OVERVIEW OF TAX ADMINISTRATIONS IN CIAT COUNTRIES

Revenue, resources, performance, and digital transformation in the prelude to the COVID-19 pandemic

Based on ISORA 2020 Survey results (Data for 2018-2019)

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Executive summary

▶ This new edition of the **Overview of Tax Administrations in CIAT Countries** is intended to provide a detailed and systemic picture of the state of tax collection agencies for the organization's member countries, based on updated information from the **International Survey on Revenue Administration (ISORA)**, compiled in 2020 with data available for fiscal years 2018 and 2019.

▶ The **different dimensions analyzed** include the revenues administered and financial resources of the Tax Administrations (TA), the basic characteristics of the personnel employed, the central issues of their operational functioning -with a special emphasis on digitalization and risk management processes-, and the degree of implementation of technological innovations aimed at improving tax compliance and tax management in general.

▶ **ISORA 2020** has information for 156 jurisdictions, which accounted for 96.1% of global GDP and 90.6% of the world's population in 2019. Among them are 35 CIAT member countries, which accumulate 44.7% of GDP and 37.1% of the population. In turn, 33% of the 156 countries correspond to "High Income" jurisdictions, 29% belong to the "Upper-Middle Income" group, 26% to the "Lower-Middle Income" group, and the remaining 12% to the "Low Income" group.

▶ **Among the CIAT countries** included in ISORA 2020, there are cases from the first three groups according to their income level, from various geographic regions, although with a clear majority from Latin America and the Caribbean (LAC) and with 11 of them as OECD members. In addition, 13 cases integrate the administration of tax and customs resources, 6 countries integrate taxes and social security contributions, and only 4 of them jointly manage the three types of fiscal resources.

Administered revenue and financial resources

▶ The countries surveyed in the ISORA 2020 survey show a wide diversity in terms of **the number and type of tax instruments administered** by their respective TAs. Income Tax (IT) stands out, both that levied on individuals (PIT) and on companies and corporations (CIT), being present in 96.8% and 98.7% of cases, respectively. Value Added Tax (VAT) is also a widely used revenue element (88.5% of cases), especially in countries with higher income levels.

▶ Excise taxes also prove to be a frequent instrument for all TA (63.5% of the 156 countries in ISORA), although with greater intensity in Low Income countries (83.3%). Customs resources appear in 40.4% of the cases and non-tax revenues in 50.6%, with a relatively higher presence in low-income countries (55.6% and 72.2%). This contrasts with contributions to social security systems (SSC), which appear as

the TA's own responsibility in 28.8% of the cases, mostly in Upper-Middle Income (43.5%) and High Income (37.3%) jurisdictions.

▶ In terms of the **magnitude of tax revenues**, the Total Net Revenue (TNR) managed by TAs (their workload) reached a global average value of 17.3% of GDP in 2019, with wide variability between extremes (0.7% to 45.7%) and increasing averages as a function of income, from 10.6% of GDP (Low Income) to 22.1% of GDP (High Income). The CIAT average (16.6% of GDP) is below the global average but above the average for LAC (15.2% of GDP).

▶ On the other hand, the TNR per capita (in dollars) shows an average for ISORA of US$ 3,377 per capita, higher than the CIAT average (US$ 2,761) and more than double the LAC average (US$ 1,513), with a marked upward trend with income level (from an average of US$ 66 per year in low-income countries to US$ 8,423 in high-income countries).

▶ These wide differences between groups of countries are reduced when considering TNR in relation to Total Government Revenue, with an overall average of 58.4% for ISORA and 62.5% for CIAT and 59.5% for LAC, with no identifiable trend according to the income level of countries.

▶ In terms of the **composition of TNR** of the TAs, at the global level, the IT is the main instrument in terms of revenue collection (40.1% of the total). It is followed in importance by total net VAT (domestic and imports), which contributes an average of 30.6% of TNR. The rest of TA revenue is made up of a varied set of taxes (20.1%), SSC (6.4%) and non-tax resources (2.8%).

▶ These proportions are similar for CIAT members and for LAC countries, although there is a certain weakness of Personal Income Tax (PIT) and SSC, compensated by a higher relative participation of VAT and the rest of the taxes. These characteristics are also confirmed when sorting the ISORA countries into groups determined by its income level.

▶ At CIAT country level, the importance of VAT as a source of tax revenue stands out in several cases in LAC region, while in the most developed countries the main tax collection instrument is the PIT. CIT is also important, especially in LAC, while SSC is only significant in the few countries with integrated TA (Argentina, Brazil, the United States and the Netherlands) and non-tax revenues exclusively in specific cases such as France and Mexico.

▶ In order to carry out all their tasks, the TAs have a certain **size and structure of budget** which, for the 156 countries participating in ISORA 2020, averages 0.177% of GDP (2019), distributed into an operating or current component (0.164% of GDP and 92.7% of the total) and a capital component (0.013% of GDP and 7.3% of the total).

▶ Salary expenditure is the main component of the operating budget, with an overall average of 69.6% of the total (73.8% for CIAT and 72.2% for LAC). Information and Communications Technology (ICT) expenditure represents, on average, a small portion of total operating expenditure (8.4% in ISORA; 8.5% in CIAT; 9.3% in LAC).

▸ As regards CIAT countries, some Caribbean countries stand out (Barbados, Guyana and Jamaica) with total budgets equivalent to 0.5% of GDP, while others have budgets below 0.1% of GDP, despite the wide dispersion in the structure of their operating budgets.

▸ From the quotient between the revenues collected and the budget used, a coefficient is obtained that expresses the "**recurrent collection cost**" of each TA. The collection of one hundred monetary units has an average cost of 1.32 for all ISORA countries (1.10 for CIAT and 1.45 for LAC). The cost of collection is clearly decreasing with respect to income level (from 2.94% for Low Income countries to 1.07% for High Income countries).

▸ By CIAT countries, Barbados, Belize, Guyana, Jamaica and Nigeria are the only five cases in which this indicator is close to 2.5 percentage points, well above the global and regional averages; at the other extreme, Brazil, the United States, Mexico and Suriname show the lowest values in this group of countries, all with a score below 0.5%.

Main characteristics of the employed staff

▸ In **terms of staffing size**, the 156 ISORA participating jurisdictions accumulated a workforce of more than 2 million (full-time equivalents -FTE-) by the end of 2019. Of these, 410 thousand belong to CIAT member countries and 104 thousand to LAC countries; 88% of the total is concentrated in Upper-Middle and High Income countries.

▸ In relation to population, the global average is close to 6,000 inhabitants per FTE worker; that ratio decreases rapidly as income level increases, from almost 15,000 inhabitants (Low Income) to 1,692 inhabitants per worker (High Income). Similar trends are observed when considering the ratio of labor force per FTE employee: an overall average of 2,558 inhabitants of the working population, with decreasing averages with income level from 5,978 (Low Income) to 862 (High Income) inhabitants of working age.

▸ Staff employed as a function of the number of taxpayers shows averages for CIAT countries that exceed the overall ISORA averages (829 and 568 taxpayers in the PIT, 81 and 66 in the CIT, 139 and 76 in the VAT, respectively). In addition, the average number of taxpayers per worker increases as income level increases, from 76 to 700 in the PIT, from 15 to 81 in the CIT, and from 10 to 102 in the VAT.

▸ The situation in CIAT countries shows great heterogeneity not only in the absolute size of the TA workforce but also when these figures are weighted by population and labor force or when considering the number of contributors per FTE employee, with the high workload in most CIAT member countries being evident.

▸ Regarding **recent staff dynamics** in ISORA TAs, the annual balance for Fiscal Year 2019 was slightly positive (1,286 workers), taking into consideration information from 151 countries with available information. In sum, 86 participating TAs of ISORA (20 CIAT members) recorded a positive employment balance during 2019. On the other hand, both CIAT and LAC, as a whole, showed slight decreases in their workforces.

▶ The average annual FTE employee hiring rate for ISORA (8.0%) is similar to that of other alternative groupings, but not the FTE employee attrition rate, where the global average is 6.3%; in CIAT it is somewhat higher (7.2%) and then increases with income level of countries, with averages ranging from 2.6% (Low Income) to 7.6% (High Income).

▶ By CIAT country, the dynamics of employed staff showed large fluctuations during 2019, with the largest positive balances (over 1,000 net FTEs) in Argentina, Canada, Kenya and the Netherlands. In the opposite direction, Brazil, France, Italy and Mexico recorded the most notable negative balances, with (net) staff reductions of more than 2,000 workers in all those cases.

▶ The ISORA survey also identifies trends related to the **distribution of available personnel by main functions** of the different TAs. For the overall average, the RRP function (Registration, Returns and Payments) accounts for 29.4% of the staff, followed by the AIV function (Audit, Investigation and Verification) with 26.2% of the total, with 11.0% assigned to the EDC function (Enforced Debt collections), while the remaining third is distributed in "other miscellaneous functions". These proportions are quite similar for CIAT and LAC averages.

▶ The proportion of staff assigned to headquarters has a global average of 28.0% for countries included in ISORA 2020, very similar for CIAT and LAC countries, with a markedly decreasing pattern in relation with income level of countries (49.4% for Low Income to 21.3% in High Income).

▶ Among the CIAT countries, the general regularities are maintained with the registration function as the main destination of personnel even with exceptions where the "audit/verification" function takes up most of the available staff. The allocation of staff to the operations headquarters shows percentages ranging from 2.1% in the Netherlands to 83.0% in Paraguay.

▶ The relative composition of the **employed staff according to age ranges** shows a greater aging as the income level of the countries increases. For the ISORA countries, the bulk of workers (78.7%) are concentrated in three age ranges between 25 and 54 years of age. The same age range reaches 75.6% in CIAT and 81.0% in LAC. In the group of high-income countries, the most abundant age group corresponds to the 45-54 year-old segment (27.4%), while for the other lower-income groups, this quality is concentrated in the 35-44 year-old segment. In the High Income group, the 55-64 age group is also of particular importance (22.9% of the total).

▶ Among the CIAT countries, it is possible to find countries with relatively very aged staff (Portugal, Spain, Italy, the United States, the Netherlands, Argentina or Brazil), with workforces whose ages are concentrated in the upper strata between 45 and 64 years of age. In contrast, the human resources of the TAs of several member countries can be considered comparatively "young", as they are concentrated in the 25-44 age bracket (Angola, Belize, Bolivia, Guatemala, Dominican Republic, Ecuador, Guyana, Honduras, Kenya, Nigeria and the Dominican Republic).

The analysis of **staff according to its seniority** shows that the years of service, although high in all cases, increase with income level. The estimated average length of service for all ISORA countries is 12.4 years (12.5 years in CIAT and 11.8 years in LAC), with 13.8 years for High Income countries; 12.6 for Upper-Middle Income; 11.6 in Lower-Middle Income; and 11.0 in Low Income countries.

Among CIAT countries, Portugal, Italy, the Netherlands, France, Argentina, Paraguay, El Salvador, and Suriname have a majority of their staff with 20 or more years of service. On the other hand, countries such as Bolivia, Colombia, Kenya, Panama and Honduras have staff with less accumulated experience in their functions.

ISORA data also allow us to classify **employees according to their gender and educational background**. In the first case, as a global average, women represent 52.3% of the workforce and occupy 39.2% of executive positions. The averages for CIAT are 54.9% and 42.0%, respectively, and for LAC are 59.7% and 48.2%. Women's participation increases with income level, both in the total workforce and in executive positions, and the gap between these two indicators widens.

On the other hand, the global average for the proportion of staff with a bachelor's degree is 42.2%, while 19.2% of the workforce, on average, has a graduate degree (Master's). As the average income of the countries increases, the percentage of employees with an undergraduate degree decreases but the percentage of FTEs with a graduate degree increases.

The data available for CIAT countries show that percent staff who are female ranges from 36.1% (Brazil) to 75.0% (Jamaica), while this range goes from 0% (Nigeria) to 81.0% (Belize) when dealing exclusively with executive positions. In terms of the academic background of the staff, there are countries where the proportion of workers with postgraduate degrees exceeds 30% of the total (Ecuador, Italy and Morocco), as well as others where the proportion of university graduates exceeds 70% (Bolivia, Brazil, Costa Rica, Kenya, Nigeria and the Dominican Republic).

Organization and operational performance

Among the main **taxpayer segmentation strategies**, special offices or programs for large taxpayers (LTOs) stand out, which, at the end of 2019, were present in almost 90% of the countries participating in ISORA (97.1% in CIAT and 87.1% in LAC, with a greater presence in lower-income countries). The LTOs surveyed in ISORA contribute, on average, 54.2% of TNR, with their share decreasing with income level of countries. In addition, LTOs consume a limited portion of personnel: 8.3% in ISORA and 7.3% in CIAT, while the number of CIT taxpayers administered through LTOs (in relation to the total number of CIT taxpayers) is, on average, 8.5% for ISORA and 1.8% for CIAT.

Simplified IT regimes for small taxpayers are present in 63.5% of ISORA countries, 71.4% of CIAT and 61.3% of LAC. This percentage is considerably higher for Low Income countries (88.9%), gradually decreasing as the income level increases. Something similar can be observed in special programs and specific services aimed at SMEs,

which exist in 59.6% of ISORA countries (65.7% of CIAT) and also show a higher relative presence in Low Income countries (72.2%).

▶ The relatively novel segmentation of high net worth individuals (HNWI), at least until the end of 2019, was implemented in 25.0% of ISORA countries and they contributed, on average, 2.2% of the TNR of these TAs. In CIAT these percentages rise to 40.0% and 3.5%, respectively, and in LAC these figures stand at 22.6% and 4.4%. Both the existence of these schemes and their contribution to tax collection are gradually higher as the income level of considered countries increases.

▶ ISORA also provides detailed information on the different **registration channels available** to taxpayers. In this regard, face-to-face ("in person") registration is still the channel with the highest presence (93.6%) among the countries participating in the survey. However, the availability of digital channels (online or through applications, present in 73.7% of the cases) has grown significantly compared to the traditional paper registration by mail (55.8%). CIAT countries exceed the average adoption of online registration (82.9%). By income level, there are large differences in the adoption of online registration, present in 92.2% of high-income countries and in 38.9% of low-income countries (where the face-to-face method is the main registration channel).

▶ In relation to **taxpayer service contact channels**, 80.1% of the TAs surveyed monitor incoming service contacts with the aim of improving existing channels and exploring the introduction of new ones. This monitoring is found in 94.3% of CIAT countries and

is more frequent in High Income countries (82.7%) than in Low Income countries (63.6%).

▶ In ISORA, the telephone channel was the one that channeled the highest percentage of incoming contacts (38.4%), followed by face-to-face (26.0%) and online procedures (21.9%). By income level, it is confirmed that digital and traditional non-face-to-face channels (telephone/postal mail) are more intensively used by higher income countries, while the face-to-face channel ("in person") reduces its degree of use as the income of the countries analyzed increases.

▶ By CIAT member countries, some countries with a clear orientation towards digital communication (Brazil, Ecuador, United States, Paraguay and Dominican Republic) contrast sharply with others where face-to-face ("in person") communication still predominates for most interactions with taxpayers (Argentina, Barbados, Jamaica, Nicaragua and Portugal).

▶ In relation to the procedures **for filing returns**, the percentages of timely returns (with respect to those "expected" according to the deadlines stipulated in the law) vary according to the tax considered (CIT 64.8%; 68.6% PIT and VAT 77.5%). Similar proportions are recorded for CIAT and for LAC, much lower than the global average. By income level, there is a positive relationship with income level, where the same proportion increases from low-income countries to high-income countries in all three taxes.

▶ The proportion of returns filled through electronic channels reaches global averages in ISORA of 70.7% (CIT), 63.5% (PIT) and 74.1%

VAT). These percentages increase in CIAT countries (87.7% CIT, 84.4% PIT and 88.3% VAT). The differences by income level are very evident, with the highest figures observed among the High Income countries. This relationship according to income is reversed for the traditional and alternative method of paper returns.

- At the individual CIAT level, there are outstanding examples of payment on time with figures above 90% in Ecuador, France, India, Morocco, the United States, the Netherlands and Portugal. On the other hand, several cases show that one hundred percent of the returns are filled electronically (Argentina, Barbados, Brazil, Colombia, Costa Rica, Ecuador, Spain, Guatemala, Italy, Kenya, Mexico, the Netherlands, Paraguay, Peru and Portugal).

- With regard to the **effective payment of taxes**, ISORA compiles data about on-time payment, i.e. effective compliance with the tax obligation in due time and form, for which an average of 79.1% is calculated for CIT, 77.7% for PIT and 85.8% for VAT. These same percentages result in averages of 81.2% (CIT), 75.6% (PIT) and 89.0% (VAT) for the CIAT countries, and are also visibly higher for the group of High Income countries (86.3%, 84.1% and 91.3%, respectively) compared to the rest of the agglomerates of countries according to their income level.

- On the other hand, the relative proportions of tax payments through electronic channels reach global averages in ISORA of 57.0% (quantity of payments) or 60.9% (economic value); CIAT countries show a high implementation of these digital channels reaching averages of 61.6% (quantity) or 75.9% (value). By income level, the average values of electronic payments grow rapidly with the level of income for both indicators.

- In the individual CIAT country data, it can be seen that the percentage of payment on time stands out in some specific cases with figures exceeding 90% in the three taxes surveyed (CIT, PIT and VAT), such as in Brazil, El Salvador, Spain, Guatemala, France, Jamaica, Kenya, the Netherlands and Uruguay. As for payment through electronic channels, there are also cases such as Angola, Bolivia, Spain, Nigeria and the Netherlands where 100% of payments are made online.

- Another of the main functions of the TAs is related to the management and regularization of **tax debts and arrears**. The averages, in percentages of collection, differ according to the tax considered, with the CIT (49.2% of tax collection) being relatively higher than other taxes (29.6% in PIT; 30.5% in VAT) or in total TNR (36.5%). The proportion of collectable or "recoverable" debt averages around 60% for ISORA and CIAT countries, with this portion of debt being relatively higher in lower income countries (70.2% in Low Income, compared to 55.6% in High Income).

- On average, tax debt ratios experienced an increase of 16.0% between 2018 and 2019, a slightly larger change among CIAT countries (23.2%) and in the LAC region (19.6%). By income level, the average annual increase in total tax debt ratios results decreasing with the income of the countries (43.2% in Low Income up to a narrow 1.9% in High Income).

- With respect to the **results of tax audits** carried out by each TA, ISORA makes it possible to evaluate the degree of effectiveness

"hit rate" of these procedures, measured by the number of audits in which a tax adjustment was carried out with respect to the total number of audits conducted in the fiscal year, reaching an overall average of 67.0% in ISORA countries, 73.3% in CIAT countries and 73.7% in the LAC region. There is also a negative relationship with income level of countries, where audits appear much more effective in low-income countries (91.5%) than in high-income countries (58.1%).

▶ As for the revenue yield of the audits -in terms of additional assessments raised through these procedures-, the average for ISORA suggests a resource gain of 8.7% (CIT), 2.8% (PIT) or 3.8% (VAT), with respect to the tax collection considered, and an overall yield of 4.7% of the TNR. By income level, total additional revenues are higher, in relative terms, for Low Income countries (8.5% of the TNR) and decrease, on average, with income level of countries.

Digital transformation and technological innovation

▶ The ISORA survey makes it possible to know, in a systematized manner, the relative unequal degree of progress of the TAs in the implementation and development of **multiple modern techniques and strategies to improve tax compliance** of the taxpayers under their control.

▶ First, in recent years, progress has been made in the **pre-filling of returns and assessments by the TA** from information collected from third parties, among the 156 countries, 46.2% of the total reported carrying out these procedures for some of the main taxes applied (CIT/ PIT/VAT), with a higher percentage among the CIAT countries (60.0%) and shows a clear increasing pattern with the income level of the countries analyzed.

▶ Secondly, the **implementation of electronic invoicing** and its requirement as a mandatory tool for recording sales and other transactions is one of the most important innovations in the fight against tax fraud. Of all the countries in ISORA, 32.1% of them have a mandatory electronic invoicing system for some or all registered taxpayers. CIAT countries lead, by groups of countries, in the degree of adoption of this tool, with 48.6% of the total, while in LAC this percentage is 41.9%. The implementation of electronic invoicing is led by middle-income countries (39.0% Lower-Middle Income; 37.0% Upper-Middle Income).

▶ The requirement by TAs for taxpayers (sellers of goods and services) to record their transactions through the **use of electronic fiscal devices** is a practice observed in almost half of the cases surveyed by ISORA, in 42.9% of CIAT members, with higher values for the Upper-Middle Income group (more than 60% of the cases).

▶ Several countries have begun to explore and adopt **cooperative compliance approaches** and programs with certain taxpayer segments of particular interest to TAs. The most widespread among ISORA, CIAT and LAC countries are those that refer to large taxpayers (55.8%; 54.3%; 35.5; respectively). Likewise, there is also a tendency to incorporate **behavioral insight methodologies or techniques** for the control of tax compliance: 46.8% of the countries in ISORA represent evidence in this area, with 57.1% of CIAT countries and 35.5% of LAC countries in the same dimension.

- The process of technological and digital transformation for tax administrations in all regions of the world is not limited to registration tasks, taxpayer services, returns or tax evasion control. **Cutting-edge innovations in data processing and statistical information management**, together with other ICT solutions, open up broad possibilities to strengthen different capabilities that make up the management of the main taxes applied.

- The most widespread of these tools corresponds to **Data science/ analytical tools**, which is implemented or in the process of being implemented in 65.4% of the ISORA countries (85.7% of CIAT members and 67.7% of the LAC region), with its presence increasing with the income level of the countries (up to 84.3% in High Income). It is followed in order of importance by **Cloud Computing**, with percentages of use/implementation of 41.7% in ISORA, 40.0% in CIAT and 29.0% in LAC, also with higher levels of diffusion among groups of middle- and high-income countries. Third, **Artificial intelligence** (including machine learning), which is installed - or close to it - in 37.2% of ISORA countries, 48.6% in CIAT and 25.8% in LAC, also increasing with income level. Finally appears **Distributed ledger technology *(Blockchain)***, which is only present in 8.3% of the countries in ISORA, 8.6% of those in CIAT and 6.5% of those in LAC.

- For a second set of innovative technological solutions, the introduction of **Application Programming Interfaces (APIs)** stands out for its importance and diffusion, which is already being used (or in the implementation phase) in 66.7% of the ISORA countries (80.0% in CIAT) with notable differences between groups according to income levels (44.4% for Low Income and 80.4% for High Income). **Digital identification technologies** (e.g., biometrics, voice identification) have also had an acceptable diffusion, reaching a concrete relevance within advanced technological solutions (28.2% in ISORA; 37.1% in CIAT).

- The set of innovative technologies explored in ISORA is completed by three other elements with great potential and encouraging first results in some cases. One of them relates to the introduction of **Virtual Assistants** (e.g., chatbots), which are already in use or are in the implementation phase in 35.9% of the total number of countries, 42.9% of CIAT members and 16.1% of LAC countries. In turn, **Government or whole-of-government identification systems**, which make it possible to integrate information systems of different public agencies and institutions, are present in 42.3% of the countries in ISORA (42.9% of CIAT and 29.0% in LAC). Finally, **Robotic Process Automation** is an incipient development that shows less diffusion and presence among the countries in ISORA (21.2%), CIAT (22.9%) and LAC (9.7%).

Final comments

- A comprehensive look at the results presented throughout these pages allows the reader to see that, despite the great diversity of cases and realities, **certain general trends** continued to take hold and consolidate during the 2018 and 2019 fiscal periods, in a changing context such as the one in which the different TAs worldwide act and operate.

▶ In particular, there is an increasingly clear **orientation towards the digital transformation of the central operational areas** through the incorporation of innovative technological solutions, all of them aimed at improving the quality of the services provided to taxpayers, managing large amounts of information, facilitating and ensuring tax compliance and, in short, achieving greater tax collection in the most efficient way possible.

▶ In this regard, the **performance of CIAT member countries** stands out, which, although dealing with limited budgets and high workloads, manage to operate with a relatively low average collection cost. Most of these countries have shown a) a growing degree of digitalization of their TAs in multiple dimensions, b) a special emphasis on taxpayer segmentation strategies, c) some leadership in the introduction of technologies to improve tax compliance (electronic invoicing), and d) encouraging progress in the incorporation of innovative technological solutions.

▶ Finally, the forced responses of the countries in the area of tax administration to the **COVID-19 pandemic** represent a disruptive change that will have to reconfigure and, in many cases, accelerate and consolidate innovative practices linked to their operational functioning, which were already being used/implemented/explored by some of these agencies in the countries included in ISORA. This Overview will serve, then, as a point of reference to evaluate the transformations that, since the outbreak of the pandemic and throughout the last few months, have become evident in the field of TA in all latitudes.

Introduction

Given the particular dynamic nature in which the Tax Administrations (TAs) act and operate in addressing their main collection mission, they are currently undergoing a process of constant transformation around the world. However, the diversity of realities generally makes it difficult to make international comparisons in different dimensions of their structure and operation, which limits the possibility of assessing and evaluating the pace, intensity and relative success (in terms of achieving their objectives) of these changes in each particular case. In order to account for this, and also to identify general trends and stylized facts, this new edition of the Overview of Tax Administrations in CIAT Countries is presented.

This paper, which is based on updated information (collected in 2020, with data available for 2018 and 2019) from the International Survey of Revenue Administration (ISORA), aims to provide a detailed and systemic picture of the state of affairs of tax collection agencies for CIAT member countries. The different dimensions for the analysis include the TAs' revenues administered and financial resources (magnitudes and structure), the basic characteristics of the staff employed (size, dynamics and composition), the core issues of their operational functioning - with a special emphasis on digitization and risk management processes (taxpayer segmentation; registration channels; service contact channels; reporting and payment; outstanding debts and audit results) - as well as the degree of implementation of technological innovations to both improve tax compliance and to make tax management more efficient and effective.

It is unavoidable to take into consideration that the data contained in this Overview refer to fiscal year 2019 (or 2018 in the absence of availability) so they constitute results prior to the COVID-19 pandemic. As seen in practice, this extraordinary situation has accelerated a series of changes that TAs were forced to make in response to the particular context, especially regarding the digital transformation of key operational processes and taxpayer[1] services. Despite not being previously planned, in several cases the pandemic and associated restrictions only accelerated pre-existing implementation processes, within the framework of reform trends originating in previous years. That is why all the information to be presented in the pages of this

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1   Some recent evidence of these changes can be found in OECD (2021).

document should be evaluated as i) the continuation of such medium-term trends and ii) a prior diagnosis of the state of TA in the run-up to the COVID-19 pandemic.

Following a brief introduction on the coverage and background of the ISORA survey, this Overview is structured in four chapters that present and analyze its results, summarized in 41 tables and 27 figures[2], which provide information in aggregate form with averages calculated for i) the total number of countries in ISORA, ii) CIAT members, iii) Latin American and Caribbean countries, iii) four groups of countries according to their income level (following World Bank criteria), and also individually for CIAT member countries.

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2   All of them were prepared by the company, based on information compiled in ISORA and consulted in July 2021.

1. The ISORA 2020 survey and CIAT countries in the international context of tax administrations

The International Survey on Revenue Administration (ISORA) is a tool for collecting standardized information on tax administration at the country level. This project, which complements and continues the international efforts already made in the same line during previous[3] years, is conducted by five different organizations: the International Monetary Fund (IMF), the Intra-European Organization of Tax Administrations (IOTA), the Organization for Economic Cooperation and Development (OECD), the Inter-American Center of Tax Administrations (CIAT) and, since 2018, the Asian Development Bank (ADB).

ISORA collects data on collection and instruments administered, budget and available human resources; segmentation and registration of taxpayers, filing of returns and payment of obligations; taxpayer service and assistance; coercive collection of debts; inspection, auditing and investigation of tax fraud and conflict resolution mechanisms; as well as innovative techniques and information and communication technologies (ICT) applied to tax management and the improvement of tax compliance.

The latest edition, compiled during 2020, contains data for fiscal years 2018 and 2019, the latter year being the benchmark chosen in this paper for the analysis of the observed results. It has information from the national[4] tax administrations (TAs) of 156 countries, which account for 96.1% of global GDP and 90.6% of the total population of the planet in 2019 (about 6,955 million people). Among them are 35 CIAT member countries, which accumulate 44.7% of GDP and 37.1% of the world's population (2,846 million).

According to the World Bank's[5] classification criteria, 33% of the countries that responded to ISORA in its most recent edition correspond to "High Income" jurisdictions, with a majority participation from the regions of Europe and Central Asia, North America and some from Latin America and the Caribbean (Table 1). The bulk of the countries (55%) fall into intermediate income groups ("Upper-Middle Income" with 29% and "Lower-Middle Income" with 26% of the total) which, in addition to the aforementioned regions, also include Asian, African and Oceania countries. Finally, the remaining 12% corresponds to jurisdictions classified as "Low Income", the vast majority of which are located in the Sub-Saharan Africa region. ISORA thus provides detailed information for all continents and regions, with only North Africa and the Middle East being significantly lacking (Figure 1).

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3   Among others, the IDB/CAPTAC-RD/CIAT reports (2012); CIAT (2016); the OECD *"Tax Administration Comparative Information Series"* (since 2004), for example OECD (2019); and the pioneering surveys of the IMF's RA-FIT *(Revenue Administration's Fiscal Information Tool)* platform and related documents of the same organization (IMF, 2019) stand out. All background and available information on the different editions of the ISORA survey can be found at: https://data.rafit.org/.

4   It should be noted that, although not included in the ISORA data, in some countries with federal political organization there are also tax administrations in the subnational governments that operate independently from the collection agencies under the orbit of the central government (effectively surveyed in ISORA), which have full responsibility for managing certain fiscal instruments (tax and non-tax) of varying relevance for each particular case.

5   More information at: https://databank.bancomundial.org/

Regarding other relevant groupings, the CIAT member countries (35) included in ISORA 2020 are represented in most regions of the world, with the exception of East Asia and the Pacific and with a preponderant presence of countries from Latin America and the Caribbean. The OECD member countries (38) that participated in this edition of the survey belong mostly to the Europe and Central Asia and North America region, although with the presence of jurisdictions from LAC and the Asia-Pacific region.

Table 1: Number of countries participating in ISORA 2020. Classification by geographic region, income level, and membership in CIAT and OECD. Year 2019

Country Groups (Regions)	Number of countries in ISORA	INCOME LEVEL				CIAT Member		OECD Member	
		Low	Lower Middle	Upper Middle	High	Yes	No	Yes	No
East Asia and Pacific (EAP)	26	0	12	5	9	0	26	4	22
Europe and Central Asia (ECA)	49	0	4	17	28	5	44	27	22
Latin America and the Caribbean (LAC)	31	0	5	18	8	23	8	4	27
Middle East and North Africa (MENA)	4	0	1	0	3	1	3	1	3
North America (NA)	2	0	0	0	2	2	0	2	0
South Asia (SA)	6	1	4	1	0	1	5	0	6
Sub-Saharan Africa (SSA)	38	17	15	5	1	3	35	0	38
Total of Countries (ISORA 2018-19)	156	18	41	46	51	35	121	38	118

Figure 1: Countries participating in the ISORA 2020 survey, classified by income level (World Bank criteria)

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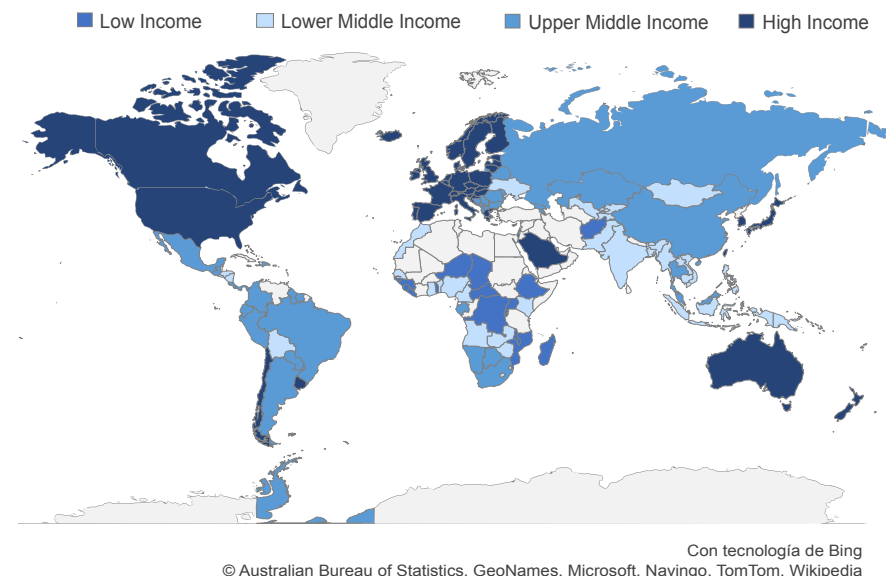
It should be noted that, with respect to the previous edition of the ISORA 2018 survey (Data 2016-2017), 9 jurisdictions have been incorporated while 11 others, which had participated on that occasion, have not responded to the survey. In addition, it should be noted that the survey has been simplified, reducing its size and increasing the precision of its questions, with the aim of increasing the possibilities of making international comparisons with a high degree of robustness and coherence[6]. Nevertheless, throughout this document and given that we plan to present different average values linked to certain regions or relevant groups of countries, we will insist on the need to maintain due caution in the analyses and general conclusions, given the high degree of heterogeneity that emerges from the results and indicators derived from the information collected.

6 It was also decided to divide the survey into two questionnaires: one to be carried out annually and directly linked to operational issues (as the one used as the basis for this document) and another to be carried out every four or five years, with questions about organizational characteristics that are more stable over time, whose answers are less likely to change between survey editions, thus simplifying its structure.

As an example of the diversity of cases, realities and states of affairs, the results and responses of all the CIAT member countries considered in ISORA will be presented below in each of the sections that make up this Overview. It can be seen, then, that these 35 countries differ, in the first place, in terms of their income level (according to World Bank criteria) where 10 of them (29%) correspond to "High Income" countries, 14 (40%) are classified as "Upper-Middle Income" and 11 (31%) belong to the "Lower-Middle Income" group, with no identifiable cases of "Low Income" countries. Furthermore, as already noted, most CIAT countries are from the LAC region, although representatives from other regions can be identified. In fact, within the group of 35 countries participating in ISORA 2020, 11 countries currently members of the OECD can be found (Table 2). As for the responsibilities of these agencies, although they all focus on the management of most of the internal taxes in application, some of them jointly integrate the administration of customs resources, others integrate the administration of contributions to social security systems (SSC), and a limited number integrate the administration of all three types of resources. Within the CIAT framework, 13 (37%) of the countries are in the first group, 6 (17%) are in the second, and only 4 of them (11% of the total) jointly integrate domestic taxes, customs and SSC.

Table 2: CIAT Member Countries. Main classification characteristics of tax administrations surveyed in the most recent ISORA edition. Year 2019.

CIAT COUNTRIES	CODE	REGION	INCOME LEVEL	OECD MEMBER	INTEGRATION WITH CUSTOMS	INTEGRATION WITH SOCIAL SECURITY
Angola	AGO	SSA	Lower middle	NO	YES	NO
Argentina	ARG	LAC	Upper middle	NO	YES	YES
Barbados	BRB	LAC	High	NO	NO	NO
Belize	BLZ	LAC	Lower middle	NO	NO	NO
Bolivia	BOL	LAC	Lower middle	NO	NO	NO
Brazil	BRA	LAC	Upper middle	NO	YES	YES
Canada	CAN	NA	High	YES	NO	YES
Chile	CHL	LAC	High	YES	NO	NO
Colombia	COL	LAC	Upper middle	YES	YES	NO
Costa Rica	CRI	LAC	Upper middle	YES	NO	NO
Dominican Rep.	DOM	LAC	Upper middle	NO	NO	NO
Ecuador	ECU	LAC	Upper middle	NO	NO	NO
El Salvador	SLV	LAC	Lower middle	NO	NO	NO
France	FRA	ECA	High	YES	NO	NO
Guatemala	GTM	LAC	Upper middle	NO	YES	NO
Guyana	GUY	LAC	Upper middle	NO	YES	NO
Honduras	HND	LAC	Lower middle	NO	NO	NO
India	IND	SA	Lower middle	NO	NO	NO
Italy	ITA	ECA	High	YES	NO	NO
Jamaica	JAM	LAC	Upper middle	NO	NO	NO
Kenya	KEN	SSA	Lower middle	NO	YES	NO
Mexico	MEX	LAC	Upper middle	YES	YES	NO
Morocco	MAR	MENA	Lower middle	NO	NO	NO
Netherlands	NLD	ECA	High	YES	YES	YES
Nicaragua	NIC	LAC	Lower middle	NO	NO	NO
Nigeria	NGA	SSA	Lower middle	NO	NO	NO
Panama	PAN	LAC	Upper middle	NO	NO	NO
Paraguay	PRY	LAC	Upper middle	NO	NO	NO
Peru	PER	LAC	Upper middle	NO	YES	YES
Portugal	PRT	ECA	High	YES	YES	NO
Spain	ESP	ECA	High	YES	YES	NO
Suriname	SUR	LAC	Upper middle	NO	YES	NO
Trinidad and Tobago	TTO	LAC	High	NO	NO	NO
United States	USA	NA	High	YES	NO	YES
Uruguay	URY	LAC	High	NO	NO	NO

Note: The geographical regions considered are East Asia and Pacific (EAP); Europe and Central Asia (ECA); Latin America and the Caribbean (LAC); Middle East and North Africa (MENA); North America (NA); South Asia (SA); Sub-Saharan Africa (SSA).

2. Administered revenue and financial resources

In addition to the institutional and organizational structure -very stable over time and surveyed in the previous edition of the ISORA[7]- survey- and the specific characteristics that make the effective functioning of these agencies -which will be analyzed later in this document-, the different tax administrations around the world exhibit a wide diversity in terms of tax revenues over which they have direct responsibility, both in their level and relative structure, as well as in terms of the financial resources that make up the budget available to carry out their tasks and functions. In turn, from the relationship between both concepts it is possible to have an approximate idea of the implicit cost of the task of tax collection in the different countries, although it is recognized that it is usually influenced by a series of particular nuances that require caution when making international comparisons. These dimensions are analyzed below according to the results of the ISORA 2020 survey, with the aim of identifying the main trends and the most significant stylized facts.

2.1 Instruments collected and administered by the TAs

First of all, the countries surveyed in the most recent edition of the ISORA survey show a wide diversity in terms of the number and type of tax instruments administered by their respective collection agencies at the national[8] level (Table 3). Among the main taxes under the responsibility of the TAs, Income Tax (IT) should be highlighted, both for individuals and for companies and corporations, whose presence is confirmed in almost all cases (96.8% and 98.7%, respectively). Likewise, Value Added Tax (VAT) is also a widely diffused and installed element of collection (88.5% of the cases), which is gradually accentuated in the countries with higher income levels (83.3% among low-income countries and 90.2% in high-income countries). Excise taxes are also shown to be an instrument widely managed by TAs (63.5% of the 156 countries in ISORA) although, unlike VAT, they are more common in low-income countries (83.3%) than in high-income countries (52.9%).

As for other instruments complementary to traditional domestic taxes, heterogeneity is greater both between geographic regions and between different income levels. Thus, customs resources (generally in the form of taxes on international trade) have a relative presence of 40.4% for ISORA countries, which is more significant in Sub-Saharan Africa, where 60.5% of the countries have this type of instrument under the responsibility of their respective TAs. According to income level, such resources tend to be slightly more frequent in Low and Lower-Middle Income countries. Something similar occurs with non-tax instruments, which appear in half of the countries included in ISORA (50.6%), with higher averages for the

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7   The main trends observed in these aspects can be consulted in an earlier version of this paper (Díaz de Sarralde Miguez, 2019).

8   The data collected through ISORA and presented in this document do not include information related to fiscal instruments (tax and non-tax) whose management is the responsibility of subnational government tax administrations, mainly in some federal countries, which coexist with the central government collection agencies considered for the purposes of the ISORA 2020 survey and its previous editions.

Europe and Central Asia region (65.3%) and for the group of Low Income countries (72.2%). For social security contributions, it can be seen that, in general, their integration as resources managed by TAs is the most limited, with a global average of 28.8% of cases and a significant presence only in regions such as Europe and Central Asia and North America and, fundamentally, in Upper-Middle Income (43.5%) and High Income (37.3%) jurisdictions.

At the aggregate level, the average values for CIAT member countries do not differ significantly from the global ISORA averages (Figure 2),

confirming the wide diffusion of IT (100% of cases), VAT (91.4%) and, to a lesser extent, excise taxes (68.6%) as the main instruments under the responsibility of each country's TAs. When these results are compared with the group of OECD member countries, some differences are observed, due to the greater relative frequency in these countries of VAT (97.4%), social security contributions (39.5%) and non-tax instruments (60.5%) (Table 3).

Table 3: Types or categories of tax revenues. Percentage of countries (of each selected group) in which the tax administration has direct responsibility for these instruments. Year 2019

Country Groups	PIT	CIT	VAT	Excises	Social Security (SSC)	Customs	Non-Tax
ISORA	**96.8**	**98.7**	**88.5**	**63.5**	**28.8**	**40.4**	**50.6**
East Asia and Pacific	96.2	100.0	73.1	50.0	7.7	19.2	34.6
Europe and Central Asia	98.0	98.0	98.0	61.2	59.2	42.9	65.3
Latin America and the Caribbean	96.8	96.8	90.3	71.0	22.6	35.5	41.9
Middle East and North Africa	75.0	100.0	100.0	50.0	25.0	25.0	25.0
North America	100.0	100.0	50.0	100.0	100.0	0.0	50.0
South Asia	83.3	100.0	50.0	33.3	0.0	33.3	33.3
Sub-Saharan Africa	100.0	100.0	92.1	73.7	10.5	60.5	55.3
Low Income	100.0	100.0	83.3	83.3	5.6	55.6	72.2
Lower Middle Income	97.6	100.0	82.9	63.4	12.2	31.7	34.1
Upper Middle Income	95.7	97.8	93.5	67.4	43.5	45.7	50.0
High Income	96.1	98.0	90.2	52.9	37.3	37.3	56.9
CIAT Members	100.0	100.0	91.4	68.6	25.7	37.1	42.9
Non CIAT Members	95.9	98.3	87.6	62.0	29.8	41.3	52.9
OECD Members	100.0	100.0	97.4	63.2	39.5	47.4	60.5
Non OECD Members	95.8	98.3	85.6	63.6	25.4	38.1	47.5

Figure 2: Types or categories of tax revenues. Percentage of countries (in ISORA and CIAT) in which the tax administration has direct responsibility for these instruments. Year 2019
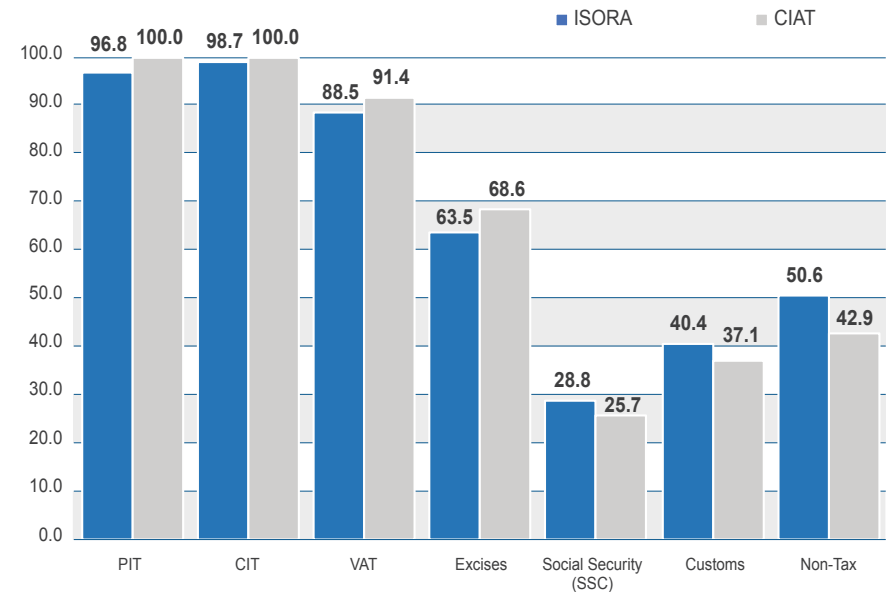
At the individual level of CIAT member countries, it is possible to observe the great diversity of situations in terms of tax instruments under the responsibility of the respective collection agencies (Table 4). Nevertheless, it is also feasible to find certain regularities in this area. For example, as noted, in all countries the TA administers IT (both for individuals and companies) and VAT (when applicable, which excludes the United States, India and Suriname). Excise taxes are also very common; however, in cases where they do not apply or are not within the TA's responsibility, other more specific taxes are usually found, such as those levied on motor vehicles. On the other hand, taxes on different manifestations of property (real estate, wealth, inheritances and bequests) are scarcer among CIAT countries, with the cases of France, Kenya, Dominican Republic and Uruguay being those in which the respective TAs manage the three taxes mentioned above simultaneously. Another element of heterogeneity is given by the integration and administration of complementary fiscal instruments such as social security contributions, customs duties and other non-tax taxes. Although they are less frequent among the TAs of the CIAT countries, there are a few cases (Argentina, the Netherlands and Peru) in which the administration of these three items appears within the responsibilities of the respective tax agencies.

Table 4: Types or categories of tax revenues, under the direct responsibility of the tax administrations surveyed by ISORA 2020. CIAT member countries. Year 2019

CIAT Countries	PIT	CIT	VAT	Excises	Vehicles	Real Estate	Wealth	Inheritance	Other taxes	Social Security (SSC)	Customs	Non-Tax
Angola	Yes	Yes	Yes	Yes		Yes		Yes	Yes		Yes	Yes
Argentina	Yes	Yes	Yes	Yes			Yes		Yes	Yes	Yes	Yes
Barbados	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes		Yes
Belize	Yes	Yes	Yes						Yes			
Bolivia	Yes	Yes	Yes	Yes					Yes			
Brazil	Yes	Yes	Yes	Yes		Yes			Yes	Yes	Yes	
Canada	Yes	Yes	Yes	Yes					Yes	Yes		Yes
Chile	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes			
Colombia	Yes	Yes	Yes	Yes			Yes		Yes		Yes	
Costa Rica	Yes	Yes	Yes	Yes	Yes	Yes	Yes					
Dominican Rep.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
Ecuador	Yes	Yes	Yes	Yes	Yes			Yes	Yes			Yes
El Salvador	Yes	Yes	Yes		Yes	Yes			Yes			
France	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes			Yes
Guatemala	Yes	Yes	Yes	Yes	Yes						Yes	
Guyana	Yes	Yes	Yes	Yes	Yes		Yes	Yes			Yes	
Honduras	Yes	Yes	Yes	Yes				Yes	Yes			Yes
India	Yes	Yes							Yes			
Italy	Yes	Yes	Yes					Yes	Yes			
Jamaica	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes		Yes
Kenya	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes

CIAT Countries	PIT	CIT	VAT	Excises	Vehicles	Real Estate	Wealth	Inheritance	Other taxes	Social Security (SSC)	Customs	Non-Tax
Mexico	Yes	Yes	Yes	Yes	Yes				Yes		Yes	Yes
Morocco	Yes	Yes	Yes		Yes				Yes			
Netherlands	Yes	Yes	Yes		Yes			Yes	Yes	Yes	Yes	Yes
Nicaragua	Yes	Yes	Yes	Yes	Yes	Yes						Yes
Nigeria	Yes	Yes	Yes						Yes			
Panama	Yes	Yes	Yes	Yes	Yes	Yes						
Paraguay	Yes	Yes	Yes						Yes			
Peru	Yes	Yes	Yes	Yes			Yes		Yes	Yes	Yes	Yes
Portugal	Yes	Yes	Yes	Yes	Yes	Yes			Yes		Yes	Yes
Spain	Yes	Yes	Yes	Yes					Yes		Yes	Yes
Suriname	Yes	Yes			Yes	Yes	Yes		Yes	Yes	Yes	
Trinidad and Tobago	Yes	Yes	Yes					Yes	Yes			
United States	Yes	Yes		Yes	Yes				Yes	Yes	Yes	
Uruguay	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			

2.2 Magnitude of administered revenue

The wide diversity of tax instruments managed by the respective TAs surveyed through ISORA allows the different countries to have a variable amount of tax revenues, which can be quantified from multiple measurements and indicators (Table 5). In that sense, the Total Net Revenue (TNR) managed by TAs (what could be considered their workload) reached in 2019 an average value of 17.3% of GDP for the 156 ISORA countries, with a wide variability between extremes (0.7% to 45.7%) and with averages by country groups that are clearly increasing depending on the income level, from 10.6% of GDP (Low Income) to 22.1% of GDP (High Income)[9]. The simple average for CIAT member countries (16.6% of GDP) is slightly lower than the global average and that of upper-middle income countries (17.8% of GDP), although it is above the average for the LAC region (15.2% of GDP).

Another alternative indicator that allows us to observe the existing gaps between ISORA countries and between the different groupings of countries in terms of administered revenue collection is given by the TNR per capita (in dollars). The average for ISORA in 2019 was U$S 3,377 per capita, higher than the average for CIAT (U$S 2,761) and more than double the average for LAC countries (U$S 1,513). Also with this indicator, the results show a clear upward trend with income level, from a meager annual average of US$ 66 for Low Income countries, US$ 322 for Lower-Middle Income countries, US$ 1,386 for Upper-Middle Income countries and US$ 8,423 for High Income jurisdictions.

On the other hand, these wide differences between groups of countries are reduced when the TNR is considered in relation to Total Government Revenue. With a global average of 58.4% and slightly higher averages for

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9   It is necessary to clarify that all quantitative statistics collected in the ISORA survey and processed for presentation in this document correspond to fiscal year 2019 which, in some cases, may not coincide with the corresponding calendar year. Among CIAT countries, for example, this applies to Barbados, Belize, Jamaica and India, where the fiscal year under consideration runs from April 2019 to March 2020; the United States and Trinidad and Tobago (from October to September of the following year) and Kenya (from July to June of the following year).

"CIAT" and "LAC" averages (62.5% and 59.5% of the total, respectively), there is no identifiable trend according to the income level of the countries, with all the partial averages being around the global average in this area (Figure 3).

Table 5: Total Net Revenue (TNR). Alternative measures (in percentages of GDP, in dollars per capita and in percentages of Total Government Revenue). Simple averages for selected groups of countries. Year 2019

Country Groups	Total Net Revenue (TNR) (as % of GDP)	Total Net Revenue per capita (in dollars)	Total Net Revenue (as % of Total Government Revenue)
ISORA	**17.3**	**3,377**	**58.4**
CIAT Members	16.6	2,761	62.5
Latin America and the Caribbean	15.2	1,513	59.5
Low Income	10.6	66	54.4
Lower Middle Income	12.7	322	55.7
Upper Middle Income	17.8	1,386	64.1
High Income	22.1	8,423	56.5

Figure 3: Total Net Revenue (left panel, in percent of GDP; right panel, in percent of Total Government Revenue). Simple averages for selected groups of countries. Year 2019
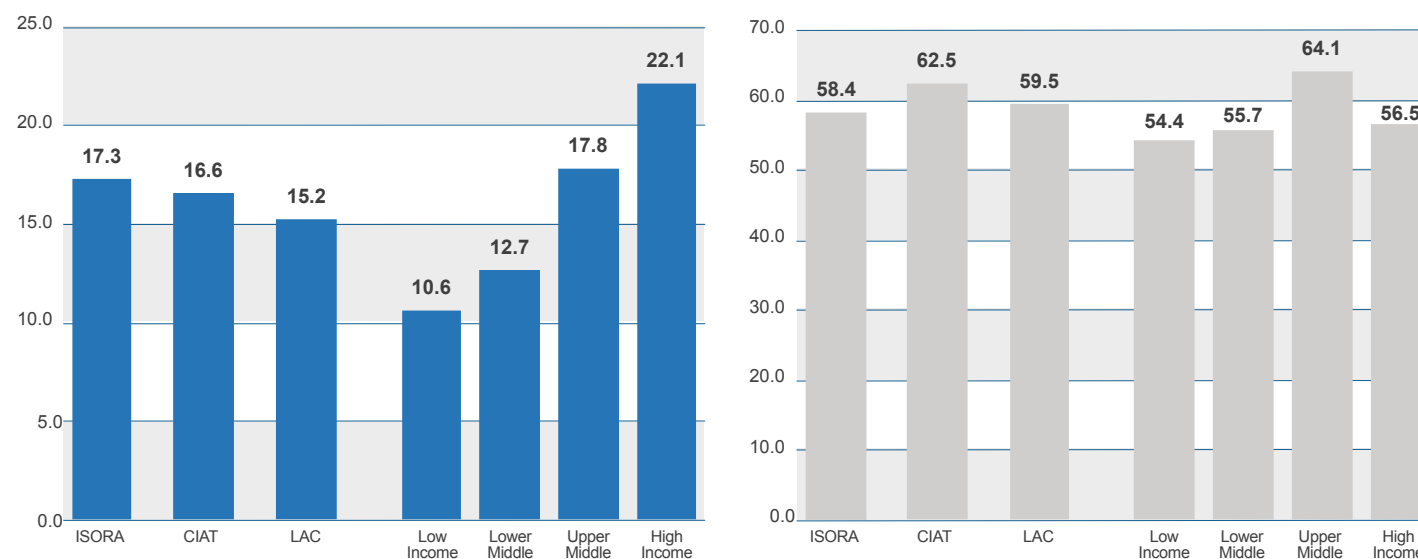
The CIAT country analysis shows that the differences between countries are visible and significant for the three indicators considered with respect to the TNR administered during fiscal year 2019. In percentages of GDP, a minimum value is found in India (5.6%) and a maximum value in the Netherlands (33.8%), with several countries also clearly above the CIAT average, including Argentina (22.7%), Italy (22.3%), Jamaica (23.1%) and Portugal (24.0%). In per capita terms, the most developed countries with the highest income levels (Canada, Spain, the United States, France, Italy, the Netherlands and Portugal) stand out, with annual figures of over US$5,000 per capita. Finally, in terms of percentages of Total Government Revenue, the great diversity of cases and results is also confirmed with cases such as Guatemala and Kenya, where the TNR represents more than 90% of this reference variable -which highlights the importance of TA performance in ensuring public financing- while in other countries such as India (28.9%), France (33.2%) and Ecuador (36.7%) the relative magnitude of the TNR of their TAs has a lower incidence -while still relevant- within the total fiscal resources of each of these countries (Table 6).

Table 6: Total Net Revenue (TNR). Alternative measures (in percentages of GDP, in dollars per capita and in percentages of Total Government Revenue). CIAT member countries. Year 2019

CIAT COUNTRIES	TOTAL NET REVENUE (TNR) (AS % OF GDP)	TOTAL NET REVENUE PER CAPITA (IN DOLLARS)	TOTAL NET REVENUE (AS % OF TOTAL GOVERNMENT REVENUE)	CIAT COUNTRIES	TOTAL NET REVENUE (TNR) (AS % OF GDP)	TOTAL NET REVENUE PER CAPITA (IN DOLLARS)	TOTAL NET REVENUE (AS % OF TOTAL GOVERNMENT REVENUE)
Angola	17.6	494	87.8	Italy	22.3	7,411	47.4
Argentina	22.7	2,253	67.1	Jamaica	23.1	1,242	75.5
Barbados	21.8	3,948	71.8	Kenya	16.2	295	91.8
Belize	14.7	748	50.2	Mexico	16.6	1,655	69.8
Bolivia	14.3	508	49.6	Morocco	18.2	597	70.3
Brazil	19.0	1,695	59.4	Netherlands	33.8	17,681	77.3
Canada	19.8	9,195	47.7	Nicaragua	13.3	256	48.9
Chile	16.9	2,495	73.0	Nigeria	3.6	81	45.9
Colombia	13.6	872	46.2	Panama	n.a.	n.a.	n.a.
Costa Rica	11.7	1,478	74.6	Paraguay	10.1	543	51.9
Dominican Rep.	12.6	1,045	87.6	Peru	16.6	1,166	83.3
Ecuador	12.3	763	36.7	Portugal	24.0	5,606	56.1
El Salvador	15.9	662	71.6	Spain	17.1	5,058	43.6
France	17.5	7,077	33.2	Suriname	15.2	1,100	59.3
Guatemala	10.5	488	93.3	Trinidad and Tobago	18.3	3,052	70.1
Guyana	20.9	1,385	81.3	United States	14.5	9,482	49.4
Honduras	16.3	420	63.2	Uruguay	17.0	3,012	60.2
India	5 6	118	28.9				

Note: Data not available (n.a.) for Panama (year 2019).

2.3 Relative structure of administered revenue

In terms of the composition of the Total Net Revenue of the tax administrations, at a global level, IT is the main instrument in terms of tax collection, representing around 40.1% of the total -if the tax paid by companies and individuals is considered together-. It is followed in order of importance by total net VAT (domestic and imports[10]) which, on average for all countries participating in ISORA, contributes 30.6% of the TNR. The rest of TA revenue is made up mainly of a varied set of taxes, including excise, property and customs duties (except for import VAT), with an average relative contribution of 20.1%. The range of TNR components is completed by social security contributions (SSC), which represent 6.4% for the average ISORA, in addition to revenues derived from the application of non-tax instruments, which contribute an average of 2.8% of the total TNR (Table 7).

For the CIAT member countries as a whole, the average relative contribution of the main collection instruments is similar to those recorded for the global group of 156 countries in ISORA, with a slight difference in terms of the IT, which represents 40.2% of the TNR, but with a greater relative relevance of the tax contributed by companies (22.5%) than that levied on individuals (17.7%). This bias within the IT is accentuated for the average of LAC countries, where the weakness of Personal IT (13.1%) and SSC (3.3%) is more evident, which is compensated by more important relative weights of VAT (35.8%) and the Rest of Taxes (24.1%).

According to the classification of ISORA countries into groups according to income level, it can be observed that Personal Income Tax (PIT) has a much more significant relevance in High Income countries (27.3%)

where, inversely and in comparison to lower income countries, Corporate Income Tax (CIT) has a more limited role as a component of TNR (16.2%). VAT contributes a considerable share of TNR in all country groups (between 27.1% and 33.6%), regardless of their income level, which is also true for the Rest of Taxes (with a maximum of 25.3% for Lower-Middle Income countries). In contrast, the relative contribution of SSC to TNR is really significant only in the Upper-Middle Income (11.0%) and High Income (8.3%) groups of countries. Conversely, the non-tax revenues collected by TAs, on average, are only relatively important among Low Income countries (10.2%) and very insignificant in the tax structures of the remaining groups of countries by income (Figure 4).

Table 7: Relative structure of revenues administered by the TA (as percentages of TNR). Simple averages for selected groups of countries. Year 2019

Country Groups	PIT	CIT	VAT	SSC	OTHER TAXES	NON TAX
ISORA	**20.4**	**19.7**	**30.6**	**6.4**	**20.1**	**2.8**
CIAT Members	17.7	22.5	30.4	5.2	22.2	2.0
Latin America and the Caribbean	13.1	21.4	35.8	3.3	24.1	2.4
Low Income	18.1	20.0	33.0	0.0	18.6	10.2
Lower Middle Income	19.8	25.9	27.1	0.8	25.3	1.0
Upper Middle Income	14.0	18.3	33.6	11.0	20.1	3.0
High Income	27.3	16.2	29.7	8.3	16.6	1.9

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10 Figures net of drawback values, even when the import component is collected by Customs.

Figure 4: Relative structure of revenues administered by the TA (as percentages of TNR). Simple averages for selected groups of countries. Year 2019

- PIT
- CIT
- VAT
- SSC
- Other taxes
- Non tax
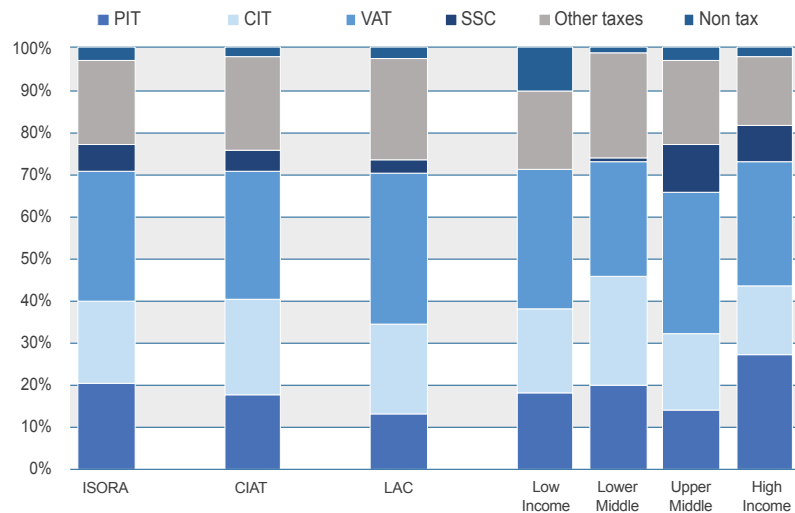
At the level of CIAT member countries, the central importance of VAT as a source of tax revenue and primary component of the TNR in TAs stands out, particularly in several cases in the LAC region, such as Belize (54.6%), Chile (48.7%), Ecuador (47.6%), El Salvador (49.2%), Guatemala (48.2%), Paraguay (46.3%) and Uruguay (45.5%), among others (Table 8). However, in the most developed countries, the main tax collection instrument is represented by PIT, as observed in Canada (52.1%), Italy (43.2%), Spain (40.8%) and the United States (51.0%). CIT also plays a leading role within the TNR in a wide range of countries, especially in LAC region (due to the well-known weakness of PIT and, in some cases, of VAT) and also in others such as India (58.3%) and Nigeria (30.9%), which contrasts sharply with the meager values recorded in developed countries with higher income levels such as Spain or Italy (Figure 5). The relative magnitude of SSC is only relevant in the few countries with integrated TA (for example, Argentina, Brazil, the United States and the Netherlands), while non-tax revenues only acquire a significant weight in specific cases such as France (17.9%) or Mexico (20.6%).

Table 8: Relative structure of revenues administered by the TA (in percentages of TNR). CIAT member countries. Year 2019

CIAT Countries	PIT	CIT	VAT	SSC	Other Taxes	Non Tax
Angola	7.7	29.2	2.3	0.0	59.9	1.0
Argentina	7.5	15.0	31.4	24.9	13.5	7.7
Barbados	21.8	23.8	38.3	0.0	15.6	0.5
Belize	18.9	26.4	54.6	0.0	0.1	0.0
Bolivia	1.5	26.6	23.4	0.0	48.5	0.0
Brazil	11.3	15.4	21.0	31.6	20.6	0.0
Canada	52.1	16.5	9.5	16.2	4.4	1.3
Chile	8.7	33.6	48.7	0.0	9.0	0.0
Colombia	8.9	37.9	43.0	0.0	10.1	0.0
Costa Rica	12.6	22.6	38.6	0.0	26.2	0.0
Dominican Rep.	10.3	16.7	37.2	0.0	35.7	0.0
Ecuador	7.3	25.4	47.6	0.0	18.7	1.0
El Salvador	2.8	42.3	49.2	0.0	5.7	0.0
France	16.9	7.9	41.2	0.0	16.1	17.9
Guatemala	4.5	23.0	48.2	0.0	24.3	0.0
Guyana	15.6	26.1	23.3	0.0	35.0	0.0
Honduras	14.0	20.4	42.9	0.0	22.2	0.4
India	40.6	58.3	0.0	0.0	1.1	0.0
Italy	43.2	7.6	23.1	0.0	26.1	0.0
Jamaica	12.9	12.5	38.3	13.8	22.4	0.2
Kenya	24.9	10.7	25.9	0.0	31.9	6.7
Mexico	21.9	19.9	23.1	0.0	14.4	20.6
Morocco	21.4	24.9	42.6	0.0	11.1	0.0
Netherlands	24.0	9.5	20.6	33.3	10.1	2.5
Nicaragua	12.6	46.6	17.8	0.0	19.9	3.0
Nigeria	1.3	30.9	22.6	0.0	45.2	0.0
Panama	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Paraguay	1.3	26.6	46.3	0.0	25.8	0.0
Peru	11.5	21.7	37.9	12.1	15.6	1.2
Portugal	26.6	13.4	36.5	0.0	22.9	0.6
Spain	40.8	11.2	33.6	0.0	12.4	2.0
Suriname	1.1	1.9	0.0	5.7	91.2	0.0
Trinidad and Tobago	23.5	41.4	20.2	0.0	14.9	0.0
United States	51.0	7.3	0.0	38.7	3.1	0.0
Uruguay	20.0	13.5	45.5	0.0	21.0	0.0

Note: Data not available (n.a.) for Panama (year 2019).

Figure 5: Relative structure of revenues administered by the TA (in percentages of TNR). CIAT member countries. Year 2019
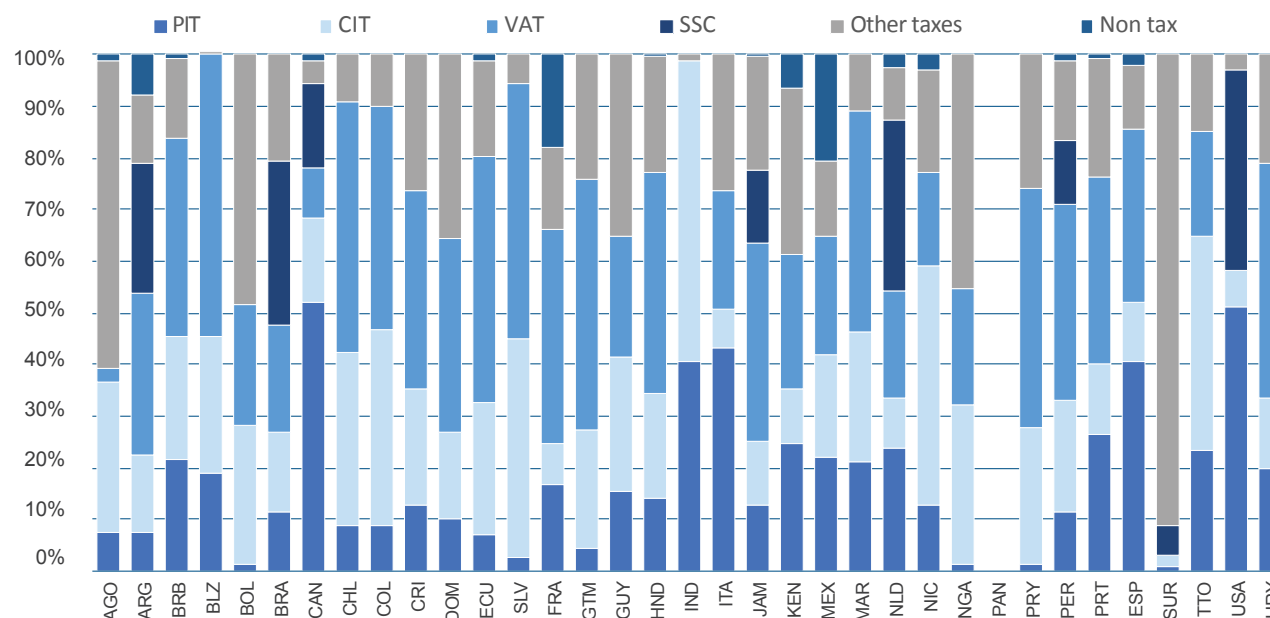
Nota: Datos no disponibles para el caso de Panamá (año 2019).

2.4 Available financial budget and cost of collection

In order to carry out all the tasks that contribute to the achievement of their strategic mission, the different TAs participating in ISORA have a certain budget, which, on average for the 156 countries, amounts to 0.177% of GDP, distributed between an operating or current component (0.164% of GDP and 92.7% of the total) and a capital component (0.013% of GDP and 7.3% of the total). The CIAT countries, on average, have a smaller budget (0.160% of GDP), with a larger proportion of this budget corresponding to current operating expenditure, while the average for the LAC region is higher (0.196% of GDP) and higher than the global average. By income level, the average total budget is higher towards the extremes for low-income and high-income countries (0.207% and 0.199%

of GDP, respectively), with lower average figures for middle-income country groups, although upper-middle-income countries are those with the highest average capital expenditure (Table 9).

The information provided by ISORA on the internal composition of the budget also shows that salary expenditure is the main component of the operating budget, with an overall average of 69.6% of the total, which is somewhat higher for the group of CIAT countries (73.8%) and LAC (72.2%). There is no clear trend by income level, although these percentages are somewhat higher for higher income groups (73.5% for Upper-Middle Income and 69.4% for High Income). On the other hand, Information and Communication Technologies (ICT) represent a small portion of total operating expenditure (8.4% overall average for ISORA;

8.5% for CIAT; 9.3% for LAC), with a clear upward trend as higher income levels are considered (4.8% for Low Income versus 10.2% for High Income).

From the quotient between revenues collected and the budget used by each TA, it is possible to obtain a coefficient that expresses the "recurrent collection cost" of the tax administration. Although as any synthetic indicator it has limitations (being affected by circumstances beyond the control of the TA) and should not be directly identified as a measure of the operational efficiency of these organizations, its calculation provides an approximate orientation of the existing gaps between the different countries and allows weighting, with the necessary caution, the use and effective performance of the financial resources available in the budget of each TA (Díaz de Sarralde Miguez, 2018a). Thus, for the set of ISORA countries, the collection of one hundred monetary units has an average cost of 1.32, which is lower for CIAT countries (1.10) and somewhat higher for the LAC region (1.45). The cost of collection is clearly decreasing with respect to income level: from 2.94% for low-income countries to 1.07% in high-income countries (Figure 6).

Table 9: Expenditure structure and operating budget indicators (as a percentage of GDP and as a percentage of total). Simple averages for selected groups of countries. Year 2019

Country Groups	Operating Expenditure (in % of GDP)	Capital Expenditure (in % of GDP)	Recurrent Cost of Collection (in %)	Salary Expenditure / Operating Expenditure (in %)	ICT operating cost as percent of operating expenditure (in %)
ISORA	**0.164**	**0.013**	**1.32**	**69.6**	**8.4**
CIAT Members	0.154	0.006	1.10	73.8	8.5
Latin America and the Caribbean	0.178	0.018	1.45	72.2	9.3
Low Income	0.193	0.014	2.94	66.5	4.8
Lower Middle Income	0.140	0.010	1.39	66.1	5.1
Upper Middle Income	0.145	0.021	1.14	73.5	9.9
High Income	0.191	0.008	1.07	69.4	10.2

Figure 6: TA budget structure by main types of expenditures (left panel, in percent of GDP) and cost of collection (right panel, in percent). Simple averages for selected groups of countries. Year 2019
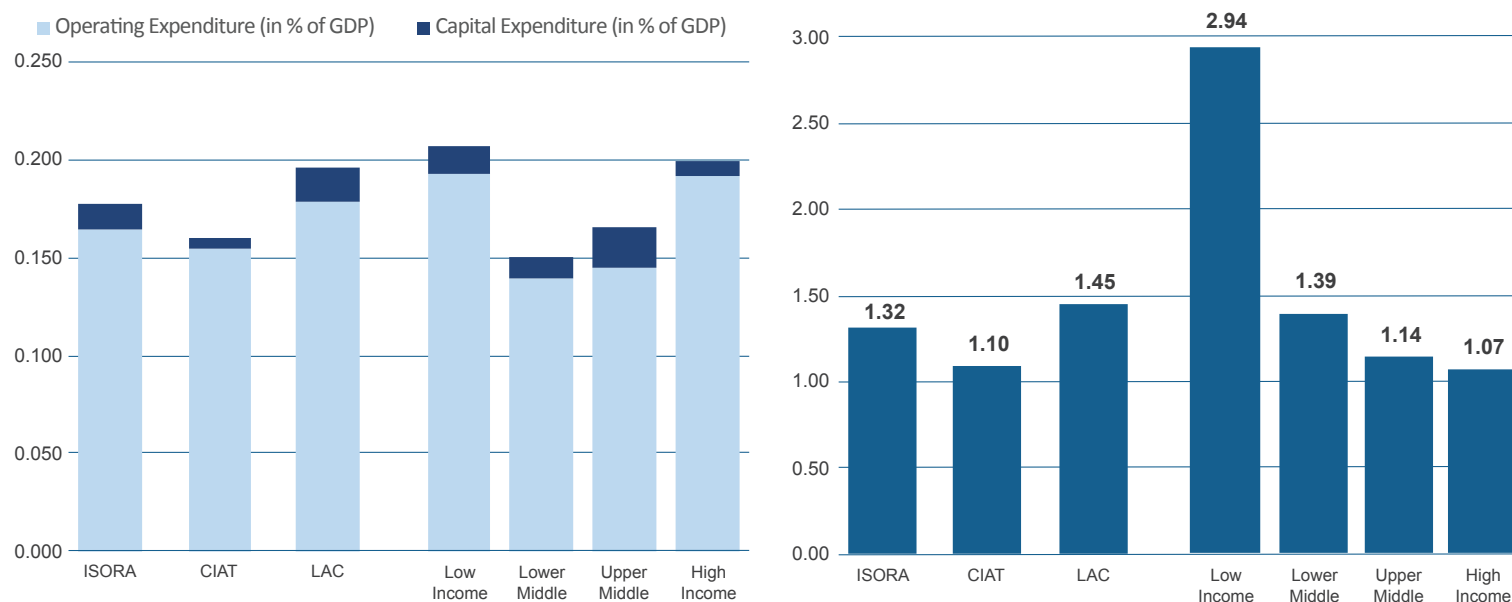
By country, within CIAT and in terms of the relative size of the budget, some Caribbean countries stand out (Barbados, Guyana and Jamaica) with values close to 0.5% of GDP, compared to several others that do not reach a fifth of that amount (Brazil, El Salvador, Guatemala, India, Kenya, Mexico, Morocco, Nigeria, Panama, Paraguay, Spain, Suriname and the United States), all below 0.1% of GDP (Table 10). The wide dispersion is repeated when looking at the share of salaries in operating/current expenditures (from 36.7% in Trinidad and Tobago to 94.8% in Argentina), as well as the share of ICT expenditures in the total operating budget (from practically zero in Angola, Bolivia and Suriname to 33.6% of current expenditures in Paraguay). Finally, as regards the cost of collection, Barbados, Belize, Guyana, Jamaica and Nigeria are the only five cases -among the CIAT countries- in which this indicator is close to 2.5 percentage points, well above the global and regional averages; at the other extreme, Brazil, the United States, Mexico and Suriname show the lowest values in this group of countries, all of them with a score below 0.5% (Figure 7).

Table 10: Expenditure structure and operating budget indicators (as a percentage of GDP and as a percentage of the total). CIAT member countries. Year 2019

CIAT Countries	Operating Expenditure (in % of GDP)	Capital Expenditure (in % of GDP)	Recurrent Cost of Collection (in %)	Salary Expenditure / Operating Expenditure (in %)	ICT operating cost as percent of operating expenditure (in %)
Angola	0.141	0.000	0.81	85.7	0.0
Argentina	0.255	0.003	1.24	94.8	1.1
Barbados	0.450	0.006	2.46	51.2	18.4
Belize	0.259	0.004	2.53	79.4	0.6
Bolivia	0.160	0.006	1.12	71.4	0.0
Brazil	0.080	0.000	0.44	72.8	3.1
Canada	0.222	0.003	1.12	74.0	16.3
Chile	0.112	0.003	0.89	89.9	10.0
Colombia	0.107	0.011	0.93	83.6	7.0
Costa Rica	0.133	0.003	1.35	46.0	22.9
Dominican Rep.	0.143	0.016	1.35	40.0	5.8
Ecuador	0.099	0.000	0.93	76.7	11.0
El Salvador	0.081	0.000	0.70	84.0	3.4
France	0.141	0.000	0.87	89.2	5.7
Guatemala	0.097	0.002	1.25	53.2	2.5
Guyana	0.427	0.046	2.34	74.2	2.8
Honduras	0.106	0.004	0.82	89.0	2.4
India	0.035	0.001	0.62	55.8	12.3
Italy	0.169	0.001	0.76	60.2	9.5
Jamaica	0.472	0.010	2.48	49.8	2.9
Kenya	0.098	0.000	0.68	87.8	0.4
Mexico	0.044	0.000	0.32	79.3	4.9
Morocco	0.078	0.008	0.58	79.8	9.6
Netherlands	0.275	0.006	0.82	65.2	23.0
Nicaragua	0.123	0.004	0.93	74.5	7.0
Nigeria	0.081	0.004	2.34	37.2	3.1
Panama	0.016	0.000	n.a.	n.a.	14.2
Paraguay	0.071	0.015	0.88	51.8	33.6
Peru	0.144	0.012	1.09	69.6	11.7
Portugal	0.252	0.009	1.06	79.2	5.7
Spain	0.091	0.002	0.58	82.8	5.1
Suriname	0.065	0.000	0.43	77.8	0.0
Trinidad and Tobago	0.172	0.000	1.07	36.7	4.3
United States	0.052	0.003	0.36	74.3	25.2
Uruguay	0.154	0.003	1.08	87.1	2.4

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Figure 7:   Cost of collection of TA (in percentages). CIAT member countries. Year 2019
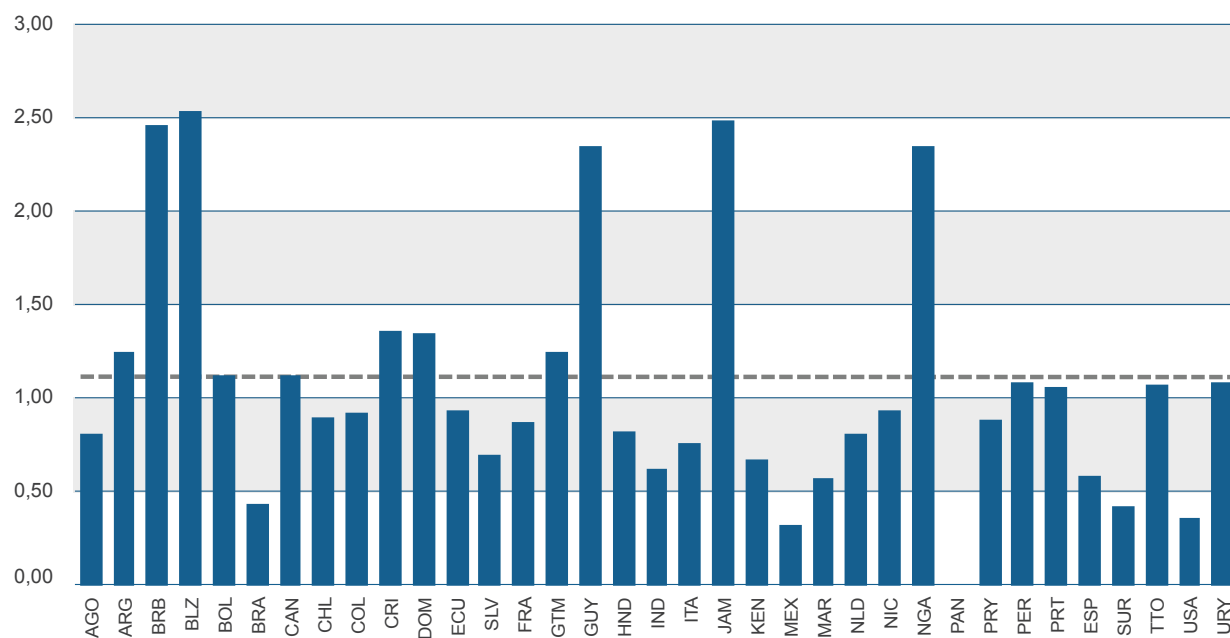
Note: Data not available for Panama (year 2019).

3. Main characteristics of the employed staff

In addition to the economic (budget) and technological resources available to the TAs to carry out their multiple tasks and meet their objectives, a central component of these organizations with a high impact on their effective performance is human resources, i.e. their specific staff. As described below, the ISORA survey provides valuable information on the size, dynamics, distribution by functions and composition of the employed staff according to different criteria (age, seniority, gender and academic background), which allows for various comparisons between countries and for weighting particular cases in order to identify trends in these aspects.

3.1 Staff size

By the end of fiscal year 2019, the 156 participating jurisdictions of ISORA accumulated a workforce of more than 2 million workers (in their full-time equivalence -FTE-[11]). Of these, 410 thousand belong to CIAT member countries and 104 thousand to LAC countries (Table 11). Likewise, the bulk of these agents are heavily concentrated in Upper-Middle and High Income countries (88% of the global total). For comparative purposes, it is feasible to weight these figures in relation to the total population of each country, their labor force and the universe of active taxpayers in the main taxes applied (Corporate IT, Personal IT and VAT).

On the one hand, for the global group of ISORA countries, the average population per FTE worker is close to 6,000 inhabitants, which is similar to that of CIAT countries (6,260) but higher than that of LAC (3,706); by income level, the number of inhabitants per worker is very high, on average, for Low Income countries (almost 15,000 inhabitants) and this ratio decreases rapidly as the income level increases (average of 1,692 inhabitants per FTE worker for the High Income group). Similar trends are observed when considering the ratio of labor force per FTE worker in the TAs: with an overall average of 2,558 inhabitants of the labor force, a similar average for CIAT countries and decreasing averages with income level from 5,978 (Low Income) to 862 inhabitants of working age (High Income).

The comparison of the size of personnel employed (FTE) as a function of the number of taxpayers shows a totally different picture, beyond the general averages. With higher figures to be expected for Personal Income Tax (PIT) than for Corporate Income Tax (CIT) or Value Added Tax (VAT), the averages for CIAT countries are higher in all cases than the overall ISORA average (829 and 568 taxpayers for PIT, 81 and 66 for CIT, 139 and 76 for VAT, respectively). However, by income level, the average number of taxpayers per FTE worker increases as the income level of each group of countries rises, going from 76 to 700 in the PIT, from 15 to 81 in the CIT, and from 10 to 102 in the VAT (Figure 8).

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11 In all cases and for comparability, it refers to Full-Time Equivalents (FTE). An FTE of 1.0 means that the resources are equivalent to one full-time staff member working for a full year.

Table 11: Number of personnel employed (FTE) and weights by reference variables (population/taxpayers). Subtotals and simple averages for selected groups of countries. Year 2019

Country Groups	Tax Administration's Staff (in FTEs)	Population per FTE	Labor Force per FTE	PIT Active Taxpayers per FTE	CIT Active Taxpayers per FTE	VAT Active Taxpayers per FTE
ISORA	**2,024,955**	**5,937**	**2,558**	**568**	**66**	**76**
CIAT Members	410,294	6,260	2,690	829	81	139
Latin America and the Caribbean	104,359	3,706	1,802	498	72	118
Low Income	20,203	14,997	5,978	76	15	10
Lower Middle Income	215,219	9,106	3,633	425	44	29
Upper Middle Income	1,085,786	5,356	2,557	675	84	96
High Income	703,747	1,692	862	700	81	102

Figure 8: Economically active population (labor force) per employee (FTE) (left panel, number of persons) and Number of PIT taxpayers per employee (right panel). Simple averages for selected groups of countries. Year 2019
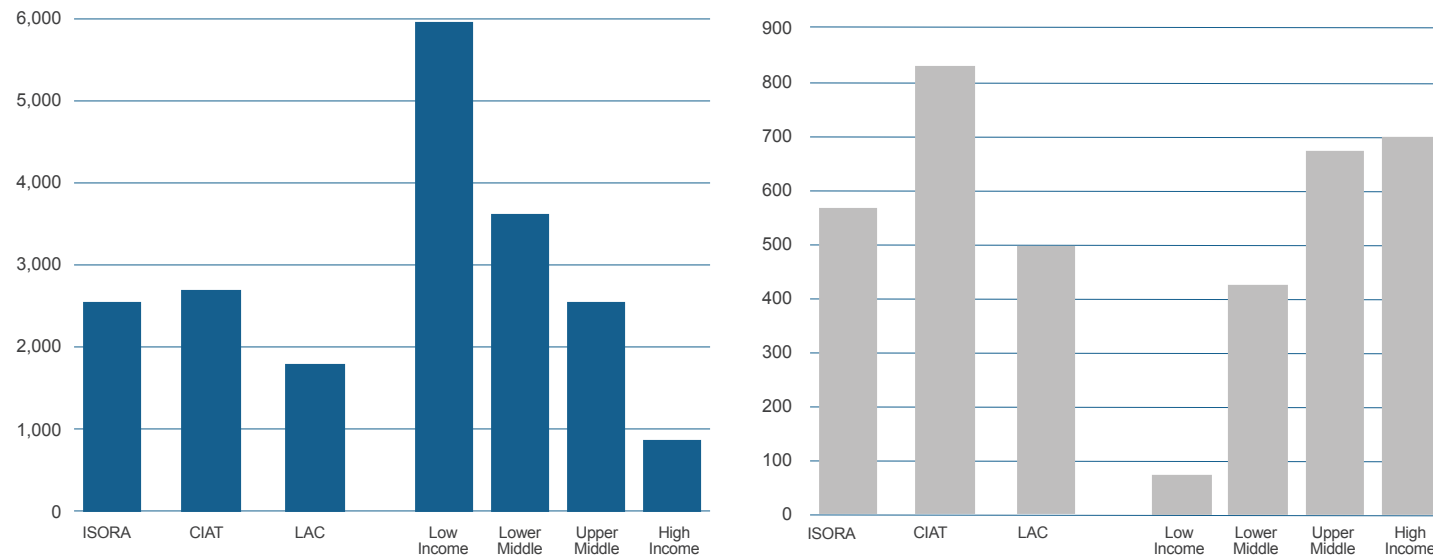
As was pointed out in the previous version of this Overview, among the multiple causes behind these differences in the workload derived from the different indicators, it is quite likely that demographic (higher population growth in lower-income countries) and economic circumstances (a less developed economic structure in low-income countries, accompanied by greater informality, weakness of direct taxes and dependence on a small number of large taxpayers) largely explain the differences (Diaz de Sarralde, 2019).

For their part, CIAT countries show great heterogeneity also in these aspects related to personnel employed (FTE). Not only in the absolute size of the workforce of the different TAs with extremes between Suriname (81) and the United States (73,544), but also once these figures are weighted by the total population and labor force of each of the countries (with countries ranking well above the global or regional averages). Even considering the number of contributors per FTE employee, the high workload of CIAT member countries as diverse as Angola, Brazil, Chile, the United States, India, Kenya and Mexico, among others, is evident.

Table 12: Number of personnel employed (FTE) and weights by reference variables (population/taxpayers). CIAT member countries. Year 2019

CIAT Countries	Tax Administration's Staff (in FTEs)	Population per FTE	Labor Force per FTE	PIT Active Taxpayers per FTE	CIT Active Taxpayers per FTE	VAT Active Taxpayers per FTE
Angola	2,131	14,934	6,178	2,459	73	4
Argentina	15,389	2,920	1,350	69	24	70
Barbados	316	908	491	229	33	15
Belize	240	1,626	744	278	30	15
Bolivia	3,505	3,285	1,636	24	57	60
Brazil	11,540	18,289	9,229	2,601	426	n.a.
Canada	41,075	915	501	744	91	89
Chile	5,014	3,780	1,906	2,058	303	223
Colombia	7,360	6,840	3,640	502	68	62
Costa Rica	935	5,398	2,646	525	180	587
Dominican Rep.	3,467	3,097	1,440	50	49	59
Ecuador	3,365	5,163	2,540	289	51	500
El Salvador	999	6,460	2,792	527	36	144
France	44,739	1,499	679	1,147	55	92
Guatemala	2,940	5,648	2,329	191	128	455
Guyana	524	1,494	605	706	9	8
Honduras	1,187	8,211	3,887	147	31	108
India	42,153	32,416	11,725	1,487	20	n.a.
Italy	35,625	1,693	728	807	38	132
Jamaica	2,277	1,295	654	27	7	6
Kenya	2,861	18,376	8,346	3,500	177	75
Mexico	33,058	3,859	1,729	2,278	65	294
Morocco	4,939	7,384	2,443	157	96	138
Netherlands	20,390	850	455	611	40	98
Nicaragua	1,457	4,492	2,093	12	13	19
Nigeria	8,606	23,352	6,957	n.a.	12	22
Panama	871	4,875	2,377	182	102	60
Paraguay	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Peru	6,821	4,766	2,766	882	161	141
Portugal	9,869	1,041	531	552	51	167
Spain	20,730	2,271	1,115	1,191	93	343
Suriname	81	7,177	2,683	6	56	n.a.
Trinidad and Tobago	907	1,538	735	32	31	2
United States	73,554	4,463	2,255	2,095	29	n.a.
Uruguay	1,369	2,529	1,288	978	119	178

3.2 Staff dynamics

Regarding the recent dynamics of FTE staff in ISORA TAs, the annual balance for Fiscal Year 2019 was slightly positive (1,286 workers), taking into consideration information from 151 countries (out of 156) with available information. This balance was negative, although also limited, for CIAT and LAC countries (with decreases of 1,332 and 1,883 FTE employees, respectively). By income level, the middle-income country groups had large fluctuations that offset each other in the overall balance: the Lower-Middle Income group added 29,401 employees, while the Upper-Middle Income group reduced the total workforce by 23,784 FTEs. In sum, 86 ISORA participating TAs (20 of which are CIAT members) recorded a positive employment balance during 2019 (i.e. they had inflows in excess of their staff outflows or outflows), representing 57.0% of the 151 TAs with available information, with this proportion being relatively higher in Low Income and Lower-Middle Income countries compared to the rest (Table 13).

Related to the above, it is feasible to calculate the hiring rates of FTE workers as well as the attrition rates, considering the recruitments/ departures during fiscal year 2019 with respect to the average staffing during the same period[12]. Thus it can be seen that the average FTE hiring rate for ISORA (8.0%) is similar to that of other alternative groupings, but not the FTE attrition rate, where the overall average is 6.3%. Among CIAT countries, that rate is somewhat higher (7.2%) and then it increases with the income level of the different countries, with averages ranging from 2.6% in low-income countries to 7.8% and 7.6%, respectively, in the two higher income groups (Figure 9).

Table 13: Indicators of employee dynamics (FTE). Subtotals and simple averages for selected groups of countries. Year 2019

Country Groups	Annual Balance in FTE Employment (Amount)	FTE Hiring Rate	FTE Attrition Rate	TAs with positive FTE Employment Balance (number)	TAs with positive FTE Employment Balance (in %)
ISORA	**1,286**	**8.0**	**6.3**	**86**	**57.0**
CIAT Members	-1,332	8.3	7.2	20	58.8
Latin America and the Caribbean	-1,883	7.1	6.3	19	61.3
Low Income	-1,195	8.3	2.6	12	66.7
Lower Middle Income	29,401	8.1	4.5	28	73.7
Upper Middle Income	-23,784	7.6	7.8	22	48.9
High Income	-3,136	8.3	7.6	24	48.0

Figure 9: Hiring and attrition rates of employed staff (FTE). Simple averages for selected groups of countries. Year 2019
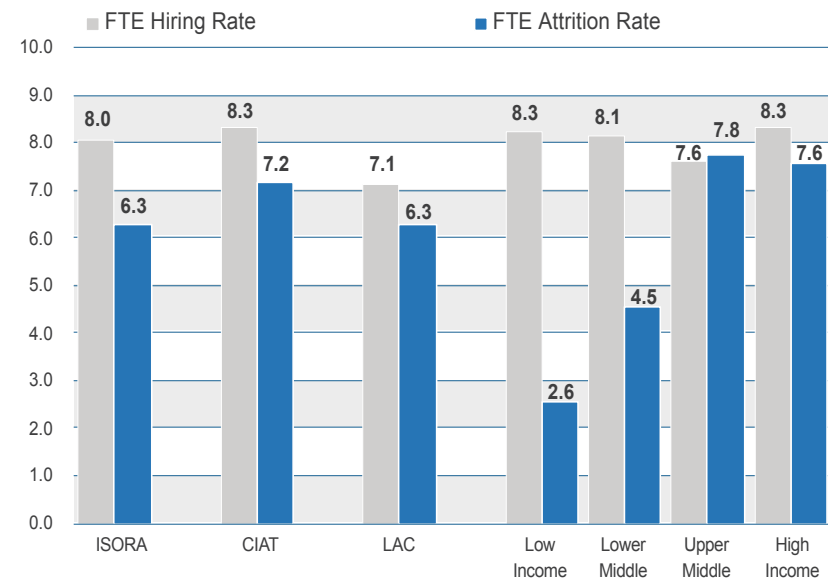
12 The average is calculated by dividing by two the sum of the total FTE endowment at the beginning and end of the year in question.

By country, the dynamics of staff employed in CIAT countries show large fluctuations during 2019, with the largest positive balances (above 1,000 net FTEs) in Argentina, Canada, Kenya and the Netherlands. In the opposite direction, Brazil, France, Italy and Mexico recorded the most notable negative balances in this area, with net staff reductions exceeding 2,000 workers in all cases. The variability is very high in terms of annual FTE hiring and attrition rates, which are influenced by the particular characteristics of the countries themselves, the different moments in the institutional evolution of their respective TAs and the specific macroeconomic context (Table 14).

Table 14: Indicators of employee dynamics (FTE). CIAT member countries. Year 2019

CIAT Countries	Annual Balance in FTE Employment (Amount)	FTE Hiring Rate	FTE Attrition Rate
Angola	27	n.a.	n.a.
Argentina	1,123	8.1	2.9
Barbados	12	6.8	2.9
Belize	5	3.8	1.7
Bolivia	68	13.6	9.8
Brazil	-2,141	0.0	10.8
Canada	2,188	16.7	12.0
Chile	36	2.8	2.1
Colombia	787	11.1	3.4
Costa Rica	-19	4.8	6.8
Dominican Rep.	262	11.9	4.0
Ecuador	-5	9.0	9.2
El Salvador	8	3.0	2.2
France	-2,557	2.1	4.6
Guatemala	177	6.1	2.9
Guyana	20	8.8	7.1
Honduras	26	10.6	8.3
India	n.a.	n.a.	n.a.

CIAT Countries	Annual Balance in FTE Employment (Amount)	FTE Hiring Rate	FTE Attrition Rate
Italy	-2,386	1.0	7.7
Jamaica	114	8.6	3.5
Kenya	1.077	19.2	4.7
Mexico	-2,144	8.8	15.1
Morocco	-146	0.8	3.7
Netherlands	1,764	10.5	5.3
Nicaragua	17	8.4	7.2
Nigeria	643	9.8	2.1
Panama	-22	18.0	20.6
Paraguay	-16	1.0	2.6
Peru	-142	13.7	15.0
Portugal	228	18.0	15.9
Spain	461	5.8	4.0
Suriname	-15	0.3	2.6
Trinidad and Tobago	-18	15.2	17.1
United States	-744	10.9	11.9
Uruguay	-20	5.9	7.3

3.3 Staff distribution by TA function

The ISORA survey also makes it possible to identify trends in the distribution of staff employed among the main functions on which the different TAs in the participating countries organize their work. Thus it is possible to see that, for the global average, the RRP function (Registration, Returns and Payments) accounts alone for the largest percentage of FTE staff (29.4%), followed closely by the AIV function (Audit, Investigation and other Verification) with 26.2% of the total. A smaller portion of the staff, 11.0% on average, is assigned to the EDC function (Enforced debt collections), while a remaining one-third of the staff is spread across "other miscellaneous functions" (Table 15). These relative proportions are quite similar for CIAT averages and other relevant country groupings with some caveats: in LAC the RAP function has a lower relative weight in terms of staff assigned (23.4%) and, although without clear patterns, the AIC function has a higher relevance as the income level of the countries increases (16.2% for the Low Income average and 29.0% for High Income).

TAs may have different degrees of operational decentralization within the territory of each country, which depends on a series of specific factors (such as geographic extension, population density and economic resources to implement it, among others) and determines the concentration of personnel employed in the headquarters of operations and the different branches and regional agencies. Precisely, the indicator of the proportion of FTE staff assigned to headquarters has an average of 28.0% for all countries in ISORA, very similar for CIAT and LAC countries, although with a notably decreasing pattern as the income level of the countries increases: for the Low Income group, practically half (49.4%) of the staff is physically located in that head office, a percentage that drops to 35.0%, 24.2% and 21.3% for Lower-Middle, Upper-Middle and High Income countries, respectively (Figure 10).

Table 15: Distribution of personnel employed (FTE) by functions or main areas of TA (in percentages). Simple averages for selected groups of countries. Year 2019

Country Groups	Functions of the TAs				Percentage staff in headquarters
	Registration, returns and payment processing	Audit, investigation and other verification	Enforced debt collections and related functions	Other miscellaneous functions	
ISORA	**29.4**	**26.2**	**11.0**	**33.3**	**28.0**
CIAT Members	28.3	27.2	10.7	33.7	29.5
Latin America and the Caribbean	23.4	25.8	11.3	39.4	28.9
Low Income	33.7	16.2	12.3	37.8	49.2
Lower Middle Income	34.1	22.8	10.7	32.4	35.0
Upper Middle Income	23.5	29.2	11.6	35.8	24.2
High Income	29.6	29.0	10.5	30.9	21.3

Figure 10: Distribution of staff employed (FTE) by main functions or areas of the TAs (left panel) and proportion of staff assigned to the head office of operations (right panel) (both in percentages). Simple averages for selected groups of countries. Year 2019
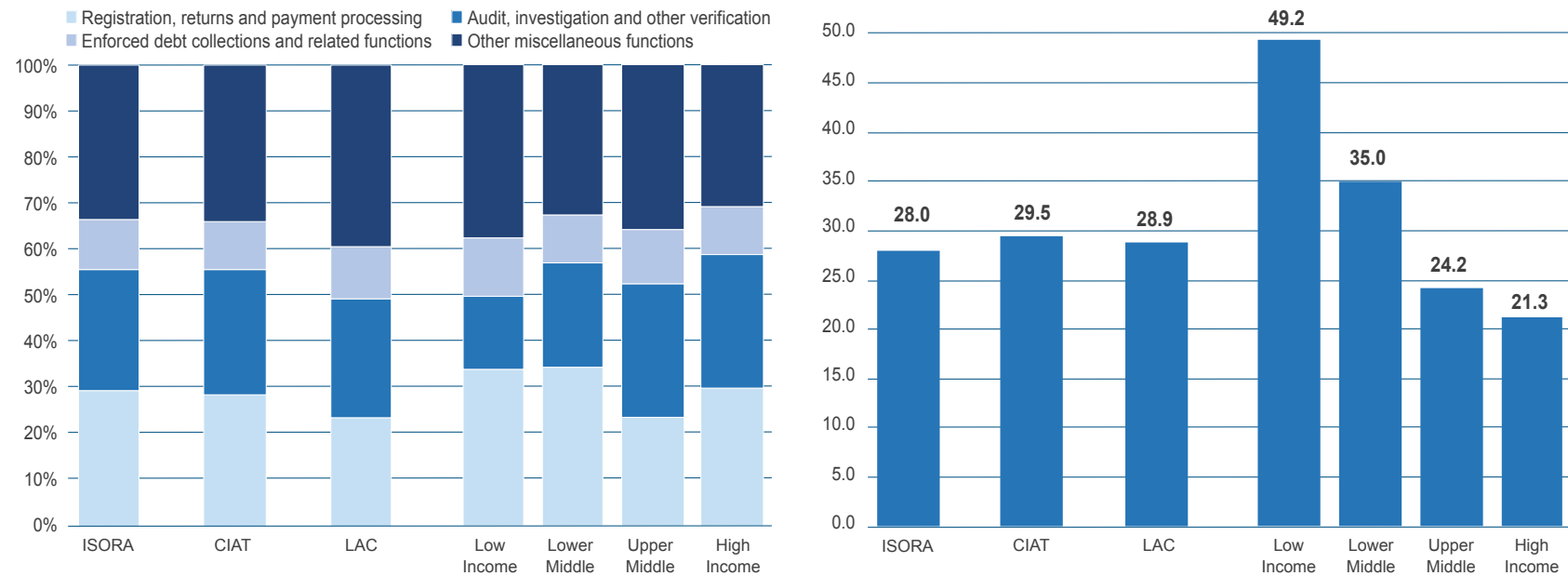
At the CIAT country level, there is presumably a wide diversity of situations in terms of the distribution of personnel employed by main functions (Table 16). In some cases, the general regularities are maintained with the registration function (RRP) as the main destination of FTE personnel, although there are some countries such as Bolivia, Chile, Costa Rica, El Salvador, the Netherlands and Peru where the audit function (AIV) takes up most of the available staff (up to 63.1% in the case of El Salvador). The function linked to tax debt management (EDC) has a significant relative importance -in terms of FTE staff assigned- in the TAs of Argentina (23.0%), Canada (26.0%), Spain (20.3%), Kenya (30.0%) and Suriname (21.0%). On the other hand, the assignment of staff to the headquarters or head office of operations shows percentages ranging from 2.1% in the Netherlands and 3.8% in France to 83.0% in Paraguay and 79.2% in Uruguay.

Table 16: Distribution of personnel employed (FTE) by functions or main areas of TA (in percentages). CIAT member countries. Year 2019

CIAT Countries	Functions of the TAs				Percentage staff in headquarters	CIAT Countries	Functions of the TAs				Percentage staff in headquarters
	Registration, returns and payment processing	Audit, investigation and other verification	Enforced debt collections and related functions	Other miscellaneous functions			Registration, returns and payment processing	Audit, investigation and other verification	Enforced debt collections and related functions	Other miscellaneous functions	
Angola	59.2	10.7	n.a.	30.1	30.0	Italy	30.8	36.2	2.6	30.5	6.1
Argentina	6.3	26.6	23.0	44.1	17.0	Jamaica	18.0	20.7	14.9	46.4	27.9
Barbados	42.7	23.7	5.1	28.5	22.0	Kenya	20.0	50.0	30.0	0.0	40.0
Belize	36.7	32.5	12.5	18.3	52.0	Mexico	10.2	29.8	16.7	43.3	12.0
Bolivia (2018)	23.2	31.8	19.7	25.4	16.2	Morocco	48.8	12.1	13.0	26.2	11.0
Brazil	29.2	25.1	19.2	26.4	5.5	Netherlands	16.3	35.9	7.5	40.3	2.1
Canada	22.4	24.3	26.0	27.3	27.7	Nicaragua	8.8	24.8	6.0	60.4	30.8
Chile	16.5	45.7	0.0	37.8	23.0	Nigeria	72.5	8.7	1.5	17.3	16.7
Colombia	23.6	39.7	14.8	21.8	17.5	Panama	56.4	21.0	4.2	18.4	68.0
Costa Rica	10.9	44.9	12.0	32.2	28.0	Paraguay	n.a.	n.a.	n.a.	n.a.	83.0
Dominican Rep.	31.6	19.9	1.9	46.6	10.6	Peru	18.7	35.5	13.8	32.0	15.1
Ecuador	28.0	33.1	5.3	33.6	26.2	Portugal	55.0	18.5	11.5	14.9	18.1
El Salvador	18.8	63.1	0.0	18.1	63.0	Spain	16.1	44.3	20.3	19.4	18.6
France	28.7	24.5	18.9	27.9	3.8	Suriname	7.4	21.0	21.0	50.6	13.0
Guatemala	53.9	25.6	9.9	10.6	66.5	Trinidad and Tobago	10.7	9.8	2.4	77.1	37.9
Guyana	24.4	26.5	15.6	33.4	74.9	United States	38.9	26.8	11.5	22.7	6.4
Honduras	33.0	13.8	8.1	45.1	32.5	Uruguay	40.6	23.9	3.4	32.1	79.2
India	n.a.	n.a.	n.a.	n.a.	n.a.						

3.4 Staff composition according to age ranges

The relative composition of employed personnel according to age ranges shows a greater aging as the income level of the countries increases (Table 17). One way to check this is to summarize the data by age ranges into a single value - taking the central values of each intermediate interval and the limit values at the two extremes - where the results for the average age of each group of countries would be: 45.4 years for High Income; 42.8 for Upper-Middle Income; 40.3 for Lower-Middle Income; 41.9 for Low Income (equal to the average for the LAC region), while the global average for ISORA would be 43.0 years and for the CIAT countries would be 44.3.

On average for the ISORA countries, the bulk of full-time workers (78.7%) are concentrated in three age ranges between 25 and 54 years of age. This same age group averages 75.6% among CIAT countries and 81.0% in the LAC region. According to income levels, the same stratum is equivalent to 85.0% of FTE personnel in low-income countries, while it is only 71.4% in high-income countries. In the latter group of countries, moreover, the largest age group corresponds to the segment between 45 and 54 years of age (27.4%), while for the other lower income groups this quality is found in the 35-44 years age group. In the High Income group, the segment between 55 and 64 years of age is also of particular importance (22.9% of the total), clearly above the average of the other country groupings (Figure 11).

Table 17: Composition of staff employed (FTE) by age ranges (in percentages). Simple averages for selected groups of countries. Year 2019

Country Groups	Younger than 25	25 to 34	35 to 44	45 to 54	55 to 64	Over 64
ISORA	**3.9**	**24.5**	**29.3**	**24.9**	**16.2**	**1.2**
CIAT Members	2.7	22.6	28.1	24.8	19.5	2.2
Latin America and the Caribbean	4.2	26.5	32.6	22.0	13.1	1.6
Low Income	3.1	23.9	37.1	24.0	11.0	0.8
Lower Middle Income	4.8	31.4	31.6	22.6	9.2	0.4
Upper Middle Income	3.6	25.8	29.2	24.2	16.2	1.0
High Income	3.8	18.3	25.6	27.4	22.9	2.0

Figure 11: Composition of staff employed (FTE) by age ranges (in percentages). Simple averages for selected groups of countries. Year 2019
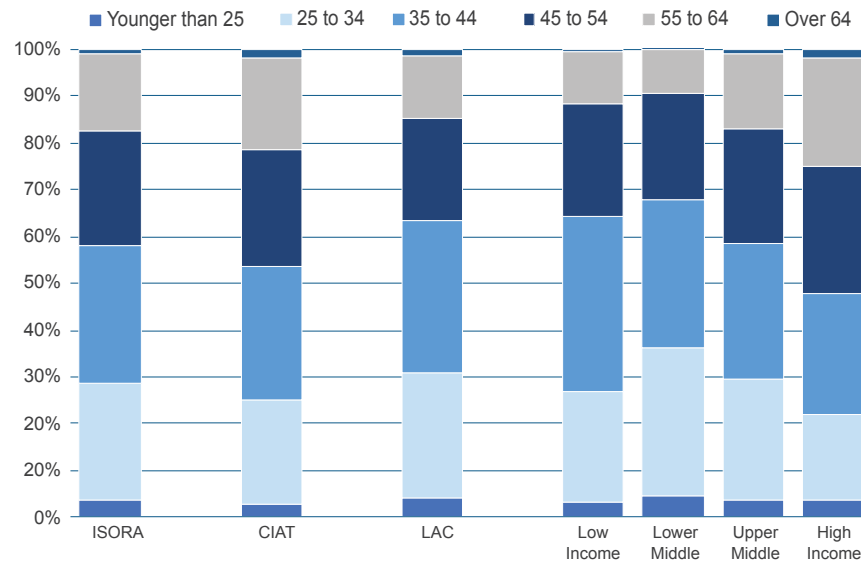
Among the CIAT countries, it is possible to find countries with relatively older FTEs, such as Portugal, Spain, Italy, the United States, the Netherlands, Argentina or Brazil, with workforces whose ages are concentrated in the upper strata between 45 and 64 years of age. At the same time, the human resources of the TAs of several member countries can be considered comparatively "young", as they are concentrated in the 25-44 age bracket, as shown in the cases of Angola, Belize, Bolivia, Guatemala, Dominican Republic, Ecuador, Guyana, Honduras, Kenya, Nigeria and Guyana (Table 18).

Table 18: Composition of employed personnel (FTE) by age ranges (in percentages). CIAT member countries. Year 2019

CIAT Countries	Younger than 25	25 to 34	35 to 44	45 to 54	55 to 64	Over 64
Angola	0.7	26.0	47.8	17.2	8.3	0.0
Argentina	2.2	11.4	22.3	34.5	27.0	2.6
Barbados	3.5	25.6	29.7	19.9	19.6	1.6
Belize	5.4	30.0	43.8	19.2	1.7	0.0
Bolivia	0.8	37.8	37.9	15.9	6.4	1.1
Brazil	0.1	6.2	22.8	33.5	30.3	7.1
Canada	5.9	19.2	25.2	28.0	19.3	2.4
Chile	0.6	16.5	30.6	30.4	16.9	5.0
Colombia	2.2	17.5	26.0	24.4	27.3	2.7
Costa Rica	1.3	14.9	29.9	29.7	23.1	1.1
Dominican Rep.	8.6	35.7	27.5	17.4	8.5	2.2
Ecuador	0.5	31.9	54.6	11.0	1.8	0.1
El Salvador	0.1	12.2	29.2	31.4	22.2	4.9
France	0.8	10.9	20.5	32.4	34.6	0.9
Guatemala	2.5	32.1	36.9	19.4	7.6	1.5
Guyana	15.7	28.7	29.8	16.0	8.7	1.2
Honduras	6.1	53.2	27.6	9.3	3.5	0.2
India	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Italy	0.0	2.9	20.9	29.8	41.6	4.7
Jamaica	2.9	25.0	38.3	26.0	7.8	0.0
Kenya	3.5	44.0	27.5	15.8	9.2	0.0
Mexico	4.1	33.1	26.3	23.8	10.7	2.1

CIAT Countries	Younger than 25	25 to 34	35 to 44	45 to 54	55 to 64	Over 64
Morocco	0.3	34.4	23.1	27.8	14.3	0.1
Netherlands	1.7	13.7	16.3	23.6	42.2	2.4
Nicaragua	3.8	24.5	23.5	26.6	20.7	0.9
Nigeria	0.5	18.8	41.9	31.8	6.9	0.0
Panama	2.0	18.4	27.0	24.5	22.5	5.7
Paraguay	1.8	29.2	27.8	26.1	14.5	0.7
Peru	1.2	26.3	27.5	26.1	14.6	4.2
Portugal	0.0	0.8	13.7	34.6	47.3	3.5
Spain	0.1	6.0	13.4	31.3	46.6	2.7
Suriname	0.9	27.4	19.5	28.6	21.1	2.5
Trinidad and Tobago	8.8	25.4	21.3	30.4	14.1	0.0
United States	1.7	10.5	21.3	28.3	30.6	7.6
Uruguay	2.8	17.4	25.6	19.9	31.6	2.8

Note: In the Netherlands, figures do not include contract personnel.

3.5 Staff composition by seniority (years of service)

Employee staffing levels (FTE) can also be classified according to the seniority of the TA workers. It is to be expected that the average age of their workforces is highly correlated with their experience in these tasks. The years of service, although high in all cases, increase with the level of income (Table 19). With a similar estimation method (taking the central values of each intermediate interval and the limit values at the two extremes), the approximate average length of service of employees for all ISORA countries would be 12.4 years (close to 12.5 years for CIAT and above 11.8 years for LAC), with 13.8 years for High Income countries; 12.6 for Upper-Middle Income countries; 11.6 in Lower-Middle Income countries; and 11.0 in Low Income countries. Furthermore, in High Income countries the percentage of FTE employees with twenty or more years of experience reaches an average of 36.1%, while this measure drops to 15.6% in Low Income countries (Figure 12).

Table 19: Composition of personnel employed (FTE) by seniority ranges -years of service- (in percentages). Simple averages for selected groups of countries. Year 2019

Country Groups	Less than 5 years	5 to 9 years	10 to 19 years	Over 19 years
ISORA	**25.0**	**19.4**	**27.6**	**28.0**
CIAT Members	28.7	15.4	25.4	30.6
Latin America and the Caribbean	30.8	17.4	28.0	23.8
Low Income	20.9	36.1	27.4	15.6
Lower Middle Income	27.4	23.3	28.2	21.1
Upper Middle Income	24.7	17.3	29.8	28.2
High Income	24.7	14.0	25.3	36.1

Figure 12: Composition of personnel employed (FTE) by seniority ranges -years of service- (in percentages). Simple averages for selected groups of countries. Year 2019
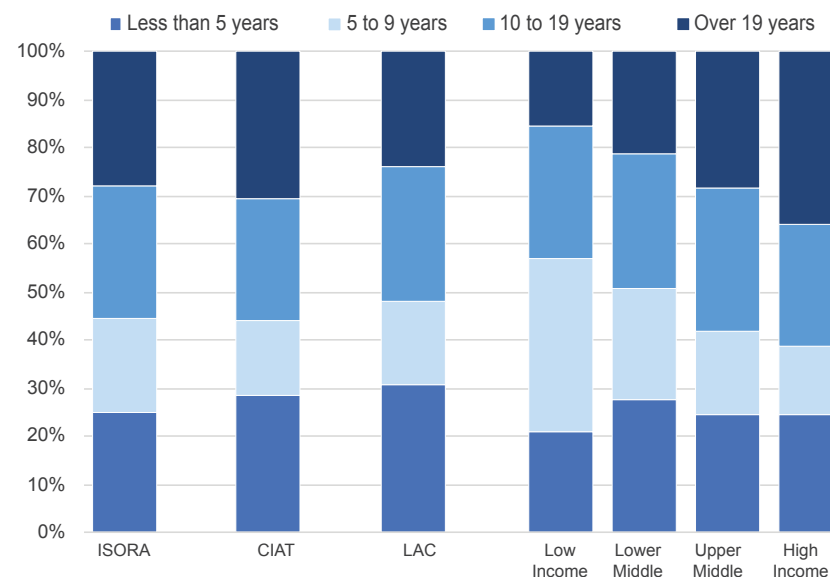
Among CIAT countries, Portugal, Italy, the Netherlands, France, Argentina, Paraguay, El Salvador and Suriname have a majority of their staff with more than 19 years of service. In contrast, countries such as Bolivia, Colombia, Kenya, Panama and Honduras (the latter with 100% of new employees due to the recent and complete renewal of its staff) show a composition of staff with less accumulated experience (Table 20).

Table 20: Composition of personnel employed (FTE) by seniority ranks -years of service- (in percentages). CIAT member countries. Year 2019

CIAT Countries	Less than 5 years	5 to 9 years	10 to 19 years	Over 19 years	CIAT Countries	Less than 5 years	5 to 9 years	10 to 19 years	Over 19 years
Angola	36.7	26.8	22.6	13.9	Italy	5.2	10.3	22.8	61.7
Argentina	14.5	4.1	30.8	50.6	Jamaica	16.8	18.6	42.0	22.6
Barbados	31.6	3.5	35.8	29.1	Kenya	52.0	8.1	23.0	16.9
Belize	16.3	20.0	37.1	26.7	Mexico	33.3	22.1	21.7	23.0
Bolivia	77.1	14.5	5.9	2.5	Morocco	17.8	26.3	18.6	37.2
Brazil	n.a.	n.a.	n.a.	n.a.	Netherlands	17.8	8.2	18.6	55.3
Canada	37.7	15.1	27.9	19.3	Nicaragua	26.7	16.0	41.1	16.2
Chile	25.6	11.9	33.0	29.5	Nigeria	29.9	26.3	11.7	32.0
Colombia	43.8	12.7	3.3	40.2	Panama	35.1	40.0	12.7	12.1
Costa Rica	20.0	11.8	29.2	39.1	Paraguay	33.1	7.4	15.3	44.3
Dominican Rep.	43.0	14.2	31.1	11.6	Peru	29.9	17.5	17.8	34.7
Ecuador	31.5	24.7	41.8	2.1	Portugal	0.4	3.3	21.6	74.7
El Salvador	10.9	5.1	37.1	46.9	Spain	4.4	9.7	15.9	70.0
France	17.1	13.0	31.4	38.6	Suriname	11.9	25.9	13.9	48.3
Guatemala	38.0	22.3	32.2	7.6	Trinidad and Tobago	9.6	19.6	45.4	25.4
Guyana	34.0	21.6	33.5	10.8	United States	20.0	13.6	33.7	32.7
Honduras	100.0	0.0	0.0	0.0	Uruguay	24.5	12.9	28.2	34.3
India	n.a.	n.a.	n.a.	n.a.					

Note: In the Netherlands, figures do not include contract personnel.

3.6 Staff composition by gender and educational background

The ISORA data also allow us to classify staff employed (FTE) according to other relevant characteristics such as gender and educational background (Table 21). In the first case, it is inquired about the percentage of women within the total workforce as well as, more specifically, in executive positions. In global average for all the countries included in ISORA, women represent 52.3% of the workforce, while they occupy 39.2% of executive positions. The averages for CIAT are slightly higher (54.9% and 42.0%, respectively) although with the same gap between both dimensions. In the LAC region, the average participation of women is significantly higher than the global average (59.7% and 48.2%).

The results also show that, in general, the participation of women increases with the income level of the countries, both in the overall workforce (from 30.1% in low-income countries to 63.1% in high-income countries) and in executive positions (from 24.2% to 47.3%) (Figure 13). It should also be noted that the gap between these two indicators - overall participation and participation in executive positions - also widens as the income level of the group of countries considered increases, being smaller in low-income countries (5.9 points) than in high-income countries (15.8 percentage points).

On the other hand, the overall average for ISORA of the proportion of personnel with a bachelor's degree (Bachelor's degree or equivalent) reaches 42.2%, while 19.2% of the staff, on average, has a graduate degree (Master's degree or equivalent). The percentages for CIAT and LAC differ in the sense that they are higher for basic university education (49.7% and 47.2%, respectively) but lower for postgraduate education (13.7% and 9.1%). By income level, a similar pattern is observed: as the average income of the countries increases, the percentage of employees with a graduate degree decreases, from 46.4% for Low Income to 34.3% for High Income, concomitant with the increase in the percentage of FTE personnel with a graduate degree, which rises from 16.4% to 22.3% for the two groups mentioned (Figure 14). A striking stylized fact is that, overall, the proportion of employees with some type of university education is higher for Low and Lower-Middle Income countries (above 60%) than for High Income countries.

Table 21: Relative share of female in employed staff (FTE) and proportion of staff with different degrees of educational attainment (bachelor/master) (in percentages). Simple averages for selected groups of countries. Year 2019

Country Groups	Percent staff who are female	Percent executives who are female	Percent staff with bachelor's degree	Percent staff with master's degree (or higher)
ISORA	**52.3**	**39.2**	**42.2**	**19.2**
CIAT Members	54.9	42.0	49.7	13.7
Latin America and the Caribbean	59.7	48.2	47.2	9.1
Low Income	30.1	24.2	46.4	16.4
Lower Middle Income	45.1	33.2	42.1	18.8
Upper Middle Income	55.3	40.5	49.0	17.8
High Income	63.1	47.3	34.3	22.3

Figure 13: Relative share of female in employed staff (FTE) and executive staff (in percentages). Simple averages for selected groups of countries. Year 2019
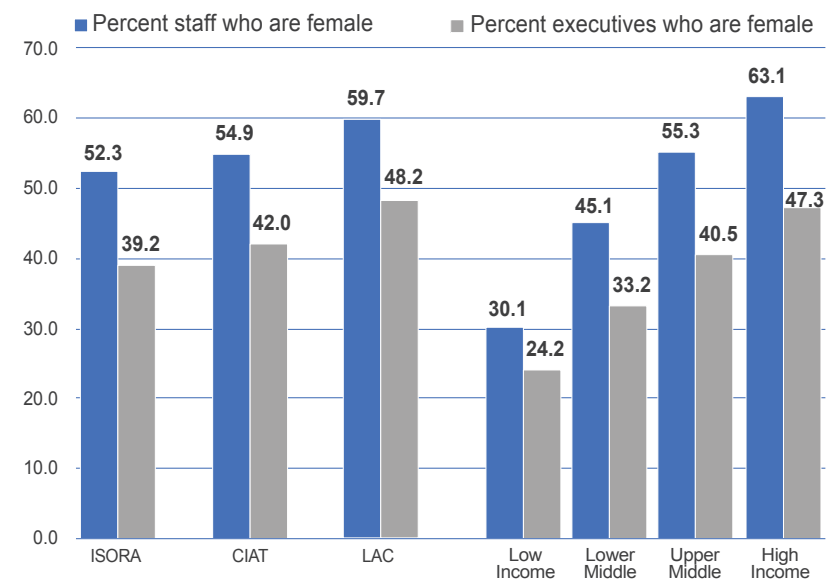
Figure 14: Proportion of staff with different degrees of academic training (bachelor/master) (in percentages). Simple averages for selected groups of countries. Year 2019

Table 22: Relative participation of female in employed personnel (FTE) and proportion of personnel with different degrees of academic training (in percentages). CIAT member countries. Year 2019

Países CIAT	Percent staff who are female	Percent executives who are female	Percent staff with bachelor's degree	Percent staff with master's degree (or higher)
Angola	47.2	32.5	50.4	2.2
Argentina	45.6	34.7	58.7	4.4
Barbados	67.1	60.0	42.7	7.9
Belize	70.0	81.0	25.4	4.6
Bolivia	58.9	39.1	99.6	0.4
Brazil	36.1	15.6	79.3	0.9
Canada	59.4	49.4	n.a.	n.a.
Chile	52.4	46.3	60.7	16.6
Colombia	56.5	45.7	29.5	3.3
Costa Rica	58.6	61.4	77.6	8.2
Dominican Rep.	58.2	53.1	83.9	16.1
Ecuador	60.5	52.1	53.7	38.5
El Salvador	50.7	36.1	56.1	8.0
France	59.0	27.0	27.8	22.4
Guatemala	42.9	40.5	34.5	9.7
Guyana	59.5	63.2	23.5	3.7
Honduras	58.5	69.2	58.1	11.4
India	n.a.	n.a.	n.a.	n.a.
Italy	50.2	32.1	3.4	47.8
Jamaica	75.0	40.0	36.3	11.5
Kenya	44.3	31.8	91.0	9.0
Mexico	53.8	37.2	63.9	4.9
Morocco	48.3	19.1	11.7	56.9
Netherlands	41.3	37.5	40.2	21.5
Nicaragua	50.0	48.8	37.7	12.5
Nigeria	41.6	0.0	75.7	24.3
Panama	65.7	34.2	45.8	15.4
Paraguay	49.1	22.2	61.1	0.9
Peru	43.4	38.1	61.1	11.6
Portugal	60.0	42.3	46.8	3.9
Spain	53.1	33.6	61.5	n.a.
Suriname	48.1	n.a.	n.a.	n.a.
Trinidad and Tobago	73.2	61.1	16.2	19.5
United States	65.1	59.7	28.5	14.4
Uruguay	64.7	n.a.	48.6	n.a.

Note: In the Netherlands, figures do not include contract personnel.

The data available for the CIAT countries show a situation of wide variability for all the indicators mentioned. Regarding the relative participation of women in the total workforce and in executive positions, the countries show percentages ranging from 36.1% in Brazil to 75.0% in Jamaica for the first variable, while this range goes from zero in Nigeria to 81.0% in Belize when dealing exclusively with executive positions. In terms of the academic training of FTE staff, there are cases of countries where the percentage of those with a Master's degree or equivalent exceeds 30% (Ecuador, Italy or Morocco) while in several of them it does not reach 5% of the total (Argentina, Angola, Brazil, Bolivia, Guyana, Paraguay, among others), as well as cases where the proportion of university graduates exceeds 70%, as observed in Bolivia, Brazil, Costa Rica, Kenya, Nigeria and the Dominican Republic (Table 22).

Dalmiro Morán | Santiago Díaz de Sarralde Miguez

4. Organization and operational performance

Beyond the characteristics of the TAs in terms of public revenues under their responsibility, the availability of financial resources and their specific staffing, the ISORA survey allows to know different variables that make the effective performance of these organizations in their multiple tasks and functions, prioritizing a series of indicators that enable international comparisons. The organizational and operational dimensions to be explored cover the different taxpayer segmentation strategies, the registration and contact channels for taxpayer services, the mechanisms for filing and processing tax returns, the means of effective payment of the various taxes, the management of tax debts and late payments, and the auditing practices for tax auditing and control. Following the logic of exposition and analysis developed in the previous sections, the main general results are presented with emphasis on the particular cases of CIAT member countries.

As already mentioned in the introduction, it is important to point out that, especially in the dimensions that will be analyzed throughout this section, it is very likely that the COVID-19 pandemic and the forced adaptations it led to in the area of tax administration represent a disruptive change for the evolution that these institutions were already undergoing in most of the countries included in ISORA. That is why this Overview serves as a reference point to evaluate, in the future and as the necessary information can be gathered, the transformations that, since the outbreak of the pandemic and throughout the last few months, have become evident in the field of TA throughout the planet.

4.1 Taxpayer segmentation

Given their importance in terms of tax collection, the main and most widespread segmentation[13] technique is constituted by special offices or programs for large taxpayers (LTO)[14] which, at the end of 2019, were present in almost 90% of the countries participating in ISORA, in 97.1% of the CIAT countries and in 87.1% of the LAC countries. Although widespread among the world's TAs, the relative presence of LTOs is decreasing as the income level of the countries increases, from 100% in Low Income countries to 78.4% in High Income countries. In terms of the revenue involved, LTOs contribute, on average, more than half of their total net revenues (54.2%). This share is similar for the average of CIAT countries (54.1%) and somewhat lower than the average for LAC (60.4%), and decreases with income level of countries, from 69.8% for Low Income countries to 41.9% of TNR for High Income countries (Figure 15).

Furthermore, for all the averages calculated, the LTOs use a limited portion of total personnel: 8.3% for ISORA; 7.3% for CIAT; 11.1% for LAC,

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13 Taxpayer segmentation strategies have been previously analyzed for previous editions of ISORA in Diaz de Sarralde (2018b; 2019).

14 Countries tend to define large taxpayers based on variables such as the amount of annual sales/billing, the amount of annual income, the value of assets, the level of imports and/or exports, the amount of taxes paid, and the type of economic activity (e.g., financial services or mining sector).

with no evident pattern depending on the income level of the countries. On the other hand, if we analyze the number of corporate IT taxpayers (companies) administered through the large taxpayers' office (LTO) in relation to the total number of active taxpayers of the tax, this indicator decreases as the income level of the countries increases: the average for Low Income countries is 21.5% while for High Income countries it is only 3.7%; in turn, the average in ISORA is 8.5%, for CIAT countries it is only 1.8% and for LAC it is 6.8% of the total (Table 23).

As for simplified IT regimes for small taxpayers, as of the end of 2019 the same were present in 63.5% of the countries participating in ISORA, in 71.4% of CIAT members and in 61.3% of those belonging to the LAC region. This percentage is considerably higher, on average, for Low Income countries (88.9%), gradually decreasing as the income level increases (average of 52.9% for High Income). Something similar can be observed with regard to special programs and specific services aimed at the segment of small and medium-sized enterprises (SMEs, not included in the above-mentioned regimes), which exist in 59.6% of ISORA countries (65.7% of CIAT) and also show a higher relative presence in Low Income countries (72.2%), which decreases for groups of countries with higher income levels (Figure 16).

Finally, the relatively novel segmentation of high net worth individuals (HNWI) concentrates on a narrow set of individual taxpayers at the upper end of the income or wealth scale, usually defined by specific criteria determined by a country. At least until the end of the 2019 tax year, these schemes were in place in 25.0% of ISORA countries and contributed, on average, 2.2% of the Total Net Revenue (TNR) of these TAs[15]. In CIAT countries, these percentages rise to 40.0% of the countries with HNWI programs and an associated revenue equivalent to 3.5% of TNR, while for LAC these figures stand at 22.6% and 4.4%, respectively. It should also be noted that the existence of these schemes and their revenue contribution are gradually higher as the income level of the countries considered increases, with average percentages of 11.1% and 0.2%, respectively, for low-income countries, compared to 35.3% (of the countries) and 4.1% (of the TNR) for high-income countries (Table 23).

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15 The collection percentages for each of the taxpayer segments correspond to the responses of the countries that have implemented them, and their sum total does not add up to 100% since they come from potentially different groups.

Table 23: Indicators of the main contributor segmentation programs (in percentages). Proportion of countries and simple averages for selected groups of countries. Year 2019

Country Groups	Large Taxpayers Office (LTO)				High Net Worth Individuals (HNWI)		Specific service initiatives aimed at SMEs	Simplified income tax regime for small taxpayers
	Existing program / office	Net Revenue by LT (in % of total)	Assigned FTEs (in % of total)	CIT Taxpayers (in % of total)	Existing program	HNWI Net Revenue (in % of total)		
ISORA	**89.7**	**54.2**	**8.3**	**8.5**	**25.0**	**2.2**	**59.6**	**63.5**
CIAT Members	97.1	54.1	7.3	1.8	40.0	3.5	65.7	71.4
Latin America and the Caribbean	87.1	60.4	11.1	6.8	22.6	4.4	61.3	61.3
Low Income	100.0	69.8	7.7	21.5	11.1	0.2	72.2	88.9
Lower Middle Income	92.7	59.8	9.3	11.1	24.4	0.6	63.4	68.3
Upper Middle Income	95.7	52.7	10.5	5.3	19.6	3.0	58.7	60.9
High Income	78.4	41.9	5.6	3.7	35.3	4.1	52.9	52.9

Figure 15: Existence and contribution to revenue collection of large taxpayer programs (in percentages). Proportion of countries and simple averages for selected groups of countries. Year 2019
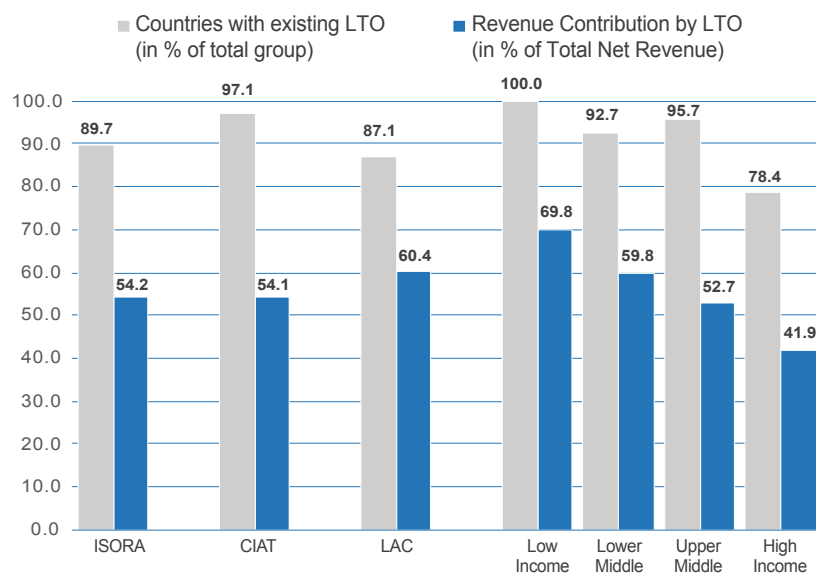
Figure 16: Existence of segmentation programs for small taxpayers (services for SMEs and simplified IT regime for small taxpayers) (in percentages). Proportion of countries for selected groups of countries. Year 2019
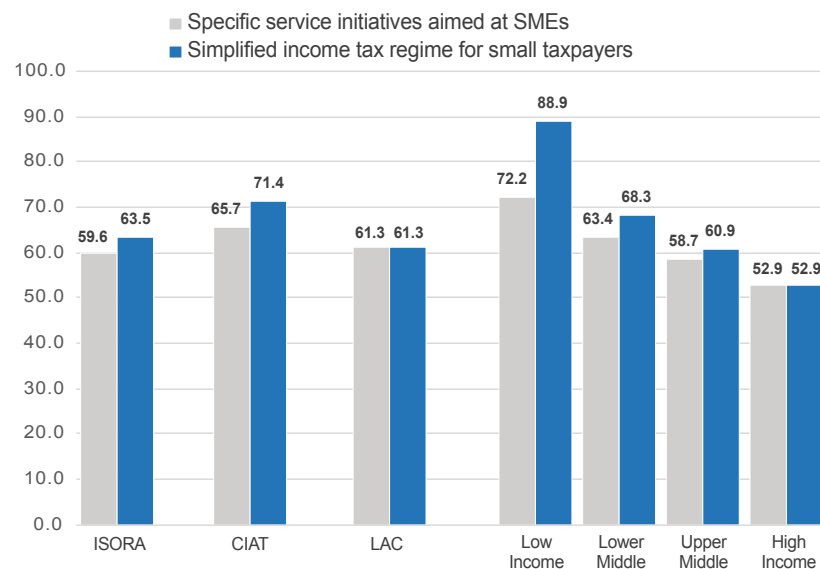
Individualized data for CIAT countries show that LTOs are present in practically all countries with the exception of Panama and, although they comprise a minority portion of Corporate IT taxpayers, their contribution to collection is very significant in several cases exceeding 70% of TNR in Angola, Belize, Bolivia, Jamaica, Morocco, Nicaragua, Peru and Dominican Republic (Table 24). As of the end of 2019, schemes for HNWI were present in 14 of the 35 member countries participating in ISORA, being relatively significant in terms of collection involved only in Brazil (6.0%), Chile (4.9%) and the United States (4.5%). Finally, programs aimed at smaller taxpayer segments, which are much more numerous but contribute less to tax collection, are widespread among CIAT countries, with 25 of them having a simplified IT regime for small individual taxpayers and 23 of the 35 countries providing specific services for SMEs.

Table 24: Indicators of the main taxpayer segmentation programs (in percentages). CIAT member countries. Year 2019

CIAT Countries	Large Taxpayers Office (LTO)				High Net Worth Individuals (HNWI)		Specific service initiatives aimed at SMEs	Simplified income tax regime for small taxpayers
	Existing program / office	Net Revenue by LTO (in % of total)	Assigned FTEs (in % of total)	CIT Taxpayers (in % of total)	Existing program	HNWI Net Revenue (in % of total)		
Angola	Yes	87.0	5.8	0.3	No		No	No
Argentina	Yes	49.1	3.0	0.2	Yes	n.a.	Yes	Yes
Barbados	Yes	1.0	6.0	2.9	No		Yes	Yes
Belize	Yes	70.0	2.1	2.8	No		No	No
Bolivia	Yes	80.2	13.9	2.0	No		Yes	No
Brazil	Yes	64.0	1.4	0.1	Yes	6.0	Yes	Yes
Canada	Yes	n.a.	3.3	n.a.	Yes	n.a.	Yes	No
Chile	Yes	43.0	4.4	0.1	Yes	4.9	Yes	Yes
Colombia	Yes	63.1	4.7	0.7	No		No	Yes
Costa Rica	Yes	62.0	6.7	0.3	Yes	n.a.	Yes	Yes
Dominican Rep.	Yes	71.0	5.5	0.4	No		Yes	Yes
Ecuador	Yes	39.0	5.6	0.1	No		No	Yes
El Salvador	Yes	60.0	11.8	2.4	No		No	No
France	Yes	n.a.	n.a.	n.a.	No		Yes	Yes
Guatemala	Yes	49.0	8.5	0.1	No		No	Yes
Guyana	Yes	63.0	5.5	3.0	No		Yes	Yes
Honduras	Yes	58.8	14.0	1.4	No		Yes	Yes
India	Yes	0.2	n.a.	0.9	No		No	Yes
Italy	Yes	28.0	1.7	0.3	Yes	n.a.	Yes	Yes
Jamaica	Yes	73.8	7.3	5.7	Yes	n.a.	Yes	Yes
Kenya	Yes	37.9	7.5	0.4	Yes	0.1	Yes	Yes

CIAT Countries	Large Taxpayers Office (LTO)				High Net Worth Individuals (HNWI)		Specific service initiatives aimed at SMEs	Simplified income tax regime for small taxpayers
	Existing program / office	Net Revenue by LTO (in % of total)	Assigned FTEs (in % of total)	CIT Taxpayers (in % of total)	Existing program	HNWI Net Revenue (in % of total)		
Mexico	Yes	59.3	0.2	0.4	No		Yes	Yes
Morocco	Yes	70.0	2.7	1.8	No		No	Yes
Netherlands	Yes	67.3	10.9	1.7	Yes	n.a.	Yes	No
Nicaragua	Yes	74.0	7.8	2.3	Yes	2.3	Yes	Yes
Nigeria	Yes	68.7	8.4	2.3	No		No	No
Panama	No	n.a.	n.a.	n.a.	No	n.a.	Yes	Yes
Paraguay	Yes	67.0	n.a.	0.6	No		No	No
Peru	Yes	74.8	13.3	1.5	No		Yes	Yes
Portugal	Yes	44.8	2.2	0.5	Yes	n.a.	Yes	Yes
Spain	Yes	33.2	3.7	0.2	Yes	n.a.	Yes	Yes
Suriname	Yes	n.a.	58.0	n.a.	No		No	No
Trinidad and Tobago	Yes	65.5	3.9	2.2	No		Yes	Yes
United States	Yes	7.1	4.2	17.2	Yes	4.5	Yes	No
Uruguay	Yes	44.7	5.1	0.2	Yes	n.a.	No	Yes

4.2 Taxpayer registration

Regarding one of the traditional processes of tax administration operations, ISORA also provides detailed information about the different registration channels available to taxpayers and their relationship with the internal digitalization of TAs. The results for 2019 highlight that face-to-face (in-person) registration is still the channel with the highest presence (93.6%) among the countries participating in the survey (Table 25). As for alternative channels, the availability of digital channels (online or through applications) has grown significantly compared to paper registration by postal mail (73.7% of the countries offer the computerized alternative; compared to 55.8% for paper)[16].

CIAT countries exceed the average adoption of online computerized registration (82.9%) and LAC countries average 74.2% for the availability of this remote registration channel. By income level, there are large differences in the adoption of these new online technologies, with 92.2% of high-income countries adopting them, far behind the 38.9% of low-income countries. The higher percentages achieved by high-income countries in all channels -except face-to-face- shows the existing gaps, at least on average, with respect to lower-income countries that still maintain the face-to-face or in-person method as the main registration channel (Figure 17).

16 Different registration channels may not be available for all taxes or taxpayer segments.

Table 25: Availability of alternative channels for taxpayer registration (in percentages). Simple averages for selected groups of countries. Year 2019

Country Groups	Online	Telephone	E-mail	Mail / post	In-person	Other
ISORA	**73.7**	**51.9**	**51.9**	**55.8**	**93.6**	**35.9**
CIAT Members	82.9	48.6	37.1	40.0	94.3	40.0
Latin America and the Caribbean	74.2	32.3	35.5	29.0	93.5	38.7
Low Income	38.9	33.3	27.8	22.2	94.4	27.8
Lower Middle Income	58.5	56.1	51.2	46.3	95.1	26.8
Upper Middle Income	80.4	52.2	58.7	58.7	97.8	50.0
High Income	92.2	54.9	54.9	72.5	88.2	33.3

Figure 17: Availability of main taxpayer registration channels (online and in-person) (in percentages). Simple averages for selected groups of countries. Year 2019
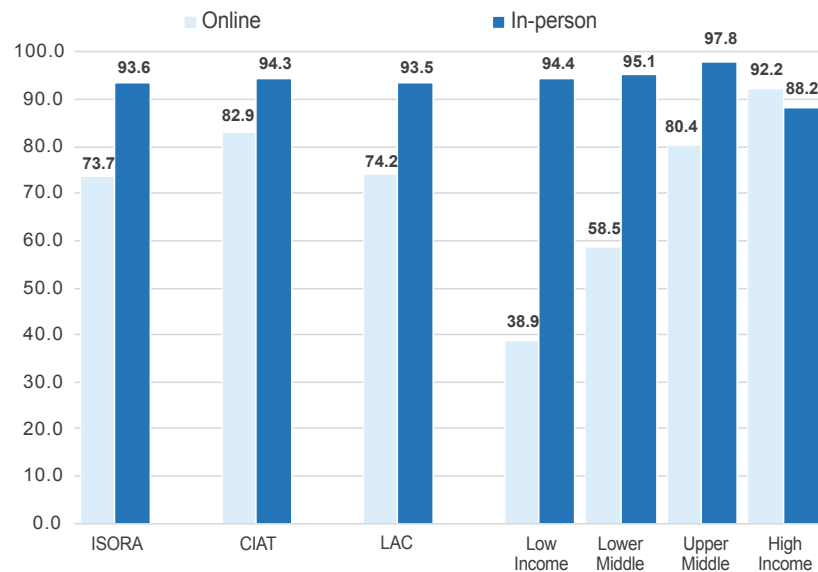
The data disaggregated by CIAT member countries provide more detail on the channels available for taxpayer registration in each of them. The face-to-face channel is available in all cases except for Barbados and Mexico; the online channel follows in importance with presence in 29 of the 35 CIAT members, followed by the telephone channel, available in half of the countries analyzed (Table 26).

Table 26: Availability of alternative channels for taxpayer registration. CIAT member countries. Year 2019

CIAT Countries	Online	Telephone	E-mail	Mail / Post	In-person	Other
Angola	Yes	Yes	Yes	Yes	Yes	No
Argentina	Yes	No	No	No	Yes	No
Barbados	Yes	No	No	No	No	Yes
Belize	No	No	No	No	Yes	No
Bolivia	No	No	No	No	Yes	No
Brazil	Yes	Yes	Yes	Yes	Yes	Yes
Canada	Yes	Yes	No	Yes	Yes	Yes
Chile	Yes	No	No	No	Yes	No
Colombia	Yes	No	Yes	No	Yes	Yes
Costa Rica	Yes	No	No	No	Yes	No
Dominican Rep.	Yes	Yes	Yes	Yes	Yes	Yes
Ecuador	Yes	Yes	No	No	Yes	Yes
El Salvador	No	No	No	No	Yes	No
France	Yes	Yes	Yes	Yes	Yes	No
Guatemala	Yes	No	No	No	Yes	No
Guyana	Yes	Yes	Yes	Yes	Yes	Yes
Honduras	Yes	No	No	No	Yes	No
India	Yes	Yes	Yes	Yes	Yes	No
Italy	Yes	No	No	No	Yes	Yes
Jamaica	Yes	No	No	No	Yes	Yes
Kenya	Yes	Yes	Yes	Yes	Yes	No
Mexico	Yes	Yes	No	No	No	Yes
Morocco	Yes	Yes	Yes	Yes	Yes	No
Netherlands	Yes	No	No	Yes	Yes	No
Nicaragua	No	No	No	No	Yes	No
Nigeria	No	No	No	No	Yes	No
Panama	Yes	Yes	Yes	Yes	Yes	Yes
Paraguay	Yes	Yes	Yes	No	Yes	No

CIAT Countries	Online	Telephone	E-mail	Mail / Post	In-person	Other
Peru	Yes	Yes	No	No	Yes	No
Portugal	Yes	Yes	Yes	Yes	Yes	Yes
Spain	Yes	Yes	Yes	Yes	Yes	Yes
Suriname	No	No	No	No	Yes	No
Trinidad and Tobago	Yes	No	No	No	Yes	No
United States	Yes	Yes	No	Yes	Yes	No
Uruguay	Yes	No	No	No	Yes	Yes

4.3   Contact channels for taxpayer services

In addition to registration, in recent years there has been a growing emphasis on the importance of facilitating and improving communication contacts between taxpayers and the corresponding TA for the different services provided. In fact, according to ISORA data, 80.1% of the TAs surveyed monitor incoming contacts for services as a way of being able to perfect existing channels and explore the introduction of newer ones with the aim of satisfying taxpayers' preferences. Such percentage reached, already at the end of 2019, 94.3% of CIAT countries and 83.9% of LAC countries (Table 27). According to income, this monitoring is more frequent in High Income (82.7%) and Upper-Middle Income (84.4%) countries than in Low Income countries (63.6%).

In terms of the availability of different communication channels, in recent years digital channels (online, e-mail and digital assistance) have been increasing their presence in a large number of countries, complementing or directly replacing traditional channels such as telephone, face-to-face or paper (postal mail). This, of course, prior to the outbreak of the COVID-19 pandemic which, as anticipated above, has accelerated -even in a forced manner- this movement towards non-face-to-face digital-based communication and interaction solutions with the taxpayer.

On average for the countries participating in the ISORA survey, the telephone channel accounted for the highest percentage of incoming contacts (38.4% of the total), followed by face-to-face (26.0%) and online procedures (21.9%), with a relatively low participation of digital assistance, electronic mail (e-mail) and postal mail (paper). In both CIAT and LAC, on average, the three main channels coincide, although in a different order according to the number of incoming contacts per service: first, the face-to-face method (35.4% and 38.9%, respectively), then "online" communication (27.2% and 27.5%), and third, the telephone channel (26.2% and 25.6%). In addition, the use of online channels, digital assistance and the telephone increase with the income level of the countries considered, while e-mail and face-to-face contacts show a decreasing intensity of use as the income level of the countries considered increases (Table 27).

If digital channels (online, digital assistance and email) are considered together, being these more novel and efficient in terms of resources needed for their continuous operation, to contrast with the more traditional contact channels, it can be seen for the ISORA average that the "telephone/postal mail" set continued to be at the end of 2019 the main channeler of communication for taxpayer services, followed by digital channels and the face-to-face channel, showing a greater relative importance of the latter in the average values for CIAT and LAC (Figure 18). By income level, it is confirmed that digital and traditional non-face-to-face channels (telephone/postal mail) are more intensively used by higher income countries, while the face-to-face channel ("in person") reduces its degree of use as the income of the countries analyzed increases.

Table 27: Use of different contact channels for taxpayer services (in percentages). Proportion of countries and simple averages for selected groups of countries. Year 2019

Country Groups	AT monitors incoming contacts (in %)	Online via taxpayer account	"Digital assistance (e.g. chat) "	Telephone call	E-mail	Mail / post	In-person
ISORA	**80.1**	**21.9**	**4.1**	**38.4**	**6.2**	**3.4**	**26.0**
CIAT Members	94.3	27.2	3.9	26.2	4.6	2.8	35.4
Latin America and the Caribbean	83.9	27.5	3.7	25.6	3.5	0.7	38.9
Low Income	63.6	7.9	0.1	31.2	14.5	3.4	42.8
Lower Middle Income	81.1	13.6	8.7	34.0	10.0	5.6	28.0
Upper Middle Income	84.4	21.5	3.2	38.3	5.4	3.0	28.6
High Income	82.7	30.6	3.5	42.8	2.7	2.4	18.1

Figure 18: Use of different contact channels for taxpayer services (in percentages). Proportion of countries and simple averages for selected groups of countries. Year 2019
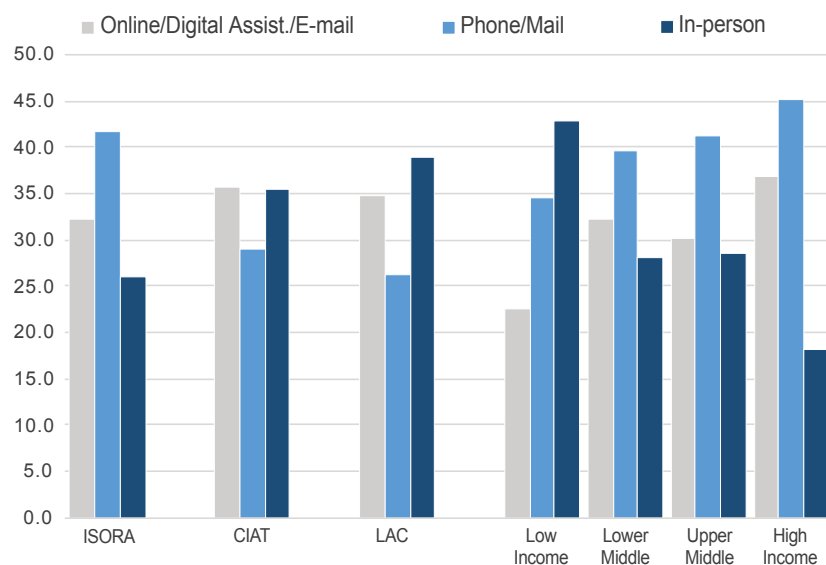
By CIAT member countries, the monitoring of incoming contacts by service is a widespread practice in 33 of the 35 cases surveyed (Table 28). Regarding the most used contact channels, even with a great variety of situations, some countries with a clear orientation towards online digital communication (Brazil, Ecuador, United States, Paraguay and Dominican Republic concentrate close to or more than 90% of total incoming contacts) contrast sharply with other countries where face-to-face or in-person communication still predominates for most services and interaction with the taxpayer (more than 80% of the total in Argentina, Barbados, Jamaica, Nicaragua and Portugal).

Table 28: Use of different contact channels for taxpayer services (in percentages). CIAT member countries. Year 2019

CIAT Countries	AT monitors incoming contacts	On line via taxpayer account	Digital assistance (e.g. chat)	Telephone Call	E-mail	Mail / post	In-person
Angola	No						
Argentina	Yes	n.a.	0.5	7.8	6.3	n.a.	85.4
Barbados	Yes	3.8	0.0	0.0	0.0	3.3	93.0
Belize	No						
Bolivia	Yes	0.0	4.9	20.8	0.0	0.0	74.2
Brazil	Yes	91.8	0.0	2.1	0.6	n.a.	5.4
Canada	Yes	73.2	0.0	26.7	0.0	0.1	n.a.
Chile	Yes	34.8	1.4	27.6	n.a.	0.0	36.3
Colombia	Yes	2.5	11.9	30.6	0.0	n.a.	55.0
Costa Rica	Yes	0.0	0.0	30.6	17.6	2.8	49.1
Dominican Rep.	Yes	98.5	0.0	0.2	0.0	0.2	1.0
Ecuador	Yes	95.0	0.0	1.1	0.0	0.0	3.9
El Salvador	Yes	0.0	0.0	45.3	10.0	0.2	44.5
France	Yes	20.7	0.2	31.9	14.6	n.a.	32.6
Guatemala	Yes	0.0	11.6	79.1	9.3	0.0	0.0
Guyana	Yes	0.0	0.0	60.1	3.9	0.0	36.0
Honduras	Yes	0.0	10.1	46.3	5.9	0.0	37.7
India	Yes	0.6	0.9	53.0	4.4	41.1	n.a.
Italy	Yes	8.9	n.a.	15.1	0.4	n.a.	75.6
Jamaica	Yes	0.3	n.a.	3.9	0.4	n.a.	95.4
Kenya	Yes	1.6	24.0	11.2	9.1	n.a.	54.2
Mexico	Yes	0.0	49.5	50.5	n.a.	n.a.	n.a.
Morocco	Yes	n.a.	9.3	42.8	47.9	n.a.	n.a.
Netherlands	Yes	0.0	0.0	65.6	0.0	34.1	0.3
Nicaragua	Yes	0.0	0.0	8.8	0.0	0.0	91.2
Nigeria	Yes	0.0	0.0	70.0	20.0	0.0	10.0

CIAT Countries	AT monitors incoming contacts	On line via taxpayer account	Digital assistance (e.g. chat)	Telephone Call	E-mail	Mail / post	In-person
Panama	Yes	n.a.	3.0	20.8	1.0	8.1	67.1
Paraguay	Yes	96.5	0.0	1.8	0.2	0.0	1.6
Peru	Yes	73.4	0.5	7.1	0.0	0.0	19.0
Portugal	Yes	4.4	n.a.	15.5	n.a.	n.a.	80.1
Spain	Yes	12.3	n.a.	35.1	n.a.	n.a.	52.6
Suriname	Yes	n.a.	n.a.	38.1	n.a.	0.8	61.1
Trinidad and Tobago	Yes	100.0	n.a.	n.a.	n.a.	n.a.	n.a.
United States	Yes	88.7	0.0	9.8	0.0	1.2	0.4
Uruguay	Yes	90.7	0.1	4.2	0.1	0.0	4.9

4.4 Filing of tax returns

In relation to the procedures for filing returns, ISORA allows the construction of indicators to evaluate the degree of compliance with filing within the stipulated timeframe as well as the percentage of returns filled through electronic channels (Table 29). It should be clarified that, according to information from previous editions of the survey, in several countries there is a legal obligation to fill them electronically (for all or some taxpayers) and its presence is closely related to the income level, being much more frequent in high-income countries and in most CIAT countries (Díaz de Sarralde Miguez, 2019).

The percentages of timely returns, understood as those made within the deadlines stipulated by law , are 64.8% for Corporate IT (CIT), 68.6% for Personal IT (PIT) and 77.5% for VAT as global averages in ISORA.

These same proportions are, for the CIAT countries, equal to 66.8% for CIT, 66.5% for PIT and 71.3% for VAT. For the LAC average, the figures are much lower than the global averages. By income level, there is a clear positive relationship with income level, where the proportion of term submissions increases from low-income countries to high-income countries, both in CIT, PIT and VAT (Figure 19).

Regarding returns filled through electronic channels -aggregating their different possible modalities - the overall averages for ISORA are 70.7% for CIT, 63.5% for PIT and 74.1% for VAT (Figure 20). These percentages increase for the three taxes mentioned in the case of CIAT countries (87.7%, 84.4% and 88.3%, respectively). The differences by income level are very evident: electronic filing reaches proportions of 11.1% in CIT, 11.1% in PIT and 11.7% in VAT for the group of Low Income countries (with practically no implementation, with few exceptions); on the other hand, the same results for High Income countries are 84.0% (CIT), 73.2% (PIT) and 88.7% (VAT). Of course, this implies an inverse relationship with the income level of the countries for the traditional and alternative method of paper returns.

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17 In order to measure the proportion of timely filing, "expected tax returns" are defined as the estimated number of returns that the tax administration expects to receive from registered taxpayers who are required by law to make such filing in a given tax year.

18 In contrast to returns filled on paper (e.g., completed at the tax office, sent by postal mail, scanned and sent by e-mail, etc.), electronic returns can be (i) pre-filled by the TA in full, with presumption of acceptance, (ii) pre-filled in full, requiring confirmation by the taxpayer, (iii) pre-filled in part with income and/or expense information, or (iv) not pre-filled.

Table 29: Indicators of (on-time/electronic) filing of tax returns (in percentages). Simple averages for selected groups of countries. Year 2019.

Country Groups	On-time filling rate (in %)			Electronic filling rate (in %)		
	CIT	PIT	VAT	CIT	PIT	VAT
ISORA	**64.8**	**68.6**	**77.5**	**70.7**	**63.5**	**74.1**
CIAT Members	66.8	66.5	71.3	87.7	84.4	88.3
Latin America and the Caribbean	52.8	52.9	64.0	74.2	69.4	76.6
Low Income	52.5	46.6	67.9	11.1	11.1	11.7
Lower Middle Income	62.3	69.4	75.1	64.2	56.4	68.6
Upper Middle Income	61.1	65.5	77.5	74.8	71.7	77.7
High Income	75.9	79.8	81.8	84.0	73.2	88.7

Figure 19: Proportion of on-time filed tax returns (in percentages). Simple averages for selected groups of countries. Year 2019
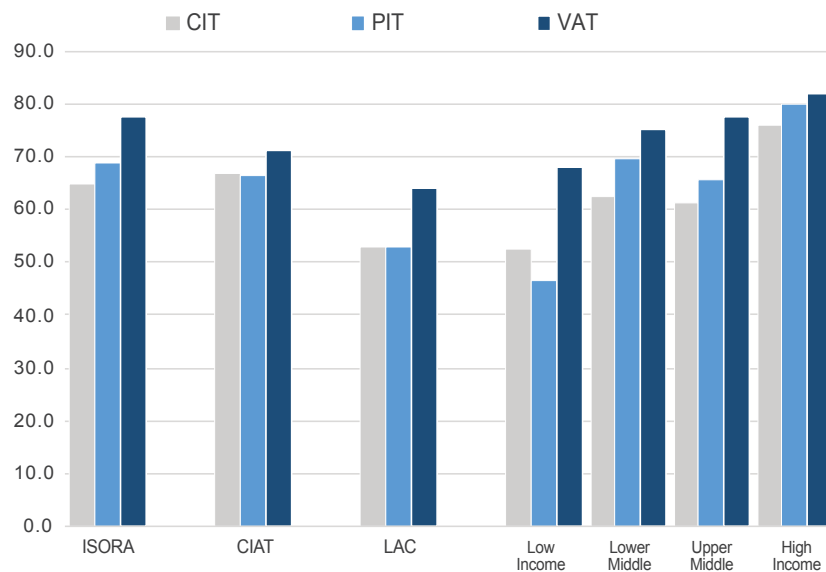
Figure 20: Share of tax returns filed through electronic channels (in percentages). Simple averages for selected groups of countries. Year 2019
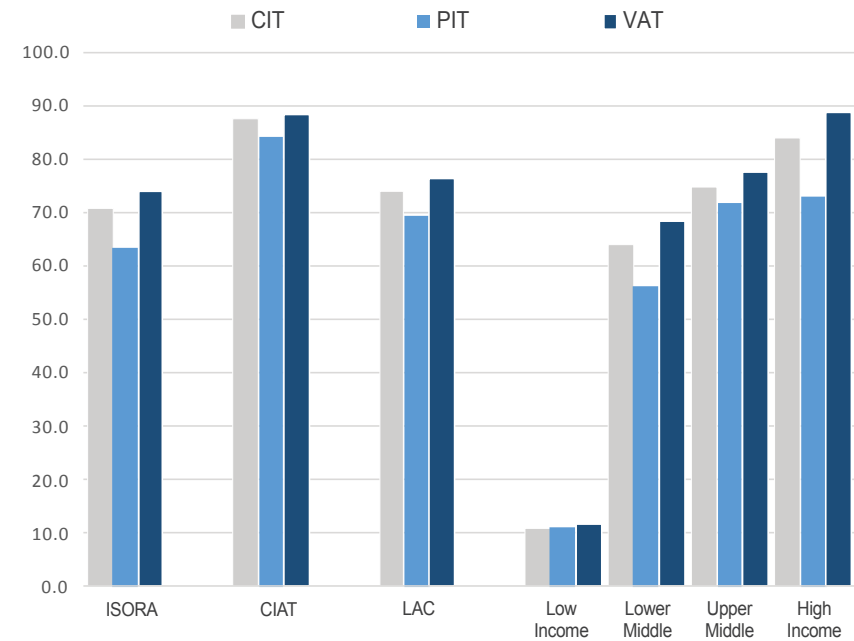
At the individual CIAT country level, the percentages of on-time filing of tax returns are very different among the cases and even among the three main taxes (Table 30). Nevertheless, there are some outstanding examples with figures above 90% (Ecuador, France, India, Morocco, Morocco, the United States, the Netherlands and Portugal). On the other hand, the high degree of implementation of electronic filing in CIAT countries is reflected in the significant number of these countries where one hundred percent of returns are filled electronically (Argentina, Barbados, Brazil, Colombia, Costa Rica, Ecuador, Spain, Guatemala, Italy, Kenya, Mexico, the Netherlands, Paraguay, Peru and Portugal).

Dalmiro Morán | Santiago Díaz de Sarralde Miguez

Table 30: Tax return filing indicators (on-time/electronic) (in percentages). CIAT member countries. Year 2019

CIAT Countries	On-time filing rate (in %)			Electronic filing rate (in %)		
	CIT	PIT	VAT	CIT	PIT	VAT
Angola	26.9	11.1	67.4	n.a.	n.a.	100.0
Argentina	34.5	56.6	81.1	100.0	100.0	100.0
Barbados	93.2	n.a.	71.4	100.0	100.0	100.0
Belize	73.4	21.5	68.9	0.0	0.0	1.2
Bolivia	72.6	89.6	97.7	99.9	99.6	99.5
Brazil	n.a.	95.9	n.a.	100.0	100.0	100.0
Canada	86.6	94.9	59.6	91.2	88.3	91.3
Chile	80.7	n.a.	77.2	99.7	99.9	99.8
Colombia	51.2	100.2	n.a.	100.0	92.6	100.0
Costa Rica	77.8	66.7	68.6	100.0	100.0	100.0
Dominican Rep.	36.1	29.3	33.1	98.2	91.3	98.7
Ecuador	88.4	93.4	93.1	100.0	100.0	100.0
El Salvador	70.6	88.4	56.4	99.9	86.8	100.0
France	95.0	95.8	91.1	94.4	66.5	97.8
Guatemala	64.5	95.9	62.1	100.0	100.0	100.0
Guyana	21.4	26.4	39.6	0.8	0.6	3.6
Honduras	85.2	60.7	76.3	87.3	82.2	90.8
India	93.7	95.1		100.0	99.8	
Italy	n.a.	n.a.	n.a.	100.0	100.0	100.0
Jamaica	34.9	20.9	59.2	86.0	29.6	95.7
Kenya	46.5	32.7	80.3	100.0	100.0	100.0
Mexico	47.8	31.9	n.a.	100.0	100.0	n.a.
Morocco	93.2	97.7	91.8	99.9	59.3	100.0
Netherlands	96.7	99.0	95.6	100.0	98.1	100.0
Nicaragua	53.0	53.8	55.0	99.9	99.9	100.0
Nigeria	n.a.	n.a.	n.a.	0.0	n.a.	0.0
Panama	94.6	89.9	79.6	n.a.	n.a.	n.a.
Paraguay	87.2	88.0	68.0	100.0	100.0	100.0
Peru	86.7	79.0	87.9	100.0	100.0	100.0
Portugal	98.9	97.1	95.4	100.0	100.0	100.0
Spain	n.a.	n.a.	n.a.	100.0	75.9	100.0
Suriname	1.9	2.5		n.a.	n.a.	
Trinidad and Tobago	23.2	13.0	23.4	n.a.	n.a.	n.a.
United States	99.7	99.7		65.1	89.1	
Uruguay	55.1	67.0	74.3	96.7	71.9	81.1

4.5 Effective payment of taxes

With regard to the payment of the different taxes, two variables stand out for their relevance as indicators of tax compliance and digital transformation. On the one hand, ISORA compiles data on payment on time, i.e. effective compliance in due time and form of the tax obligation accrued in the three main taxes applied in most countries. The average for ISORA shows a payment on time ratio of 79.1% for CIT, 77.7% for PIT and 85.8% for VAT. These same percentages result in averages of 81.2% (CIT), 75.6% (PIT) and 89.0% (VAT) for the CIAT countries surveyed (Table 31). Although the differences are not as significant as in other dimensions related to the operational functioning of TA, the average percentages of payment on time are visibly higher when comparing the High Income group (86.3%, 84.1% and 91.3%, respectively) with the rest of the agglomerates of countries according to their income level.

On the other hand, the incorporation of digital tools to facilitate tax payments is currently perceived as an indispensable advance in tax compliance management. The relative proportions of tax payments through electronic channels (e.g., through the use of e-wallets) reach global averages in ISORA of 57.0%, if the number of payments is taken into account, and 60.9%, if their economic value within the total[19] collection is considered. CIAT member countries show a high implementation of digital channels for tax payments, representing an average of 61.6% of the amount of payments received or 75.9% of their total value (Figure 22). The LAC region, on the other hand, exhibits much weaker average values in this regard (40.7% and 54.9%, respectively). By income level, the gap that remains, at least until the end of Fiscal Year 2019, between the different groups of countries is evident, with average e-payment values growing rapidly with income level, from 26.5% of the amount and 32.3% of the value of payments received (Low Income) to 70.5% and 68.9% of the total (High Income), respectively.

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19 Electronic payment channels may not be available for all taxes or taxpayer segments.

An additional indicator that emerges from ISORA is the relative use of withholding mechanisms for the effective payment of Personal IT (PIT), which constitutes an advantage in terms of administrative costs and reduction of tax evasion spaces in the tax (Table 31). For the ISORA countries, the global average of the proportion of this tax withheld at the source is 60.8%, for the CIAT countries it is somewhat higher (71.1%) and for the LAC countries it is somewhat lower (56.6%). There is also a positive relationship between this indicator and the income level of the different countries, since the average figures are 42.9% (low income), 54.1% (medium-low), 60.3% (medium-high) and 73.1% (high income).

Table 31: Indicators of actual tax payments (in percentages). Simple averages for selected groups of countries. Year 2019

Country Groups	On-time payment rate (in %)			Electronic payment proportion (in %)		Estimated percentage of PIT withheld by third parties
	CIT	PIT	VAT	Amount	Value	
ISORA	**79.1**	**77.7**	**85.8**	**57.0**	**60.9**	**60.8**
CIAT Members	81.2	75.6	89.0	61.6	75.9	71.1
Latin America and the Caribbean	76.7	64.6	88.1	40.7	54.9	56.6
Low Income	74.8	70.2	82.3	26.5	32.3	42.9
Lower Middle Income	74.9	79.4	77.9	56.1	57.1	54.1
Upper Middle Income	76.8	72.8	86.9	51.5	66.2	60.3
High Income	86.3	84.1	91.3	70.5	68.9	73.1

Figure 21: Proportion of tax payments made on time or within expected time periods (in percentages). Simple averages for selected groups of countries. Year 2019
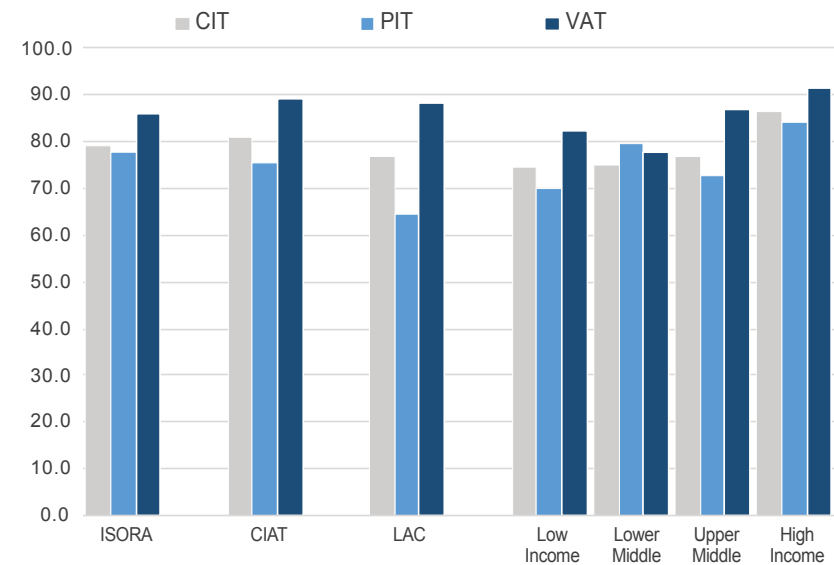
Figure 22: Share of tax payments (amount/value) made through electronic means (in percentages). Simple averages for selected groups of countries. Year 2019
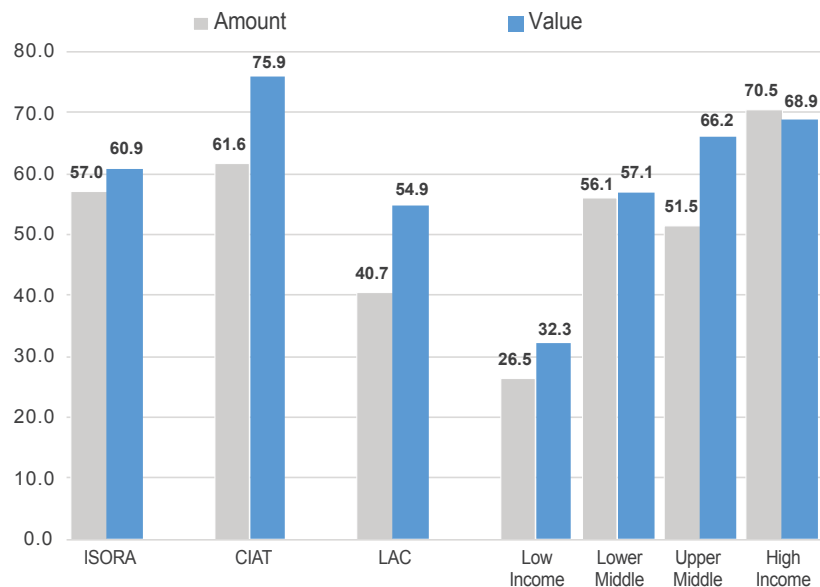
In the individual CIAT data by country, it can be seen that the percentage of payment on time varies considerably among them, with some specific cases standing out with figures exceeding 90% in the three taxes surveyed (CIT, PIT and VAT), such as in Brazil, El Salvador, Spain, Guatemala, France, Jamaica, Kenya, the Netherlands and Uruguay. As for payment through electronic channels, there are also cases with a very high degree of adoption, particularly in Angola, Bolivia, Spain, Nigeria and the Netherlands, where 100% of payments are made online. In terms of the percentage of PIT collected through withholding tax mechanisms, despite the diversity of situations, some CIAT countries also have widely installed systems (Table 32).

Table 32: Indicators of effective tax payment (in percentages). CIAT member countries. Year 2019

CIAT Countries	On-time payment rate (in %)			Electronic payment proportion (in %)		Estimated percentage of PIT withheld by third parties
	CIT	PIT	VAT	Amount	Value	
Angola	4.0	118.9	36.6	100.0	100.0	96.0
Argentina	86.5	57.8	83.8	76.8	98.1	48.7
Barbados	75.7	n.a.	89.6	0.0	0.0	90.0
Belize	93.9	30.5	93.6	n.a.	n.a.	n.a.
Bolivia	n.a.	n.a.	n.a.	100.0	100.0	89.2
Brazil	95.9	96.3	97.4	67.7	81.4	77.8
Canada	86.6	94.0	n.a.	83.8	89.5	n.a.
Chile	n.a.	n.a.	n.a.	n.a.	n.a.	88.7
Colombia	n.a.	n.a.	98.7	29.0	37.0	89.0
Costa Rica	46.3	56.9	19.5	99.6	99.6	10.4
Dominican Rep.	74.1	62.4	95.3	75.3	75.1	93.0
Ecuador	62.0	56.5	92.1	25.8	96.8	52.5
El Salvador	96.5	105.7	102.7	91.0	93.0	92.3
France	n.a.	90.1	96.0	n.a.	92.8	79.0
Guatemala	96.2	91.1	99.2	68.7	92.7	97.6
Guyana	79.0	49.8	87.7	0.1	2.0	20.0
Honduras	94.3	86.9	89.7	36.0	36.0	81.9
India	n.a.	n.a.		n.a.	n.a.	51.0
Italy	n.a.	n.a.	n.a.	67.0	96.0	89.0
Jamaica	94.0	n.a.	98.6	30.0	80.0	n.a.
Kenya	100.0	100.0	100.0	80.0	58.4	71.1
Mexico	n.a.	n.a.	n.a.	35.0	93.0	43.7
Morocco	n.a.	n.a.	n.a.	64.2	85.2	80.0
Netherlands	97.9	95.3	98.5	100.0	100.0	98.3
Nicaragua	94.3	56.2	101.2	99.6	99.6	12.1
Nigeria	n.a.	n.a.	n.a.	100.0	100.0	100.0
Panama	65.9	49.0	93.1	43.0	61.0	100.0
Paraguay	67.0	59.0	71.0	46.0	87.0	0.0
Peru	87.9	45.2	93.0	54.5	77.8	99.4
Portugal	n.a.	n.a.	97.8	86.0	91.0	84.1
Spain	93.3	95.9	94.4	100.0	100.0	67.9
Suriname	n.a.	n.a.		n.a.	n.a.	n.a.
Trinidad and Tobago	n.a.	n.a.	97.1	1.3	1.3	36.4
United States	n.a.	n.a.		n.a.	n.a.	79.1
Uruguay	95.1	88.8	98.7	25.4	51.3	87.0

Note: In some cases (Angola, El Salvador and Nicaragua) the percentages exceed 100%, which may be due to payments made in excess or corresponding to previous periods, which is beyond the scope of the analysis made here but respects the figures provided by the respective TAs of each of these countries.

4.6 Tax debts and arrears

Another of the main functions of TAs, of particular importance in less developed countries and effectively surveyed in ISORA, is related to the management and regularization of tax debts and arrears. In this dimension, three indicators of relevance were identified covering both the magnitude of tax debts or arrears[20] (by main tax and in total as a proportion of net collection or TNR), the collectable or "recoverable" percentage of total debt (in contrast to the portion considered non-collectable[21]) and the relative variation in the amount of tax debt between 2018 and 2019 (Table 33). First, the averages for tax debt and arrears, in percentages of the collection, differ according to the tax considered being somewhat relatively larger in the case of CIT (49.2% of the levy collection) than in other taxes (29.6% in PIT; 30.5% in VAT) or in the total TNR (36.5%). The average percentages are similar for the CIAT countries, but not for the LAC region, where the tax debt reaches much higher levels (for example, 91.4% in CIT and 65.9% in total TNR). In general, it can also be seen that average tax debt ratio is higher for higher income levels, especially for the group of Upper-Middle Income countries (Figure 23).

The proportion of collectable debt is around 60% on average for ISORA and CIAT countries, with this portion of debt being relatively higher in lower income countries (70.2% in Low Income, compared to 55.6% in High Income), which, in addition to a series of specific factors, would point to the greater difficulties of TAs in less developed countries to effectively collect taxes owed through conventional channels even though they are not classified as "non-collectable debt"[22].

Finally, and on average for the countries included in ISORA, the total outstanding debt experienced in 2019 an increase of 16.0% over its value in 2018, which was somewhat higher among CIAT countries (23.2%) and in the LAC region (19.6%). By income level, the average annual increase in total tax debt is decreasing with the income of the countries, from an additional 43.2% in the Low Income group to an average of 1.9% in the High Income group (Figure 23).

Beyond the concrete usefulness of these data, like many other complementary data appearing in ISORA, the final figures at the country level should be analyzed with caution, given the relatively low response rate and the different methods of recording and valuation -especially of tax debts- existing in the countries, which makes them sometimes difficult to compare.

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20 According to the criteria defined in ISORA, this comprises the total amount of tax debt (including interest and penalties) and debt for other revenues collected by the TA that have not been paid when due. The total should include amounts of tax debts in dispute, subject to payment agreements or extensions of the payment deadline.

21 According to ISORA's methodological criteria, non-collectable arrears may include a) amounts formally objected to by the taxpayer and for which collection action is suspended pending resolution of the dispute, b) amounts that are not recoverable by law (e.g., bankruptcy of the taxpayer) and c) arrears that are irrecoverable (e.g., the debtor lacks funds or other assets).

22 On the subject of collection and recovery, the CIAT-GIZ-IDB manual (2016) can be consulted.

Table 33: Tax arrears (as percentages of TNR by item), collectable debt (as percentages of total), and change in debt-to-TNR ratio 2019/2018 (as percentages). Simple averages for selected groups of countries. Year 2019

Country Groups	Arrears in relation to collection (in %)				Collectable TNR Arrears (in % of total arrears)	Change in TNR Arrears 2019/2018 (in %)
	CIT	PIT	VAT	Total (TNR)		
ISORA	**49.2**	**29.6**	**30.5**	**36.5**	**59.6**	**16.0**
CIAT Members	46.9	23.3	28.9	46.0	60.8	23.2
Latin America and the Caribbean	91.4	49.4	38.0	65.9	65.5	19.6
Low Income	12.9	17.5	17.1	22.8	70.2	43.2
Lower Middle Income	47.3	12.7	27.0	41.4	59.8	29.5
Upper Middle Income	74.5	46.7	33.0	42.8	60.2	11.4
High Income	36.8	27.4	33.2	32.7	55.6	1.9

Figure 23: Tax arrears (left panel, as percentages of TNR) and annual change in debt-to-TNR ratio (left panel, as percentages). Simple averages for selected groups of countries. Year 2019
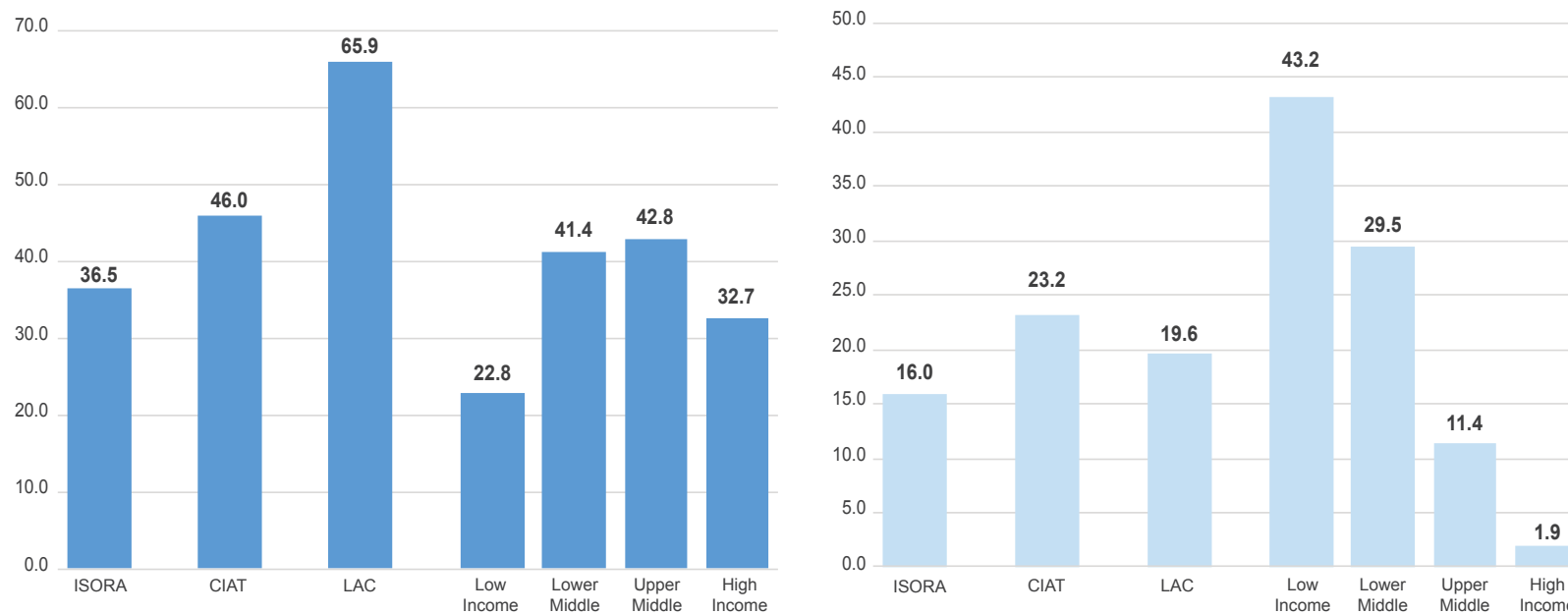
4.7 Tax audits

Regardless of the number of audits[23] carried out by each TA, which responds to different tax audit and control strategies and depends, among other factors, on the human and financial resources to carry them out, two results indicators that are useful for their comparative evaluation are given by the degree of effectiveness of the audits carried out and by the collection yield resulting from their efficiency in the detection and adjustment of tax assessments.

In the first case, the effectiveness of these procedures, measured by their "hit rate" or the number of these in which a tax adjustment was carried out with respect to the total number of audits conducted in the fiscal year, reaches an overall average of 67.0% in ISORA countries, 73.3% in CIAT countries and 73.7% in the LAC region. In terms of income levels, there is a negative relationship, with audits being much more effective in low-income countries (91.5%) than in high-income countries (58.1%), which could be linked, among other general and specific aspects, to the propensity of the former to present higher levels of non-compliance and under-declaration of income (Table 34).

In terms of audit performance -in terms of additional assessments raised through these procedures-, the average for ISORA suggests a resource gain of 8.7% (CIT), 2.8% (PIT) or 3.8% (VAT), with respect to the tax collection considered, and an overall return of 4.7% of the TNR. In general terms, these proportions are close to those calculated for the agglomerates of CIAT and LAC countries (Figure 24). By income level, the total additional revenues collected through these procedures are higher, in relative terms, for Low Income countries (8.5% of the TNR, for example) and decrease (with the exception of the CIT) for Upper-Middle and High Income groups (4.2% and 3.3%, respectively).

Table 34: Effectiveness and collection performance of audits (in percentages). Simple averages for selected groups of countries. Year 2019

Country Groups	Audit Hit rate (in %)	Audit perfomance (additional assessments raised through audits as % of collection)			
		CIT	PIT	VAT	Total (TNR)
ISORA	**67.0**	**8.7**	**2.8**	**3.8**	**4.7**
CIAT Members	73.3	10.6	2.7	2.8	4.6
Latin America and the Caribbean	73.7	8.8	3.2	2.9	3.4
Low Income	91.5	4.2	8.8	6.8	8.5
Lower Middle Income	71.0	8.1	2.2	3.2	6.0
Upper Middle Income	66.0	9.8	2.3	4.2	4.2
High Income	58.1	9.1	2.4	3.2	3.3

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23 Defined as an examination of the taxpayer's financial records and operations to verify the amounts reported in the returns. Audit types vary in nature, scope and intensity. They include comprehensive audits (of multiple taxes or multiple tax years), targeted audits, inspections of books and records, examination of VAT refund claims, and in-depth investigations for suspected tax fraud.

Figure 24: Audit effectiveness (left panel, in percentages of total) and audit collection performance (right panel, in percentages of collection). Simple averages for selected groups of countries. Year 2019
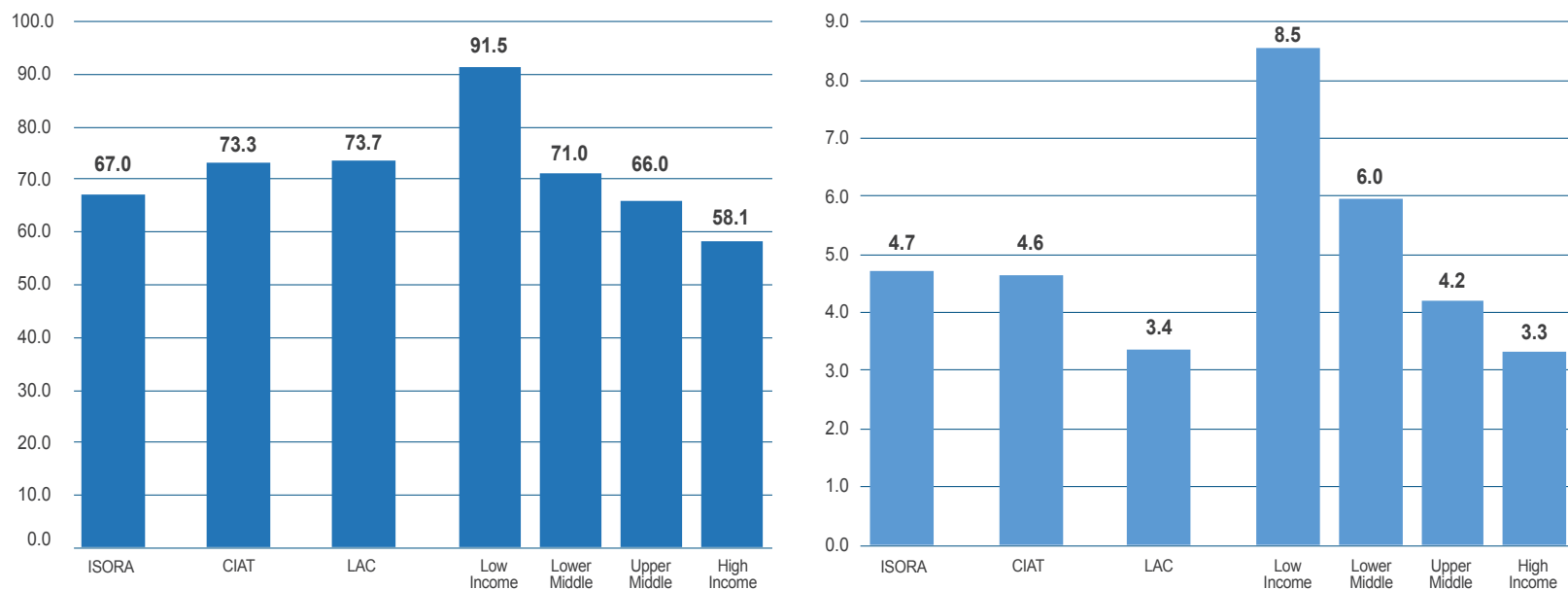
Again, the diversity of the individual data for the CIAT countries makes it necessary to proceed with caution when making comparisons on these indicators given the different methods of recording and valuation -of the concrete results of the audits- existing in each of the TAs. Nevertheless, in general it can be noted that several countries exhibit high hit rates in terms of carried-out-audits effectiveness (at least during Fiscal Year 2019) with some positive results in terms of additional revenue generated (Table 35).

Table 35:   Effectiveness and collection performance of audits (in percentages). CIAT member countries. Year 2019

CIAT Countries	Audit Hit rate (in %)	Audit perfomance (additional assessments raised through audits as % of collection)			
		CIT	PIT	VAT	Total (TNR)
Angola	100.0	n.a.	n.a.	n.a.	0.5
Argentina	65.3	2.9	1.3	1.3	1.4
Barbados	80.6	2.0	1.0	0.9	1.1
Belize	97.3	1.4	0.0	3.2	2.2
Bolivia	86.2	0.6	2.3	1.1	0.9
Brazil	99.7	51.7	3.9	10.7	14.6
Canada	58.6	11.9	1.5	10.0	3.7
Chile	21.1	7.9	0.7	1.7	5.9
Colombia	78.7	2.5	0.6	0.6	1.3
Costa Rica	55.4	15.7	0.6	1.1	4.0
Dominican Rep.	72.8	1.4	1.0	0.4	0.5
Ecuador	100.0	n.a.	n.a.	n.a.	n.a.
El Salvador	47.4	4.4	12.2	0.8	3.0
France	n.a.	9.0	2.5	2.0	3.3
Guatemala	35.3	0.0	0.5	0.0	0.0
Guyana	67.7	0.5	2.5	1.2	0.8
Honduras	31.1	0.0	0.1	0.4	0.2
India	n.a.	50.2	28.1		40.7
Italy	90.2	34.9	3.2	16.6	8.3
Jamaica	95.8	2.3	5.6	3.0	2.2
Kenya	81.5	31.6	0.7	4.3	5.0
Mexico	92.2	1.2	0.1	0.1	0.3
Morocco	98.4	8.1	1.8	2.3	6.8
Netherlands	24.9	9.6	1.2	1.4	1.6
Nicaragua	99.3	1.0	0.1	0.4	0.6
Nigeria	42.5	n.a.	n.a.	n.a.	14.5
Panama	59.5	n.a.	n.a.	n.a.	n.a.
Paraguay	97.3	3.2	0.0	1.1	2.0
Peru	62.1	10.9	2.1	4.4	4.3
Portugal	62.6	12.8	0.7	3.2	3.2
Spain	n.a.	n.a.	n.a.	n.a.	7.1
Suriname	n.a.	n.a.	n.a.		n.a.
Trinidad and Tobago	88.5	14.3	0.2	0.8	6.1
United States	97.0	3.6	0.4		0.6
Uruguay	82.7	n.a.	n.a.	n.a.	1.6

5. Digital transformation and technological innovation

In order to fulfill their main purpose -that of ensuring the effective collection of fundamental tax resources for public financing- TAs around the world have realized over the last few years, and even more so since the COVID-19 pandemic, the increasing need to accelerate the digital transformation processes in all their areas. This would allow them not only to make more efficient use of available financial and human resources - often scarce or limited for the number of taxpayers under their orbit - but also to implement better tax compliance control and information processing strategies, meet taxpayers' needs and preferences, and facilitate procedures in general in order to focus efforts on the most critical areas of their operation.

In addition to the digital tools already mentioned above, this section intends to provide specific information on the state of the art regarding the incorporation of innovative technological solutions to comprehensively improve tax management. It is not redundant to warn that, especially in these aspects, the COVID-19 pandemic, despite all the inconveniences caused, will probably contribute to accelerate certain digital transformation trends identifiable up to the last fiscal year available in ISORA (2019) that, undoubtedly, will be reflected in the data corresponding to 2020/2021.

5.1 Advanced techniques and strategies to improve compliance

The ISORA survey makes it possible to know, in a systematized manner, the unequal degree of relative progress of TAs in the implementation and development of multiple modern techniques and strategies to improve tax compliance of taxpayers under their control. In all cases, it is possible to visualize differences and similarities between groups of countries and particular cases within CIAT.

Firstly, in recent years progress has been made in the development of affidavit systems of pre-filled returns by the TA based on information collected from third parties, such as employers and financial institutions, which not only reduce the effort required of taxpayers to prepare their returns, but also generate implicit incentives to make their operations and income transparent for whom they are taxed[24]. Among the 156 countries or jurisdictions included in the latest edition of ISORA, 46.2% of the total reported carrying out these procedures for one of the main taxes applied (CIT/ PIT/VAT), with a higher percentage among the CIAT countries (60.0%) and somewhat lower in the LAC region (41.9%). The use of this technique to improve and facilitate voluntary compliance shows a clear increasing pattern according to income level of analyzed countries (Figure 25).

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24 Regarding pre-filled tax returns, a recent CIAT-GIZ (2019) working paper on the subject should be consulted.

Secondly, the implementation of electronic invoicing and its requirement as a mandatory tool for recording sales and other transactions is one of the most important innovations in the fight against tax fraud. Of all the countries in ISORA, 32.1% of them have a mandatory electronic invoicing system for some or all taxpayers registered by their respective TAs. CIAT countries lead, by groups of countries, in the degree of adoption of this tool with 48.6% of the total[25], while in LAC this percentage reaches 41.9% (Figure 25). Unlike most technological innovations for tax management, the implementation of electronic invoicing is not led by high-income countries (25.5%), since its dissemination and incorporation is currently more intensive among middle-income countries (39.0% Lower-Middle Income; 37.0% Upper-Middle Income). Looking ahead, electronic invoicing seems to continue to be a higher priority for lower-income countries, given its potential as an instrument for reducing tax evasion and under-declaration.

Other techniques, aimed at the same objective of improving levels of voluntary compliance, are represented by the requirement by TAs for taxpayers (sellers of goods and services) to record their transactions through the use of electronic fiscal devices or duly certified cash registers. In ISORA this practice is observed in almost half of the cases, while in CIAT in 42.9%, with relatively similar values for other groups of countries according to income level, except for the Upper-Middle Income with a use of these elements in more than 60% of the cases (Table 36).

In addition to technology applied to tax control, several countries have begun to explore and adopt cooperative compliance approaches and programs with certain segments of taxpayers of particular interest to TAs . For example, the most widespread among ISORA, CIAT and LAC countries are those referring to large taxpayers (55.8%; 54.3%; 35.5; respectively), although they also exist for other taxpayers (32.7% ISORA countries) and, more recently and more limited, for high net worth individuals (13.5% of the total). There is also a tendency to incorporate behavioral insight methodologies or techniques for the control of tax noncompliance and the design of strategies to pursue this objective: 46.8% of the countries in ISORA represent the evidence in this area, with 57.1% of the CIAT countries and 35.5% of the LAC countries in the same line of work.

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25 For further details, please refer to the CIAT-IDB (2018) book on electronic invoicing.

26 Cooperative compliance mechanisms are characterized by being conditional on the taxpayer demonstrating: a) good governance with respect to tax matters, and b) willingness to operate in an open and transparent manner, and full disclosure of its tax risks as they occur. In return, the TA commits to provide improved service to the taxpayer through: a) dedicated points of contact; b) faster resolution of technical and administrative issues; c) assignment of a reduced risk rating to the taxpayer for audit purposes; and d) reduced penalties.

Table 36: Strategies implemented to improve tax compliance (as a percentage of total countries in each group). Simple averages for selected groups of countries. Year 2019

Country Groups	TA pre-fills returns or assessments	Behavioral insight techniques	Mandatory use of electronic invoices (partial or total)	Mandatory use of electronic fiscal devices (partial or total)	Cooperative compliance approach		
					Large Taxpayers	HNWI Taxpayers	Other Taxpayers
ISORA	**46.2**	**46.8**	**32.1**	**49.4**	**55.8**	**13.5**	**32.7**
CIAT Members	60.0	57.1	48.6	42.9	54.3	22.9	31.4
Latin America and the Caribbean	41.9	35.5	41.9	38.7	35.5	9.7	22.6
Low Income	5.6	33.3	22.2	44.4	66.7	5.6	44.4
Lower Middle Income	31.7	51.2	39.0	46.3	61.0	17.1	39.0
Upper Middle Income	41.3	30.4	37.0	60.9	39.1	6.5	19.6
High Income	76.5	62.7	25.5	43.1	62.7	19.6	35.3

Figure 25: Proportion of countries using pre-filled returns (left panel) and requiring mandatory e-invoicing for some or all of their taxpayers (right panel) (in percentages). Simple averages for selected groups of countries. Year 2019
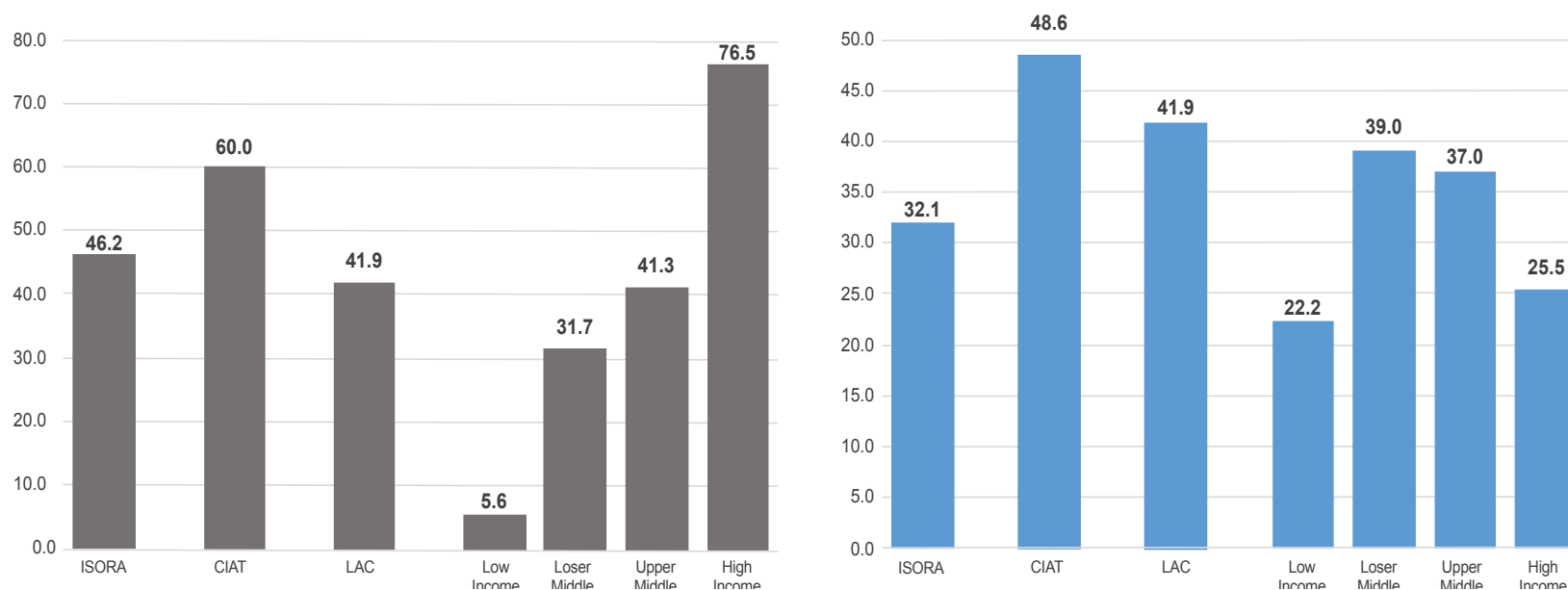
The individualized data for the CIAT countries show that most of them have already adopted some or all of the techniques described above. Although this does not guarantee success in the tasks carried out, it establishes precedents and shapes regional trends that may bring the countries closer to their effective implementation in each of the countries in question (Table 37).

Table 37: Strategies implemented to improve tax compliance. CIAT member countries. Year 2019

CIAT Countries	TA pre-fills returns or assessments	Behavioral insight techniques	Mandatory use of electronic invoices (partial or total)	Mandatory use of electronic fiscal devices (partial or total)	Cooperative compliance approach		
					Large Taxpayers	HNWI Taxpayers	Other Taxpayers
Angola	No	No	No	No	No	No	No
Argentina	Yes	Yes	Yes	Yes	No	No	No
Barbados	Yes	Yes	No	No	Yes	No	Yes
Belize	No	No	No	Yes	No	No	No
Bolivia	No	Yes	Yes	No	No	No	No
Brazil	Yes	No	Yes	Yes	No	No	No
Canada	Yes	Yes	No	No	No	No	No
Chile	Yes	Yes	Yes	No	Yes	Yes	Yes
Colombia	Yes	Yes	Yes	No	No	No	No
Costa Rica	No	No	Yes	No	No	No	No
Dominican Rep.	Yes	No	Yes	Yes	No	No	No
Ecuador	Yes	Yes	Yes	Yes	Yes	No	No
El Salvador	Yes	Yes	No	No	No	No	No
France	Yes	Yes	No	Yes	Yes	No	No
Guatemala	No	Yes	Yes	Yes	No	No	No
Guyana	No	No	No	No	Yes	No	No
Honduras	No	No	No	No	No	No	No
India	Yes	Yes	No	No	Yes	Yes	Yes
Italy	Yes	Yes	Yes	Yes	Yes	No	No
Jamaica	No	Yes	No	No	Yes	Yes	Yes
Kenya	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mexico	Yes	No	Yes	Yes	Yes	Yes	Yes
Morocco	No	Yes	No	No	Yes	No	No
Netherlands	Yes	Yes	No	No	Yes	Yes	Yes
Nicaragua	Yes	No	No	No	No	No	No
Nigeria	No	No	No	No	Yes	No	Yes
Panama	No	No	No	Yes	No	No	No
Paraguay	No	No	Yes	Yes	No	No	No
Peru	Yes	Yes	Yes	No	Yes	No	No
Portugal	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Spain	Yes	No	Yes	No	Yes	Yes	Yes
Suriname	Yes	No	No	Yes	Yes	No	No
Trinidad and Tobago	No	Yes	No	No	Yes	No	No
United States	No	Yes	No	No	Yes	No	No
Uruguay	Yes	No	Yes	Yes	No	No	Yes

5.2 Innovative technologies and tools for tax management

The technological and digital transformation process for tax administrations in all regions of the world is not limited to registration tasks, taxpayer services, returns or tax evasion control. Cutting-edge innovations in data processing and statistical information management, together with other ICT solutions, open up broad possibilities to strengthen different capacities that make up the management of the main taxes applied by each country.

For their comparative analysis -and to assess the degree of use or implementation of each tool-, first a set of four innovative technological solutions is considered, calculating the proportions (or amounts

relative to the total) of countries that already use or are in the process of implementing them for different relevant groupings[27] and during fiscal year 2019 (Table 38). The most widespread corresponds to Data science/analytical tools which are implemented or in that process in 65.4% of ISORA countries, in 85.7% of CIAT members and in 67.7% of the LAC region, with their presence in the TAs increasing with the income level of countries (up to 84.3% in High Income). It is followed in order of importance by Cloud Computing[28], with percentages of use/implementation of 41.7% in ISORA, 40.0% in CIAT and 29.0% in LAC, also with higher levels of diffusion among groups of middle- and high-income countries. Third, Artificial Intelligence[29] (including machine learning) should be mentioned, which is installed or close to it in 37.2% of ISORA countries, 48.6% of CIAT and 25.8% of LAC, with minimum group proportions of 17.1% (Low-Middle Income) and maximum proportions of 58.8% (High Income). Finally, with the lowest levels of implementation, appears Distributed ledger technology or Blockchain[30], which is only present in 8.3% of the countries in ISORA, 8.6% of those in CIAT and 6.5% of those in LAC, with slightly more significant proportions exhibited by middle-income groups (Figure 26).

Table 38: Innovative technological solutions (I). Proportion of countries using or in the implementation phase (in percentages). Year 2019

Country Groups	Artificial intelligence	Cloud computing	Data science/ Analytics tools	Distributed ledger technology/ Blockchain
ISORA	**37.2**	**41.7**	**65.4**	**8.3**
CIAT Members	48.6	40.0	85.7	8.6
Latin America and the Caribbean	25.8	29.0	67.7	6.5
Low Income	27.8	27.8	44.4	5.6
Lower Middle Income	17.1	43.9	53.7	12.2
Upper Middle Income	34.8	32.6	63.0	13.0
High Income	58.8	52.9	84.3	2.0

27 Note: Three possibilities are allowed where "In Use" means that the technology in question is implemented and in use at the time of answering the survey; "Implem." means that the technology is in the implementation phase for future use; "No" refers to situations where the technology analyzed is not in use, including cases where implementation has not yet begun.

28 Cloud computing is a service model that offers customers flexible, on-demand access to a spectrum of computing resources. Customers access such resources (e.g., software applications, storage capacity, networking and computing power) online.

29 The ability of machines and systems to acquire and apply knowledge, including performing a wide variety of cognitive tasks, e.g., sensing, linguistic processing, pattern recognition, learning and decision making, and prediction.

30 Distributed Logging Technology (DLT) allows transactions to be stored and updated on many computers at the same time. The combination of encryption and DLT ensures that a block, once added to the chain, cannot be altered and enables application authentication and secure transactions for a variety of assets.

Figure 26: Innovative technological solutions (I). Proportion of countries using or in the implementation phase (in percentages). Year 2019
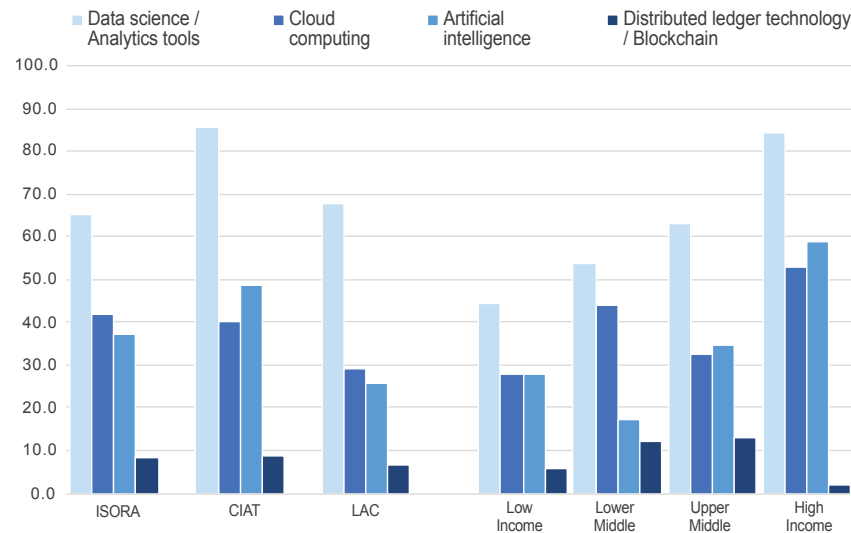
A closer look at the 35 CIAT member countries participating in ISORA shows the composition of each of the general proportions noted above with respect to this conglomerate, further allowing us to identify the countries that are already using the innovative technologies listed and those that were in the implementation phase at the end of Fiscal Year 2019 (Table 39).

Table 39: Innovative technological solutions (I). Particular status. CIAT countries. Year 2019

CIAT Countries	Artificial Intelligence	Cloud computing	Data science / Analytics tools	Distributed ledger technology / Blockchain
Angola	No	No	In Use	No
Argentina	In Use	No	In Use	No
Barbados	No	In Use	Implem.	No
Belize	No	No	In Use	No
Bolivia	No	No	In Use	No
Brazil	In Use	No	In Use	In Use
Canada	In Use	In Use	In Use	No
Chile	Implem.	Implem.	In Use	No
Colombia	In Use	In Use	In Use	No
Costa Rica	No	In Use	In Use	No
Dominican Rep.	In Use	In Use	In Use	No
Ecuador	No	No	In Use	No
El Salvador	No	No	No	No
France	In Use	No	In Use	No
Guatemala	No	In Use	In Use	No
Guyana	No	No	No	No
Honduras	No	No	In Use	No
India	Implem.	In Use	Implem.	No
Italy	Implem.	No	In Use	No
Jamaica	No	No	In Use	No
Kenya	Implem.	In Use	Implem.	In Use
Mexico	No	In Use	In Use	No
Morocco	Implem.	No	Implem.	No
Netherlands	In Use	No	In Use	No
Nicaragua	No	No	In Use	No
Nigeria	No	In Use	In Use	No
Panama	No	No	No	No
Paraguay	Implem.	No	Implem.	No
Peru	Implem.	In Use	In Use	Implem.
Portugal	No	No	In Use	No
Spain	In Use	No	In Use	No
Suriname	No	No	No	No
Trinidad and Tobago	In Use	In Use	No	No
United States	In Use	In Use	In Use	No
Uruguay	No	No	In Use	No

Note: "In Use" means that the technology in question is implemented and in use at the time of answering the survey; "Implem." means that the technology is in the implementation phase for future use; "No" refers to situations in which the technology analyzed is not in use, including cases where implementation has not yet begun.

Continuing with a second set of five innovative technological solutions and calculating the proportions of countries that already use or are in the implementation phase for different relevant groupings and during fiscal year 2019, the introduction of Application Programming Interfaces (API)[31], stands out for its importance and diffusion, which allow secure digital interaction between revenue systems and external applications in banks, accounting software providers and other government agencies, and can be used to send and receive information, validate activities and facilitate operations. In this area, 66.7% of ISORA countries have this technology (in use or in the implementation phase), while in CIAT this percentage reaches 80.0%, with significant differences between groups according to income levels (44.4% for Low Income and 80.4% for High Income). Digital identification technologies (e.g., biometrics, voice identification) have also had an acceptable diffusion among the different countries, reaching an outstanding relevance within the advanced technological solutions (28.2%), below the proportion observed for CIAT (37.1%). Interestingly, in this particular element there are no differences between income groups, standing at around 28% (Table 40).

The set of innovative technologies explored in the different TAs through ISORA is completed by three other elements with great potential and encouraging first results in some cases (Figure 27). One of them is related to the introduction of Virtual Assistants[32] (e.g., chatbots), which are already in use or are in the implementation phase in 35.9% of the total number of countries included in the survey (156), in 42.9% of CIAT members and in only 16.1% of LAC countries. Government or whole-of-government identification systems, which make it possible to integrate information systems of different public agencies and institutions, are present in 42.3% of the countries in ISORA and in 42.9% of the CIAT countries (29.0% in LAC). Finally, Robotics Process Automation[33] is an incipient development and therefore shows less diffusion and presence among ISORA (21.2%), CIAT (22.9%) and LAC (9.7%) countries. These three elements of innovation, in terms of their relative use in the ISORA countries, show a particularity in common by income level, where the proportions are similar between groups, except for that corresponding to High Income countries, which is considerably higher (54.9% in the first case, 58.8% in the second and 41.2% in the third).

31 An API is a set of software functions and procedures that allow applications to access the features and/or data of another software solution; applications can send requests to this interface and receive responses. A significant advantage of this, compared to traditional software interfaces, is that complexity and sensitive information within the software solution can be protected, since communication with other applications is done exclusively through the API.

32 Software packages that simulate human interactions by answering questions or requests that would otherwise be handled by humans. They are sometimes called chatbots because they can be used to answer online chats. Virtual assistants can use a preset set of questions and answers and can also be equipped with machine learning capabilities.

33 A 'robot' software learns a set of operations and then performs them as if it were a human interacting with computers. This is often used to automate repetitive tasks that would otherwise have to be performed by tax administration staff, for example, copying information from one system to another.

Table 40: Innovative technological solutions (II). Proportion of countries using or in the implementation phase (in percentages). Year 2019

Country Groups	Robotics Process Automation	Application programming interfaces (APIs)	Whole-of-government identification systems	Digital identification technology	"Virtual assistants (e.g. chatbots)"
ISORA	**21.2**	**66.7**	**42.3**	**28.2**	**35.9**
CIAT Members	22.9	80.0	42.9	37.1	42.9
Latin America and the Caribbean	9.7	54.8	29.0	29.0	16.1
Low Income	11.1	44.4	38.9	27.8	33.3
Lower Middle Income	7.3	68.3	29.3	29.3	24.4
Upper Middle Income	15.2	58.7	37.0	28.3	26.1
High Income	41.2	80.4	58.8	27.5	54.9

Figure 27: Innovative technological solutions (II). Proportion of countries using or in the implementation phase (in percentages). Year 2019
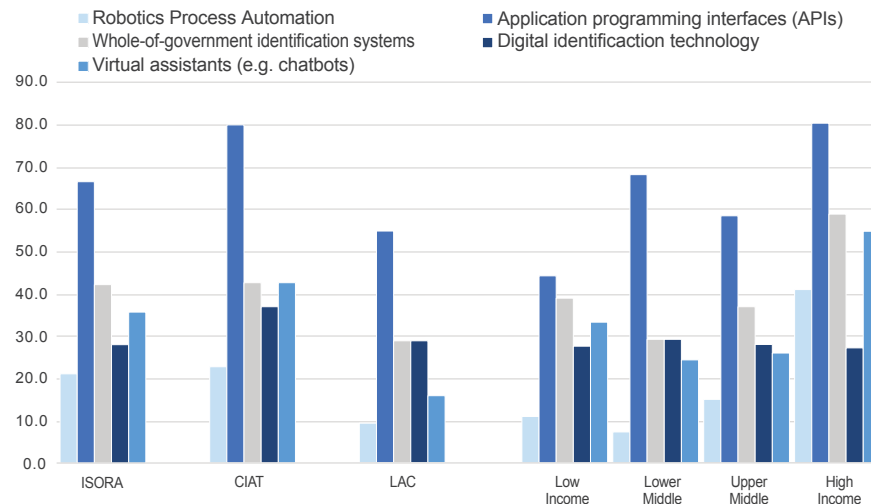
The analysis by CIAT member country shows the great diversity of cases in terms of the five innovative instruments described above (Table 41).

Table 41: Innovative technological solutions (II). Particular status. CIAT countries. Year 2019

CIAT Countries	Robotics Process Automation	Application programming interfaces (APIs)	Whole-of-government identification systems	Digital identification technology	Digital identification technology
Angola	No	In Use	No	In Use	In Use
Argentina	No	No	No	No	No
Barbados	No	In Use	No	No	No
Belize	No	No	No	No	No
Bolivia	No	In Use	No	In Use	No
Brazil	No	In Use	No	In Use	No
Canada	Implem.	In Use	No	No	In Use
Chile	No	In Use	No	No	No
Colombia	Implem.	In Use	Implem.	Implem.	In Use
Costa Rica	No	In Use	In Use	In Use	In Use
Dominican Rep.	No	No	No	No	No
Ecuador	No	In Use	In Use	No	No
El Salvador	No	In Use	In Use	No	No
France	No	In Use	No	No	In Use
Guatemala	No	No	No	No	No
Guyana	No	In Use	In Use	No	No
Honduras	In Use	In Use	No	No	In Use
India	No	In Use	Implem.	No	Implem.
Italy	No	No	In Use	No	No
Jamaica	No	In Use	In Use	In Use	In Use
Kenya	In Use	In Use	No	In Use	No
Mexico	Implem.	In Use	In Use	In Use	No
Morocco	No	In Use	No	No	Implem.
Netherlands	No	In Use	No	No	No
Nicaragua	No	In Use	No	No	No
Nigeria	No	In Use	Implem.	In Use	No
Panama	No	No	No	In Use	No
Paraguay	No	Implem.	Implem.	Implem.	In Use
Peru	No	In Use	In Use	No	In Use
Portugal	In Use	In Use	In Use	No	In Use
Spain	No	No	No	No	No
Suriname	No	In Use	In Use	No	No
Trinidad and Tobago	Implem.	In Use	No	Implem.	Implem.
United States	No	In Use	No	No	In Use
Uruguay	In Use	In Use	In Use	In Use	In Use

Note: "In Use" means that the technology in question is implemented and in use at the time of answering the survey; "Implem." means that the technology is in the implementation phase for future use; "No" refers to situations in which the technology analyzed is not in use, including cases where implementation has not yet begun.

Dalmiro Morán | Santiago Díaz de Sarralde Miguez

6. Final comments

This edition of the Overview of Tax Administrations in CIAT Countries is a new contribution in a vast series of studies that, for more than a decade, this institution has been producing and publishing in its effort to contribute to the gradual improvement of TAs in all their facets, based on the dissemination and analysis of the information available on the subject. To this end, the ISORA survey has become a central tool for the collection and systematization of valuable data provided by the TAs themselves within the framework of an ambitious joint project in which CIAT has participated since its inception. For TAs, ISORA provides an ideal framework for identifying strengths, weaknesses, opportunities, and "best practices" at the international level, in a format that allows for cross-country comparisons.

A comprehensive look at the results presented throughout these pages shows that, despite the great diversity of cases and realities, certain general trends continued to strengthen and consolidate during the 2018 and 2019 tax periods (to which the latest 2020 version of ISORA refers), in a changing context in which the different TAs around the world act and operate. In particular, there is an increasingly clear orientation towards the digital transformation of the central operational areas through the incorporation of innovative technological solutions, all of them aimed at improving the quality of the services provided to taxpayers, managing large amounts of information, facilitating and ensuring tax compliance and, ultimately, achieving greater collection in the most efficient way possible.

As discussed in the introduction and throughout the chapters of this document, it should be noted that the forced tax administration responses of the countries to the COVID-19 pandemic represent a disruptive change that will have to reconfigure or, in many cases, accelerate and consolidate innovative practices related to their operational functioning, which were already being used/implemented/explored by some of these agencies in the countries included in ISORA. In this sense, this Overview is also useful as a point of reference to evaluate in the future, as the necessary information can be compiled, the transformations that, since the outbreak of the pandemic and throughout the last months, have become evident in the field of the TA of all latitudes.

In the specific field of CIAT member countries, it should be noted that, although dealing with an average net income equivalent to 16.6% of GDP and budgets more limited than other ISORA countries (both in operating and capital expenditures), their respective TAs manage to operate with a relatively low average collection cost, which is much lower than the global average of ISORA and close to the average of High Income countries. All this without taking into account that their staff, with valuable characteristics in terms of composition (participation of women, university education, etc.), is limited in size (weighted by population or taxpayers) and must consequently bear a high workload.

However, among the CIAT countries there is a growing degree of digitization in their TA in the multiple dimensions addressed in ISORA:

(i) they exceed the global average of adoption of online computerized registration; (ii) something similar is observed for incoming contacts by service, although there the face-to-face channel still maintains its relative importance (compared to other groups of countries); (ii) the mandatory electronic declaration is widely spread in the main taxes, with average percentages of implementation that exceed global averages and even those of High Income countries; (iii) they channel a large percentage of payments through electronic channels, with acceptable levels of payment on time. In short, the results provided by ISORA 2020 could confirm the consolidation of a continuous trend towards the growing dominance of digital channels of contact and interaction with taxpayers.

On the other hand, the vast majority of CIAT countries place special emphasis on taxpayer segmentation strategies, with average utilization values clearly above the global average and other groups of countries. In addition, as regards the use of technology to improve tax compliance, the leadership of these countries (as a group) in the massive implementation of electronic invoicing systems as a mechanism to guarantee the automatic control of all economic transactions carried out in the formal circuit of the economies stands out. Something similar can be noted with respect to the partial/total pre-filling of tax returns based on information available to TAs. Additionally, CIAT members included in this round of the ISORA survey show encouraging progress in the incorporation of innovative technological solutions -such as data analytical tools, artificial intelligence, virtual assistants and application programming interfaces (APIs)- in all cases with average values that far exceed global averages and are close to those calculated for High Income group countries.

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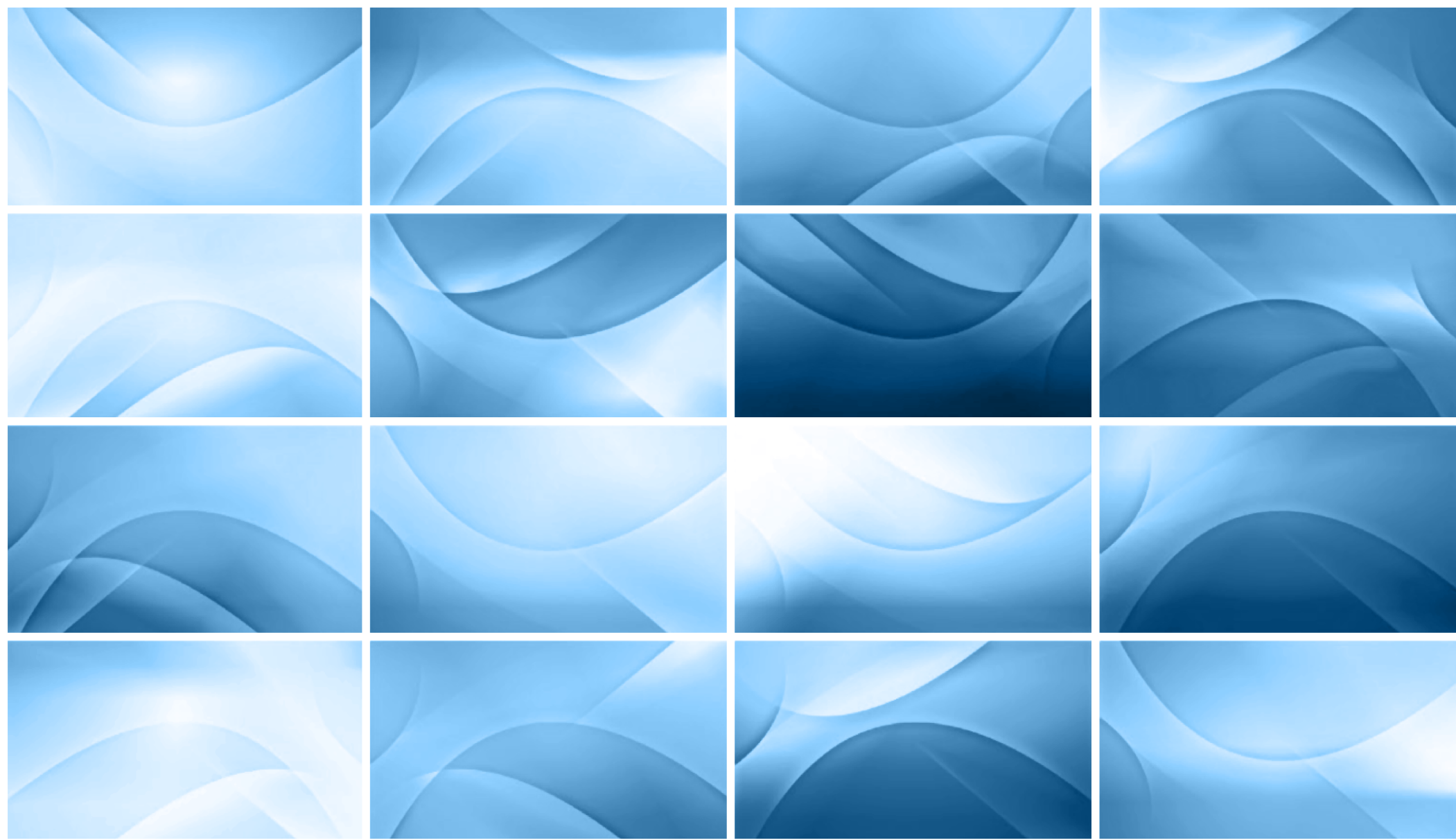
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