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# Potential VAT and the VAT Gap

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## Parliamentary Budget Office

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## Parliamentary Budget Office

Macroeconomic Analysis and Tax Policy Unit

# Potential VAT and the VAT Gap

January 2018

**About the research publication:** *The research publication series aims to present the main results of theoretical and empirical research on pressing issues, as well as introducing international experience. Moreover, this series presents PBO's independent research on issues within its discretion.*

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## Executive Summary

The Parliamentary Budget Office's (PBO) given publication aims to estimate potential value-added tax (VAT) and the VAT gap (difference between potential and actual revenues) in Georgia.

A tax gap, by simple definition, is the difference between maximum theoretically collectable and actual tax receipts. Since it is impossible to have an ideally effective tax system, the existence of a tax gap is inevitable. Nevertheless, due to the importance of tax revenues, tax gap minimization is a major goal of the state.

The tax gap itself can be decomposed into several parts. The most important classification for this publication involves decomposing the tax gap into policy and compliance gaps. Specifically:

- **The policy gap** arises because of tax revenue deviation from its potential that results from government policy comprising tax exemptions, reliefs and zero-rates (in case of VAT). Estimating the policy gap requires determining the deviation of maximum theoretically collectable receipts under existing legislation from maximum potential receipts that could have been collected had no tax exemptions, reliefs, etc. been imposed.
- **The compliance gap** implies intentional and unintentional violation of the existing tax legislation by taxpayers. To calculate the compliance gap, maximum theoretically collectable receipts under existing legislation should be compared to actual receipts.

This publication utilizes the macroeconomic, top-down approach for evaluating the VAT gap and its above-mentioned components, estimating the variables of interest using total GDP as the base, combined with individual sector data from national accounts. The analyzing period consists of 10 years, from 2007 including 2016. In further detail:

- Our first goal is to determine potential VAT, for which we estimate potential VAT base using data from national accounts, as well as the tax code. Applying the 18% tax rate to the base allows us to calculate potential VAT with respect to existing legislation (also calculated with respect to maximum economic potential). This potential VAT grew continuously in the analyzing period (average growth – 7.2%) and made up GEL 3.9 billion in 2016 (GEL 2.1 billion in 2007).
- Our second goal is to select actual VAT so that the chosen indicator reflects the formation and collection of tax liabilities in the reporting year as accurately as possible. To calculate this indicator, we add VAT paid on imports to net payable VAT, which is calculated as the difference between payable and reducible VAT declared for the corresponding year<sup>1</sup>. In 2007-2015 average growth of actual VAT made up 5.3%, while in 2016 it increased by GEL 1 billion at once and reached GEL 3.3 billion (GEL 1.6 billion in 2007). This jump in

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<sup>1</sup> VAT paid in fact on territory encompasses past payments and those to be returned. Moreover, as evident after the treasury code reform, it comprised payments to be redirected to other types of tax (it should be noted that declared VAT always exceeded paid VAT on territory). For the purposes of this research, only the reporting year's corresponding payments are important, and the moment when the liability arises, as opposed to that of actual payment.

actual VAT was predominantly caused by an increase in VAT paid on imports, while net VAT payable on territory remained largely unchanged. As per PBO assessment, this might have been caused by the treasury code reform, which resulted in more accurate accounting and, thus, provides a clearer picture of tax flows. Precise assessment of this issue will be possible by analyzing dynamics of the following years.

- After calculating potential and actual VAT, we move on to the main part of the research, which entails estimating the **VAT gap**.

The results of this research show that the 1<sup>st</sup> part of the analyzing period (2007-2010) was characterized by a declining VAT gap, whereas in the 2<sup>nd</sup> part (after 2011) the gap increased substantially. **The VAT gap dynamics was driven by the compliance gap, while the policy gap remained largely stable.** In 2016 actual VAT increased markedly, which caused the gap to instantly decline. **If this trend persists, the policy gap will be established as the main component of the VAT gap in the coming years.**

Overall, in 2007-2016:

- Average VAT gap was 21.2% (11% in 2016);
- Compliance gap on average totaled 26.1% (13.8% in 2016);
- Average policy gap reached 18.6% (20.6% in 2016).

As for other indicators, **C-efficiency** (aka VRR, coverage of maximum potential VAT) was 60.2% in 2007-2016, while **the total gap to GDP ratio** amounted to 6.9% on average (5.3% in 2016).

Comparing the results to other countries, considering that not many countries have systematic experience in estimating tax gaps, it is suitable to weigh the indicators up to those of EU countries. **As of 2014, the compliance gap of Georgia was better than that of three countries in the EU.** As for latest data, if we compare our 2016 indicators to those of EU in 2014 (latest available for EU), **Georgia's gap was better than that of twelve EU countries, as well as the average EU gap** (higher than France's and lower than Portugal's).

**In general, it should be noted that, taking available data and methodology specifics into consideration, it is desirable to focus analysis on the gap trend and not absolute values, while any interpretation should take into account a substantial degree of uncertainty in estimating the gap.** PBO plans to update the research in the following years and will present the latest estimates of potential VAT and the VAT gap periodically.

# 1. Introduction

Taxes are one of the main instruments for accumulating financial resources necessary for government functioning, redistributing income and influencing the behavior of economic agents. In 2015 EU tax revenues, including social contributions, reached 40% of the union's GDP and 89% of total government revenues<sup>2</sup>, while excluding social contributions – 20.3% of GDP<sup>3</sup>. For comparison, in the same year the consolidated budget tax revenues of Georgia made up 27.7% of the country's GDP and 90.8% of overall government revenues<sup>4</sup>.

Despite the importance of taxes for the state, **the taxpayer, as an individual, strives to minimize the tax burden**, which, combined with other independent issues, results in the creation of a tax gap (difference between potential and actual revenues).

The goal of this research publication is to estimate the VAT gap and its trend, considering that VAT is the paramount component of Georgia's tax revenues. The publication utilizes the macroeconomic, top-down method, which involves estimating the theoretical VAT base on the basis of national accounts components and calculating its deviation from actual values.

The following chapters introduce and review the essence and estimation methods of tax gaps and, in particular, the VAT gap, as well as the research methodology and subsequent results for Georgia.

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<sup>2</sup> Eurostat.

<sup>3</sup> World Bank.

<sup>4</sup> Geostat, Ministry of Finance of Georgia.

## 2. Essence and Classification of the Tax Gap

The tax gap, by simple definition, is the difference between maximum theoretically collectable and actual tax revenues. Since it is impossible to have an ideally effective tax system, the existence of a tax gap is inevitable. Nevertheless, due to the importance of tax revenues, tax gap minimization is a major goal of the state.

The tax gap itself can be decomposed into several parts. The most important classification for this publication involves decomposing the tax gap into policy and compliance gaps. Specifically:

- **The policy gap** arises because of tax revenue deviation from its potential that results from government policy comprising tax exemptions, reliefs and zero-rates (in case of VAT). Estimating the policy gap requires determining the deviation of maximum theoretically collectable receipts under existing legislation from maximum potential receipts that could have been collected had no tax exemptions, reliefs, etc. been imposed.
- **The compliance gap** implies intentional and unintentional violation of the existing tax legislation by taxpayers. To calculate the compliance gap, maximum theoretically collectable receipts under existing legislation should be compared to actual collected revenue.

This classification is also utilized by the International Monetary Fund (IMF), which focuses on the VAT gap and employs its own Revenue Administration – Gap Analysis Program (RA-GAP) model for gap calculation purposes (Hutton, 2017). According to the model, the tax gap can be divided into two main components: compliance and policy gaps (Figure 1)<sup>5</sup>.

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<sup>5</sup> The IMF RA-GAP model allows for further diving the compliance and policy gaps. Namely, the compliance gap can be decomposed into assessment and collection gaps, while the policy gap – into expenditure and efficiency gaps. These gaps are defined on the following page.

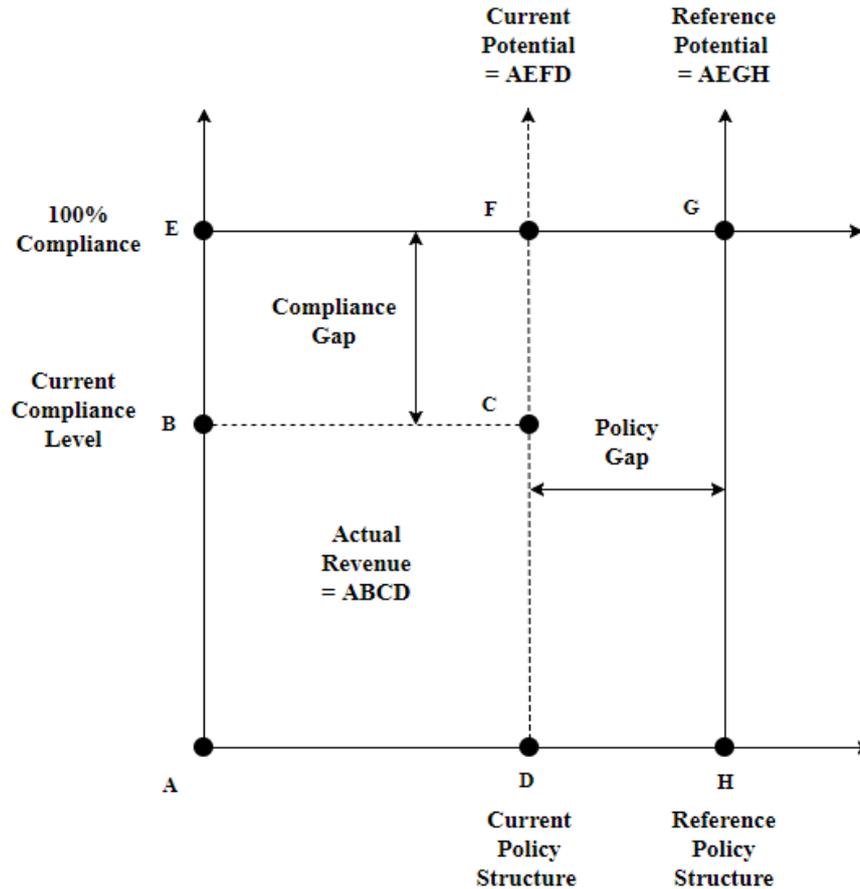


Figure 1: Tax Gap Components. Source: IMF.

As evident from Figure 1, the tax gap arises as a result of deviation from 100% compliance level and the reference policy structure:

- Overall tax gap = reference potential revenue – actual revenue (AEGH – ABCD);
- Compliance gap = current potential – actual revenue (AEFD – ABCD);
- Policy gap = overall tax gap – compliance gap, or reference potential – current potential (AEGH – AEFD).

It should be noted whilst representing the policy gap in this way that, in parallel with closing the policy gap, we expect a creation of the compliance gap in a new area. Namely, getting closer to the reference policy structure ( $AD \rightarrow AH$ ) will result in higher tax revenues, but the growth will not be the same size as the decline in the policy gap, since taxpayers, deliberately and inadvertently, will violate new components of the legislation too. As the size of this potential compliance gap is unknown, it is not desirable to extend line BC till line GH (compliance level associated with new policy structure might be different from that associated with the old policy structure), which is why the illustration of the policy gap on Figure 1 assumes 100% compliance. This asymmetry between gaps should be noted when interpreting the results, as, for example, amending tax legislation will affect both gaps, while increasing administration efficiency will have an impact on the compliance gap only (Keen, 2013).

**Apart from the aforementioned, the tax gap can be decomposed into other, similarly interesting components (Tax Gap Project Group, 2016). Namely, we can define:**

- Assessment (difference between theoretically collectable and assessed tax) and collection (difference between assessed and actually collected tax) gaps;
- Expenditure (forgone revenues to achieve specific policy objectives) and efficiency (forgone revenues because of pragmatic reasons with respect to collection) gaps;
- Gross (without late and enforced payments) and net (including late and enforced payments) gaps.

According to the US Internal Revenue Service (IRS) classification, the gross gap by itself comprises the non-filing (not filing the tax return), underreporting (filing the tax return, but underreporting tax owed) and underpayment (filing the tax return, but not paying tax due on time) gaps (Toder, 2007).

### 3. VAT Dynamics and Gap

#### 3.1 VAT and Its Dynamics

**Value-added tax (VAT) is a national consumption tax that arises in the process of selling goods and services on country territory.** Any economic activity linked with supplying goods and services is taxable under VAT, unless exempted as per government decision.

VAT is calculated incrementally, based on value added on each stage of production. The tax is collected from the goods and services supplier, but the tax burden is shifted to the final consumer, who pays it as part of the price. Therefore, VAT is an indirect consumption tax. However, in practice the economic burden of VAT might also be partly shifted to the supplier. Despite the design of VAT, which targets consumption and consumers as taxable base, its efficiency, similar to any tax, is determined not only by the tax system, but also by market conditions, such as elasticity of demand and types of competition (OECD, 2016).

**Throughout the past 50 years the volume, spread and share in GDP of VAT have increased substantially across the world, and today VAT amounts to 1/5<sup>th</sup> of tax revenues<sup>6</sup> (Figure 2).** The number of those countries that utilize VAT exceeds 160 and comprises all members of OECD with the exception of USA, which prefers the sales tax model<sup>7</sup>. VAT revenues play a significant role in all abovementioned countries, irrespective of their development levels. What's more, VAT revenues to GDP ratio has been growing since 1993 and showcases a convergence trend among countries with different levels of development: for countries with higher than average income, the VAT revenues to GDP ratio has been converging to that of high income countries; countries with lower than average income have approximately same-sized indicators, while in low income countries VAT revenues have increased two times since mid-90s, albeit lagging behind those of aforementioned countries (Keen, 2013).

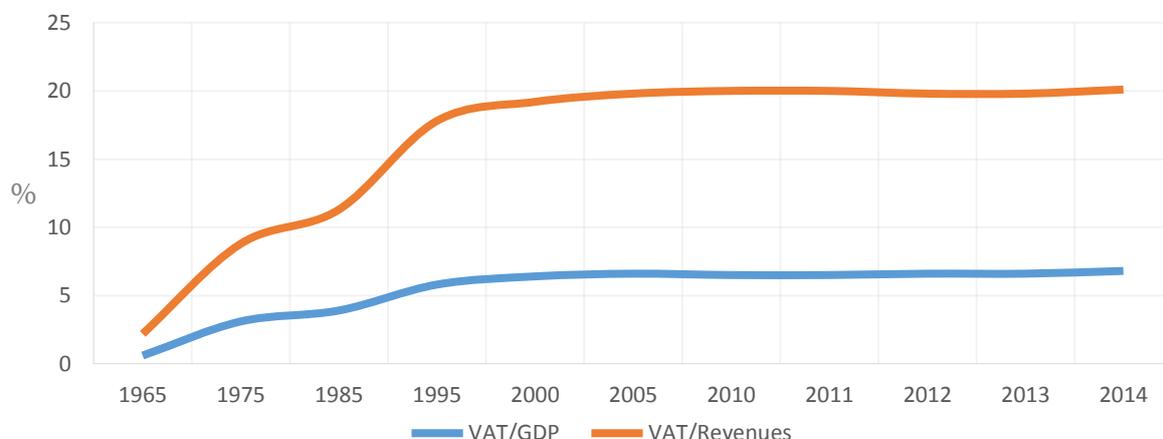


Figure 2: VAT Dynamics (OECD Average). Source: OECD.

<sup>6</sup> OECD, Consumption Tax Trends.

<sup>7</sup> OECD.

Georgia is no exception from these trends. VAT is one of the country's five national taxes and its rate constitutes 18% of taxable turnover or imports<sup>8</sup>. VAT revenues form the largest part of tax revenues; moreover, VAT volume and ratio to GDP exhibit upwards trends.

As evident from Figure 3, in 2016, compared to 2002, VAT revenues had increased 8 times and amounted to GEL 3.29 billion. For comparison, VAT receipts were 66.1% higher than the next largest item, income tax receipts (GEL 1.98 billion). In the same period, VAT to GDP ratio reached 9.7% (5.4% in 2002). In 2016 VAT share in the consolidated budget gross revenues totaled 34% (35.4% in 2002), while the share in tax revenues reached 37.4% (43.8% in 2002). As for 2015, VAT revenues amounted to GEL 3.5 billion (99.4% of plan), VAT revenues to GDP ratio - 11%, while the share in the consolidated budget gross revenues and tax revenues - respectively, 39.1% and 43.8%<sup>9</sup>.

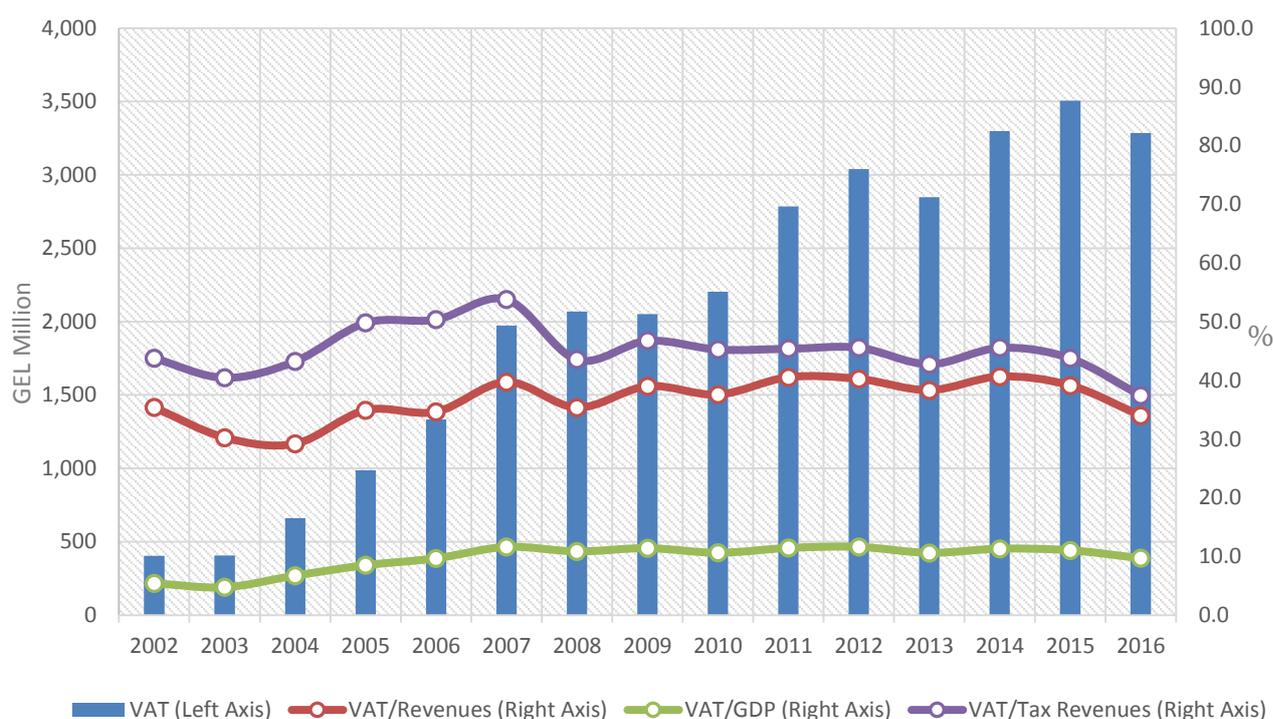


Figure 3: VAT Revenue and Trends (Georgia). Source: Geostat, Ministry of Finance of Georgia.

### 3.2 VAT Gap

Overall potential VAT revenues comprise two main parts:

1. Actual revenues, which can be divided into four subgroups depending on the causes of payment (Institute for Financial Policy, 2012):

<sup>8</sup> Tax Code of Georgia.

<sup>9</sup> The YoY dynamics of VAT in 2016, as per PBO assessment, might be linked to the impact of the treasury code reform on different distribution of tax revenues (based on declarations) with respect to tax types.

- Voluntary effect – taxpayers voluntarily declare and pay liabilities. Voluntary payments are collected even in the absence of a tax administrator;
- Preventive effect – taxpayers, considering threat from the tax administrator/audit activities, voluntarily declare and pay liabilities. Payments collected thanks to the preventive effect are received because of fear of sanctions and are a result of the mere existence of a tax administrator, without its active operations;
- Basic tax control effect – this part of tax revenues is collected as a result of basic control from a tax administrator, which includes checking tax return forms, controlling formal aspects, etc.;
- Comprehensive tax control effect – this part of tax revenues is collected by virtue of tax audit conducted by a tax administrator and, in part, encompasses the preventive effect.

2. Potential revenues, which can be divided into three subgroups:

- Collection loss – declared but non-paid liabilities;
- Identification loss – non-declared and, thus, non-paid liabilities;
- Government policy loss – forgoing potential receipts as a result of government decision.

Since VAT is an indirect tax, its gap is calculated using the macroeconomic<sup>10</sup>, top-down method<sup>11</sup>. The macroeconomic method, on its own, consists of two approaches<sup>12</sup>:

1. Estimating the gap using supply-use and/or input-output tables;
2. Estimating the gap using GDP components.

**The 1<sup>st</sup> approach** implies analyzing national accounts data on sector level and calculating deviation between potential and actual revenues independently for each sector. The VAT base is calculated for individual sectors, and then further specified according to different components. This approach entails classifying final sector expenditures with respect to tax rates (taking standard and reduced rates into account is necessary to calculate the tax base) and summing them up to get the general picture. The VAT base is formed by several types of expenditures, out of which final household consumption is the most significant one. According to this method, the tax base comprises final consumption of VAT-paying sectors and intermediate consumption of those sectors exempted from VAT. The components are:

- Final household consumption;
- Final consumption (subject to VAT and not repayable) of non-profit institutions serving households (NPISH);
- Government final consumption (subject to VAT and not repayable);
- Intermediate consumption of VAT-exempted sectors and gross fixed capital formation.

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<sup>10</sup> See Annex 2.

<sup>11</sup> UK HM Revenue and Customs (HMRC) estimates the VAT gap with the bottom-up approach as well, but its purpose is only ensuring data consistency and filling the general picture, so it's not published.

<sup>12</sup> Despite the fact that, in theory, both approaches should yield the same results, this is usually not the case due to imperfect data.

The next step involves correcting the calculated value according to remaining components (e.g. repayable tax and exemptions) and determining its deviation from net VAT receipts (corrected for timing effects), which allows for estimating the gap (HMRC, 2016).

**As for the 2<sup>nd</sup> approach**, it is based on selecting the tax base as a generalized indicator and subsequent removal of irrelevant components, as opposed to building the base step-by-step. Most useful for this approach is GDP, which is a conveniently available indicator measuring value added in the economy.

This approach utilizes aggregate demand data and is based on the basic identity of national accounts, which defines output (value added):

$$Y = C + I + G + X - M \quad (1),$$

Where Y is the difference between gross output and intermediate consumption (O – N), i.e. value added. Considering this and rearranging the terms:

$$C = O - N - I - G - X + M \quad (2),$$

From which we can see that, to estimate the base, the aggregate demand approach isolates final consumption, given on the left side of the equation, equaling the value added approach, given on the right hand side (Hutton, 2017).

After correcting the base (including, for example, according to exempted sectors and the turnover threshold) the figure is compared to actual VAT receipts, and the gap is calculated.

In order to illustrate why it is necessary to further amend final consumption data, an algebraic illustration is useful (IMF, 1996). In case of no VAT exemptions and zero-rates, the VAT base and final consumption in the economy are equal. Deviations arise when the government, due to political or administrative reasons, creates tax reliefs. Total sales in the economy are equal to:

$$S = C + I + X + IS \quad (3),$$

Where IS stands for intermediate sales. Investment under VAT is classified as intermediate consumption (of capital goods), while exports are zero-rated. Therefore, I and X do not enter the equation for calculating the VAT base. However, tax paid on taxable goods purchased by VAT exempted sectors is not repayable, which is why part of intermediate sales remain in the base.

**In any case, be it summing up the components or removing extra elements from a generalized indicator, the most important decision for estimating the VAT gap concerns precise definition of the VAT base.** Since the top-down method, which is used to estimate the VAT gap and which is employed in this publication as well, relies on national accounts data, it is crucial to identify the common and distinctive elements between final consumption data in national accounts and the relevant base for VAT.

- Final consumption data in the national accounts and the theoretical VAT base differ with respect to various aspects, which necessitates some transformation before estimating the

gap. Namely, national accounts data includes several elements that are not taxable under the VAT regime and does not include several elements that should enter the tax base. For example, national accounts final consumption data does not contain housing expenditure (it's part of gross fixed capital formation) which should enter the VAT base, and contains government wage expenses, which is not taxed under VAT.

- Moreover, it is crucial to identify the exact elements of final consumption that should be treated as the VAT base. Several researchers define the tax base as only household final consumption (Alm & El-Ganainy, 2012), while others – as overall final consumption of households, government, and NPISHs (CASE, 2013). Since the target base for VAT is overall final consumption and tax liabilities arise from government and NPISH economic activities as well, we choose the wide definition of the VAT base, which should be noted when interpreting the results. This base is then further corrected for economic and legislation purposes.
- Apart from estimating the potential VAT base, caution is necessary when treating actual VAT receipts too. Actual revenues constitute collected receipts during the fiscal year, but these receipts usually contain liabilities from previous years, while the current year liabilities are collected in the following periods. The possibility of repaying receipts (e.g. to exporters) should also be considered, and this combination signals the need to account for timing effects (Keen, 2013).

**After estimating the VAT base, it is possible to calculate C-efficiency, which is defined as:**

$$E^c = \frac{V}{\tau_s C} \quad (4),$$

Where **V** stands for actual receipts,  $\tau_s$  – standard rate of VAT, and **C** – final consumption (VAT base). Formulating VAT revenue in this way allows for distinguishing its 3 major driving factors: standard rate, C-efficiency, and propensity to consume, out of which the most important element affecting revenues is C-efficiency. However, as with estimating the base, caution is needed when interpreting C-efficiency, since increasing it to 100% does not necessarily mean improving the system (Keen, 2013).

C-efficiency, the concept of which originates from an IMF paper in 2001, is one of the most widespread methods of analyzing the VAT gap and is annually calculated for member countries by OECD which calls it VAT Revenue Ratio (VRR)<sup>13</sup>. C-efficiency (VRR) is useful for creating the general picture and comparing data for the VAT gap, after which it is possible to decompose the gap into several components.

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<sup>13</sup> OECD, Consumption Tax Trends.

## 4. VAT Gap in Georgia

PBO estimates the VAT gap in Georgia using the top-down method, GDP approach, although elements of the 2<sup>nd</sup> approach are also utilized<sup>14</sup>. The analyzing period comprises ten years (2007-2016) and is based on national accounts (for potential VAT estimation) and VAT declarations (for actual VAT calculation) data. It should be noted that the accuracy of research significantly depends on national accounts data quality and size of deviation between preliminary and adjusted values, which could result in major discrepancies.

In order to calculate the VAT base, we take GDP (value-added, in basic prices) and add those elements that remain outside GDP but are taxed under VAT, while subtracting those that enter GDP but are non-taxable (Table 1). After correcting GDP with respect to external trade, investments and government expenditures, we observe that our derived final consumption indicators are different from those in the national accounts data, underlying the necessity of correcting the tax base vis-à-vis these components. Moving on, we take into account exempted sector data and estimate the potential VAT base.

GEL Million	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>GDP (Y)</b>	14,611	16,522	15,546	18,014	20,975	22,505	23,335	25,096	27,468	29,217
<b>External Adjustment (NX)</b>	6,649	7,163	5,583	6,343	8,240	9,379	8,504	10,136	11,564	12,262
<b>Investment Adjustment (I)</b>	-3,133	-3,458	-769	-2,632	-4,088	-5,089	-4,405	-5,976	-6,600	-7,783
<b>Government Expenditure Adjustment (G)</b>	-1,351	-1,630	-1,416	-1,382	-1,511	-1,594	-1,558	-1,636	-1,680	-1,752
<b>Consumption (C=Y+NX-I-G)</b>	16,777	18,597	18,944	20,343	23,616	25,201	25,876	27,619	30,752	31,944
<b>Consumption Adjustment (C')</b>	-3,086	-3,690	-3,423	-3,684	-4,022	-4,326	-4,628	-5,318	-6,113	-6,572
<b>VAT Base (B)</b>	13,691	14,906	15,521	16,659	19,594	20,875	21,248	22,301	24,639	25,373
<b>VAT Base (W/O VAT)</b>	11,602	12,633	13,154	14,118	16,605	17,691	18,006	18,900	20,881	21,502

Table 1: Estimating the VAT Base in Georgia. Source: PBO Calculations.

It should be noted that the VAT base<sup>15</sup> corresponds with the existing policy structure, i.e. existing tax legislation. On the other hand, final consumption (C) corresponds with the reference policy structure, i.e. C would have been the VAT base had no tax reliefs been present in the legislation. Therefore, the consumption adjustment (C') provision reflects the potential base reduction due to government tax policy. After estimating the VAT bases, we can move on to estimating potential

<sup>14</sup> See Annex 1.

<sup>15</sup> When mentioning the term, it is assumed that VAT has been removed from the base.

and actual VAT, as well as the gaps. Potential VAT is calculated by applying the 18% standard rate to the respective tax bases of both policy structures.

As for actual VAT, for our research purposes, we choose **actually declared VAT** during the corresponding year, instead of VAT paid in fact, since VAT paid comprises liabilities from the previous periods, as well as future repayable receipts. To determine actual VAT, we calculate the difference between overall VAT payable and reducible on territory during the year (**net VAT payable**), and add **VAT paid on imports**. Representing actual VAT like this allows us to a maximal extent to take into account payments associated with solely the corresponding year, as well as the moment in time when liabilities arise, instead of that when payments are made. As evident after the treasury code reform, VAT paid in fact on territory, along with past and future payments, also comprised sums that should have been diverted towards other types of taxes (it should be noted that VAT paid in fact on territory always greatly exceeded VAT declared on territory).

Table 1 shows that in 2007-2016 both GDP and the VAT base had been increasing significantly and, by 2016, had reached almost twice the size compared to 2007. Average nominal growth of GDP made up 8.2% in the reporting period, while growth of the VAT base was 7.2%. It's noteworthy that in 2009 GDP declined by 5.9% YoY, but the VAT base still grew by 4.1%.

As evident from Table 2, potential VAT corresponding to both types of policy structure exhibited a clear upwards trend. Average growth totaled 7.5% for potential VAT corresponding with reference policy structure, slightly higher than that of potential VAT corresponding with the current policy structure (7.2% as mentioned above).

As for actual VAT dynamics, in this case the trend was not so clear. Average growth of actual VAT in 2007-2015 was lower than that of potential VAT and made up 5.3%, while if we include the 2016 value which is an extreme outlier (YoY growth – 42.4%), average growth reached 9.4%.

GEL Million	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>A. Potential VAT (Reference Policy Structure)</b>	2,559	2,837	2,890	3,103	3,603	3,844	3,947	4,213	4,691	4,873
<b>B. Potential VAT (Current Policy Structure)</b>	2,088	2,274	2,368	2,541	2,989	3,184	3,241	3,402	3,759	3,870
<b>C. Actual VAT</b>	1,565	1,756	1,810	2,023	2,259	2,273	2,261	2,248	2,342	3,336
<b>VAT Gap (B-C)/A</b>	20.5%	18.3%	19.3%	16.7%	20.3%	23.7%	24.8%	27.4%	30.2%	11.0%
<b>Compliance Gap (B-C)/B</b>	25.1%	22.8%	23.5%	20.4%	24.4%	28.6%	30.3%	33.9%	37.7%	13.8%
<b>Policy Gap (A-B)/A</b>	18.4%	19.8%	18.1%	18.1%	17.0%	17.2%	17.9%	19.3%	19.9%	20.6%
<b>C-efficiency C/A</b>	61.1%	61.9%	62.6%	65.2%	62.7%	59.1%	57.3%	53.4%	49.9%	68.5%

Table 2: Potential VAT and the VAT gap in Georgia. Source: PBO Calculations.

It should be noted that, in 2016, the jump in actual VAT was mainly caused by a 44% increase in VAT paid on imports, while VAT net payable on territory remained largely stable. Moreover, VAT paid in fact on territory, which always exceeded VAT net payable before, declined two times. According to PBO assessment, a possible cause of this is the treasury code reform, which resulted in the convergence of VAT paid and VAT net payable on territory, since the distribution of taxes with respect to types is now done according to taxpayer declarations (if this transfer of sums between components has no significant effect on VAT paid in fact (total VAT paid is the sum of VAT paid on imports and territory, so remains unchanged), it substantially alters our actual VAT (as it comprises VAT net payable on territory (independent from this change) and VAT paid on imports (increased as a result of this change)). Subsequently, we don't expect the 2016 dynamics to be a one-off outlier but rather a structural change, which can be more precisely assessed by observing the following years.

The substantial rise of actual VAT in 2016 significantly affected the efficiency indicators (except the policy gap which does not involve actual VAT). It should be noted that 2016 was the 1<sup>st</sup> year in the reporting period when VAT net payable (difference between overall payable and reducible VAT) was almost equal to VAT paid in fact (collected in fact on territory).

After estimating the potential and actual VAT, we can move on to calculating various efficiency indicators of VAT collection. Table 2 contains data about the VAT, compliance and policy gaps, together with C-efficiency. The gaps are calculated according to IMF recommended methodology (Hutton, 2017):

$$VAT\ Gap = \frac{Potential\ VAT\ (Current\ Structure) - Actual\ VAT}{Potential\ VAT\ (Reference\ Structure)} \quad (5),$$

$$Compliance\ Gap = \frac{Potential\ VAT\ (Current\ Structure) - Actual\ VAT}{Potential\ VAT\ (Current\ Structure)} \quad (6),$$

$$Policy\ Gap = \frac{Potential\ VAT\ (Reference\ Str.) - Potential\ VAT\ (Current\ Str.)}{Potential\ VAT\ (Reference\ Structure)} \quad (7),$$

While C-efficiency (*Error! Reference source not found.*), calculates the share of actual VAT in potential VAT (reference structure), in order to assess the coverage level of the tax base.

To analyze the VAT gaps and C-efficiency, a graphical illustration is helpful (Figure 4):

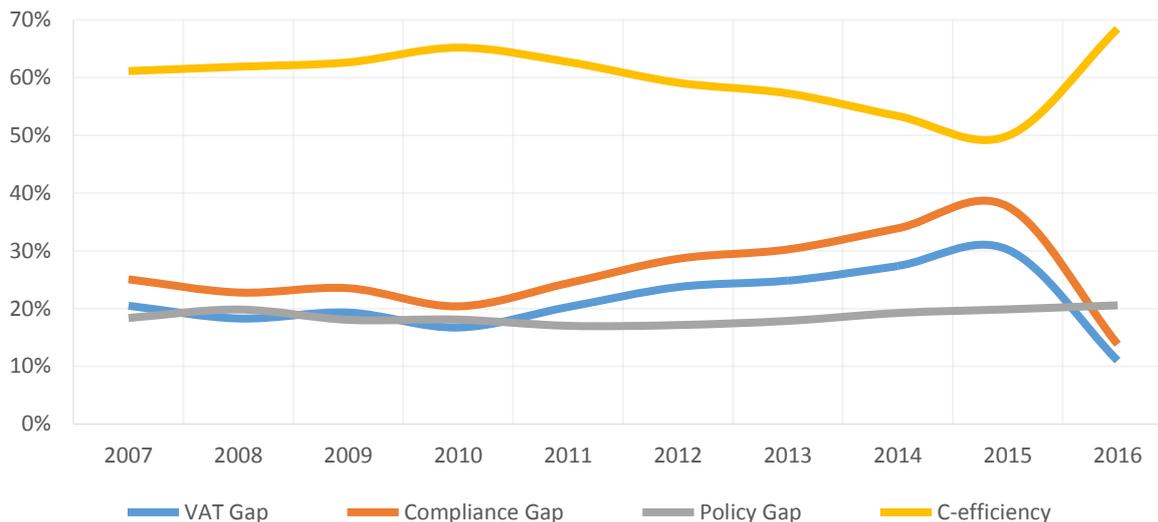


Figure 4: VAT Efficiency Indicators. Source: PBO Calculations.

#### Analysis reveals the following trends:

**The overall VAT gap** exhibited a downwards trend in the beginning of the reporting period and in 2010 had declined by 3.9 percentage points (pp) compared to 2007. Since 2011, the gap switched to a clear upwards trend and exceeded 30% in 2015, 9.7 pp higher compared to the period beginning. **However, in 2016, as seen above, the gap declined sharply as a result of a jump in actual VAT and reached 11%, which is the lowest value in the analyzing period.**

The VAT gap trend was driven by the **compliance gap**, which also reached its minimum (except 2016) in 2010 (20.4%, decline compared to 2007 – 4.7 pp), and its maximum – in 2015 (37.7%, increase compared to 2007 – 12.6 pp, compared to 2010 – 17.3 pp). In 2016 the compliance gap declined even more abruptly than the overall gap and totaled 13.8%, which is also its lowest value in the analyzing period.

As for the **policy gap**, it was largely stable in the reporting period. The policy gap fell to its minimum in 2011 (17%), after which it had a slight increasing trend and reached its maximum in 2016 (20.6%, increase compared to 2007 – 2.2 pp).

In parallel with the declining VAT gap, **C-efficiency** was growing in the beginning of the reporting period, and declined with the growing gap, falling slightly below 50% in 2015 (decline compared to 2007 – 11.2 pp). In 2016, as a result of the gap's sharp decline, C-efficiency reached its maximum – 68.5%.

**Overall, in 2007-2015 the average VAT gap was 22.4% (21.2% including the 2016 value), the average compliance gap – 27.4% (26.1% including the 2016 value), while C-efficiency – 59.3% (60.2% including the 2016 value). In the reporting period, the policy gap made up 18.6% on average.**

Observing the dynamics of the VAT gap and its components, we can divide the analyzing period into two parts: 2007-2010 and since 2011:

- From 2007 including 2010, the declining trend of VAT and compliance gaps was driven by fast growth of actual VAT. Whilst during these four years actual VAT was growing on average by 9%, average growth of potential VAT (both types of policy structure) was 6.7%. Actual VAT growth was high in 2011 too (12%), but this time it was lower than that of potential VATs (17.6% and 16.1%). During 2012-2015 actual VAT growth declined, while potential VAT continued to grow (5.9% and 6.9%), which resulted in gap widening<sup>16</sup>. After 2016, with the gap's substantial decline, we can assume the beginning of a 3<sup>rd</sup> part in the analyzing period, which might allow us to make more precise estimations in the following years.
- As for the policy gap, throughout the reporting period potential VAT corresponding to both types of policy structure was growing by essentially the same amount (7.5% and 7.2%); hence, the policy gap only slightly fluctuated.

GEL Million	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
VAT Gap (A-C)	995	1,081	1,079	1,080	1,343	1,571	1,687	1,965	2,349	1,537
Compliance Gap (B-C)	524	518	557	518	730	912	981	1,154	1,417	535
Policy Gap (A-B)	471	563	522	562	614	660	706	811	933	1,002
VAT Gap/GDP	6.8%	6.5%	6.9%	6.0%	6.4%	7.0%	7.2%	7.8%	8.6%	5.3%

Table 3: VAT Gap (Absolute) and Share in GDP. Source: PBO Calculations.

As for the VAT gap in **absolute terms** (Table 3), the gap remained stable in the beginning of the reporting period, then grew steadily before 2016 (2.4 times higher in 2015 compared to 2007), and in 2016, as a consequence of the actual VAT jump, declined to GEL 1.5 billion. A similar trend was observed with respect to the compliance gap, which had increased 2.7 times in 2015 compared to 2007, and also fell sharply in 2016. As for the policy gap, it exhibited an upwards trend in the reporting period, reaching its maximum in 2016 (2.1 times higher compared to 2007). This can be interpreted as evidence that during these 10 years VAT exempt sectors had been growing significantly<sup>17</sup>.

During 2007-2010 compliance and policy gaps held basically equal shares in the overall gap, while from 2011, as a consequence of fast growth of the compliance gap, its share was also increasing steadily and exceeded 60% in 2015, followed by a fall to 35% in 2016 (Figure 5).

<sup>16</sup> As mentioned above, this might have been caused by incorrect accounting, which involves paying on territory VAT that was due on imports and then claiming it.

<sup>17</sup> The policy gap, which is the difference between potential VATs corresponding with current and reference policy structures, is also known as a widespread measure of tax collection efficiency: tax expenditure. Aggregate estimation of the policy gap allows us to estimate tax expenditure as a whole, since the sum of individual tax expenditures might not be equal to the policy gap, which is caused by intersection among exempt sectors (Hutton, 2017).

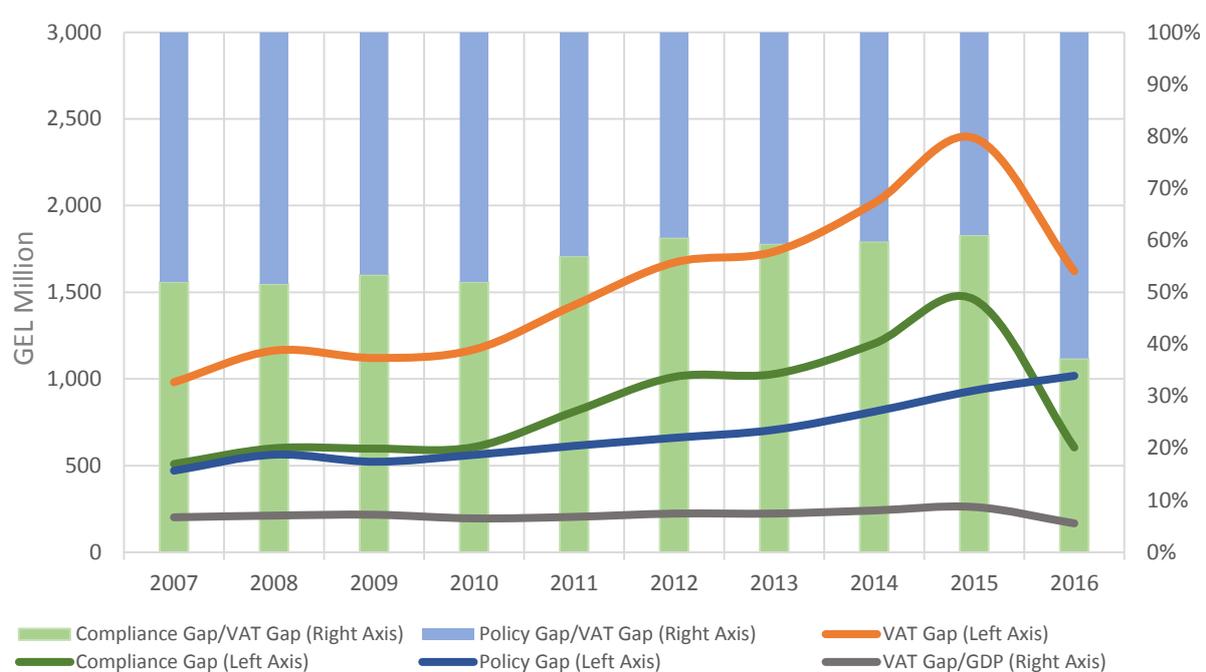


Figure 5: VAT Gap Components and Share in GDP. Source: PBO Calculations.

Following an initial decline, an upwards trend was observed in case of **VAT gap to GDP ratio** as well, reaching 8.6% in 2015 (1.8 pp higher compared to 2007), but falling to 5.3% in 2016. Average share of the gap in GDP was 7% in 2007-2015, and 6.9% including the 2016 value.

For comparison, it is interesting to also estimate the VAT gap with respect to VAT paid in fact (instead of actual VAT). As mentioned above, VAT paid in fact comprises both past payments and future repayments, which is why it was significantly larger than actual VAT throughout the reporting period (except 2016, when declared and paid VAT converged for the 1<sup>st</sup> time). Subsequently, the gap was also substantially smaller. Namely, considering VAT paid in fact, the VAT gap in the reporting period was 7.1% on average, reaching maximum value in 2016 (12%). The average compliance gap was 8.8% (maximum in 2016 – 15.1%), while the average policy gap – 18.6% (maximum in 2016 – 20.6%). In the same period, C-efficiency was 74.3% on average (minimum in 2016 – 67.4%).

Comparing the results to other countries, considering that not many countries have systematic experience in estimating tax gaps, it is suitable to weigh the indicators up to those of EU countries, where tax gap indicators are regularly calculated (mainly for VAT). **It should be noted that these countries consider the compliance gap as the VAT gap**<sup>18</sup>. As evident from Figure 6, in 2014, Georgia had a lower gap than 3 EU countries: Romania, Latvia and Malta, and a slightly larger one than that of Slovakia. **If we compare Georgia’s gap in 2016 (13.8%) to that of EU countries in 2014 (latest available data for EU), it is lower than the EU average (14.1%)<sup>19</sup> and is almost equal to that of France and Portugal (see Annex 3 for detailed information).**

<sup>18</sup> See Annex 3.

<sup>19</sup> EU countries without Cyprus and Croatia.

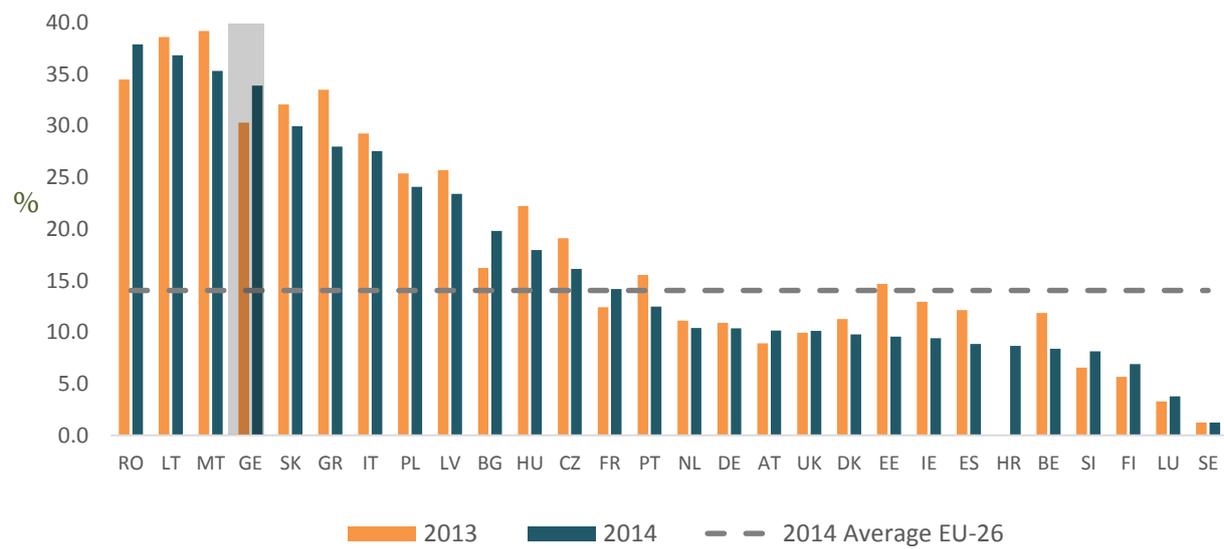


Figure 6: VAT Gap in EU Countries. Source: CASE. (2016) Study and Reports on the VAT Gap in the EU-28 Member States, PBO Calculations.

## Annex 1. PBO Methodology

Due to our research purposes and data availability, we estimate Georgia's VAT gap using the top-down method, GDP approach. Therefore, this publication estimates the tax base by the consumption approach (aka demand based approach), which is utilized, for example, by EU countries, as opposed to the output based approach (aka supply or value added approach), which is employed by the IMF RA-GAP model (Tax Gap Project Group, 2016).

The research methodology also comprises elements of the 2<sup>nd</sup> approach of the top-down method, which involves individual analysis of sectors with help of supply-use tables. These tables do not contain critically important information about gross fixed capital formation according to sectors (only the gross value is reported), which is why it's not possible to estimate the VAT gap with this approach. However, the tables provide information about final and intermediate consumption of VAT exempt sectors, which we use to further adjust and improve the GDP approach. Therefore, the research combines parts of both approaches.

The research is based on the assumption that national accounts data is precise, comparable and all-inclusive (including the shadow economy).

### **GDP (Y, Basic Prices) = Value Added**

#### **1. External Adjustment (NX, Only Goods Trade)**

1.1 Imports (+)

1.2 Exports (-)

#### **2. Investment Adjustment (I)**

2.1 Gross Fixed Capital Formation (-)

2.2 Change in Inventories (-)

2.3 Housing Costs (+)

2.4 Acquisition of Non-Financial Assets (+)

2.5 Capital Expenditures, Other Expenditures (+)

2.6 Non-Claimed Private Investments (+)

#### **3. Government Expenditure Adjustment (G)**

3.1 Public Administration, Value Added (-)

3.2 Public Expenditure, Intermediate Consumption (+)

### **Consumption (C = Y + NX - I - G)**

#### **4. Consumption Adjustment with respect to Exempt Sectors**

4.1 Agriculture, Value Added, w/o Forestry And Fishing (-)

4.2 Households as Employees of Domestic Staff, Value Added (-)

4.3 Financial Intermediation, Value Added (-)

4.4 Healthcare, Value Added (-)

4.5 Education, Value Added (-)

4.6 Tourism, Value Added (-)

4.7 Shipping ,Value Added (-)

4.8 Intermediate Consumption Of Exempt Sectors (+)

4.9 Passenger Cars, Net Imports (-)

4.10 Pharmaceuticals, Net Imports (-)

4.11 Value Added Of Enterprises With Turnover Under Gel 100,000 (-)

5. VAT Base (Including VAT)

6. VAT Base (Excluding VAT)

7. Potential VAT

**1.1 Imports (+)** – import is added to the tax base, because it is taxed under VAT according to place of consumption.

**1.2 Exports (-)** – export is subtracted from the base, as it is zero-rated under VAT.

**2.1 Gross fixed capital formation (-)** – capital formation, i.e. investment, is subtracted from the base, since it is exempt from VAT (intermediate consumption of capital goods).

**2.2 Change in inventories (-)** – change in inventories, which makes up gross capital formation with gross fixed capital formation, is subtracted from the base, as it is not taxed under VAT.

**2.3 Housing costs (+)** – housing costs are added to the base, since private owners, individuals, cannot declare them as capital expenditures to be claimed.

**2.4 Acquisition of non-financial assets (+)** – acquisition of non-financial assets is added to the base, since the government, which is not a taxpayer, cannot claim capital expenditures either.

**2.5 Capital expenditures, other expenditures (+)** – capital expenditures are added to the base, since the government, which is not a taxpayer, cannot claim capital expenditures either.

**2.6 Non-claimed private investments (+)** – non-claimed private investments are added to the base. This is assessed to make up 15% of overall investment and is based on a PBO estimate that takes into account business sector statistics, which is used to estimate the share of small (exempt from VAT) enterprises, and supply-use tables, from which we estimate the average share of VAT exempt sector investments in total investments (**PBO estimate**).

**3.1 Public administration, value added (-)** – public administration expenditures are subtracted from the base, since the government does not pay VAT.

**3.2 Public administration, intermediate consumption (+)** – public administration intermediate consumption is added to the base, since the government does not pay VAT and, thus, cannot claim VAT that is paid when purchasing taxable products and will be left unaccounted for otherwise.

**4.1 Agriculture, value added, w/o forestry and fishing (-)** – the exempt sector added value is subtracted from the base.

**4.2 Households as employees of domestic staff, value added (-)** - the exempt sector added value is subtracted from the base.

**4.3 Financial intermediation, value added (-)** - the exempt sector added value is subtracted from the base.

**4.4 Healthcare, value added (-)** - the exempt sector added value is subtracted from the base.

**4.5 Education, value added (-)** – 90% of the exempt sector added value is subtracted from the base, since, despite the fact that the sector is exempt from VAT, we consider non-accredited institutions and training or seminar activities, which are taxed under VAT (**PBO estimate**).

**4.6 Tourism, value added (-)** – 90% of value added of the sector “activities of travel agents and tour operators; tourist assistance activities” is subtracted from the base, since tour operators are exempt from VAT, but we also consider instances of reselling and domestic tourism services, which are taxed under VAT (**PBO estimate**).

**4.7 Shipping, value added (-)** – 80% of value added of the sector “other land transport; sea and coastal water transport”, 100% of “air transport”, 80% of “cargo handling and storage” and 20% of “other supporting transport activities” is subtracted from the base, since international shipping is exempt from VAT (**PBO estimate**).

**4.8 Intermediate consumption of exempt sectors (+)** – intermediate consumption of exempt sectors that cannot claim VAT is added to the base (with respective shares), since it is taxed under VAT (**PBO estimate**).

**4.9 Passenger cars, net imports (-)** – passenger car net imports are subtracted from the base, since initially we should subtract the VAT exempt product value from imports.

**4.10 Pharmaceuticals, net imports (-)** – pharmaceutical good (sum of codes 3003, 3003 and 3006 in the “Commodity Nomenclature for External Economic Activities”) net imports are subtracted from the base, since initially we should subtract the VAT exempt product value from imports.

**4.11 Value added of enterprises with turnover under GEL 100,000 (-)** – value added of enterprises with turnover under GEL 100,000 is subtracted from the base, since it is exempt from VAT and is estimated to be 5% of gross value added, based on small enterprise turnover data; we also consider that enterprises below the threshold voluntarily register as VAT payers for different reasons and, subsequently, take 2/3 of this 5% (**PBO estimate**).

Following these operations, we derive the potential VAT base, from which we calculate potential VAT.

Potential VAT can be compared to different indicators of actual VAT and we can calculate various types of gaps.

## Annex 2. Gap Estimation Methods

2 main methods are used for tax gap estimation: **top-down** (macroeconomic) and **bottom-up** (microeconomic). The macroeconomic method is based on calculating potential receipts using national accounts data and estimating their deviation from actual values, while the microeconomic method relies on randomly selecting individual taxpayers and analyzing their behavior. The gap can also be calculated by econometric methods, but results greatly depend on initial assumptions and data quality, while estimating the gap itself is hindered by interpretation difficulties (Hutton, 2017).

Both methods have their advantages and disadvantages. Usually, the macroeconomic method provides less information about taxpayer behavior, significantly depends on national accounts assumptions and is very sensitive towards data updates, while the microeconomic method is less inclusive and more expensive, with the sampling error probability high.

The top-down method is especially useful for calculating indirect tax gaps, because it provides comprehensive estimates and is based on independent national accounts data. The tax gap is calculated by subtracting collected revenues from the base. This method is used to calculate VAT and excise gaps, by applying respective rates to consumption data.

The top-down method is inconvenient for calculating direct tax gaps, since independent sources providing information about incomes and assets are insufficiently inclusive and detailed to calculate a trustworthy value of the tax base. Therefore, for direct taxes, the bottom-up method is preferred. The tax gap components, based on internal sources, are estimated individually for consumer groups and noncompliance types (HMRC, 2012).

The underlying assumption of the top-down method is that the chosen data source (usually national accounts) covers the whole tax base, which is convenient for research and allows for getting a relatively fast, aggregate and less resource-intensive estimate. Consequently, the level of preciseness significantly depends on *national accounts data quality*, including shadow (unobserved) economy estimates, which is a crucial component of the gap, and on *the size of deviation between adjusted and preliminary data*, which can result in substantial differences.

The bottom-up method, on the contrary, uses various sources and constructs the tax base step by step, according to components, which provides useful operating data. The gap components are estimated individually, with respect to taxpayers and deviation types, while the source of data is usually the tax administrator. After estimating the respective components, the results are spread over the population using the extrapolation method (Tax Gap Project Group, 2016).

Both methods contain a significant degree of uncertainty. This mainly concerns the top-down method, since it subtracts a large number (collected receipts) from a large number (tax payable) in order to get a small number (gap). A small gap, compared to its relative size, is characterized by a high degree of uncertainty (HMRC, 2011). Uncertainty is a problem for the bottom-up method

too, since it is based of several different sources and, subsequently, faces high risk with respect to their degree of preciseness and reliability.

In the best case, of course, the gap is calculated combining both methods, but due to human and financial resource constraints, difficulties with regard to obtaining and processing data, as well as other factors, this is usually not possible.

It should also be considered that estimating the tax gap relies on estimating potential tax revenues, which, taking into account the degree of inaccuracy and incompleteness of data, constitutes a significant barrier. Both the macroeconomic and microeconomic methods of estimating the theoretical tax base contain deviations in both positive and negative directions. Since defining the sampling error is impossible and there is no reason for these deviations to balance each other out, interpreting the results and making conclusions needs significant caution. **It is desirable for the analysis to focus on the gap trend and not absolute values, while any interpretation should take into account a substantial degree of uncertainty.**

If the gap is not driven by some exogenous factors, its trend will be informative and useful for analyzing the general picture. On the other hand, caution is necessary when interpreting the trend as well, since the technique of estimating statistical data varies and it is not always possible to reestimate the past years using updated techniques (Toder, 2007).

## Annex 3. VAT Gap Estimation Experience

VAT plays a significant role in EU revenues and constitutes one of the main sources of financing the union's budget, which is why investigating its effectiveness holds special importance in the EU. Several member countries estimate the gap annually. Apart from independent estimations, as per requests of the European Commission, the gap is calculated on EU level as well.

According to the EU decision, "in order to pool and exchange information and experience on the different methodologies of tax gap estimations, a project group was established by experts of those Member States which have a practice in calculating a tax gap"<sup>20</sup>. This group (Tax Gap Project Group) consists of 15 member countries and focuses research on the VAT gap. Out of these 15 countries, the VAT gap is estimated regularly in 12, which significantly exceeds the number of direct tax gap estimations (income tax – 4 countries, corporate income tax – 3 countries, social contributions – 3 countries, all 4 types of tax – only UK)<sup>21</sup>.

At the European Commission's request, in 2009 Reckon conducted research for the time period 2000-2006 concerning the EU VAT gap estimation and analysis, which became a basis for other research projects afterwards. As stated in the paper, it is impossible to calculate the VAT gap using the bottom-up approach because of scarce information from tax administrators about VAT fraud, confidentiality of data and methods, and the potential sampling error (Reckon, 2009).

The top-down method allows for gap estimation, but, as mentioned above, this method is characterized by an absence of detailed information, which is why the contribution of individual sectors, goods, services or producers in creating the gap cannot be determined. The most important challenge with respect to preciseness is data quality, the level of coverage of taxable activities by national accounts data and the degree of data accuracy.

According to the research methodology, the net theoretical VAT liability (VAT base) is calculated using the following components: households, NPISHs and government final consumption; intermediate expenditure on exempt goods and services; gross fixed capital formation and change in inventories. The data source is the member countries' supply and use tables.

Reckon research shows that in 2000-2005 the VAT gap in EU countries was growing in absolute terms (from EUR 90.9 billion to EUR 113.3 billion), but fell in 2006 (EUR 106.7 billion). As for the gap share in the theoretical base, in 2000-2005 it remained stable at 13-14%, falling to 12% in 2006. It should be noted that no common trends were revealed among countries.

As of 2006:

- The highest VAT gap was observed in Greece, where actual receipts were 30% lower than potential (EUR 6.56 billion). Next were Slovakia with 28% (EUR 1.31 billion), Hungary – 23% (EUR 2.07 billion), and 22% each for Italy (EUR 26.34 billion), Lithuania (EUR 510 million), and Latvia (EUR 378 million). The gap was no larger than 3% in Luxembourg

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<sup>20</sup> EU Commission, register of expert groups and other similar organizations.

<sup>21</sup> TGPG survey.

(1%, EUR 20 million), Spain (2%, EUR 1.42 billion), Ireland (2%, EUR 241 million), Sweden (3%, EUR 807 million), and the Netherlands (3%, EUR 1.38 billion).

- The largest gap in absolute value was that of the UK (EUR 26.98 billion, 17%), Italy (EUR 26.34 billion, 22%), Germany (EUR 16.87 billion, 10%), France (EUR 9.8 billion, 7%) and Greece (EUR 6.56 billion, 30%).
- With respect to theoretical VAT base, Germany was 1<sup>st</sup> (EUR 164.12 billion, gap – 10%). Next were UK (EUR 155.7 billion, gap – 17%), France (EUR 140.82 billion, gap – 7%), Italy (EUR 119.2 billion, gap – 22%) and Spain (EUR 63.01 billion, gap – 2%).

Another important research conducted at the request of the European Commission belongs to CASE (Center for Social and Economic Research), which estimated the VAT gap for 2000-2011 in a 2013 publication and then periodically updated data, releasing estimates up to 2014 in 2016. Similarly with Reckon, CASE used the top-down method, while the research methodology is also largely the same. As evident from the initial research (CASE, 2013):

- During 2000-2008 average VAT gap had a downwards trend, especially in new EU member countries, but the discrepancy between countries remained large and significant improvement in countries with the largest gaps was not observed. After the 2008 economic crisis, despite increasing the tax rates, VAT gap grew on average.
- In 2001-2011 the largest gap was observed in Romania, where actual revenues were 42% smaller than potential (5.4% of GDP). Other largest gaps were found in Lithuania (35% of the base, 3.9% of GDP), Greece (30% of the base, 3% of GDP), Slovakia (29% of the base, 2.9% of GDP), Italy (26% of the base, 2.1% of GDP) and Hungary (26% of the base, 3% of GDP). On average, the EU VAT gap was 17% of the base and 1.6% of GDP in the reporting period.
- The main driver of the VAT gap was policy decisions. Namely, if the average VAT gap was 17%, the policy gap made up 36% and was significantly larger than the compliance gap in almost all countries<sup>22</sup>.

**As for latest data** (CASE, 2016):

- In 2014 actual VAT receipts were 14.06% lower than potential. The reduction of the gap was mainly driven by higher compliance.
- The largest gap was observed in Romania (37.9%), Lithuania (36.8%) and Malta (35.3%), while the lowest – in Sweden (1.2%), Luxembourg (3.8%) and Finland (6.9%). The median gap was 10.4%.
- The policy gap was significantly larger, reaching 43.8% on average. Out of the total, 5.3% was caused by differentiated tax rates, while 38.5% was a result of forgone revenues arising from tax exemptions.

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<sup>22</sup> It is important to note that both Reckon and CASE consider the compliance gap as the VAT gap. Therefore, when presenting the results of these research projects, the VAT and compliance gaps are considered to be the same (unless specifically mentioned).

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