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ESTIMATING AND TACKLING THE TAX GAP: ALTERNATIVES AND PROPOSALS

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ABSTRACT

With governments repeatedly struggling to maintain a balance in tax collection, more attention has been paid to reducing the tax gap. In the search for a deeper understanding, the aim of this study was to analyze the scientific production on the calculation methodologies for estimating the tax gap and the ways suggested for tackling it, using the main academic and government publications on the subject. The result indicated that, although abundant, the methods for estimating the tax gap do not present a consensus on the sources of information that should be used in the calculations, even considering that these are specific to each taxing entity. It also indicated that the literature on tackling the tax gap has been growing, but is already consistent in proposing alternatives to the conventional use of penalties and inspections, but lacks research with effective proposals that can be applied in practice to combat tax evasion.

Keywords: Tax gap. Tax monitoring. Tax compliance.
JEL: H26; H21; H29.

SUMÁRIO

1. INTRODUCTION

Tax evasion, as well as tax breaks granted by governments, is an intrinsic part of the tax collection process and the main component of the tax gap. In periods of low collections, it is common for the tax gap to be questioned, stimulating the search for calculation methodologies for efficient estimates of its quantification. The fact is that the tax gap affects public finances in a representative way and has a multiplicity of negative economic effects, the most relevant being its contribution to budget deficits that force spending cuts or tax increases. It also affects the distribution of income in an arbitrary and unfair way, since some taxpayers are better able to exploit the tax system than others, contributing to the perception of unfair treatment and disrespect for the law, requiring the government to use more resources to identify non-compliant taxpayers and, not least, it affects the accuracy of macroeconomic statistics because it is not possible to pinpoint the amounts of tax evasion. In other words, it is not possible to understand the true impact of taxation without recognizing the existence and effects of the tax gap.

After the economic crisis experienced in 2008, marked by recession and large budget deficits, there was a significant increase in political attention in developed countries to tax evasion and tax enforcement. In all European Union countries, for example, the constraints of strict fiscal rules, austerity and revenue shortages continue to limit the scope for action by governments that need to stimulate their economies (MURPHY, 2019). The International Monetary Fund (IMF) has stated that, like the advanced economies, there is also much concern among developing countries about strengthening compliance in this post-crisis period (SLEMROD, 2019), given that the tax gap fundamentally threatens the integrity of the tax system and, as a result, the most important debate in the coming years will be about how to reduce it (MCMANUS; WARREN, 2006). The issue is not simply financial, but it is important that the state functions in the most reliable way, which is through effective tax administration (BIRD, 2015).

The tax gap, in essence, represents the loss of tax revenue and the reduction in funds earmarked for distribution by the government through social public benefit programs. In addition, tax evasion places the burden of reduced revenue on certain taxpayers by considering that the drop in revenue may lead the government to increase the tax burden, transferring this burden to honest and tax-compliant taxpayers.

Considering the issue of tax justice alone, the tax gap is already a valid point of attention for governments to seek tax equity (BRANHAM, 2009).

It should not be overlooked, however, that the hidden economy, as well as the tax gap,

also has implications for the budget and the allocation of taxes and income distribution, examples being the real or perceived increase in the tax burden over time, which can reduce revenue or worsen the deficit; economic indicators measured with errors; and political and social implications, considering that the growth of the informal sector can reflect the degree of voter dissatisfaction as a result of the regulation of their activities (GILES, 1999).

Given the effects and relevance of the tax gap on public budgets, the literature on tax administration and compliance suggests that the main benefits of estimating the tax gap are identifying the types and levels of non-compliance that contribute to its formation, improving the efficiency of a tax authority's resource allocation to combat non-compliance and measuring the effectiveness of a tax authority. In the UK, tax gap estimates are also used to help identify misinterpretations of legislation by the taxpayer in such a way as to reduce their tax collection when this is not the legislative intention (MCMANUS; WARREN, 2006).

Faced with this scenario of non-compliance, budget deficits and reduced social welfare, tax gap estimates have become increasingly popular as a tool for assessing the degree of success of a particular tax or tax system, and can also be used as performance indicators for tax collection agencies (GEMMELL; HASSELDINE, 2014). These estimates provide relevant information on the level of non-compliance and its components, including the evolution over time, which is perhaps the most important indicator. The estimation strategy must have at least three conditions to guarantee rigor and transparency: the results must be presented within the confidence interval, the methodology must be stable over time and the data used must be available periodically. In this way, estimates are of great use to the tax administration as a management tool (DURÁN-CABRÉ et al., 2019).

Although the importance of estimates is recognized, it is important to stress that there is no universal calculation methodology for the tax gap, as would be the case, for example, of an estimate developed by some tax administration that could be applied in another country and that would show how inefficient a country is in terms of contributing to public revenue or how dangerous this is for fiscal policy, as well as for socio-economic policy (RACZKOWSKI; MRÓZ, 2018).

In this respect, considering the need to mature and solidify the estimates of the tax gap, which have not yet been consolidated, and to combat its causes, the general objective of this study is to analyze the scientific production on the estimates for calculating the tax gap and the alternatives for tackling it.

The results of this study provide elements for a more robust literature on the tax gap,

which has acquired a significant body of literature in recent years due to the need to understand the reasons that lead to tax evasion and the ways to combat it, making it relevant to present an analysis of scientific production on the subject and its trends.

The study begins by examining the emergence of the tax gap concept and how it has been classified. Next, the calculation methodologies are presented, with a brief look at the VAT gap and the main possibilities for tackling the tax gap. Finally, the expected future of the tax gap is pointed out, followed by a conclusion noting the main points of attention.

2. TAX GAP CONCEPTS

There are numerous tax gap concepts, most of which were developed by tax agencies with the aim of measuring the aggregate tax revenue lost due to lack of compliance (GEMMELL; HASSELDINE, 2014). Basically, the tax gap is defined as the difference between the amount of tax planned by the tax legislation and the amount declared and collected on time by taxpayers (MAZUR; PLUMLEY, 2007); or the difference between the total collected and the total tax revenue that would be collected under full tax compliance (DURÁN-CABRÉ et al., 2019); or the difference between the total tax revenue and the total tax revenue that would be collected under full tax compliance (DURÁN-CABRÉ et al., 2019); or alternatively, the difference between tax capacity and actual tax revenue, the former representing the maximum possible tax revenue to be collected in a country and the latter the amount collected through taxation as a percentage of GDP (CASTRO; CAMARILLO, 2014). From an economic point of view, it can be defined as the loss of revenue from the state budget that negatively affects fiscal policy, public spending, the fair distribution of burdens and the economy (FISCALIS, 2016).

Although the tax gap concept seems simple, it is still incomplete and there are some difficulties in applying it in practice. This is the case when the reality of an entity generates different interpretations of tax legislation between the taxpayer and the tax administration and such uncertainty about tax liability can lead to a tax gap (MAZUR; PLUMLEY, 2007).

The concept makes it clear that the tax gap exists in any economy, in varying proportions, arising mainly due to tax evasion and persistent practices of aggressive tax optimization. It should be considered both from the point of view of positive economics (the way it is) and normative economics (the way it should be), due to the fact that, for public finance purposes, while funds are accumulated and spent, the tax gap is a direct determinant of the budget deficit, public debt and the possibilities of performing the state's statutory tasks (RACZKOWSKI; MRÓZ,

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2018). However, the tax gap does not only include tax evasion, but also tax waivers, which will be discussed below.

The tax gap is not an end in itself, but a means to the end of efficient tax administration, better tax policy and tax legislation, among others; it is not an indicator of taxpayer compliance in the short term; it is not just about establishing an estimate, but understanding its nature, drivers and non-compliance behavior, directing better responses; it is not independent of increased compliance, as it is linked to a behavioral response from the tax base and quality of compliance; it is not fully solvable as its elimination would require universal audits, high penalties, a high burden on the compliant, reduced economic activity and political dissent (WARREN, 2019).

The Internal Revenue Service (IRS), the US tax agency, classifies the tax gap into three mutually exclusive categories: non-filing gap, representing returns filed after the deadline or not filed at all; underreporting gap, representing returns with less information than the real ones; and underpayment gap, representing returns that are filed on time but have untimely payments (MAZUR; PLUMLEY, 2007; TODER, 2007a). For better evaluation, the IRS uses a concept that it has named the net tax gap, which is the tax gap in any fiscal year minus the payments of taxes due in that year that were collected late, either voluntarily or through IRS enforcement activity, noting that the payment of interest and fines related to these delays do not make up this concept (TODER, 2007a).

Although there is a well-defined classification into three components, the causes of these components are complex and unpredictable, which include a series of determining factors, many of which are psychological in origin and may or may not be related to the tax system, including unintentional error, the complexity of tax legislation and dissatisfaction with the government, among others. Some factors are decisive for the development and persistence of the hidden economy and illegal activities (WARREN; MCMANUS, 2007). Even so, understanding the reasons for non-compliance is important for developing strategies to encourage it and this intelligence can be obtained through the tasks of the tax authorities, especially audits, but external sources of information such as statistics and literature on taxpayer behavior and risk management also contribute, as does the calculation of tax gap estimates (MCMANUS; WARREN, 2006).

The tax gap can also be classified as the assessment gap and the collection gap, where the former refers to the difference between the total amounts of tax collected and the tax theoretically collectible, where the tax assessed is an aggregate of the total amounts of tax due based on tax returns and assessed by audits, and the latter is the difference between the total amounts of

tax actually collected and the total amounts of tax assessed (FISCALIS, 2016).

One point on which the literature continually diverges is whether or not to consider tax avoidance in tax gap estimates. The tax gap is the result of tax evasion and some forms of tax avoidance that are not characterized as illegal, allowing the agents operate legally, and in fact do not consist of attempts by taxpayers to reduce the tax burden in the light of the applicable legislation (RACZKOWSKI; MRÓZ, 2018).

It is important to note, therefore, that the tax gap includes tax evasion from legal activities in the hidden economy, i.e. part of economic activity that is not recorded in official economic statistics, such as informal services, such as domestic workers and street vendors (TODER, 2007a). In the case of the IRS, estimates of the tax gap are limited to activities in the legal sector of the economy, and do not take into account income from illegal gambling, prostitution and drug trafficking, for the reason that the government's predominant interest is not to eliminate the tax differences of these activities, but rather to eliminate the activities themselves. Thus, the tax gap is not synonymous with the hidden economy, although there is an overlap between their concepts (MAZUR; PLUMLEY, 2007).

The tax gap is basically made up of the compliance gap and the policy gap. The compliance gap is the difference between the amount of tax that would be collected if current legislation were applied in the way the tax authority considers appropriate and the amount actually collected. It is formed by behavior chosen by the taxpayer, such as tax evasion, tax avoidance and amounts declared but not collected (MURPHY, 2019). The policy gap, sometimes referred to as tax expenditure, is a difference in tax collection caused by the tax policy implemented by the legislator, with these policies establishing deviations from the general rules of taxation, such as granting exemptions, rebates and lower rates than the standard (FISCALIS, 2016).

It follows from the policy gap concept that, based on the most commonly used concept of the tax gap and the necessary observations of taxpayer behavior exposed by Gemmell and Hasseldine (2012), there may be an overestimation of the magnitude of the tax gap, since part of the revenue considered lost in the tax gap concepts does not actually exist, is not subject to refund and will probably not be collected, and behavioral response coefficients should be considered minimally. Thus, a concept for the tax gap would be the level of application of tax evasion that results in an undue reduction in the tax base and a reduction in the contributions owed to the state budget (RACZKOWSKI, 2015).

Along these lines, the tax gap is an important tool for assessing how the intention of the tax law can be compromised by its implementation and administration, because indicates the

unintended tax-induced economic distortions to taxpayer behavior; highlights the inequalities arising from the fact that not all taxpayers pay their fair share of the tax burden; highlights the legal complexity that can reduce compliance due to the high cost of compliance; and finally, reveals the sustainability of the tax system by examining trends in revenue risks in tax gap analyses over time (WARREN, 2019).

Finally, it should be noted that a solid understanding of the tax gap is crucial for governments and for the development of appropriate government policies, since an increase in the tax gap could reduce tax revenue and, consequently, jeopardize the ability to meet social demands, resulting in the possibility of increasing tax rates in order to raise the necessary additional revenue (WARREN; MCMANUS, 2007).

3. ORIGIN OF THE TAX GAP ANALYSIS

The publications on tax evasion and, consequently, the tax gap, based on the predominant current, use as a paradigm the work of Allingham and Sandmo (1972), which analyzed the individual decision of the taxpayer about the possibility of evading their income and to what extent, an approach related to studies of the economics of criminal activity, such as the publication by Becker (1968). The authors point to the fact that until then, theoretical studies of the link between taxation and risk-taking had not included the problem of tax evasion.

In the model developed, taxpayers, acting under uncertainty, choose between declaring their income in full or only a portion of it, with the latter alternative having its reward linked to the existence or not of the inspection of their declared amounts, thus being a non-trivial and non-immediate decision, since the penalty for its infraction does not occur when the decision is made. They also consider that the political tools to curb tax evasion are tax rates, penalties and inspections.

Becker (1968), the work that motivated the study by Allingham and Sandmo (1972), published an essay using economic analysis to answer the normative versions of how much punishment and resources should be applied in different types of legislation and how many infractions should be allowed without punishment. The author states that optimal decisions are those that minimize the social losses caused by infractions, which are considered to be the sum of the damages, the cost of apprehension, conviction and execution. They point out that fines have advantages over other punishments because they compensate society while punishing offenders.

4. TAX GAP IN FIGURES

According to its conceptualization, the tax gap is relevant to everyone and this raises the question of who should take responsibility for calculating it. The answer is not simple, but due to its importance, it should be an open, transparent, cooperative and collaborative venture (WARREN, 2019). In fact, studies on tax gap estimates have gained momentum in recent years, especially with the increased awareness of the reduction in tax bases caused, for example, by the increase in public debt after the global crisis in 2008, which stimulated greater attention from tax agencies in measuring the extent of tax avoidance and evasion, encouraged by organizations such as the OECD and IMF (GEMMELL; HASSELDINE, 2014).

As an introduction to the presentation of tax gap figures, it is important to understand that, when analyzing them, they should not be seen as instantaneous at a given moment, but rather as the result of different analysis projects and audit work that took place over 15 or 20 years prior to publication (BJÖRKLUND LARSEN, 2017). It should also be noted that the intention of this topic is not to exhaust all published tax gap presentations, but rather to present the ways in which they are demonstrated so that there is a paradigm and that they can be compared, aware of their differences.

Usually, the percentage level of a country's tax gap is related to its GDP, i.e. the higher the GDP, the lower the percentage share of the tax gap, examples being the USA (3.8%), Great Britain (3.2%) and Japan (4.3%). When the tax gap is assessed in absolute terms, it is inversely proportional when compared to the tax gap assessed as a percentage of GDP. As an example, they cite the USA, which calculated a tax gap of US$ 654 billion in 2015, which is higher than Poland's GDP of US$ 548 billion and close to Switzerland's GDP of US$ 719 billion. This means that the big economies have different possibilities for generating GDP. The OECD member countries with the largest tax gap proportional to GDP are Italy (13.5%), Estonia (12.9%) and Romania (12.1%), and the smallest are Luxembourg (1.7%), New Zealand (2%) and Canada (2.2%), with the average being 7.7% of GDP (RACZKOWSKI; MRÓZ, 2018).

With regard to country-specific figures, in the case of US income tax, one characteristic of the tax gap is that its proportion in relation to taxes owed has remained stable over time. IRS studies on non-compliance, calculated since the 1970s, indicate that the tax gap varies between 16 and 20 percent of its tax burden. They also indicate that most of this tax gap is made up of amounts under-declared by individuals, amounting to 68 percent of the total. Of this percentage, only a fifth of the tax gap is recovered through inspection activities and involuntary late

payments (TODER, 2007b).

It is important to mention that, when it comes to income tax in the US, most non-compliance is carried out by high-income earners, because people of this profile have opaque income categories, such as dividend income, capital gains and property income. The underreporting of income by people earning more than US$10 million a year is five times higher than for those earning up to US$200,000 (SARIN; SUMMERS, 2019).

In 2001, the annual US tax gap was around $290 billion, which represents a non-compliance rate of 15%, the main cause being incorrect declarations originating from small and medium-sized companies. Sole proprietorships are significantly more likely to be non-compliant with tax laws. Another reason for non-compliance for these companies could be a lack of enforcement (LOGUE; VETTORI, 2011). In the same year, the IRS's projection of the tax gap for 2006 was approximately US$400 billion, more than double the federal deficit projected for 2007, which led politicians and economists to conclude that reducing the tax gap, in addition to reducing the aforementioned deficit, would also be important for restoring fairness to tax legislation (TODER, 2007b).

With these 2006 figures, Gemmell and Hasseldine (2012) recorded that the three main characteristics of the US tax gap are that more than 75% of the net tax gap is attributed to individual income tax, more than 80% of the gross tax gap stems from underreporting, with half attributable to underreporting of corporate net income, and that non-compliance is highest among taxpayers whose income is not subject to third-party information reporting or withholding requirements.

For the years 2008 to 2010, the IRS recorded that the average tax gap was estimated at US$458 billion, with a voluntary compliance rate of 81.7%, which would be close to the amount needed to eliminate the US budget deficit. However, these figures have been increasing progressively. The first IRS estimate in 1973 indicated a tax gap of US$60 billion for individual and corporate income tax, with a voluntary compliance rate of between 82% and 84%. However, predictions of a steady growth in the tax gap, either in relative or absolute magnitude, have the odds wrong and instead it is more likely to decrease in size in the coming years (ALM; SOLED, 2017).

Of this total indicated by the IRS, the non-filing gap represents 84.5% of the entire tax gap, made up mostly of unreported corporate income, while in the case of income tax underreporting, the individual gap is greater than the corporate gap (ALM; SOLED, 2017). The most common underreporting is that which is less visible to the IRS, such as sole proprietorship inco-

me, partnership income and self-employment income, all due to the fact that these incomes are subject to underreporting and are not automatically withheld (SARIN; SUMMERS, 2019). A relevant fact is that around half of the tax gap in US federal taxes is made up of failed payments by small businesses and the self-employed, who evade their taxes (MORSE, 2009).

Estimates for New Zealand for the period between 1968 and 1994 revealed a hidden economy of between 6.8% and 11.3% of GDP and a tax gap of between 6.4% and 10.2% of total tax obligations (GILES, 1999). In the case of the member countries of the European Union, the calculation between 2011 and 2014 indicates that tax gap levels average 10.7% of GDP (RACZKOWSKI, 2015). Looking at other regions, Georgia (65%), Peru and Azerbaijan (58%) and Thailand (50%) stand out as the countries with the largest hidden economies. The average for countries in Eastern Europe and Central Asia is the equivalent of one third of GDP (KHWA-JA; IYER, 2014).

In the specific case of Sweden, the tax agency points out that the tax gap in 2007 was 133 billion kronor, equivalent to 5% of GDP or 10% of the tax determined to be collected, basically made up of three tax errors. The main gap is 50% of the total number coming from undeclared income, whether salary or sales, followed by a third originating from what they call the international tax gap, made up of foreign individuals with income in Sweden, Swedes with income abroad or transactions between Swedish taxpayers with activities in other countries and, finally, a sixth made up of other domestic transactions that do not fit into the above, such as applying the wrong VAT rates, incorrect deductions and wrong calculations on capital gains (BJÖRKLUND LARSEN, 2017).

In Catalonia, a region of Spain, wealth taxes were analyzed in 2014. For wealth tax, the estimated tax gap was 44.34%, with the main component being under-declared amounts, corresponding to 97.28% of the estimated tax gap, of which 56.4% refers to undeclared assets located abroad and 36% refers to incorrect application of the use of exemption for closed companies. In the case of inheritance and gift tax, the estimated tax gap was 41.26% of potential revenue, with its main component also being underreported amounts with a percentage of 85.6%, 37% of which refers to undeclared assets located abroad and 29% due to incorrect use of tax deductions for privately-held companies (DURÁN-CABRÉ et al., 2019).

With regard to the international tax gap, only the IRS has a good estimate prepared on the basis of publicly available figures, such as that released by the Boston Consulting Group in 2003, which estimated that of the US$38 trillion deposited worldwide, US$16.2 trillion were held by North American residents and of these, less than 10% were held outside the country.

If this figure were to approach US$1.5 trillion and assume a 10% annual gain, which would result in US$150 billion, the international component of the tax gap would be US$50 billion. This figure would be higher than the corporate tax gap, estimated at R$29.9 billion in 2001, and yet the IRS invests far more resources in the corporate tax gap than in the international tax gap (GUTTENTAG; AVI-YONA, 2006).

In the case of developing and transition countries, estimates of the hidden economy range from 30% to 60% of GDP (IBRD; GENDRON, 2006).

5. METHODOLOGIES FOR CALCULATION ESTIMATION

Considering that the fundamental concept of the tax gap is the difference between theoretical tax liabilities and actual tax collection, its estimation raises normative and positive questions, since it seeks to know what 'would be collected', a question of tax policy formatting, and what 'should be collected', a legal question, comparing these values with the positive question of what 'is actually collected' (WARREN, 2019). Although the concepts given to the tax gap present similarities in their core and objective, the methodologies used in their estimates are carried out in a diverse way due to the existence of multiple factors, such as the availability of aggregate data, the tax system implemented and the behavior of taxpayers.

Estimating what doesn't happen, as in the case of the tax gap, where taxes that theoretically should be paid but aren't, is much more difficult than estimating observed quantities such as GDP, employment or earned income (Toder, 2007a). All tax gap or hidden economy estimates are subject to measurement errors and are often measuring different things (GEMMELL; HASSELDINE, 2012). Tax gap estimates are nothing more than approximate indicators of lost revenue. The reliability and usefulness of the estimates are related to the methodology and data used, so caution is advised when interpreting the estimates and drawing far-reaching conclusions about their results without a clear understanding of these assumptions. It is also advisable to emphasize the trend of estimated results rather than absolute numbers (FISCALIS, 2016).

In the past, the tax gap literature was considered unreliable and attempts to quantify it were criticized for being costly and inconclusive, criticisms that seem to have changed with the significant number of studies carried out on the subject. Since the 1990s, several OECD member countries and developing countries have estimated the tax gap, and these results have been widely disseminated and used as performance indicators. These countries include France, Sweden, the US and the UK. Any remaining resistance to its calculation may be due to the pres-

sure that estimating the tax gap can impose on governments to collect revenue that is difficult to collect without generating an adverse public reaction, in the belief that this additional revenue would generate a cost and consequently increase the size of the state without a comparable improvement in service (MCMANUS; WARREN, 2006).

As a result, methodologies have matured over time to encompass the variety of information needed to estimate them. Furthermore, the methods and strategies for calculating the tax gap are increasingly complex. In the beginning, tax authorities focused on calculating the tax gap through inspections, information that was used to compare with the total amount of taxes to be collected. Nowadays, a collection of tools and the development of compliance strategies are used, allowing for a digitized sample of taxpayers at risk (BJÖRKLUND LARSEN, 2017).

Limitations are also faced in tax gap studies, including conceptual issues as well as those arising from data availability and integrity. The calculation requires data from the national statistical system as well as from tax administrations, and broad issues such as data currency, reliability, validity and availability must be analyzed. The sources of the data, as well as its quality, have a significant impact on the validity of the estimation result, but also on the design or final methodology adopted (MCMANUS; WARREN, 2006).

Even in the face of the difficulties faced, estimating the tax gap is fundamental because it helps governments make the best decisions about the shortcomings of the tax system, as well as increasing its robustness. It also makes it possible to verify the level of risk in already identified risk areas, conduct a comprehensive analysis of compliance and non-compliance sectors, identify unclassified risk areas, monitor risk areas and evaluate the effectiveness of attempts to reduce non-compliance in a risk area. In addition, it points out spatial issues, such as by region, temporal issues, such as trends over time, and compositional issues, such as variable behavior between groups. It also has the ability to question the data and its integrity, as well as indicate perceptions about economic, social, political and institutional origins (WARREN; MCMANUS, 2007).

However, in order to be meaningful and relevant, the estimates must identify the stakeholders, pointing out their interests in the measurement and what the estimate is for them; micro-contextualize the tax gap estimates by indicating the contribution of each measure to the total, as well as the interaction between each component; macro-contextualize the tax gap estimates by considering how the unobserved participants and unrecorded observations impact it, and how it behaves with changes in the tax structure or tax administration (WARREN, 2019).

In general, tax gap estimates have three main uses, which are to assess the effectiveness

and efficiency of a tax authority, which is their most common use; to measure the inequality resulting from the non-application of tax legislation in an impartial manner; and, finally, they can be used to measure the effectiveness of the application of tax policy in a jurisdiction (MUR-PHY, 2019).

When evaluating tax gap estimates as a public management tool, attention must be paid to their weaknesses and care must be taken when interpreting their values over time and when making comparisons between countries, since this estimate depends on elements related to the tax system and the specific characteristics of each country. Consideration should be given to the differences between the types of taxes and their level of importance in the composition of the tax base, the production structure and tax morale (DURÁN-CABRÉ et al., 2019).

It should not be forgotten that although the figures in the estimates are supposed to represent the total volume of losses to a government's revenue, they are calculated by type of tax and, with regard to the type of tax for which the tax gap estimates are prepared, it should be noted that most focus only on VATs. However, this type of tax is not the largest generator of revenue in most economies, which is the function of income taxes and social security charges, which share much of their tax bases (MURPHY, 2019).

It should be noted that dollar estimates of the tax gap appear accurate, but are subject to many uncertainties when considering the challenges associated with estimating underreporting, such as the strong incentives taxpayers have to hide evasion and, consequently, the penalties involved. In the case of the IRS, the main approach was to calculate underreporting based on direct measurement of evasion through audits, as was its practice between 1963 and 1988, through line-by-line analysis of a stratified random sample of approximately 50,000 returns in a three-year cycle through its TCMP (Taxpayer Compliance Measurement Program), in which they manage to compare the information declared with the actual information. With the replacement of the TCMP by the NRP (National Research Program), examined 46,000 declarations between 2001 and 2006 (ALM; SOLED, 2017).

There are basically two types of methodology for estimating the tax gap. The first is the macro or top-down or indirect approach, which uses aggregate data to estimate data from the hidden economy and apply an effective tax rate or uses macroeconomic indicators such as GDP and national consumption (GEMMELL; HASSELDINE, 2012). They are based on the premise that the data source for the tax gap estimate covers the entire tax base. They consume less time and fewer resources, with results that are comprehensive and comparable over time, allowing for trend analysis. Their disadvantage is the need to explain the causes and components of the

tax gap (FISCALIS, 2016).

Macro approaches are divided into the discrepancy method, the single indicator method and the multiple indicator method. The first method estimates the tax gap based on the difference between reported income and an independent measure of income which is believed to include hidden income, but which in practice probably only captures a fraction of the total. The simple indicator method assumes a direct link between the size of hidden income and some variable, such as the amount of money in the economy, which, using its level or trend, represents the growth or proportion of hidden income. This method has two major weaknesses, which are that its identification at any time requires that there is no hidden income at some point, or that the relationship of hidden income to the proxy is known at some point and that the change in the proxy over time is entirely due to changes in hidden income (GEMMELL; HASSELDINE, 2012).

With regard to the multiple indicator method, MIMIC models are used, which are similar to the single indicator method, but the hidden economy tries to be measured by at least two indicators and to be associated with two or more causal variables. The most commonly used method is the one that treats the hidden economy as a latent variable and estimates a set of parameters that can relate the latent variable to the causes and indicators (GEMMELL; HASSELDINE, 2012).

Another methodology for estimating the tax gap is the micro, bottom-up or direct approach, which uses data from the returns filed by taxpayers and, based on audits of this data, infers an amount that should be declared by each taxpayer.

This approach is superior to the first because it provides richer information and allows, for example, redistributive analysis of the tax gap (DURÁN-CABRÉ et al., 2019). Audits are much more accurate, although more expensive (GEMMELL; HASSELDINE, 2012). The tax gap is estimated by extrapolating data to the population after random selection analysis (FISCALIS, 2016). The main problem with current research methods is that there is distrust in taxpayers' responses regarding their evasion, which makes audits more reliable. In addition, it is difficult to identify the size of the sample required and, without independent sources of information, it is also difficult to determine the representativeness of the samples selected (GEMMELL; HASSELDINE, 2012).

The micro approach is the main measure of a tax authority's efficiency, where three errors are assessed. The first is the efficiency of the tax authority in collecting tax return data, being responsible for identifying non-filed returns, which requires a significant sample of the popula-

tion of non-filing taxpayers in order to determine the causes and probable losses. The second is the estimated error rate in tax returns, which can arise from both evasion and avoidance. Finally, delinquency must be monitored, i.e. the amount of tax declared but not collected (MURPHY, 2019).

The estimation of the tax gap based on the indirect methodology consists of using the level of the hidden economy estimated by the MIMIC method; GDP at current prices; the total tax burden (TTR), the latter two being obtained from World Bank publications; and through the indirect method of monitoring and estimating the lack of data (RACZKOWSKI, 2015). A new methodology adds the predicted difference between the size of the expected growth expressed in GDP and the economic growth reported in the previous period, based on information from the European Economic Forecast and the OECD (RACZKOWSKI; MRÓZ, 2018).

In practice, the choice of methodology depends on various factors that affect the robustness of the results, including the availability of data, particularities of the tax system and types of fraud. However, when possible, it is recommended to combine methodologies so that a comparison of results is possible, which can provide information on reliability and robustness. Estimates based on macroeconomic aggregates are less informative about the causes of revenue loss, while estimates based on microeconomic data are less comprehensive (FISCALIS, 2016).

Thus, the recommendations are that tax gap estimates should cover all taxes, comprehensive methodologies should be established on the bottom-up and top-down methods for estimates, being published on both bases, cover the needs of the potential user and not only serve as a measure of efficiency of the tax authority, publish annual estimates of policy gap and expenditure on tax benefits (MURPHY, 2019).

The IRS, for example, uses different methods to measure the three components of the tax gap. To estimate non-filing rates, the IRS creates tax filing units based on household units from the population census produced by the national statistics agency, Bureau of the Census, and, using household characteristics and reported incomes, the IRS tabulates the number of individual tax units required to file a return. With this result, the IRS calculates the number of individual taxpayers who are required to file a return and who file on time, where the non-filing rate is given by RF / R, where R is the estimated number of returns based on the statistics agency and F the estimated number of required filers who file their returns on time based on the IRS figures (TODER, 2007a).

The main method used by the IRS to estimate underreporting is to audit stratified random samples of tax returns and then project them to population totals. The starting point for the cal-

culation is the comparison between the value declared by taxpayers and the value determined by the auditor, including positive and negative adjustments, and this gap is measured as the number of underreported returns per taxpayer minus the number of returns that the auditors reported with overreported tax liability. Finally, with regard to the gap arising from taxpayers who filed their returns on time, but collected less than the amount due on time, the IRS simply tabulates the data from the returns filed with the payments made, generating a highly accurate measure of the amounts not collected (TODER, 2007a).

In the case of the tax gap component caused by the payment difference, the difficulty is less and a simple calculation of the difference shows the gap. However, in the case of the non--filing gap, the difficulty is greater for the IRS, as it is determined by the difference between the total population of declarations and those who actually file and estimate their taxable income, estimating taxes that have not been declared minus taxes that may have been withheld at source, based on own data and provided by the US Census Bureau (ALM; SOLED, 2017).

When measuring the tax gap, some issues must be analyzed, such as the use of adjustments to estimate income not detected by examiners, which does not allow us to know whether this adjustment is excessive or insufficient for the revenue sought; adjusting amounts erroneously collected by taxpayers; the use of outdated data in the estimates, either due to changes in regulations or the use of indices based on old audits, and; problems with tax gap estimates in companies that have sophisticated tax plans that hide income and move between tax avoidance and evasion (TODER, 2007a).

A few observations should also be made about tax gap estimates. Firstly, despite the large potential positive and negative errors, the tax gap estimate is capable of reasonably indicating the magnitude of non-compliance. However, over time, at least in the case of the IRS, the estimates are not good measures for evaluating the agency's performance because there are changes in the quality of the data available and the techniques used, which can interfere with compliance rates. Another observation is that some sources of income have higher non-compliance, but their components do not allow us to reveal where the IRS would get a greater return on invested capital because the lowest compliance rates are from individual taxpayers, many with high individual incomes, but these audits are more costly and have a lower return than automated correspondence and document collection activities. And finally, it should also be noted that reducing the tax gap should include expanding third-party information reporting and providing more enforcement resources to the IRS, showing that these are cost-effective approaches, but do not offer immediate promise of having a major effect on the tax gap (TODER, 2007a).

It is important to point out that most of the literature that focuses on measuring the tax gap through the hidden economy does not distinguish between types of taxes, because much of the academic literature is interested in measuring the hidden economy rather than the tax gap itself, but when some approaches to the tax gap are followed, measuring the hidden economy is only a first step in this process. Approaches to measuring the tax gap or the hidden economy require accurate measures of both the tax actually collected and the theoretical taxes that would result from all liabilities, and to identify the theoretical liability would require: an accurate measure of the total extent of tax non-compliance, including the loss and an independent estimate of the tax base, i.e. not calculated by the tax authority, and in addition, an estimate of the average tax rate appropriate to that tax base (GEMMELL; HASSELDINE, 2012).

Giles (1999) developed an econometric methodology to estimate the hidden economy using a structural MIMIC model to treat the size of this hidden economy as a latent variable, but with a new approach based on currency and, additionally, taking into account the non-stationarity of the various economic time series that had hitherto been used in studies. Only one of these variables was used in the study, which was the size of the hidden economy in relation to GDP. With this ratio, it was possible to estimate the tax gap using the effective tax rate.

Raczkowski (2015) sought to estimate the tax gap for all the member countries of the European Union between 2011 and 2014. The first step was to determine the nominal value of GDP, using the World Bank database, as well as the TTR (average total tax burden). Based on this information, the level of hidden savings in nominal values was obtained using MIMIC economic modeling. Based on the TTR and the average capital gains rate (TTR profit), obtained from the World Bank database, it was possible to calculate the level of the tax gap in nominal values in specific countries. The only restriction to the research method is due to the lack of information on VAT refunds on tax apportionments between countries for transactions taxed at a zero rate.

Castro and Camarillo (2014), based on the tax revenues of the 34 OECD member countries between 2001 and 2011, calculated tax capacity by taking the coefficients obtained by the aggregate sys-GMM equation and substituting the most recent values of the explanatory variables for each country, a process known as the stochastic approach, which applies linear regression models to estimate the coefficients. As explanatory variables they used GDP per capita, volume of trade in GDP, foreign direct investment relative to fixed capital formation, specialization of agriculture as a percentage of the economy, specialization of industry as a percentage of the economy, indicators of civil liberty and political rights, education, life expectancy and

infant mortality. The difference with the percentage of tax revenue under GDP indicates the tax gap. For the authors, the results indicate that the tax gap remains stable over time, suggesting that the tax systems of the countries in the sample have not changed significantly over the period, and further noted that the tax gap does not seem to have a pattern with the level of income in countries, and can therefore depend on various factors such as the efficiency of tax collection and the tax system.

With regard to the efficiency measure, tax gap studies can be used by governments to assess the performance of their tax administration in maintaining the integrity of their tax system. The IMF supports this assessment and calculates tax gap estimates when reviewing countries' fiscal capacity. The OECD recognizes that using revenue as a target and measure of effectiveness in most countries depends very much on economic growth, but in relation to assessing tax effectiveness, a tax gap estimate is a more valuable and relevant indicator, making it preferable (MCMANUS; WARREN, 2006).

5.1 Methodology for calculating the VAT gap

Although VATs were introduced in the 1950s, they have now been adopted in more than 130 countries, including the OECD members, except the USA, and many developing countries (KEEN, 2007). Their rates in OECD countries have increased progressively since their introduction, with a standard rate of eighteen percent at the time of publication of the article, which increases the potential benefits of non-compliance, as well as the tax gap (WARREN; MCMANUS, 2007). Precisely for this reason, the VAT gap estimate has gained importance in the European Union in attempts to combat tax fraud, as it indicates the potential size of VAT evasion, although it includes non-fraudulent defaults such as insolvency in its estimates (LEŠNIK; JAGRIČ; JAGRIČ, 2018). Tax gap estimates can be calculated for any type of tax, but estimates for VATs are the most common because reliable and comprehensive estimates of direct taxes are more difficult. This is because direct taxes have complex rules that make it difficult to develop a good methodology (FISCALIS, 2016).

As with other taxes, the methodologies for calculating VAT gap estimates can be top-down or bottom-up. The former is more widely used and uses information on consumption disaggregated by commodity, usually from household surveys, together with national accounts data that allows for some manipulation (KEEN, 2013). A top-down estimate suffers from a lack of available independent data on income, and assets are not sufficiently detailed, as are the lack

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of national accounts data for verification of fraud or data on offshore assets in foreign countries. This would capture only part of the evasion (FISCALIS, 2016). The latter approach, as with other taxes, aggregates operational information from audits and other activities to estimate VAT due and unpaid. There are other approaches, such as the one applied by the IMF, which uses the source of national accounts and tables to simulate the structure of the VAT chain, estimating the amount unpaid by sector and aggregating it to calculate an overall estimate (KEEN, 2013).

For calculation and comparison, among other indicators, the efficiency coefficient "C" is used, which is the ratio between VAT revenue on the product of consumption and the regular VAT rate. This coefficient is used as a tool by policy analysts to evaluate VATs by comparing the revenue that VAT actually generates with that which would be raised if it were perfectly executed and levied at a uniform rate, with a standard rate on all consumption and without benefits such as exemption. The coefficient is also used for cross-country comparisons in many developing country councils and has also come to be used in OECD members (KEEN, 2013).

The efficiency coefficient "C" is an indicator of the deviation from the perfectly applied VAT levied at a constant rate on consumption, and its deviation is due to the policy gap, divided into rate differentiation and exemptions granted by governments, and the compliance gap, which reflects imperfect implementation. In the case of the OECD countries, in 2006, the policy gap was much larger than the compliance gap, except in Greece and, comparatively, the policy gap varies widely, although all countries are subject to the same rules as the European Union (KEEN, 2013).

An example of countries that do this calculation is France, which regularly estimates VAT fraud using the VAT gap method, which first calculates the amount of VAT received and then compares it with the amount of VAT that should have been received considering the economic activity understood by the different headings of the input-output tables. In the UK, on the other hand, the VAT gap is calculated using national accounts statistics and the data is widely disseminated, including for assessing the performance of those responsible for collecting VAT (MCMANUS; WARREN, 2006).

Lešnik, Jagrič and Jagrič (2018) estimated the VAT gap with a bottom-up approach using data from submitted VAT returns, comparing the value of the difference between total sales and purchases for the period, these being the values actually practiced, with the theoretical value, which would be a stipulated percentage of 10% on purchases for the period, a percentage adopted to estimate the value of the margin that the goods should be sold for. This percentage was used for all sectors and was considered conservative by the authors, who considered the cal-

culation to be practical and useful, and could serve as a complement to government estimates, which generally adopt the top-down system.

Having presented the methodologies for estimating the tax gap, or VAT gap, Table 1 summarizes the approach used in each study.

Table 1 - Methodologies for estimating the tax gap/VAT gap

Author(s)	Top-down (T) /Bottom-up (B)	Methodology
Giles (1999)	T	It develops and estimates the hidden economy as a latent variable by means of the MIMIC methodology, using a money demand model. It also considers the non-stationarity of the various economic time series that are used to estimate the models.
Toder (2007)	T	Gap due to non-filing: calculation by the census of the number of declarations that should have been filed and were not, with attribution of the aggregate revenue estimate. Gap due to underreporting: random audits to identify uncollected amounts. Gap due to underpayment: comparing the amounts declared with the amounts collected.
Gemmel e Hasseldine (2012)	B	It indicates the method used by the IRS, which uses data from detailed audits and extrapolates the results to the taxpayer population.
Keen (2013)	T	Calculation of the VAT gap based on "C-Efficiency" $$E^c = \frac{V}{\tau_s C}$$ Where: V: VAT revenue τ: normal rate C: consumption
Raczkowski (2015)	T	Calculation based on calculating the hidden economy $$TG_n = \frac{SE(\%)r}{100\%} \cdot GDP_n \cdot \frac{TTR}{GDP_n} = \frac{SE(\%)r}{100\%} \cdot TTR(\%)$$ $$TG_n = TTR\% \cdot SE_n$$ Where: TGn: Tax Gap (nominal); SE_n: Hidden Economy (nominal in a given year); GDPn: Nominal GDP, in current prices; TTR: total tax rate.
Raczkowsi e Mroz (2017)	T	Estimation of the hidden economy using the MIMIC methodology, based on GDP at current prices, TTR and the indirect method of monitoring and estimating the lack of data.
Lešnik, Jagrič e Jagrič (2018)	T	Value added in the period, associated with turnover and the sum of purchases in the period, multiplied by the standard rate.
Durán-Cabré et al. (2019)	B/T	In a first stage, it calculates the amounts declared as lower than the real amount for each gap source, which is then added to the base initially declared. Once the bases have been redone, the tax obligations resulting from the tax audits are added.
Murphy (2019)	T	The European Commission's methodology estimates the amount of VAT that should be levied at the prevailing rates applicable within a state on the activity identified within GDP, and then compares the resulting total theoretical tax yield with the actual tax levied.
Poniatowski, Śmietanka e Bonch-Osmolovskiy (2020)	T	Calculation of the VAT gap by the difference between VAT collected and VTTL, known as the theoretical total VAT liability, and calculated on macroeconomic bases such as household and government spending.

Source: prepared by the author.

6. TACKLING THE TAX GAP

The tax gap is an inherent part of the tax collection system and it must be tackled continuously in order not to allow it to widen. The containment of tax evasion and, consequently, the reduction of the tax gap, must be multidirectional and multifaceted tasks for the tax authority, as well as adapted to the reality of the country, considering that there is no universal set of solutions. A combination of hard methods and tools should be sought, inhibiting the tax gap in a repressive manner, and soft, building trust, providing information and conducting educational campaigns (RACZKOWSKI; MRÓZ, 2018).

One method used to make it easier to tackle the tax gap is to divide it up, which can be done in various ways. The first is to divide it up by type of error or fraud, such as for undeclared work or sales, or for transactions that occur when income is obtained outside the country. A second way is to divide it up between different types of taxpayers, such as individuals, micro-enterprises, small and medium-sized enterprises, and the public sector. A third division would be by type of tax, such as turnover tax, capital tax, VAT, social security, among others (BJÖRKLUND LARSEN, 2017).

However, no matter how much tax effort is made and how many policies are developed to this end, it is important to realize that part of the uncollected revenue is not recoverable and in essence does not exist, since a fraction of the so-called lost revenue may be impossible to collect. This is because tax gap estimates, in the presence of behavioral responses, exaggerate the amount of uncollected revenue due to the fact that such estimates motivate reforms aimed at increasing compliance and recovering this missing revenue. Even so, when this improvement in compliance is successful, it should be associated with a lower tax base and lower total revenue than that estimated for the previously calculated tax gap (GEMMELL; HASSELDINE, 2014).

One of the main factors to be considered in tackling the problem is resources, such as trained staff and appropriate technology, but in the absence of a solid strategy, resources alone won't do the job. And this strategy, without political support, cannot be effectively implemented. Thus, the most important ingredient for effective tax administration is clear recognition, at the highest levels of politics, of the importance of the task and a willingness to support good administrative practices (BIRD, 2015).

It is also important to note that combating the tax gap does not only mean increasing tax revenue, but that taxpayers who comply with their obligations can see their tax rates decrease as the income of taxpayers who do not comply increases. In this respect, controlling the tax gap

can be a policy aimed at reducing economic inequality between those who comply with the law and those who do not (MURPHY, 2019).

The following items present the main ways of tackling the tax gap suggested by the literature.

6.1 Use of third-party information

The fundamental obstacle for governments to improve the efficiency of their tax legislation is the informational asymmetry that exists between taxpayers and tax authorities, due to the fact that the former know all the data about their operations and it is challenging for the authorities to obtain it through the use of reports from the taxpayer themselves or from third parties. Such reports are excellent tools for resolving asymmetry and, even in cases where taxes are not withheld, can be just as effective (LEDERMAN, 2010).

Aware of the importance of reducing the aforementioned information asymmetry, an important task for tax administrations is to gather information from other government and private sector sources in order to verify the information declared by taxpayers. This is already guaranteed in most countries by the tax legislation itself, which obliges the provision of information on various transactions and activities to the tax authorities, including, in some cases, the witholding of taxes in order to identify potential taxpayers and ensure that at least part of the tax is collected on time (BIRD; ZOLT, 2008).

Using the US as an example, the reason that voluntary income tax compliance is relatively high, even if enforcement and punishment rates are not high, is that these are not the only tools. The government makes use of third-party information in relationships between independent parties that inform not only the payments, but also interest, dividends and suppliers, associated with the use of tax withholding by the other party. The best candidates for information reporting are small groups of companies that provide reports to a large group of beneficiaries (LEDERMAN, 2010).

Corroborating the importance of third-party information is the fact that underreporting, which accounts for 71% of the US income tax gap, has the same proportion of taxpayers defaulting because they are not subject to third-party reporting, increasing their discretion not to declare income, which together with the increase in deductions, are the main forms of non-compliant behavior (BRANHAM, 2009).

Thus, as a suggestion for reducing the tax gap, there is the expanded use of third-party

reports, such as those issued by financial institutions, which in addition to managing the use of cards and making it possible to monitor transactions more easily than cash transactions, also make it possible to use such transactions to estimate the value of the amounts received by companies (LOGUE; VETTORI, 2011).

In the case of tax administrations seeking to overcome the obstacle of access to information, this process can cost up to 10% of the agency's budget, information that can also be used to support the development of tax policies and reduce the tax gap in various ways (RACZKOWSKI, 2015). This is the case in the Scandinavian countries, which have a self-reporting system associated with a system for obtaining information from third parties, made up of companies, employees and the financial sector, which guarantees them access to 95% of this information, making the chance of tax evasion much lower (KLEVEN, 2014 apud RACZKOWSKI, 2015).

The use of informants can also be considered third-party information, which can improve the effectiveness of examinations and reduce the tax gap by increasing the likelihood of delinquent taxpayers being selected for examination. However, the existing award programs, in the case of the United States, are discretionary in terms of the awards and have several questions regarding their formality, requiring legal attention. Still, the biggest concern with this system involves the ability to reward those who violate professional relationships of trust, and in the case of those who participated in the planning or initiated the transaction on behalf of others so that non-compliance would occur, are the only restriction for this reward, provided that they have already been convicted of a crime (MORSE, 2009a).

The use of third-party information will also be addressed in other ways of tackling the tax gap, since access to this information is one of the main pillars in this process.

Chart 2 - Summary of the hypotheses for the use of third-party information to tackle the tax gap

- The use of third-party reports is an excellent tool in reducing informational asymmetry with taxpayers (LEDERMAN, 2010).
- Gathering information from other government and private sector sources helps reduce tax evasion, as well as tax retention (BIRD; ZOLT, 2008).
- The use of third-party information in relationships between independent parties helps inform not only payments but also interest, dividends, and suppliers associated with the use of tax withholding by the other party (LEDERMAN, 2010).
- The expanded use of third-party reports, such as those issued by financial institutions, allows for not only managing the use of cards but also monitoring transactions (LOGUE; VETTORI, 2011).
- The use of informants can improve examination effectiveness and reduce the tax gap by increasing the likelihood that non-compliant taxpayers are selected for examination (MORSE, 2009a).

Source: prepared by the author.

6.2 Tax compliance

The problem of tax compliance is as old as taxes, and finding patterns of tax non-compliance, as well as ways to reduce them, are essential (ERARD; FEINSTEIN, 1998). However, tax compliance is difficult to observe in practice because it is hidden and direct observations are only available to a fraction of taxpayers who are audited. It is therefore a complex behavioral issue in which its analysis requires a variety of methods and data sources (CUMMINGS et al., 2009). In addition to risk management by the tax administration, the rules for activities to combat each type of non-compliance by different types of taxpayers are fundamental, and can include activities such as new taxpayers, preventing and punishing tax evasion, preventing and punishing the submission of returns with incorrect tax bases and imposing fines (BIRD, 2015).

As a way of tackling this, tax gap estimates are often used to encourage compliance efforts by tax collection agencies, but an improvement in compliance implies an increase in taxpayers' effective marginal tax rates, which can lead to a significant reduction in the tax base. As a result, there may be a reduction in the tax base or a migration of this relevant base to others with lower rates. This ability to migrate is considered on the basis of legal rules, administrative costs, political choices and existing tax regimes. In order to reduce these behavioral responses, changing these rules may have more effect on increasing compliance than trying to reduce the tax gap associated with the existing tax regime (GEMMELL; HASSELDINE, 2014).

Tax authorities try to limit the opportunities for non-compliance and make efforts to make it easier for taxpayers to comply, examples being the use of third-party reporting, tax withholding schemes and legal regulations. However, they ignore the non-compliant taxpayer out of laziness, the one who would comply if it were easy. Thus, the use of simple language and the simplification of tax returns and laws can reduce unintentional non-compliance, which does not mean that research seeking to understand why taxpayers do not comply intentionally should be abandoned (OECD, 2010).

When analyzing tax gap estimates, it should not be overlooked that indicators of non-existent certainty can be generated in the measurement of tax compliance, considering that legislation is not always precise and thus generates different interpretations. From this point of view, the very concept of a tax gap seems to be inadequate for policy purposes, given that successful tax administration requires taxpayers to cooperate in the operation of the tax system rather than being forced to comply with all the requirements of their tax obligations (JAMES; ALLEY, 2002).

When the reference is to comparing the degree of compliance over time, this has proved to be inaccurate, as the tax gap can vary in compliance rates for different taxes and sources of revenue, but also due to changes in the shares of tax and revenue sources. The tax gap also changes with the taxpayer's ability to hide revenue and the tax authority's ability to detect evasion and errors. Even so, there is a fairly stable trend over time in relation to tax liabilities (TODER, 2007b). The main factor that should be noted is that the evolution of the tax gap over time depends not only on the efforts of the tax administration, but also on external factors that can affect compliance. (DURÁN-CABRÉ et al., 2019). In this context, a greater threat of detection and punishment is clearly a factor in increasing tax compliance, but increased enforcement leads to an even greater increase (CUMMINGS et al., 2009).

The basis for tackling the tax gap should be that tax compliance is a process managed by the tax authority, not a thing in itself. A systemic approach to tax compliance as a whole could serve as a basis for the tax authority to develop administrative strategies (RANDLANE, 2016).

However, there is the premise that the development of strategic actions requires the tax authorities to know who is responsible for non-compliance. This is the case in the US, which, noting the importance of non-compliance by small and medium-sized businesses, began to explore the possibility of a radical change, abandoning the current system of income taxation and adopting a system that taxes through a rough estimate of income, in line with some developing countries, where non-compliance is even worse. This change was tantamount to a massive exchange of precise mediation for a reduction in administrative and tax enforcement costs. The great benefit of using a presumed tax is that it eliminates the need to analyze taxpayers' expense deductions, since these expenses are no longer relevant (LOGUE; VETTORI, 2011).

Alternatively, greater regulation of the preparers of returns for small businesses and the self-employed, who are usually lawyers, accountants and others, should be analyzed. This regulation, which would contribute to increased tax compliance, would be based on deterring illegal tax planning and other forms of evasion by increasing penalties, increasing the detail of returns, tightening ethical and disciplinary standards, additional licensing requirements and modifying preparers' investigative obligations (MORSE, 2009b).

In the behavioral sphere, contacts between tax authorities and taxpayers can increase compliance in the short term, even in the form of a "placebo", supposedly by signaling to the taxpayer that they are on their "radar". If the messages include evidence that the authority has information about a possible tax evasion, this strongly leads to a reduction in evasion (SLEMROD, 2019). Providing concrete evidence message that the authorities have information

on evasion is consistent in reducing evasion, since it combines the message that it is on the radar with actionable information on non-compliance. It should be considered, however, that the administrative and compliance costs related to tax collection are very concentrated, i.e. 10% of returns often account for 90% of revenue and the remaining 90% of returns account for up to 80% of administrative and compliance costs (BIRD, 2015).

There is strong evidence that the main causes cited in the literature as being determinants of tax compliance do in fact affect it, as well as tax compliance, which are detection and punishment, tax burden, allocation of tax collection, overweight due to low probability of inspection and social norms, and in the case of the latter there is variation between countries, indicating that social attitudes towards tax compliance have a measurable and significant impact on individual behavior (ALM; SANCHEZ; JUAN, 1995). However, although most researchers understand that tax compliance is not only motivated by economic causes, there is still no consensus on the reasons that affect the intention to pay taxes (RANDLANE, 2016).

Table 3 - Summary of the hypotheses for using tax compliance to tackle the tax gap

- Tax compliance is challenging to observe in practice and a complex behavioral issue that requires various methods and data sources for analysis (CUMMINGS et al., 2009).
- Rules governing activities are crucial to combat different types of non-compliance by different types of taxpayers (BIRD, 2015).
- To reduce evasive behavioral responses, changing rules can have a greater impact on increasing compliance than attempting to reduce the tax gap associated with the existing tax regime (GEMMELL; HASSELDINE, 2014).
- Using plain language and simplifying tax forms and laws can reduce unintentional non-compliance (OCDE, 2010).
- The evolution of the tax gap over time depends not only on tax administration efforts but also on external factors that can affect tax compliance (DURÁN-CABRÉ et al., 2019).
- A higher risk of detection and punishment is clearly a factor in increasing tax compliance, but increased audits lead to even greater compliance (CUMMINGS et al., 2009).
- A systemic approach to tax compliance could serve as a foundation for tax authorities in developing administrative strategies (RANDLANE, 2016).
- The adoption of presumptive taxation can reduce non-compliance among small and medium-sized enterprises (LOGUE; VETTORI, 2011).
- Increased regulation of small business tax preparers and self-employed workers contributes to tax compliance (MORSE, 2009b).
- Contacts between tax authorities and taxpayers can enhance short-term compliance, preferably using evidence of evasion (SLEMROD, 2019).
- There is strong evidence that the main factors cited in the literature as determinants of tax compliance do indeed influence it (ALM; SANCHEZ; JUAN, 1995).

Source: prepared by the author.

6.3 Fiscal policy

The tax gap is often treated as a political issue, because political agents and economists

understand that reducing it is a deficit reduction strategy, and this attention goes through a cyclical period, where politicians alternately call for greater oversight and complain about the burdens the authorities impose on citizens (TODER, 2007b). A government compliance strategy based on detection and punishment may be a good foundation, but it is not enough to solve the problem, which requires a multifaceted approach that emphasizes law enforcement, as well as positive rewards for tax compliance, good governance and social obligation to pay taxes (ALM; SANCHEZ; JUAN, 1995).

On the other hand, a problem to consider is that companies are oriented towards tax optimization and the irresponsible policies of many governments do not apply enforcement so that these taxpayers comply with tax legislation, since the government itself consents, consciously or not, to tax evasion behaviors or aggressive abusive tax planning practices of companies already operating in the country (RACZKOWSKI; MRÓZ, 2018). A warning therefore arises as to the size of the theoretical tax base, especially where it is mobile between tax jurisdictions or even between taxes in the same jurisdiction, as a higher tax burden may encourage some migration to areas with a lower burden and this would result in the fact that, even with the revenue collection capacity unchanged by the tax authorities, a change in tax policy could alter the total potential tax that could be raised, altering tax gap estimates (GEMMELL; HASSELDINE, 2012).

Thus, the first task in any review or reform of the tax system should be to contextualize the tax gap by analyzing the economy as a whole, so that the observed and unobserved economy are well understood (WARREN; MCMANUS, 2007). Designing effective policies in the quest to reduce tax evasion also requires understanding the behavioral variables of the tax compliance decision (CUMMINGS, 2009). This is because the tax gap is an aggregate with very specific political objectives for a tax collector, but it is also used for a variety of political agendas. If there is a dependence on the tax gap to maintain tax regularity, it is important that this figure is as correct as possible. Knowing the composition of the tax gap and how it allows tax collectors and policymakers to evaluate measures to increase compliance (BJÖRKLUND LARSEN, 2017).

Establishing strict rules for taxpayers, such as stricter fines, is essential if high levels of compliance are to be achieved, as well as being cheap to maintain. Eligible policies include the possibility for the tax collector to influence compliance behavior, either directly, with direct interventions on specific groups, or indirectly, by altering the context in which the taxpayer operates, itself or through third parties, such as tax intermediaries or associations (OECD, 2010).

It is important to note that countries that have lower tax revenue than tax capacity, i.e. have a tax gap, occur because they have an inefficient tax collection system or procedures and because they set relatively low tax rates or tax burdens and provide a low level of public goods and services, i.e. have a relatively small government (CASTRO; CAMARILLO, 2014). Thus, when developing fiscal policy, attention must also be paid to these attributes.

An example of the impact of fiscal policy is the analysis of the fall in VAT collection in Ukraine represented by the indicator "amounts collected over GDP", which had three possible causes listed: changes in the economic structure, changes in the tax structure and changes in administrative efficiency. Once the possibilities of changes in economic and tax structures were analyzed and ruled out, the inevitable conclusion was that the explanation for the decline in VAT was due to tax administration. The indication is that VAT administration has never been strong and over time its weaknesses have been increasingly exploited by the private sector. VAT evasion, the size of the hidden economy and corruption are closely linked (BIRD; GENDRON, 2006).

Improving the efficiency of tax authorities requires concentrating efforts on improving tax compliance, reducing the administrative costs of collection and payment by taxpayers, which can be done by implementing policies that encourage voluntary compliance, prevent evasion, detect and combat fraud, enforce legislation and improve the collection of overdue taxes. These policies are interlinked and reduce the need for enforcement, and an effective enforcement policy leads to greater compliance. As a complement, the "balanced compliance strategy", which demonstrates to the community that deliberate non-compliance is not taken lightly, using as tools inspections and individual analyses similar in character to these, but which are expensive and sometimes unproductive, and thus improved processes can bring better results. As mentioned above, third-party information can increase the scope of verification activities (HAUPTMAN; HORVAT; KOREZ-VIDE, 2014).

A recurring policy is to reduce tax rates in order to reduce the tax gap. However, corporate tax evasion is unlikely to decrease in this case because the most abundant evidence is that companies go underground because of uncontrolled bureaucracy and rampant corruption, rather than because of tax rates. Thus, the evidence is that additional benefits from the fight against corruption bring significant economic gains in the form of improved tax compliance (NUR-TEGIN, 2008).

Table 4 - Summary of the hypotheses for using fiscal policy to tackle the tax gap

- Combating tax evasion requires a multifaceted approach that emphasizes law enforcement and positive incentives for tax compliance, good governance, and social responsibility for tax payment (ALM; SANCHEZ; JUAN, 1995). - Companies are oriented towards tax optimization, and the irresponsible policies of many governments do not enforce tax laws effectively to ensure compliance by these taxpayers (RACZKOWSKI; MRÓZ, 2018). - The first task in any review or reform of the tax system should be to contextualize the tax gap by analyzing the overall economy so that both observed and unobserved aspects of the economy are well understood (WARREN; MCMANUS, 2007). - Designing effective policies to narrow tax evasion requires an understanding of the behavioral variables influencing tax compliance decisions (CUMMINGS, 2009). - Knowing the composition of the tax gap allows revenue authorities and policymakers to assess measures to increase compliance (BJÖRKLUND LARSEN, 2017). - Establishing strict standards for taxpayers is essential to achieve high levels of compliance and is cost-effective to maintain (OCDE, 2010). - Improving the efficiency of tax authorities requires a focus on enhancing tax compliance, reducing administrative collection and payment costs for taxpayers. This can be achieved by implementing policies that promote voluntary compliance, prevent evasion, detect and combat fraud, enforce tax laws, and improve the collection of overdue and delinquent taxes (HAUPTMAN; HORVAT; KOREZ-VIDE, 2014). - Companies seek informality due to uncontrolled bureaucracy and rampant corruption, rather than just tax rates (NUR-TEGIN, 2008).

Source: prepared by the author.

6.4 Technology

Technological advances, which have optimized the tax administration's inspection process, have enabled a notable gain in efficiency, generating ease of processing and increased accuracy (ALM; SOLED, 2017). In the case of the IRS, for example, there has been a progressive increase in tax compliance requirements through greater transparency of reports to make evasion more difficult, improve taxpayer services, reform and simplify laws and improve information technology to detect taxpayers. Thus, in order to boost compliance, the IRS must persuade taxpayers to choose compliance because they fear punishment or because they understand their civic duty (BRANHAM, 2009).

One problem that has been worsening and contributing significantly to the tax gap is the popularization of tax havens, the name given to countries that allow favorable taxation of income invested in their banks, allowing taxpayers for decades to avoid taxing income in their home countries, even though they run the risk of punishment and criminal prosecution. However, with the increase in electronically stored bank information, tax authorities have been able to access this information in two ways: through complaints from other evading taxpayers and through hackers who, with elusive motives, make this information available in the public domain. With the global financial crisis in 2009, the G20 countries, under threat of economic

sanctions, urged many tax havens to sign bilateral treaties requiring the exchange of banking information (ALM; SOLED, 2017), thus favoring the fight against tax evasion.

Advances in technology have also contributed to an increase in electronic payments, such as the use of credit and debit cards, which results in a reduction in tax evasion. On the other hand, the increase in the use of cash, facilitated by withdrawals using ATM cards, is related to greater evasion, since the lack of traceability of payment encourages sellers to offer seductive amounts to customers, in the knowledge that it will be difficult for them to have the tax on this sale questioned by the tax authorities. Therefore, the best way to deal with this type of evasion is to adopt policies to encourage the use of cards, such as the implementation of subsidies for their use, like granting discounts based on the volume of transactions. Subsidizing broadband investments to foster e-commerce is an alternative approach to reducing this type of evasion (IMMORDINO; RUSSO, 2018).

In the case of value-added taxes (VATs), given their importance as the main source of revenue in many developing countries, the use of technology is likely to provide substantial gains, with the main tool being the verification of the purchase of one taxpayer with the sale registered by the other (BIRD; ZOLT, 2008). As mentioned above, VATs make it possible to tackle the tax gap through the use of third-party information, which can therefore be enhanced through the use of technology.

Finally, it is important to highlight the importance of using the information provided by our own reports and the possibility of cross-referencing them with third-party reports, a cross--referencing that has had its timeliness and integrity provided by technology and which brings significant gains in compliance, as mentioned.

Chart 5 - Summary of hypotheses for the use of technology to tackle the tax gap

- Technological advancements enable significant gains in processing ease and precision (ALM; SOLED, 2017).
- Technology facilitates the exchange of banking information between countries with the aim of limiting tax evasion to tax havens (ALM; SOLED, 2017).
- Encouraging policies that promote the use of cards, such as offering discounts based on transaction volume, can reduce tax evasion (IMMORDINO; RUSSO, 2018).
- Technology enables the cross-referencing of information on commercial transactions between buyers and sellers in the case of value-added taxes (BIRD; ZOLT, 2008).

Source: prepared by the author.

6.5 Tax morale

One alternative for tackling the tax gap is the development of tax morale, a term that

refers to the perception of taxpayers as citizens and their social responsibility in paying taxes. In many cases, the perception of good governance and the improvement of tax morale have a greater impact on tax compliance than the reform of tax systems (KHWAJA; IYER, 2014).

Tax compliance gains strength when taxpayers perceive a fair fiscal exchange with the state when collecting their taxes, and can increase, ceteris paribus, in cases where the services provided by the government are widely desired and the decisions that determine these services are transparent and fair (CUMMINGS et al., 2009). Injustice Perceived non-compliance can be influenced by the way taxpayers are treated by the tax collector. Neutrality and respect are important (OECD, 2010).

Tax morale, or the willingness of taxpayers to pay taxes, is maintained or increased when tax authorities treat taxpayers with respect, and the opposite is also true, i.e. when they are forced to pay tax they respond actively to try to avoid taxation. Thus, when faced with an irregularity, the tax authorities should not suspect the taxpayer's intention to deceive and impose legal sanctions, but rather give them the benefit of the doubt and investigate the reason for the error, which should contact the taxpayer informally, who will appreciate this respectful and moral treatment, collecting the tax (FELD; FREY, 2007).

The way taxes are collected can alter public trust, and this interdependence suggests that there is influence in both directions. With higher levels of trust, there is a more responsive and legitimate state, which is associated with greater tax effort and better governance in terms of performance and perception of important state institutions (IBRD, 2015). The practice of tax evasion induces an unintentional redistribution from those who respect the law to those who do not, generating unfair competition, which weakens tax morale and can lead to further evasion (HAUPTMAN; HORVAT; KOREZ-VIDE, 2014).

More efficient communication and better attention to the principles of influence could increase existing policies and proposals to encourage small businesses and the self-employed to pay their taxes. These taxpayers evade because they can easily avoid having their tax compliance questioned due to the fact that they receive most of their income in cash and are not confronted with third-party reports (MORSE, 2009b).

On the other hand, when the IRS decided to become kinder and friendlier to taxpayers, creating a hotline for those who didn't voluntarily complete their forms because they were complicated or because they didn't understand the tax obligation, the result was a collateral effect due to the corresponding decrease in inspections, caused by the reallocation of funds, since the reduction in audits decreases the amount of tax paid. balance between the risks and monetary

benefits of evasion, weighing more heavily on the side of evasion. As a result, the IRS has taken a tougher line with tougher enforcement (BRANHAM, 2009).

In cases where it finds itself in the midst of a crisis, the tax authority should emphasize increasing tax compliance based on curbing delinquency and helping taxpayers to cope with the crisis, including expanding assistance to taxpayers and improving communication and outreach programs (HAUPTMAN; HORVAT; KOREZ-VIDE, 2014).

Chart 6 - Summary of the hypotheses for using tax morale to tackle the tax gap

- Higher tax morale depends on developing the taxpayer's perception as a citizen and their social responsibility in paying taxes (KHWAJA; IYER, 2014).
- Tax compliance gains strength through increasing the perception of a fair fiscal exchange between the taxpayer and the state (CUMMINGS et al., 2009).
- Respectful treatment of taxpayers increases their willingness to pay taxes (FELD; FREY, 2007).
- The state must combat tax evasion to prevent honest taxpayers from perceiving unfair competition with evaders (HAUPTMAN; HORVAT; KOREZ-VIDE, 2014).
- More efficient communication and better adherence to the principles of influence can enhance existing policies and proposals to encourage small businesses and self-employed individuals to pay their taxes (MORSE, 2009b).
- The state should maintain more user-friendly information channels for taxpayers who have difficulty voluntarily submitting their declarations due to complexity (BRANHAM, 2009).
- During a crisis, tax authorities should emphasize increased tax compliance based on containing non-compliance and assisting taxpayers in facing the crisis (HAUPTMAN; HORVAT; KOREZ-VIDE, 2014).

Source: prepared by the author.

6.6 Supervision

Inspection, together with penalties, is cited in the literature as one of the main instruments for reducing the tax gap. It involves a thorough analysis of a taxpayer's operations to check that their tax obligations are being correctly declared, indirectly boosting voluntary compliance and directly generating the collection of additional taxes, reducing the tax gap and therefore guaranteeing the government's fiscal health and a level playing field for an honest taxpayer (GUPTA; NAGADEVARA, 2007). The guidelines for combating tax evasion state that illegal behaviour should be deterred with strict inspections and severe penalties, in order to encourage rational citizens and optimize the usefulness of contributing honestly to the tax system. their participation. The prevailing neoclassical economic view suggests that trust is good, but control is better (KIRCHLER; KOGLER; MUEHLBACHER, 2014).

It is considered to be one of the means the government has to investigate non-compliance by taxpayers and allows it to penetrate the taxpayer's private sphere to assess whether the information complies with the law. In this case, laws requiring tax disclosure by third parties also

facilitate the cross-checking of information and improve compliance analysis. The penalties assigned are intended to reinforce the requirements of the tax code, however, their enforcement is linked to the discovery of non-compliance, and enforcement is an important tool (MORSE, 2009a).

However, the success of inspection depends on the quality of the information, which in turn depends on the information collected from the taxpayer and third parties, the capacity to process the information and the strategy followed and, as technology advances, the first two factors improve (BIRD; ZOLT, 2008).

For inspection selections, information declared or from third parties, non-compliance with procedures, lack of growth, among others, are used. These criteria have the disadvantage of treating honest and dishonest taxpayers equally, as they have the same chance of selection. This system can also presuppose symptoms of non-compliance which in reality may be symptoms of other things, such as a change in the economic situation of that sector. Thus, given the volume of information available to the tax authority, the best cost-benefit option is to obtain evidence of fraudulent claims and returns from this information using data mining algorithms (GUPTA; NAGADEVARA, 2007).

It is important to consider, when planning inspections, that substantial evasion at the top of the income distribution is not detected through random inspections. It should also be considered that profits and tax liabilities are concentrated at the top, and they have their own risk preferences and relatively high audit fees, which encourage them to use advanced evasion technologies. Under the policy analysis, there is substantial evasion at the top that requires administrative resources to detect and prevent, since it is estimated that 36% of unpaid federal income taxes in the US are owed by the top 1% (GUYTON et al., 2021).

In the case of the IRS, enforcement has four main programs: inspection, cross-checking of documents, search for mathematical errors and a program to identify non-taxpayers. Enforcement generates revenue directly, by charging audit adjustments and collecting unpaid taxes, and indirectly, by increasing voluntary compliance with the perception that it is more likely to be detected. The latter effect is much greater than the former, but difficult to quantify precisely (TODER, 2007b).

In the case of taxpayers who are blatant evaders, a strong non-compliance standard may require an equally strong enforcement counter-signal, a perception confirmed even by those who believe that the ideal is the use of cooperation and punishment. Improved enforcement includes electronic systems for collating information, cooperation between the federal and state

administrations, which have relevant information on sales tax audits or other sources, better funding for audits and collections, and better selection of audits based on expanded research (MORSE, 2009b).

Given the importance of enforcement, one cannot ignore the tendency for tax authorities' budgets to shrink, and so enforcement should direct its efforts towards high-income taxpayers. This is due firstly to the fact that they have greater obligations, which means that the discrepancy between what is paid and what is owed is also greater. Secondly, they have more complex declarations and tend to accumulate income in obscure categories, where compliance is lower. And finally, because they have the resources to invest in reducing their tax liability (SARIN; SUMMERS, 2019).

In view of the above, the importance of tax gap data can be seen, but all data has limitations and needs interpretation. Therefore, inspections are suggested so that the tax authorities can identify the causes of the tax gap. A tax impact assessment evaluates the risks that arise within the tax systems themselves and can suggest ways of resolving them. This assessment is suggested to European Union countries to put in place an action plan to resolve such issues with the aim of reducing the tax gap (MURPHY, 2019).

Finally, on the other hand, it should be noted that inspections have a usurping nature and are therefore not well received by taxpayers or the economy, as they require costs for both the tax authority and the inspected party (GUPTA; NAGADEVARA, 2007). The relationship between inspections and compliance is not so simple and straightforward, and if it is based solely on deterrence, it can have major disadvantages and not result in compliance. However, tax collectors consider norms to be the most important factor in compliance and deterrence, if applied to the right extent, can support existing social norms in favor of tax compliance (OECD, 2010).

Table 7 - Summary of the hypotheses for the use of inspection in tackling the tax gap

- Authorities should deter illegal behavior through rigorous inspections and severe penalties to encourage rational citizens and optimize their utility in contributing honestly (KIRCHLER; KOGLER; MUEHLBACHER, 2014). - Inspection is an important tool for discovering non-compliance and reinforces the requirements of the tax code through penalties (MORSE, 2009a). - The success of inspections depends on the quality of the collected information, information processing capabilities, and the adopted strategy (BIRD; ZOLT, 2008). - Cost-effective planning is based on evidence of fraudulent claims and declarations using data mining algorithms (GUPTA; NAGADEVARA, 2007). - Inspection planning should consider that substantial tax evasion is concentrated at the top of the income distribution, as profits and tax liabilities are concentrated there, given their risk preferences and relatively high audit rates, which encourage the use of advanced technologies for evasion (GUYTON et al., 2021). - Inspections generate revenues directly and indirectly due to increased voluntary compliance with the perception of a higher likelihood of detection (TODER, 2007b). - Improved inspection includes electronic systems for information matching, cooperation between tax administrations, better funding for inspections and collections, and improved audit selection based on expanded research (MORSE, 2009b). - Inspections should target high-income taxpayers because they have larger obligations and resources to invest in reducing tax liability (SARIN; SUMMERS, 2019). - Inspections are suggested so that tax authorities can identify the causes of the tax gap, allowing them to assess the risks that arise within their own tax systems and suggest ways to address them (MURPHY, 2019). - Inspections are not well-received by both taxpayers and the economy, as their implementation entails costs for tax authorities and those being inspected (GUPTA; NAGADEVARA, 2007). - The relationship between inspections and compliance is not so simple and straightforward, and if based solely on deterrence, it can have significant drawbacks and may not result in compliance. However, revenue authorities consider norms to be the most important factor for compliance, and deterrence, when applied appropriately, can support existing social norms in favor of tax compliance (OCDE, 2010).

Source: prepared by the author.

6.7 Empowerment of tax authorities

For clear reasons, the tax gap can be reduced by allocating more resources to the tax authority and giving it more tools to enforce the law, such as demanding additional types of information reports and reforming and simplifying the tax law (TODER, 2007b). As already explained, the tax administration faces cost reduction challenges, and this factor should lead it to follow robust governance processes that result in efficiency gains. This can result in increased tax compliance and service delivery levels (HAUPTMAN; HORVAT; KOREZ-VIDE, 2014).

In contrast, some recent research indicates little relationship between the tax gap in European Union countries and the amount spent on tax authorities as a proportion of GDP or taxes collected. While this may seem a disappointing conclusion, in practice it implies that there may be considerable scope for improving the effective allocation of resources in many tax authorities if the data to target the allocation is available (MURPHY, 2019).

An example of this is the IRS, which has had its resources cut by 15% since 2011, impacting on the reduction of the inspection budget by 25%. Based on the budget over gross revenue, in 1993 the share of tax revenue reinvested was 0.6%, reaching 0.34% in 2019. In the collection activity, the budget reduction was 34%. This relaxation of the tax authority has made previously compliant taxpayers realize that there are substantial gains and little cost in non-compliance. However, if the tax authority were empowered through increased resources for inspection, improved information on returns and greater investment in IT, there could be an additional collection of at least 15% of the tax gap expected for the decade between 2020 and 2029, a tax gap estimated at US$7.5 trillion (SARIN, SUMMERS, 2019).

To tackle the international tax gap, some measures on a bipartisan basis could help. The first is for the tax authority to prioritize and receive more resources to audit taxpayers' compliance, requiring them to report bank accounts and shares in foreign companies. Another way is for countries to exchange information bilaterally, which today only exists for criminal matters, although there have been changes to the OECD income tax treaty to solve these problems, and the information will now be sent automatically and no longer on request. In the case of the US, it should cooperate with the OECD and other international and regional organizations to improve the exchange of information and persuade tax havens to enter into bilateral agreements. In addition, the following should be adopted incentives and punishments for tax havens in order to encourage the exchange of information (GUTTENTAG; AVI-YONA, 2006).

An example of the importance of empowering tax authorities is their ability to change personal and social norms, which are considered the most important drivers of compliance, although this ability requires a lot of experience. The abandonment of the analysis of performance indicators is met with great reluctance by agencies, which should be involved in long-term strategies for outcome measures (compliance levels) and permanently influencing taxpayers' behavior. This is the case with messages that other taxpayers have acted in a certain way, which can influence those who have not yet done so (OECD, 2010).

Chart 8 - Summary of the hypotheses for empowering tax authorities to tackle the tax gap

- The tax gap can be reduced by allocating more resources to tax authorities, providing them with additional tools to enforce compliance with the law, and reforming and simplifying tax legislation (TODER, 2007b).
- Tax administration, facing cost constraints, should be guided to follow robust governance processes that result in efficiency gains, potentially leading to increased tax compliance and service delivery levels (HAUPTMAN; HORVAT; KOREZ-VIDE, 2014).
- There is little relationship between the tax gap of European Union countries and the amount spent on tax authorities as a proportion of GDP or taxes collected. However, in practice, this suggests that there may be considerable room to improve the effective allocation of resources in many tax authorities if data for directing allocation are available (MURPHY, 2019).
- Empowering tax authorities through increased resources for enforcement, improved information from declarations, and greater investments in information technology can result in higher tax collection (SARIN; SUMMERS, 2019).
- To address international tax gaps, tax authorities should be a priority and receive more resources to audit taxpayer compliance, requiring them to report foreign bank accounts and holdings in foreign companies (GUTTENTAG; AVI-YONA, 2006).
- Empowering tax authorities has the potential to alter personal and social norms, the most important drivers of compliance, although this capability requires a lot of experience (OCDE, 2010).

Source: prepared by the author.

7. FUTURE OF THE TAX GAP

The most important debate in the coming years about the shape of the tax system will be about ways of minimizing the tax gap. The issue is that tax evasion is an illusory concept, which is not reported to the tax authorities and not identified by statisticians when measuring productive economic activity. In addition, the sources of the tax gap are varied and complex, and also vary according to the type of tax and jurisdiction (WARREN; MCMANUS, 2007).

Even so, the expectation is that there will be a reduction in the tax gap, mainly due to three factors: the ubiquity of electronic means of payment or the use of cards, reducing the main driver of tax disparities which was the use of banknotes; the use of third-party information associated with the use of technology to cross-check information, and; in the case of employees, the globalization of markets has generated a workforce dynamic where a large number of taxpayers work for large companies, rather than smaller companies where individual compliance is usually low (ALM; SOLED, 2017). Even if the expectation is to reduce the tax gap based on technology and the cross-checking of information, which are ways of combating the tax gap, the use of technology for evasion cannot be ruled out, considering the existence of taxpayers with a profile of constantly looking for opportunities.

To put numbers to the tax gap projection, as mentioned above, between 2020 and 2029, the IRS estimates that around US$7.5 trillion will not be collected in the US alone. The IRS aspires that this situation can be partially reversed by 15% of this total, which would generate

additional revenue of approximately US\$1 trillion by carrying out more inspections, improving returns and investing in IT (SARIN; SUMMERS, 2019). Although the use of enforcement can be effective in combating the tax gap, consideration must be given to the government's fiscal policy, which is increasingly reducing the budgets of tax authorities, reducing their empowerment.

A possible reduction in the tax gap would tend to reverse the effects of the loss of tax revenue and, consequently, the inefficiency of resource allocations and inequalities in the tax burden. In this way, the tax authority would continue to monitor taxpayers' compliance behavior, maintaining its supervisory role, but with adaptations to allocate its resources to more productive areas, since it must be considered that, intentionally or not, some taxpayers pay less than they should, and the tax gap will always be a permanent element of the system, since the incentives for evasion are strong (ALM; SOLED, 2017).

As has been pointed out, the main strategy of the tax authorities historically to require taxpayers to remain compliant was the threat of enforcement. Nowadays, there are several other tools resulting from technology that allow for more stratified samples for a variety of controls and surveys that provide estimates of citizens' tax practices, issues that seem to strengthen compliance (BJÖRKLUND LARSEN, 2017). In addition, the other ways of tackling the tax gap also make a strong contribution to increasing compliance. However, it is known that their implementation takes place gradually, and not all of them are always applicable. The tax authority should present the government with a timetable for implementation with the options that have the greatest impact on taxpayers.

As mentioned, technological advances will change the economic environment in which the government seeks to increase revenue, making it easier to tax people and transactions, especially in developing countries, where electronic payment methods will encourage transactions from the informal to the formal economy. It should be noted, on the other hand, that technology also makes it difficult to tax certain transactions, such as the tracking of goods in digitalized form traded between countries, or foreign service providers without a physical presence, such as lawyers, accountants and consultants (BIRD; ZOLT, 2008). It therefore remains to be seen whether total digitization is necessary, or whether in some respects maintaining procedures without digitization would be favorable to the authorities, inhibiting possible evasions that would be favored by the procedure.

Even with the possibility of difficulty in taxation in some cases due to technology, the general and dominant trend is that technology will improve the government's ability to access

better information, resulting in the design of better systems and policies, increasing the ability to collect taxes. Tax evasion will be much more difficult for individuals with income based on salaries, interest, dividends and capital gains since these transactions leave an electronic trail and are subject to both withholding and third-party reporting. This scenario favors multinational companies, high-income individuals and independent contractors, who can bet on new forms of evasion, while also relying on their political power to take disproportionate advantage of any technological changes (ALM, 2021).

It should also be noted that by developing and improving tax compliance estimates and making them available to the public, there will be greater transparency and, with it, discussion of the evidence that economic transformations such as the digital age bring. Even though estimating the tax gap is only one of the components of reviewing tax policy in response to the digital age, it has the potential to indicate how tax relates to aspects of the economic and social well-being of a country and its citizens. (WARREN, 2019). The effects of tax gap estimates on countries that calculate and publish them regularly, compared to those that do not, need to be analyzed.

Given the increasingly limited resources allocated to tax authorities, they must be careful to achieve maximum taxpayer compliance, with minimal intrusion and costs. In this way, the use of appropriate planning and inspection strategies are key factors in the successful detection of fraud and evasion (GUPTA; NAGADEVARA, 2007).

Despite the above, more studies need to be developed to explore the psychological, social and moral influences on compliance, which still has a relevant discrepancy between the economic model and the real world. The dynamic and complex institutional framework of ancillary obligations should also be better analyzed, including for example how the form of a bureaucratic system affects tax compliance and the importance of various forms of interaction between the tax administration and taxpayers (ALM; SANCHEZ; JUAN, 1995).

8. FINAL CONSIDERATIONS

This study sought to carry out an analysis of scientific production on estimates for calculating the tax gap and the alternatives for tackling it, and its compilation sets it apart from other studies on the subject. Given its intrinsic role in the tax collection system, the quest to improve the estimate is a continuous challenge, considering that the tax environment is highly dynamic, both due to legal changes and various other variables, such as legal loopholes, changes in go-

vernment and dislike of the administration, as well as the most complex variable for prediction, which is taxpayer behavior. Added to these variables is the peculiarity of the methodology used to calculate the estimate for each taxing entity, as well as for each type of tax, i.e. the calculation methodology used in one entity is not necessarily used in another, due to the tax system in place and the aggregate data available.

The methodologies presented in the literature corroborate precisely this aspect of the multiplicity of calculations, even though the classification of the type of calculation is only two: bottom-up or top-down. A calculation with a hybrid characteristic, which includes as many of the two classifications as possible, would present more reliable data and would probably be closer to the real thing. In this case, information from aggregate data and inspections would be used, resulting in fewer limitations and more robust results. What the literature shows, however, is that there is still a need for more in-depth study of the basic concepts for efficient estimation.

However, the result of the analysis of the literature shows that quantifying the tax gap is only the initial step, since once its proportion is known, it is necessary to develop and use strategies and policies to tackle it, the main ones of which have been listed in this paper. With regard to the options for tackling the tax gap, the results show that the literature has been concerned with observing the causes and developing alternatives to the traditional forms of combating tax evasion, based on penalties and inspections, options that have been explored since the seminal work by Allingham and Sandmo (1972).

Among the options for tackling the problem, it is important to note that, unlike those traditionally applied, there is a need for behavioral or cultural changes, both by the taxpayer and the government, which would require observation of the results over the medium or long term. Exceptions to this are the cases of technology and the use of third-party information, which were applied gradually several years ago and their results have already been observed and collected, but which also required a long period of time to mature.

Tax gap analysis has the potential to bring greater transparency to the impact intended with the spirit of the law compared to what has been achieved with the letter of the law, having the ability to highlight possible revenue from what is not known, understood or appreciated, such as the impact of collection on taxpayer behavior and policy formulation failures (WARREN, 2019).

The result of this work encourages researchers to develop new studies that help to mature the methodology for calculating the tax gap, as well as new options for combating it, so that the reduction of the gap is accompanied by sustainable compliance and can provide greater tax

equity, as well as increasing the social benefits arising from the increase in tax collection. It is suggested that future research examine the result of the tax effort and the coping alternatives implemented and add new elements about their impact on the tax gap and tax compliance.

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