	22.6	23.5	21.1
Morocco	14.5	16.3	17.0	29.4	14.2	8.6	26.1
Belize	8.7	16.8	8.1	29.0	32.4	5.0	27.3
Uruguay	11.5	9.4	27.6	28.9	13.7	8.8	27.0
Estonia	17.2	6.2	33.4	27.3	14.5	1.3	33.9
Nicaragua	..	..	23.5	26.7	20.4	29.4	22.3
Latvia	20.4	5.5	28.7	26.5	14.8	4.0	29.0
Colombia	5.9	24.7	12.1	25.0	12.5	19.7	20.8
Israel	19.4	9.5	16.4	24.9	13.0	16.7	31.3
Hungary	13.7	4.6	32.4	24.9	18.8	5.5	39.0
Portugal	21.2	9.0	26.1	24.8	13.6	5.3	34.6
Kenya	26.6	11.8	0.0	24.8	26.9	9.9	18.4
Argentina	10.0	9.9	22.2	23.1	24.4	10.4	32.0
Slovenia	14.0	4.0	39.7	22.9	17.1	2.2	36.6
Brazil	7.8	8.6	25.9	22.5	18.8	16.4	32.0
Guyana	14.6	19.5	10.4	22.1	30.4	3.0	24.2
Costa Rica	6.0	10.3	28.0	20.9	20.8	14.0	22.6
Turkey	14.6	5.7	29.0	20.6	23.7	6.4	25.1
Greece	15.0	5.9	29.4	20.1	19.2	10.2	36.4
Côte d'Ivoire	0.3	11.0	11.2	19.9	42.7	14.8	17.6
Tunisia	19.5	10.4	29.5	19.8	16.0	4.8	30.3
Kazakhstan	9.4	29.4	3.8	14.8	31.6	10.9	15.5
Bahamas	0.0	0.0	14.8	12.4	55.9	16.9	19.9
Cuba	5.5	14.4	12.9	0.0	52.8	14.4	38.6

Note: Countries are ranked by the share of VAT revenues. For Ecuador, Nicaragua and Venezuela, more than a third of their revenue from taxes on income and profits cannot be allocated to either CIT revenue (1200) or PIT revenue (1100). Thus, only data on the aggregated income tax category (1000) are available.
Source: OECD (2018[21]), Global Revenue Statistics Database, https://stats.oecd.org/Index.aspx?DataSetCode=RS_GBL

other taxes from goods and services generate a larger share of tax revenue. In the OECD, VAT has the largest revenue share only in three countries, out of which two are LAC countries (Chile, Israel, and Mexico).

Other taxes on goods and services, i.e. all consumption taxes excluding VAT, range from 7.2% in Sweden to 55.9% in the Bahamas. The share of all other taxes in total tax revenue range between -2.2% in Ghana[24] and 19.7% in Colombia. Taxes in this category are mostly on payroll, property and unallocable[25] other taxes.

Changes in tax structures, 2000-2015

Tax structures have changed considerably across countries from 2000 to 2015. A quarter of countries, mainly from Africa and the LAC region, experienced strong increases in all major tax types. In 12 countries, where the overall tax-to-GDP ratio declined, there was a decrease in income taxation. In 61 countries, VAT revenue (as a percentage of GDP) increased and in 37 of these countries there were simultaneous shifts away from other goods and services taxes. Changes in the tax structure may result from a shift from one tax to another, with a muted impact on the overall level of tax revenue, or by a strong increase/decrease within a single tax category, and a stronger tax revenue impact.[26]

The primary source of tax revenue has changed in 9 countries from 2000 to 2015. For Indonesia, Kazakhstan, and Israel, tax revenue was mainly collected from taxes on income, profits and capital gains in 2000, whereas in 2015 it was taxes on goods and services. In Slovenia, it changed from SSCs to taxes on goods and services. Lithuania received the largest share of tax revenue from taxes on goods and services in 2000 and from SSCs in 2015. In Mexico, Iceland, Philippines and Korea, the major tax revenue source was income taxes in 2015, whereas it has been taxes on goods and services in 2000.

Three key trends were seen among the countries in changes in tax structures between 2000 and 2015:

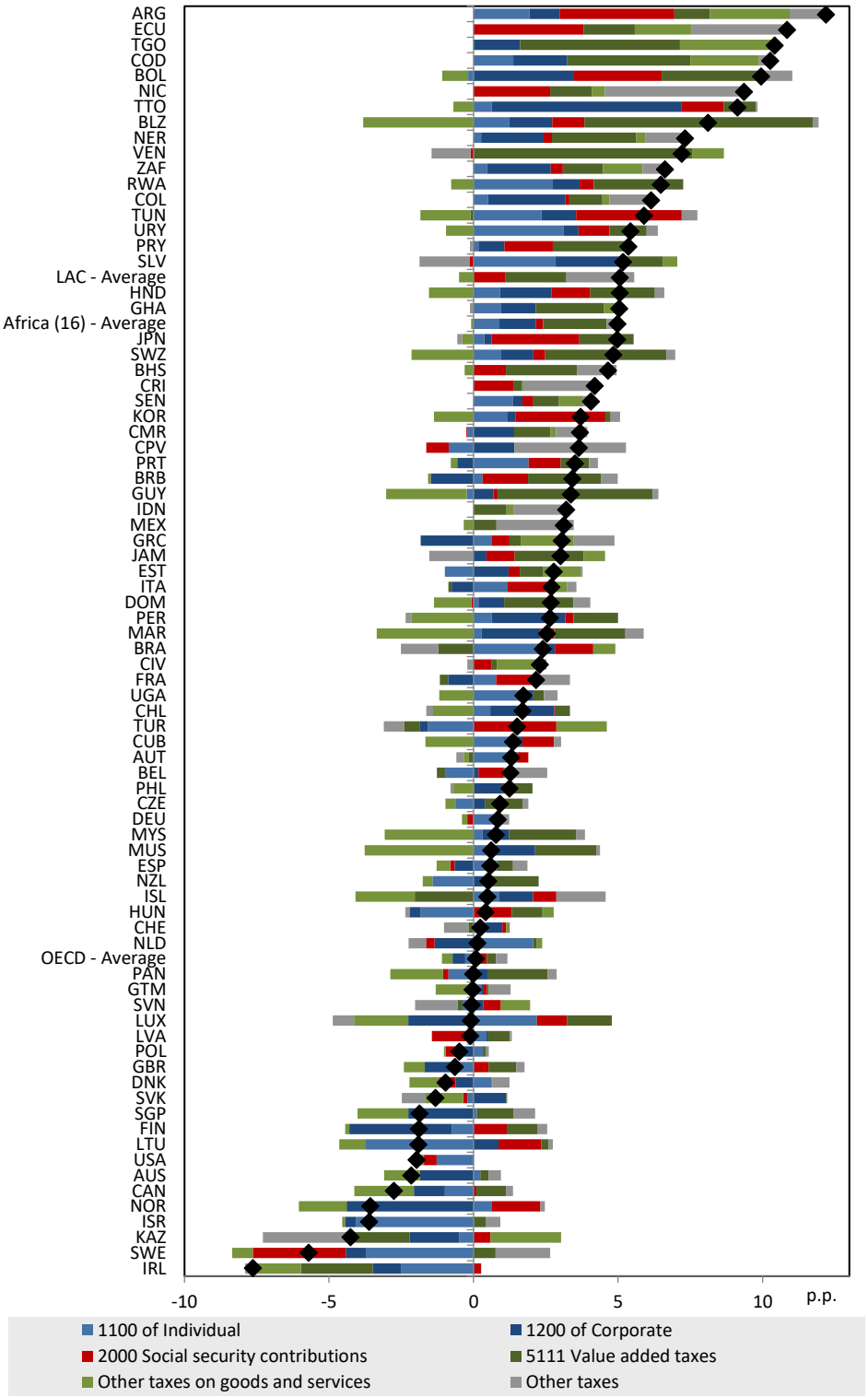
- Strong increase in most major tax types: for a quarter of countries the total tax-to-GDP ratio changed by more than 4.9 percentage points from 2000 to 2015. The group includes only countries from Africa and the LAC region, except for Japan. These 20 countries experienced increases in tax revenue (as % of GDP) in most major tax types (e.g. PIT, CIT, SSCs, and VAT). Tax revenue from VAT increased most for countries in this group, whereas revenue from other taxes on goods and services decreased slightly in 9 of the countries.
- Falls in income taxation: these can be further divided into changes that reduced overall tax levels and those that were relatively revenue neutral (implying a shift away from income taxation):

[24] "Other taxes" include some tax refunds which cannot be allocated to the main tax categories in Ghana and Uganda. Thus, the "Other taxes" share is negative in those two countries.

[25] Unallocable other taxes are income taxes which are unable to be allocated to either PIT or CIT for technical or data availability reasons. They are typically small and limited to a few countries.

[26] Changes in the total tax-to-GDP ratio average over changes in revenue from different tax types and cancel out opposing effects. A close to zero change in the total tax-to-GDP ratio can be driven by opposing changes in the different revenue shares.

Figure 7. Changes in tax-to-GDP ratios disaggregated by main tax types, 2000-2015



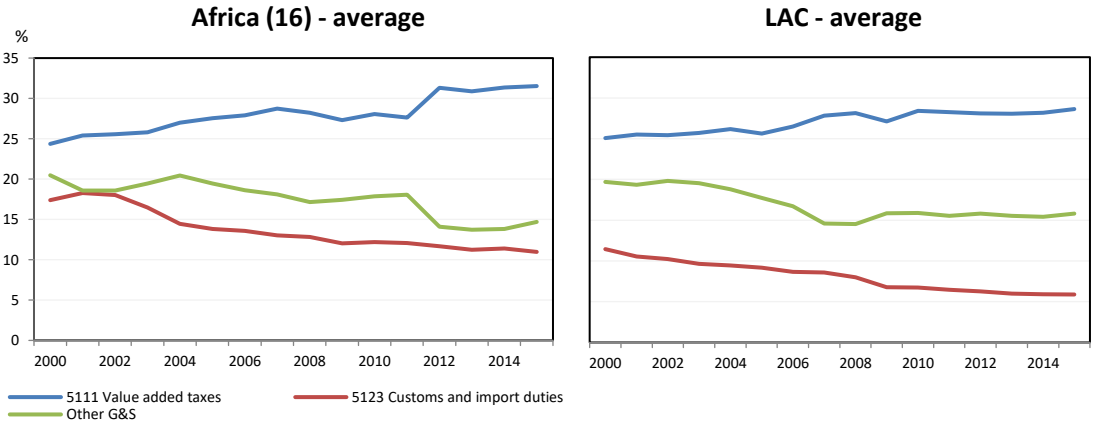
Note: Kenya is missing because there is no tax revenue data for 2000.
Source: OECD (2018[21]), Global Revenue Statistics Database, https://stats.oecd.org/Index.aspx?DataSetCode=RS_GBL

- Reduction in overall tax level: Decreases in the total tax-to-GDP ratios larger than 0.5 percentage points resulting from falls in income taxes occurred in 12 countries (i.e. Australia, Canada, Finland, Ireland, Israel, Kazakhstan, Lithuania, Norway, Singapore, Sweden, the United Kingdom, and the United States). These changes were driven mainly by decreases in income tax revenue (PIT and CIT) as a percentage of GDP which range between 1.3 and 4.4 percentage points.
- Revenue neutral changes (i.e. changes between -0.5 to 0.5 percentage points in the tax-to-GDP ratio): In 5 countries, there was a change in PIT and CIT (as a percentage of GDP) of almost the same size, but in opposite directions (Luxembourg, the Netherlands, Panama, Poland, and Slovenia). In six other countries, tax revenue from income (as a percentage of GDP) declined overall whereas other taxes increased.

- An increase in VAT, often accompanied by a corresponding fall in other goods and services taxes: in 13 African countries, 23 LAC, six Asian countries, 22 OECD countries, and Lithuania, VAT revenue (as a percentage of GDP) increased between 0.1% and 7.9% from 2000 to 2015. For some countries, this was due to the introduction of VAT (e.g. Bahamas, Rwanda, and Swaziland). For 37 of the 61 countries in this group, there were also shifts away from taxes on goods and services. For some countries (e.g. Luxembourg, Malaysia, Morocco, Panama, Spain, and Uruguay), the shift towards VAT and away from taxes on other goods and services was almost of equal size.

VAT revenue has increased as a share of GDP and total tax revenue in most African and LAC countries between 2000 and 2015 (see Figure 8). On average, revenue from VAT in the African countries increased from 24.4% (of total tax revenue) in 2000 to 31.5% in 2015. In the LAC region, VAT revenue increased from 25.1% in 2000 to 28.6% in 2015 on average. Simultaneously, revenue from customs and import duties decreased, mainly due to trade liberalisation. A drop in revenue from taxes on other goods and services was mainly driven by a decrease in excise tax revenues.

Figure 8. Tax revenue (as % of total taxation) from goods and services taxes for the Africa (16) and LAC averages, 2000-2015



Source: OECD (2018[21]), *Global Revenue Statistics Database*, https://stats.oecd.org/Index.aspx?DataSetCode=RS_GBL

Links between GDP per capita, tax structure, and tax-to-GDP ratios

The tax-to-GDP ratio of a given country is the result of a combination of factors including policy and tax administration decisions, economic structure and other macroeconomic characteristics. Understanding these drivers is the subject of a number of studies, e.g. (Koenig and Wagener, 2012[14]; Tosun and Abizadeh, 2005[15]; Xing, 2011[16]). This section provides preliminary analysis on the links between some of these characteristics, namely income levels and the tax-to-GDP ratio; and the share of different taxes in countries tax structures and their tax-to-GDP ratios.

Tax-to-GDP ratio and GDP per capita

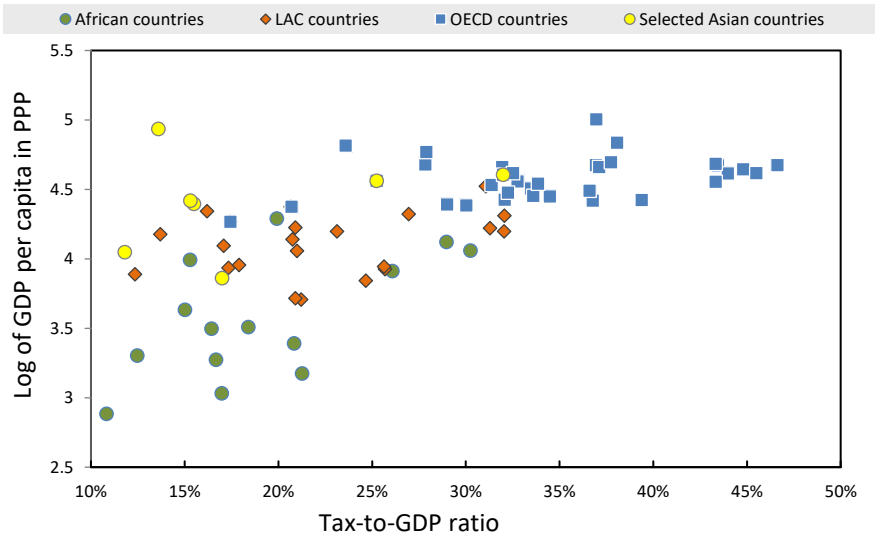
As discussed earlier in this paper, tax-to-GDP ratios are influenced by a number of factors including a country's income level. A positive correlation between GDP-per-capita and the tax-to-GDP ratio is a well-established finding in the empirical literature on the determinants of tax revenues and on tax capacity (Gupta, 2007[27]; Morrissey et al., 2016[28]; Le, Moreno-Dodson and Bayraktar, 2012[29]; Teera and Hudson, 2004[30]; Baiardi et al., 2017[31]; Castro and Camarillo, 2017[32]), although many other economic and demographic factors (including population size, resource endowment, trade openness, industry sector composition, level of corruption and bureaucracy) are also of importance in measuring the tax capacity of an economy.

Consistent with the findings in the literature, the tax-to-GDP ratios for countries included in the Global Revenue Statistics Database are also positively correlated with the log of GDP-per-capita across these countries in 2015 (Figure 9). This implies that countries with higher GDP-per-capita tend to have higher tax-to-GDP ratios, although this should not be read as suggesting causation or a case for policy action without careful consideration of the other factors which impact tax capacity and tax levels in participating countries. Similarly, consideration should also be given to the role of non-tax revenues in financing public services as these vary in importance across countries.

The relationship between tax-to-GDP levels and GDP-per-capita in each region is also highlighted in Figure 9:

- Many African countries are characterised by relatively low income levels and the tax-to-GDP ratios are below 25%.
- For the seven Asian countries, it is not possible to detect a common pattern, but most of them have moderate to high levels of GDP per capita, whereas the tax-to-GDP ratios are lower than in most OECD countries.
- The LAC countries have moderate GDP per capita levels and their tax-to-GDP ratios vary between 12.4% and 38.6%.
- Most OECD countries have tax-to-GDP ratios above 25% and GDP per capita values are among the highest.

Figure 9. Tax-to-GDP ratio and log GDP per capita in 2015



Note: Figure 9 presents 79 countries (Cuba is not shown as GDP-per-capita data are not available). Regional averages are not displayed.
Source: OECD (2018[21]), *Global Revenue Statistics Database*, https://stats.oecd.org/Index.aspx?DataSetCode=RS_GBL. International Monetary Fund (2017[33]), *World Economic Outlook Database*, https://www.imf.org/external/pubs/ft/weo/2017/02/weodata/index.aspx.

Tax-to-GDP ratio and shares of major tax types

The preceding sections have examined the tax levels and tax structures of the countries included in the *Global Revenue Statistics Database*. This section provides some initial observations from a preliminary analysis of the links between these two indicators – i.e. the degree to which tax levels are related to tax structures, or vice versa – through a correlation analysis and suggests avenues that could be further explored using the database.

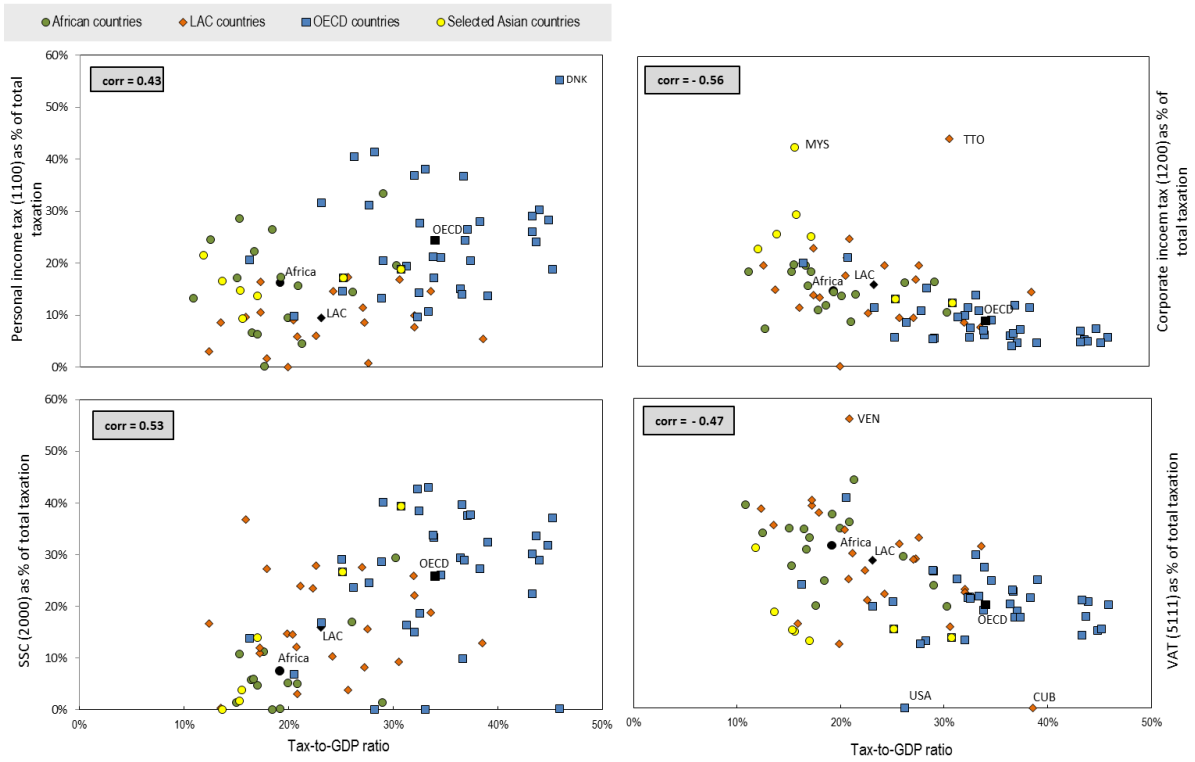
Figure 10 presents scatterplots which show the tax-to-GDP ratio against four significant tax types that are found in almost all economies, as a percentage of total tax revenue (PIT, CIT, SSC, and VAT). Each dot represents a country and the colours indicate the regional distribution. The analysis leads to the following initial observations:

- The correlation between PIT as a percentage of total taxation and the tax-to-GDP ratio is positive. This indicates that countries with higher tax-to-GDP ratios tend to receive larger shares of their total tax revenue from PIT. OECD countries have the highest PIT shares, and LAC countries the lowest, on average.
- Corporate income tax (CIT) is negatively correlated with the tax-to-GDP ratio: countries with higher tax-to-GDP ratios tend to have lower CIT shares in total tax revenue. The CIT share is similar in African and in LAC countries, but tax-to-GDP ratios tend to be higher in the LAC region. The CIT share is lowest for a group of OECD countries, while tax-to-GDP ratios are among the highest in OECD countries. The two outliers are Malaysia and Trinidad and Tobago where CIT forms the largest contribution to total tax revenue, at more than 40%.
- Social security contributions (as a percentage of total tax revenue) tend to be higher in countries with higher tax-to-GDP ratios, although countries may use other means to finance their social protection systems. This is indicated by a pronounced

positive correlation (0.53). For African countries,[27] SSCs (as a percentage of total tax revenue) are 8.4 percentage points lower on average than in LAC countries. In comparison, the tax-to-GDP ratio is 4.1 percentage points less for the African than for the LAC average. Social security contributions were zero for Australia, Kenya, New Zealand, and Singapore in 2015.

- High VAT shares (as a percentage of total tax revenue) are associated with lower tax-to-GDP ratios. The negative correlation (-0.47) implies that countries that depend more on VAT revenue tend to have lower tax-to-GDP ratios. At 31.5% the VAT share for the African average is highest, followed by the LAC average of 28.6%. For OECD countries, which have the highest tax-to-GDP ratios, the VAT share is lowest (at 20.0% on average). As an outlier, Venezuela can be identified with the highest VAT share of 56.0% of total tax revenue, whereas in the United States and Cuba, VAT revenues are nil because they do not have a VAT.

Figure 10: Tax-to-GDP ratios and tax types as a percentage of total taxation in Africa, Asia, Latin America & the Caribbean, and the OECD, in 2015



Source: OECD (2018[21]), Global Revenue Statistics Database, https://stats.oecd.org/Index.aspx?DataSetCode=RS_GBL

The analysis of correlations highlights some initial observations that suggest avenues for future research. Firstly, countries with higher GDP per capita tend to have higher tax-to-GDP ratios, up to a point, after which tax-to-GDP ratios stabilise as per capita incomes increase. This is consistent with similar findings in the literature. Secondly, the shares of

[27] Data for SSCs were not available for the Democratic Republic of the Congo, Togo, Uganda and Indonesia in 2015. Thus, the Africa average for tax revenue from SSCs as % of GDP is calculated based on the countries which have data available.

PIT and SSCs (as a percentage of total taxation) are positively correlated to tax-to-GDP ratios, i.e. countries that collect larger shares of their tax revenue from PIT and SSCs also tend to have higher tax-to-GDP ratios. This may be linked to the redistribution role of these two tax types, since PIT and SSCs are the major redistribution channels in most countries. By contrast, CIT and VAT (as a percentage of total taxation) show a negative correlation with tax-to-GDP ratios. Hence, countries that rely more heavily on CIT and VAT revenue also tend to have lower tax-to-GDP ratios. As the reasons for these apparent correlations between the tax-to-GDP ratios, GDP-per-capita, and the different tax shares can be diverse, caution should be taken in their interpretation. However, these observations suggest interesting avenues for exploration in future research.

Conclusions

The *Global Revenue Statistics Database* shows changes in the level and structure of taxation in 80 countries between 1990 and 2015, highlighting changes in the evolution of tax revenues in the different countries and regions included in the database. Across these countries, tax-to-GDP ratios range from 10.8% to 45.9% in 2015, with half of the countries having a tax to GDP ratio ranging between 18.2% and 33.2% of GDP and a median tax-to-GDP ratio of 26.2%. Tax-to-GDP ratios tend to be higher in OECD countries: many countries from Africa, Asia and the LAC region, as well as two OECD countries, have tax-to-GDP ratios below the median.

Since 2000 there has been a convergence of tax levels among the countries considered towards overall higher levels of taxes. Three-quarters of countries have increased their tax-to-GDP ratios since 2000, with half of the countries increasing their tax-to-GDP ratios by 0.1 to 4.9 percentage points and a further quarter increasing them by over 4.9 percentage points. Notable exceptions include Ireland, Kazakhstan and Sweden for which tax-to-GDP ratios decreased by more than four percentage points between 2000 and 2015. Countries with higher tax-to-GDP ratios typically increased their tax-to-GDP ratios less over this time, whereas countries with lower tax-to-GDP ratios increased them by a greater degree. This means that the distribution of tax-to-GDP ratios is more even across countries in 2015 than in 2000.

Tax structures vary among the regions. For the Africa (16) and LAC averages, taxes on goods and services, particularly VAT, form the largest share of total tax revenue; and SSCs play a larger role in tax revenues in the LAC region on average than in Africa. Social security contributions and PIT form the highest shares of tax revenue in the OECD on average, where VAT plays a smaller role as a share of total taxation, although it is similar as a share of GDP.

When the 80 countries are divided into three groups depending on whether their tax structure depends most heavily on taxes on income, profits and capital gains, SSCs or taxes on goods and services, the following conclusions can be drawn:

- Income taxes form the main part of revenues in 23 countries in 2015. Among these, a greater share is received from PIT in 19 countries, whereas CIT revenues are more significant in four countries.
- SSCs are the major source of tax revenue in 11 countries. These countries are all OECD countries except for Lithuania and Panama, and typically also have a higher reliance on PIT than other countries.
- Taxes on goods and services are the largest source of tax revenue for 46 countries, including most African and LAC countries. Value-added tax is the most significant

component of this revenue in 37 countries. In 19 of these countries, the share of CIT in tax revenues was higher than the share of PIT.

The paper also considers the changes to tax structures over time for the countries included in the database. Three types of change in tax structure were observed:

- One quarter of countries, which are all from Africa or the LAC region except for Japan, experienced strong increases in most major tax types and large increases (greater than 4.9 p.p.) in their overall tax-to-GDP ratio from 2000 to 2015.
- Countries with decreases in the tax-to-GDP ratio from 2000 to 2015, which are predominantly Asian and OECD countries, were often impacted by a fall in income tax. In some cases, countries experienced revenue neutral changes in the tax structure which involved a decrease of at least one component of income tax and an increase in another tax category, implying a shift away from income taxation.
- In 61 countries from all regions, an increase in VAT levels can be observed. A corresponding shift away from other goods and services taxation takes place in 37 of these countries.

Finally, a correlation analysis confirms previous findings in the literature that countries with higher GDP per capita tend to have higher tax-to-GDP ratios, and preliminary analysis observes correlations between the level of tax revenues and the structure of tax systems in the countries included in the database. Specifically, higher shares of PIT and SSCs are positively correlated with higher levels of total taxation, while the opposite is true for shares of VAT and CIT. Pursuing an understanding of the drivers of tax structures and their suggested relationship with income levels and total taxation would be an interesting avenue for deeper analysis using the *Global Revenue Statistics Database*.

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Annex A. Tax-to-GDP ratio data for 1990, 2000, and 2015

Table 6. Total tax revenue as % of GDP

Countries	Country codes (ISO)	1990	2000	2015	Data from
Africa (16) - Average	Africa	..	14.2	19.1	2000
Argentina	ARG	13.7	19.8	32.0	1990
Australia	AUS	28.0	30.4	28.2	1990
Austria	AUT	39.4	42.4	43.7	1990
Bahamas	BHS	12.3	15.2	19.9	1990
Barbados	BRB	23.2	30.2	33.6	1990
Belgium	BEL	41.2	43.5	44.8	1990
Belize	BLZ	21.8	19.1	27.3	1990
Bolivia	BOL	8.3	17.6	27.6	1990
Brazil	BRA	25.5	29.6	32.0	1990
Cameroon	CMR	..	12.8	16.4	1993
Canada	CAN	35.2	34.8	32.0	1990
Cape Verde	CPV	10.5	15.6	19.2	1990
Chile	CHL	16.9	18.8	20.5	1990
Colombia	COL	10.6	14.6	20.8	1990
Costa Rica	CRI	21.3	18.4	22.6	1990
Cuba	CUB	29.1	37.2	38.6	1990
Czech Republic	CZE	..	32.4	33.3	1993
Côte d'Ivoire	CIV	21.6	15.3	17.6	1990
Democratic Republic of the Congo	COD	..	0.6	10.8	2000
Denmark	DNK	44.4	46.9	45.9	1990
Dominican Republic	DOM	7.8	10.8	13.5	1990
Ecuador	ECU	7.3	10.3	21.1	1990
El Salvador	SLV	10.5	12.1	17.2	1990
Estonia	EST	..	31.1	33.9	1995
Finland	FIN	42.9	45.8	43.9	1990
France	FRA	41.0	43.1	45.2	1990
Germany	DEU	34.8	36.2	37.1	1990
Ghana	GHA	..	10.0	15.0	2000
Greece	GRC	25.2	33.4	36.4	1990
Guatemala	GTM	8.8	12.4	12.4	1990
Guyana	GUY	20.6	20.8	24.2	1990
Honduras	HND	16.2	15.3	20.4	1990
Hungary	HUN	..	38.6	39.0	1991
Iceland	ISL	30.2	36.2	36.7	1990
Indonesia	IDN	..	8.6	11.8	1997
Ireland	IRL	32.4	30.8	23.1	1990
Israel	ISR	..	34.9	31.3	1995
Italy	ITA	36.4	40.6	43.3	1990
Jamaica	JAM	23.1	22.7	25.7	1990

Japan	JPN	28.2	25.8	30.7	1990
Kazakhstan	KAZ	..	19.8	15.5	1998
Kenya	KEN	..	..	18.4	2001
Korea	KOR	18.8	21.5	25.2	1990
LAC - Average	LAC	16.0	18.0	23.1	1990
Latvia	LVA	..	29.1	29.0	1995
Lithuania	LTU	..	30.8	28.9	1995
Luxembourg	LUX	33.5	36.9	36.8	1990
Malaysia	MYS	19.1	14.6	15.3	1990
Mauritius	MUS	23.3	19.3	19.9	1990
Mexico	MEX	12.4	13.1	16.2	1990
Morocco	MAR	..	23.5	26.1	2000
Netherlands	NLD	40.2	37.2	37.4	1990
New Zealand	NZL	36.2	32.5	33.0	1990
Nicaragua	NIC	..	13.0	22.3	1991
Niger	NER	..	9.7	17.0	2000
Norway	NOR	40.2	41.9	38.3	1990
OECD - Average	OECD	31.9	33.9	34.0	1990
Panama	PAN	15.9	15.9	15.9	1990
Paraguay	PRY	5.8	12.6	17.9	1990
Peru	PER	12.1	14.6	17.2	1990
Philippines	PHL	..	15.8	17.0	1994
Poland	POL	..	32.9	32.4	1991
Portugal	PRT	26.5	31.0	34.6	1990
Rwanda	RWA	..	10.2	16.7	1996
Senegal	SEN	..	16.8	20.8	1997
Singapore	SGP	..	15.5	13.6	2000
Slovak Republic	SVK	..	33.6	32.3	1995
Slovenia	SVN	..	36.6	36.6	1995
South Africa	ZAF	23.9	22.4	29.0	1990
Spain	ESP	31.6	33.2	33.8	1990
Swaziland	SWZ	..	10.5	15.3	1995
Sweden	SWE	49.5	49.0	43.3	1990
Switzerland	CHE	23.6	27.4	27.7	1990
Togo	TGO	..	10.9	21.3	2000
Trinidad and Tobago	TTO	23.4	21.4	30.6	1990
Tunisia	TUN	..	24.4	30.3	2000
Turkey	TUR	14.5	23.6	25.1	1990
Uganda	UGA	..	10.7	12.5	1992
United Kingdom	GBR	32.9	33.2	32.5	1990
United States	USA	26.0	28.2	26.2	1990
Uruguay	URY	19.6	21.6	27.0	1990
Venezuela	VEN	18.1	13.6	20.8	1990

Note: For most OECD countries, data are available from 1965 onwards in the OECD Revenue Statistics database.
Source: OECD (2018[21]), Global Revenue Statistics Database, https://stats.oecd.org/Index.aspx?DataSetCode=RS_GBL

Annex B. Technical guide & methodological information

This Annex provides an overview of the process used to update the database, describing its data coverage and sources, classification system, compilation and updating, and strengths and limitations.

Data coverage and sources

The new *Global Revenue Statistics Database* covers 80 countries from around the world from 1990 to 2015. It draws on the four regional Revenue Statistics publications and includes 16 African countries, seven Asian countries, 25 countries from Latin America and the Caribbean (LAC) and 35 OECD countries[28] plus one non-OECD EU member (Lithuania)[29]. Additionally, three unweighted country group averages are provided: the Africa (16) average[30], the LAC average and the OECD average.[31]

The OECD interpretative guide

All data in the *Global Revenue Statistics Database* are classified using the OECD classification of taxes set out in the Interpretative Guide. This ensures consistency across the countries included in the publication and provides a high granularity of tax revenue categories.

The OECD definition of taxes, set out in the Interpretative Guide and used in all Revenue Statistics publications, defines taxes as compulsory, unrequited payments to general government. Taxes are unrequited in the sense that benefits provided by government are not normally in proportion to their payments. According to the OECD classification, taxes are classified by the base of the tax.

The Interpretative Guide provides a highly comparable and internationally-recognised framework which is used to ensure comparability of data across the regions. The Interpretative Guide is also harmonised with other leading statistical classifications, including the System of National Accounts (European Commission et al., 2009[11]), the European System of Accounts (European Commission, 2010[12]), and the Government Finance Statistics Manual (International Monetary Fund, 2014[13]) and contains a bridge table of the different classifications at the lowest level of aggregation.

Within the main categories, further subdivisions of tax categories are made which provide a high level of granularity. For example, commonly-cited taxes include PIT (heading 1100), CIT (heading 1200), SSC (heading 2000) and VAT (heading 5111). An overview on all optional sub-categories of taxes is attached in Annex C.

Approach to data collection for regional publications

[28] Four of the OECD countries are also counted as Asian or LAC countries (Chile, Japan, Korea, and Mexico).

[29] Data for Lithuania was provided by the Lithuanian Ministry of Finance through the OECD's Working Party on Tax Statistics and Tax Policy.

[30] The Africa (16) average is based in the following countries: Cabo Verde, Cameroon, Côte d'Ivoire, the Democratic Republic of the Congo, Ghana, Kenya, Mauritius, Morocco, Niger, Rwanda, Senegal, South Africa, Swaziland, Togo, Tunisia and Uganda.

[31] Note that Chile and Mexico are included in the LAC average and in the OECD average. There is no Asian average presented due to the insufficient coverage of the Asian countries in the dataset.

The new database draws on data from the four *Revenue Statistics* publications.[32] The Revenue Statistics for OECD Countries publication, which has been produced since 1972, includes data for all OECD countries, which is submitted to the OECD by national administrations using templates provided by the OECD. Other existing datasets – the IMF's World Revenue Longitudinal Dataset (WoRLD) and the ICTD/UNU-WIDER Government Revenue Dataset (GRD)[33] – draw in part from the Revenue Statistics publications in their respective databases on government revenues, which each have different country coverages and data scope.

All African and Asian countries which are included in the respective regional *Revenue Statistics* datasets participate voluntarily. Data collection for these countries is processed as follows:

- First, countries are committed to deliver and share their tax revenue data with the OECD and the regional organisations.[34]
- Regular discussions take place between the OECD, regional partners and the national data provider. The national data providers are experts – typically a senior official who has access to the necessary data and a detailed understanding of the tax system and economic context in each country.
- Technical assistance is provided to each country by a team of statisticians at the OECD Centre for Tax Policy and Administration and the OECD Development Centre to resolve classification differences and data gaps. This bilateral and collaborative approach enables the classification to be built from the bottom-up and ensures consistency across countries.
- Finally the data are validated by each country prior to publication.

The tax revenue data from most Latin American countries[35] are sourced from public websites of the Tax Administrations, Ministries of Finance or National Statistics institutes and are harmonised in collaboration with regional partner organisations, i.e. ECLAC, CIAT and IDB, which work closely and directly with the Latin American and Caribbean countries concerned.

Further detailed information is available in the respective publication and the metadata which can be accessed via the new online database. An overview about the coverage of the four publications and the included indicators can be found in Table 7.

Compilation of the global database

To construct this new global dataset, data is drawn from the latest four Revenue Statistics publications and no additional data processing has taken place to create this new database. As indicated above, all regional databases and the OECD database have been prepared according to the common classification of taxes provided by the Interpretative Guide. The year from which revenue data is available for each country is indicated in Table 6 in Annex A.

[32] *Revenue Statistics in Africa, Revenue Statistics in Asian and Pacific Countries, Revenue Statistics in Latin America & the Caribbean* and *Revenue Statistics OECD.*

[33] For more information see https://data.world/imf/world-revenue-longitudinal-dat and https://www.wider.unu.edu/project/government-revenue-dataset

[34] ATAF, AUC, ECLAC, CIAT and IDB.

[35] Argentina, Chile (an OECD country), Colombia, Costa Rica and Mexico (an OECD country) are the LAC countries providing directly data to the OECD.

Table 7. Revenue Statistics publications, overview

Revenue Statistics	in Africa	in Asia	in LAC	OECD
Number of countries	16	7	25	35
Time coverage	2000-2015	1990-2015	1990-2015	1965-2015
Common indicators	Revenue in national currency Revenue in USD Revenue as % of GDP	Tax revenue in national currency Tax revenue in USD Tax revenue as % of GDP		
	Tax revenue as % of total tax revenue			
Additional indicators				
	Non-tax revenue as % of total non-tax revenue		Tax revenues of sub-sectors of general government as % of total tax revenues	
	GDP for tax reporting years at market prices, national currency Exchange rate between the national currency and USD GDP for tax reporting years at market prices, USD			

Source: (OECD/ATAF/AUC, 2017[7]), OECD (2017[8]), OECD et al. (2018[9]), and OECD (2017[10]).

Level of Government

In the *Global Revenue Statistics Database* all indicators are measured at different levels of government and at the total aggregated level (i.e. general government). Data are available at four different levels of government: the central/federal government level, the State/regional government level, the local government level, and for social security funds. However, for a few countries data are not available at the local government level. To allow comparison across all countries and regions, the analysis in this paper only uses the general government indicator.

Strengths and limitations of the dataset

The *Global Revenue Statistics Database* provides globally comparable revenue data with a high degree of disaggregation, according to a common classification and harmonisation process. This section outlines the strengths and limitations of the new database.

The *Revenue Statistics* framework is based on a consistent, detailed, widely-known and internationally respected classification. The methodology is transparent as each edition includes the edition of the Interpretative Guide used to process the data. The classification discussion with countries is centralised as one single Unit at the OECD's Centre of Tax Policy and Administration is involved with all countries, in collaboration with statisticians at the OECD Development Centre and regional partners. This leads to a coherent application of the classification across countries.

The classification and harmonisation process also increases capacity building. Regular discussions about *Revenue Statistics* by telephone, emails and workshops with experts in countries and regional partners create a stable network of tax officials through the sharing of experiences and best practices. National tax policy makers become experts on classifying and using revenue data. This process also ensures that the database and classification are continually refined and are suited to the changing needs of participating countries.

A first strength is the classification and harmonisation of the data. The *Revenue Statistics* dataset follows a consistent way in standardising the data for all countries using the *OECD classification set out in the Interpretative Guide.* Providing detailed tax information for

participating countries is another advantage. The *Global Revenue Statistics Database* gives a great depth of tax information for each of the 80 participating countries through the use of the detailed classification of the Interpretative Guide. The *Revenue Statistics* dataset also provides greater granularity of data via the inclusion of a country-specific detailed breakdown of taxes, within the framework provided by the Interpretative Guide. The OECD, regional partners, and national officials work together to enhance the quality of the data presented. This entails developing methodologies to estimate small amounts of missing data and discussing on a case by case basis the tax base of taxes, which permits a correct classification of taxes that would otherwise have been reported as "other taxes".

Where difficulties remain in applying the detailed classification in the Interpretative Guide, the OECD and partner organisations work actively with the countries involved to fill those gaps where possible, resulting in several success stories. For example, Côte d'Ivoire and Colombia have implemented internal processes which enable them to provide income tax revenues broken down by PIT revenue and CIT revenue when they were previously unable to do so. Another example is the creation of an electronic database in the Democratic Republic of the Congo to respond to the need to provide Revenue Statistics with information on certain types of revenues and to centralise their revenue data.

The transparency and accessibility of the tax revenue data are additional assets. All data collected in the *Global Revenue Statistics Database* and the underlying *Revenue Statistics* publications are publicly available. All footnotes, caveats and other important notes are published in the metadata, which provide supplementary background information on data preparation and explain country-specific cases in detail.

Annex C. The OECD classification of taxes

1. 1000 Taxes on income, profits and capital gains
   - 1100 Taxes on income, profits and capital gains of individuals
     - 1110 On income and profits
     - 1120 On capital gains
   - 1200 Corporate taxes on income, profits and capital gains
     - 1210 On income and profits
     - 1220 On capital gains
   - 1300 Unallocable as between 1100 and 1200

2. 2000 Social security contributions
   - 2100 Employees
     - 2110 On a payroll basis
     - 2120 On an income tax basis
   - 2200 Employers
     - 2210 On a payroll basis
     - 2220 On an income tax basis
   - 2300 Self-employed or non-employed
     - 2310 On a payroll basis
     - 2320 On an income tax basis
   - 2400 Unallocable as between 2100, 2200 and 2300
     - 2410 On a payroll basis
     - 2420 On an income tax basis

3. 3000 Taxes on payroll and workforce

4. 4000 Taxes on property
   - 4100 Recurrent taxes on immovable property
     - 4110 Households
     - 4120 Other
   - 4200 Recurrent taxes on net wealth
     - 4210 Individual

4220 Corporate

4300 Estate, inheritance and gift taxes

4310 Estate and inheritance taxes

4320 Gift taxes

4400 Taxes on financial and capital transactions

4500 Other non-recurrent taxes on property

4510 On net wealth

4520 Other non-recurrent taxes

4600 Other recurrent taxes on property

5. 5000 Taxes on goods and services

5100 Taxes on production, sale, transfer, leasing and delivery of goods and rendering of services

5110 General taxes

5111 Value added taxes

5112 Sales taxes

5113 Turnover and other general taxes on goods and services

5120 Taxes on specific goods and services

5121 Excises

5122 Profits of fiscal monopolies

5123 Customs and import duties

5124 Taxes on exports

5125 Taxes on investment goods

5126 Taxes on specific services

5127 Other taxes on international trade and transactions

5128 Other taxes on specific goods and services

5130 Unallocable as between 5110 and 5120

5200 Taxes on use of goods, or on permission to use goods or perform activities

5210 Recurrent taxes

5211 Paid by households in respect of motor vehicles

5212 Paid by others in respect of motor vehicles

5213 Other recurrent taxes

5220 Non-recurrent taxes

5300 Unallocable as between 5100 and 5200

6. 6000 Other taxes

6100 Paid solely by business

6200 Paid by other than business or unidentifiable