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Estimating Value Added Tax Gap in Uzbekistan

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ABSTRACT

The **subject** of the paper is to study of the theoretical literature on evaluate the effectiveness of the value added tax (VAT) mechanism, and identification of criteria for the analysis of the VAT mechanism. The **purpose** of the paper is to investigate methods for evaluating the effectiveness of VAT mechanism and, on that basis, to evaluate the VAT gap in Uzbekistan and the factors influencing it. The **importance** of the paper is confirmed by the significant contribution of the tax to the sufficiency and stability of budget revenue in countries with consumption tax mechanisms. A mathematical **approach** based on the C-efficiency (Collection efficiency) ratio is used to calculate the VAT gap. This model evaluates the discrepancy between actual VAT income and the maximum amount of tax revenue that could be obtained by taxing all (and only) final consumer spending in the economy. The **novelty** of the paper is justified by adaptation of model to the specification of VAT structure of Uzbekistan and recent data to estimate VAT gap. The **research concluded** that Uzbekistan's VAT mechanism is twice as inefficient as its ideal mechanism. Estimates for 2016 and 2020 indicate that on average a quarter of potential VAT revenue is not collected due to Compliance Gap, while Policy Gap is responsible for over a third of the ideal loss of VAT revenue. In order to improve compliance, it is recommended to optimize the collection and control systems in addition to policy modifications that include reforms of tax objects, subjects, rates, incentives, and other tax elements.

Keywords: VAT; tax gap; tax evasion; value added; consumption; VAT mechanism

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ОРИГИНАЛЬНАЯ СТАТЬЯ

Оценка недополучения налога на добавленную стоимость в Узбекистане

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АННОТАЦИЯ

Предметом исследования является изучение теоретической литературы по оценке эффективности механизма налога на добавленную стоимость (НДС), а также выявление критериев анализа механизма НДС. **Цель** научной работы — исследовать методы оценки эффективности механизма НДС и на этой основе оценить недобор НДС в Узбекистане и факторы, влияющие на него. Важность исследования подтверждается значительным вкладом данного налога в достаточность и стабильность бюджетных доходов в странах с механизмом налога на потребление. Для расчета недобора НДС используется математический подход, основанный на коэффициенте C-efficiency (Collection efficiency). Данная модель оценивает несоответствие между фактическими поступлениями НДС и максимальной суммой налоговых поступлений, которую можно было бы получить, облагая налогом все (и только) конечные потребительские расходы в экономике. Новизна исследования обоснована адаптацией модели к спецификации структуры НДС в Узбекистане и последними данными для оценки разрыва НДС. В результате исследования сделан **вывод,** что механизм НДС в Узбекистане в два раза неэффективнее идеального механизма. Оценки показывают, что в период с 2016 по 2020 г. в среднем четверть потенциального дохода от НДС не собирается из-за разрыва в соблюдении требований (Compliance Gap), в то время как разрыв в политике (Policy Gap) ответственен за более чем треть идеальной потери дохода от НДС. Для повышения уровня соответствия рекомендуется оптимизировать системы сбора и контроля в дополнение к модификации политики, включающей реформы объектов налогообложения, субъектов, ставок, стимулов и других элементов налогообложения.

***Ключевые слова*:** НДС; налоговый разрыв; уклонение от уплаты налогов; добавленная стоимость; потребление; механизм НДС

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INTRODUCTION

In the context of international tax competition, policymakers are becoming increasingly difficult target their fiscal policy simultaneously to increase budget revenue around the world and attract foreign direct investment without prejudice integrity of the tax system or taxpayer confidence on the fairness of tax system. To achieve these policy objectives, first of all, it is necessary to modernize tax system based on fundamental principles of economic theories and the scientific foundations of taxation. Secondly, governments are required to ensure high collection efficiency of tax mechanisms by improving tax administration.

To this end, it is indispensable for governments to assure major taxes, that contribute a significant share of budget revenue, to have well-designed mechanism and enforcement strategies. Despite having different tax systems, most of the countries rely on indirect taxes, especially the value added tax (VAT), to raise sufficient and stable budget revenue.

Since its first introduction in the 1950s in France VAT has become one of the world's the most dominant revenue generators in less than a century [1]. VAT`s role as a "money machine" in raising revenue for government expenditure and its neutrality have made it an attractive mechanism for taxing consumption [2]. This is evidenced by the fact that VAT has been adopted in more than 160 countries and accounts for on average 20 percent of total tax revenues of these countries. Besides, VAT also has a crucial role in tackling the shadow economy. It is one of the most effective tax mechanisms in taxing the informal sector indirectly [3]. The effectiveness of the VAT mechanism in this regard depends primarily on the extent to which it captures each stage of value chain in the economy and its collection capability.

In Uzbekistan VAT was introduced in 1992, instead of the turnover tax that was in force at that time. Despite the fact that VAT continues to play a substantial fiscal role, accounting for almost a quarter of overall tax collections, studies have shown that Uzbekistan's current VAT system is the relatively complex, multilayered, and underdeveloped [4].

Given that the government of Uzbekistan has been implementing large-scale economic reforms in recent years, maintaining sufficient budget revenue has become more vital than ever. In this regard, improving the collection efficiency of VAT is of utmost importance which, in turn, depends on the compliance and policy issues.

Thus, in this research, it would be primarily to estimate the VAT compliance gap, by identifying gaps in its mechanism, and provide possible policy recommendations to mitigate the compliance gap of the VAT in Uzbekistan.

LITERATURE REVIEW

Efficiency of the VAT is determined by its ability to accomplish its functions both theoretically and practically. A well-functioning VAT system is characterized by its consumption-oriented approach, comprehensiveness, and multifunctionality, which allows VAT to be levied at all stages of the production chain [5]. In this perspective, L. Ebrill et al. [5] assert that the ideal VAT mechanism is achieved only when the entire tax base (final consumption) is taxed at a single rate.

One of the diagnostic tools that enables evaluating VAT mechanism by considering aforementioned aspects is the C-efficiency (Collection efficiency ratio) indicator. The concept of C-efficiency of VAT was first used in the study of L. Ebrill et al. [5]. M. Keen [6] conducted a detailed scientific study and modeled this indicator by interpreting C-efficiency as an indicator of deviation of the current VAT mechanism from the ideal mechanism. In other words, C-efficiency is based on assessing the difference between actual VAT revenue and the ideal tax revenue that can be collected by taxing all (and only) final consumption expenditures in the economy at a single tax rate. This indicator reveals the shortcomings of the VAT mechanism by dividing it into policy and compliance gaps, allowing analysis of the factors of the VAT efficiency as a whole.

- The policy gap here reflects the extent to which the current VAT system deviates from the ideal VAT mechanism, which taxes only final consumption costs (without any incentives and with VAT recovered on intermediate use of goods) at a single tax rate.
- The compliance gap represents the imperfect enforcement of the current VAT mechanism as a result of the tax administration`s insufficient control capability and low tax morale.

M. Keen [6] provides a mathematical illustration of C-efficiency (E^C) by compliance gap (Γ) and policy gap (P) as follows:

$$E^C = (1-\Gamma)\times(1-P). \quad (1)$$

As for M. Keen [6] this indicator should ideally be equal to 1 coefficient or 100 percent if all compliance and policy gaps eliminated.

However, in the most developing countries including Uzbekistan, even if policy is ideal the imperfect implementation of tax legislation and taxpayer compliance issues deters revenue agencies from collecting all potential tax liability imposed by

law. This, consecutively, leads to expansion of not only a compliance gap but also policy gap as well. In this regard, this research focuses primarily on estimating compliance gap and its factors to analyse VAT efficiency of Uzbekistan.

In order to understand and evaluate compliance in Uzbekistan, it is important first to set a clear definition of tax compliance.

According to R. Bruno [7] it is a matter of imperfect enforcement of tax law, the tax authority's structural architecture, taxpayer ethics, and tax morale, or a complicated combination of these factors. All of this leads to tax gaps which are the common indicator of the tax evasion. In this context, tax noncompliance refers to both deliberate and inadvertent failures to fulfil tax liabilities [8].

The IRS[1] and HMRC[2] provide institutional definition of tax gap as "the difference between what the taxpayers are supposed to pay and what they actually pay on a timely manner".

There have been extended number of studies on measuring the VAT compliance gap, all of which in one sense or another define it as the difference between actually collected revenue and potential revenue that could be collected with perfect enforcement, given the policy framework that was in place during that year [6, 9, 10].

Theoretically, the elements underlying the compliance gap involve the state of negligence in enforcing reported tax amount, inaccuracies made in estimating the tax base, incomplete filed tax returns, tax avoidance due to loopholes in legislation, and tax evasion caused by hidden activities.[3] In particular, the compliance gap can be broken down into three components: the non-filed revenue, the underreported revenue, and the underpaid tax amount due [11].

Similarly, M. Thackray and M. Alexova [12] in their study analysed the gap by dividing it into allocation gap and unexplained gap. The former is determined by the difference between potential tax payments and total value of tax revenue, while the letter explains to what extent allocation gap diverges from total compliance gap.

Similarly, E. Hutton [13] group compliance gap into two main components, namely the collections gap (i.e., deviation of declared amount from estimated amount) and assessment gap (i.e., difference between declared amount as that is evaluated being obliged and the total potential VAT revenue).

M. Keen [6] proposes the bottom-up approach which adds up operational data audits and other sources to compute VAT that is due but not paid. Thus, he defines it as the percentage difference of principle VAT payable from actual VAT revenue or accrued collected.

Unlike M. Keen [6] and G. Poniatowski et al. [10] in own research using top-down approach estimated VAT gap in European Union member countries. According to them VAT gap is not just a measure of tax fraud but also include legitimate tax avoidance, unpaid part of the recognized amount as well as different due to the data accuracy and data availability. The studies reveal that the largest part of the non-compliance is due to unintended miscalculations, informal economy, and illicit economic activities. The remaining part can be explained by the low rate of taxpayer trust in government, corruption in collection of tax and public spending policy of executive bodies, and complexity of legislation [14].

In this regard, estimating the VAT compliance gap may be a valuable guide for policymakers and tax agencies to identify the origins and extent of non-compliance, evaluate revenue authorities' performance, and enhance the efficacy of resource allocation to fight against tax evasion.

Although conceptual and methodological frameworks of measuring VAT compliance gap have been developed relatively earlier, and used by researchers to quantify the gap mainly for developed countries, there is a lack of study that develops the Uzbekistan VAT mechanism and its efficiency. This study contributes to the existing literature by focusing on specific aspects of taxing consumption through Uzbekistan VAT mechanism.

METHODOLOGY

To estimate compliance gap in the VAT mechanism of Uzbekistan first it needs modeling. Based on the literatures discussed above under any policy design (i.e., perfect or imperfect) the compliance gap is the difference between the potential revenue under the existing policy settings and actual revenue (see *EBEF* area in *Fig. 1*).

Generally, there are two approaches that are used to estimate the gap:

[1] Internal Revenue Service of the USA (IRS). Tax Gap for Tax Year 2006 Overview. Washington DC: 2012. URL: https://www.irs.gov/pub/newsroom/overview_tax_gap_2006.pdf (accessed on 18.09.2022).

[2] Her Majesty's Revenue and Customs (HMRC). Measuring tax gaps 2018 edition — Tax gap estimates for 2016–17. 2018. London: HMRC: URL: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/ (accessed on 18.09.2022).

[3] International Monetary Fund (IMF). Republic of Estonia technical assistance report — revenue administration gap analysis program — the value-added tax gap. Washington, D.C.: International Monetary Fund. 2014. Organization for Economic Cooperation and Development (OECD). Consumption Tax Trends 2012. (Paris: OECD) 2012.

1. *Bottom-up approach* requires calculation of potential VAT on the final consumption of each product.

2. *Top-down approach* relies on data from the national accounts.

The detailed mathematical model of the compliance gap can be illustrated by bottom-up approach as follows [6]:

$$\Gamma = \left(\frac{\sum_{i=1}^{N} T_i^* (C_i - C_i^*)}{\sum_{i=1}^{N} T_i^* C_i} \right), \qquad (2)$$

where Γ — represents VAT compliance gap; T^* — is for standard VAT rate; C_i — denotes final consumption expenditure on all goods and services; C_i^* — stands for final consumption expenditure on taxable goods services under current policy design.

Due to lack of micro-data in this study top-down approach is employed to measure potential VAT revenue. By assessing the gap between estimated potential and actually received revenue, a top-down approach attempts to give a thorough evaluation of total noncompliance losses. The procedure for calculating the gap is done in the following three steps:

Step 1. Estimation of potential revenue under the existing legal framework, PR (Box ACDF in *Fig. 1*).

Step 2. Identifying actual (collected) revenue, AR (Box BCDE in *Fig. 1*).

Step 3. Computation of VAT compliance gap PR-AR (Box ABEF in *Fig. 1*).

First, we start by estimating the potential VAT revenue, which is the amount of VAT calculated based on the aggregates of the national accounting system and the structure of the tax rates and incentives under effective statutory framework. In other words, this is the total tax liability, which is the value of all final consumption and intermediate expenses that are subject to VAT under the existing tax legislation [10]. It consists following three major components:

1. Final consumption expenditure of Households, Government and Non-profit institutions serving households (NPISH). It also includes non-recoverable VAT on taxable goods and services used by the government and NPISHs providing services for households.

2. Input VAT for intermediate consumption — the purchase of taxable goods and services by tax-exempt industries (for example, medical services) and non-VAT payers (for example, small businesses).

3. Input VAT for the costs of gross capital formation (investment) — the acquisition of equipment and raw materials by enterprises who is not entitled to account for input VAT.

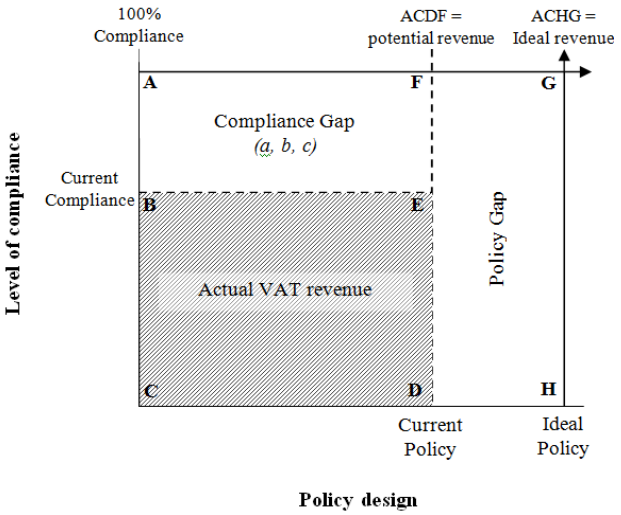

Fig. 1. **Illustration of VAT Gap and its Components**

Source: Compiled by the author based on the study of M. Keen [6].

The transactions that generate potential VAT components according to Uzbekistan's tax law is shown in detail in *Fig. 2* and *3*.

According to the *Fig. 2*, the first component of the potential VAT revenue is calculated based solely on the value of goods and services subject to taxation provided by a VAT-paying entities. Similarly, the second component of potential VAT is the amount of the non-recoverable input VAT that arise from intermediate consumption of taxable goods by VAT non-payers.

Figure 3 presents the third component of potential VAT. It is calculated based on the expenses for the gross capital formation (i.e., the amount of investment in fixed assets and inventories) by the entities that do not have the right to account for input VAT.

ANALYSIS AND DISCUSSION OF RESULTS

Since its inception, VAT has played a significant fiscal role in the formation of state budget revenues of Uzbekistan. Until 2019, there were not significant changes to the mechanism of this tax. During this time, the sale of goods and services was the object of taxation. The tax base is determined by the consumption type, and the amount of VAT is calculated based on the invoice-based credit method.

The tax rate was initially set at 30 percent in 1992, and has been gradually reduced in recent years. From 2000 to 2019, the VAT base is taxed at a standard rate of 20%. With the adoption of the new concept of tax policy in 2018, radical reforms have been implemented in order to improve its mechanism. In particular, to prevent the status of "small enterprise" from being abused, enterprises with an annual turnover of more

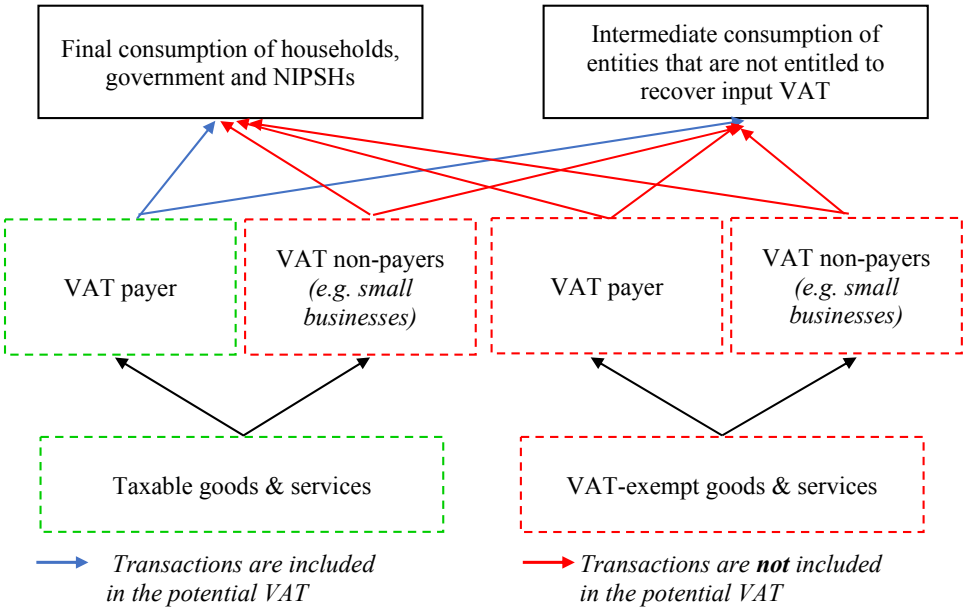

Fig. 2. **Illustration of 1st and 2nd Components of the Potential VAT for Uzbekistan**

Source: Compiled by the author on the basis of Tax Code of Uzbekistan. URL: https://lex.uz/docs/5535180 (accessed on 18.09.2022).

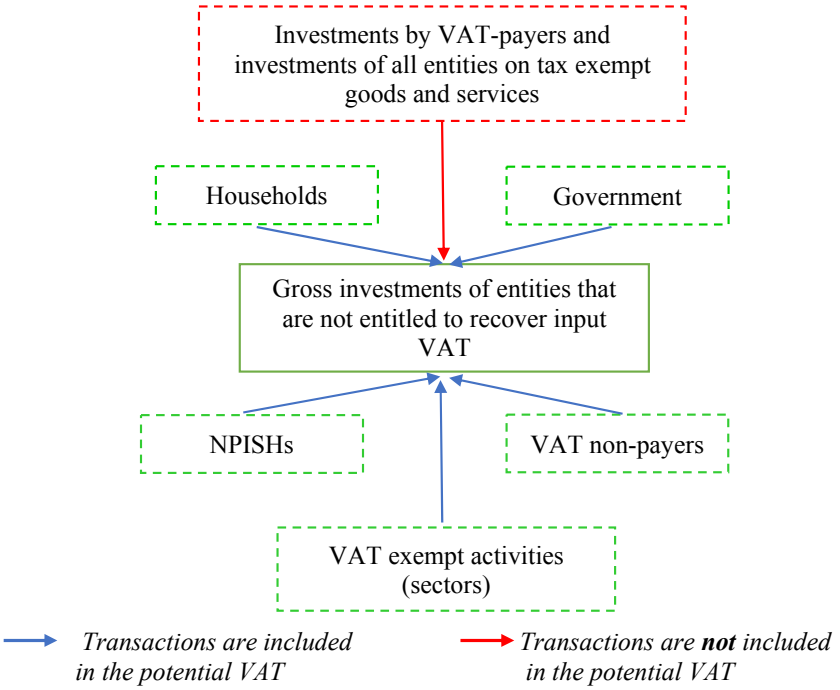

Fig. 3. **Illustration of the 3rd Component of Potential VAT for Uzbekistan**

Source: Compiled by the author on the basis of Tax Code of Uzbekistan. URL: https://lex.uz/docs/1286558 (accessed on 18.09.2022).

than 1 billion Uzbek sum (UZS) or that reached a certain amount during the year are required to enter the general tax regime and become VAT payers. In addition, in order to alleviate the problem of increasing burden of VAT, from 2019, the VAT rate was reduced from 20 to 15%.

The elimination of many VAT exemptions, as well as the reduction of the tax rate, resulted in a 16.7 — fold increase in the number of VAT payers in 2018–2020, thereby expanding the tax base and increasing VAT revenues by more than twofold (see *Fig. 4*).

Although these indicators show that the tax system and its reforms have a general trend with VAT revenue, they do not provide detailed information on the level of efficiency of the VAT system and to what extent they could mitigate compliance gap, or the factors influencing it.

To determine the extent to which the VAT mechanism and its application are effective in reducing non-

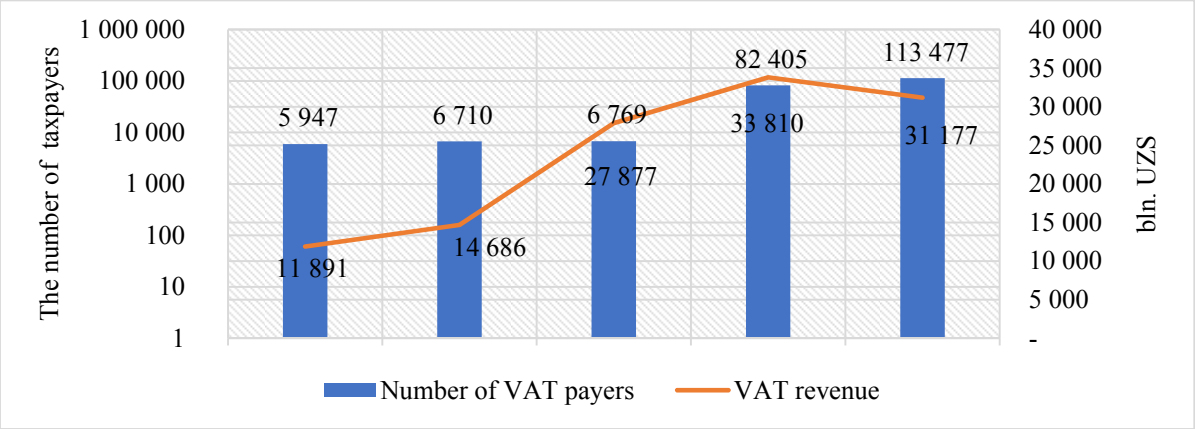

Fig. 4. **Comparative Indicators of VAT Revenue, 2017–2020**

Source: Compiled by the author on the basis of data from the State Tax Committee of Uzbekistan. URL: https://soliq.uz/other/open-portal (accessed on 18.09.2022).

compliance before and after reforms, we use a top-down approach to measure the VAT compliance gap.

Following three step top-down approaches, in the first step the potential VAT revenue (PR) is calculated based on "Resources and their use" (or input-output table) table provided by the State Statistics committee of Uzbekistan. This *Table* reports data on the sectors of the economy in which 83 groups of goods and services are produced in the economy, as well as the distribution of final and intermediate consumption and gross investment costs by sector. The share of small businesses was calculated on the basis of additional data from the State Statistics Committee and the State Tax Committee.

In the second step, actual (collected) VAT revenue (AR) is identified by the information taken from the State Tax Committee.

Finally, in the third step compliance gap is identified by deducting actual revenue (AR) from potential revenue (PR). To determine the extent to which noncompliance is causing budget revenue loss, the difference between potential and actual revenue is divided by the potential VAT revenue.

Table 1 below shows the results of the calculation of potential VAT and its components, as well as actual VAT revenue in 2016–2020, based on the above approach and the data obtained.

According to the results, over 2016–2020 the average potential VAT revenue was 32.9 trln UZS, while the actual VAT revenue was 23.9 trln UZS and the gap accounted for about 9.0 trln UZS. To get a clearer picture of the situation, the gap is also shown as a percentage of potential revenue and GDP. In 2016 compliance gap was 21.7 and 36.2% in 2020.

In addition, *Table 1* shows the share of potential VAT components in the total average, based on which it can be concluded that the current VAT system of Uzbekistan is targeted more on taxing intermediate consumption (54%) of non-taxable entities, (i.e., intermediate consumption of raw materials — 35% and investments — 19%), rather than final consumption (46%).

One of the primary reasons for this is can be explained by the large number of interruptions in the VAT chain caused by incentives and special regimes as well as the inappropriateness of the reforms to the capacity of tax administration. In fact, despite the fact that incentives have been reduced and the average tax rate for the entire period has been reduced to 18.4% as a result of a 15% reduction in the tax rate beginning in the fourth quarter of 2019. Tax evasion and delayed payment have increased significantly due to a sharp increase in the number of taxpayers. This, in turn, resulted in, increase of the compliance gap to 26%. As shown in *Fig. 5*, the number of taxpayers increased by 11.2 times in 2019 compared to the previous year, while VAT arrears increased by 1.2 times, which is the part of the compliance gap.

During 2020, significant changes were made in tax policy, as well as in the VAT systems. In particular, the new Tax Code was adopted, VAT rate was reduced to 15%, electronic invoicing was introduced for all businesses, and most of the existing VAT exemptions were abolished. As a result, the number of VAT payers increased by 31072 compared to the last year (see *Fig. 5*).

However, during the COVID-19 pandemic, certain goods and services were temporarily exempted from taxes in order to support the population and businesses, in addition to incentives such as defered payment of taxes to VAT payers. As a result, tax revenues decreased by 8% and VAT arrears (untimely payment of tax liabilities due to concessions) increased by 145%. This, in turn, led to the widening of compliance gap to 36%.

Table 1

Components of Potential VAT and Compliance Gap

Years	Potential VAT (in trln UZS)	Of which			Actual VAT (in trln UZS)	Gap (±) (in trln UZS)	Comopliance Gap, (%)
		household consumption	inter-madiate use	gross fixed capital formation			
2016	15.2	6.9	6.5	1.8	11.9	3.3	21.7
2017	19.6	8.6	7.8	3.2	14.7	4.9	25.0
2018	35.5	15.7	12.0	7.8	27.9	7.6	21.4
2019	45.4	20.9	15.3	9.2	33.8	11.6	25.6
2020	48.9	22.9	16.1	9.8	31.2	17.7	36.2*
Avg. & share of avg. (2016–2020)	32.9	45%	35%	19%	23.9	9.0	25.9

Source: Calculated by the author on the basis of data from the State Statistics Committee and the State Tax Committee of Uzbekistan. URL: https://soliq.uz/other/open-portal; URL: https://stat.uz/uz/rasmiy-statistika/national-accounts-2 (accessed on 18.09.2022).
Note: * This value (36.2*) are not adjusted for increased unpaid tax liability due to deferrals and other relieves because of COVID-19. That is why very high.

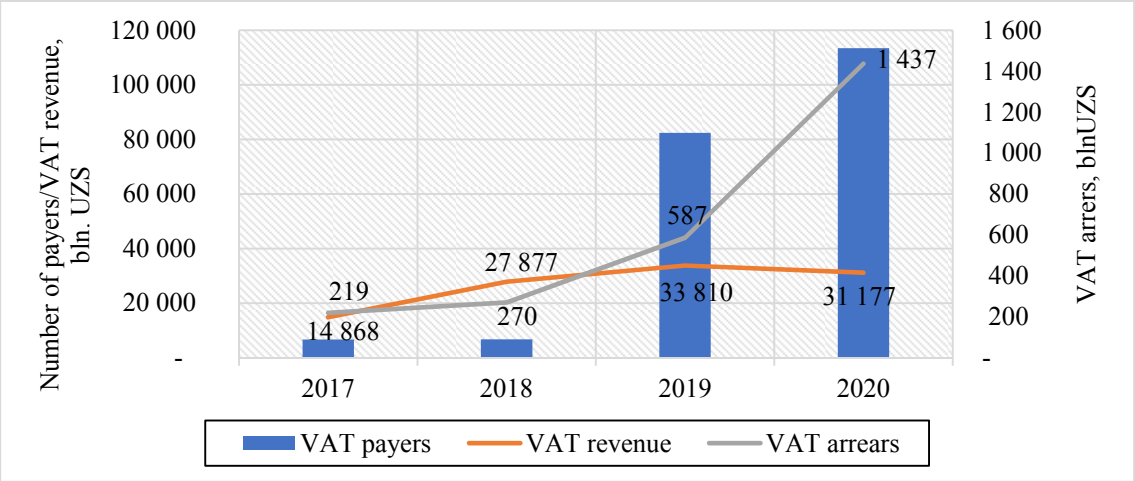

Fig. 5. **Comparative Indicators of VAT Revenue, 2017–2020**

Source: Compiled by the author on the basis of data from the State Tax Committee of Uzbekistan. URL: https://soliq.uz/other/open-portal (accessed on 18.09.2022).

In general, VAT revenues have increased in recent years as a result of tax policy and administration reforms. This is primarily due to the elimination of special tax regimes (i.e., single tax payment for small enterprises), and the elimination of multiple tax breaks and privileges, which have been targeted for the expansion of VAT coverage.

To get the full picture of the VAT gap in Uzbekistan, it is necessary to identify Policy gap. By re-arranging equation (1), Policy gap (P) can be expressed mathematically as follows:

$$P = 1 - (E^C / (1 - \Gamma)). \quad (3)$$

Table 2 provides results of Policy gap estimations using data obtained for C-efficiency from International Monetary Fund (IMF) database and Compliance gap results from *Table 1*.

According to results in *Table 2*, it can bee seen that C-efficiency has been improved from 33.6% in 2016 to 49.1% in 2020. Positive change in VAT performance mainly attributable to decrease in Policy gap which can be explained by elimination of several incentives, minimizing threshold for VAT registration, and tax cut. However, the sudden increase in the number of taxpayers deteriorated tax compliance, increasing the VAT gap from 21.7%

Table 2

VAT C-Efficiency and its Components

Years	C-efficiency* (E^C)	Components of C-efficiency	
		Compliance Gap** (Г)	Policy Gap (*P*)
2016	33.6	21.7	57.1
2017	35.6	25.0	52.6
2018	54.3	21.4	30.9
2019	51.4	25.9	30.6
2020	49.1	36.2	23.2
Avg. of 2016–20	**44.8**	**26.0**	**38.8**

Source: Calculated by the author on the basis of data from International monetary fund (IMF) datebase. URL: https://www.imf.org/external/np/fad/tpaf/pages/vat.htm. (accessed on 18.09.2022).

in 2016 to 36.2% in 2020. As for average of 2016–2020, out of 44.8% of ideal loss of VAT revenue is explained 38.8% by shortcomings of VAT policy while Compliance gap is responsible for more than a quarter of potential VAT revenue loss.

In view of the above, it can be concluded that the fiscal potential of VAT has dramatically improved over the preceding five years as a result of improvements made to the framework of tax policy and administration. This improvement has considerably contributed the growth of real tax revenues.

However, due to a number of persistent deficiencies current tax policy is resulting in a loss of potential VAT revenues. The major limitations include, in particular, co-existence of two different mechanisms for taxing consumption in the country, namely VAT and turnover tax, as well as an ineffective preferential incentives system. Another shortcoming arises from the ineffective incentive system that has not been addressed fully yet. As a result, the VAT mechanism is constrained by the relatively higher taxation of intermediate consumption as opposed to final consumption. This system also limits the taxation value created by non-VAT payers. Furthermore, the low level of compliance due to the current high rate and weak tax administration undermine the VAT mechanism from operating at full capacity.

CONCLUSION

The study showed that the current VAT system of Uzbekistan has a complex and relatively underdeveloped mechanism. According to the results of analysis VAT mechanism of Uzbekistan is more targeted taxation of intermediate consumption of raw materials and investment due to incentives in the form of full or partial tax exemption. As a result of which both policy and compliance gap of VAT is widening, thereby leading to the loss of potential tax revenues.

The policy gap is primarily caused by the simultaneous use of two universal excise types —VAT and turnover tax — in the same system for taxing consumption. This practice causes a number of issues with the VAT mechanism, particularly because intermediate consumption is taxed more heavily than final consumption in the economy due to the two-mechanism system. Due to this circumstance, the value added (produced) by the entities paying turnover tax is not taxed. Additionally, the inability of small business entities to account for input VAT increases their tax burden, which raises the risk of tax fraud and widens the compliance gap as well.

The low level of VAT compliance is primarily due to the tax burden, and this indicator has improved slightly as the tax rate has been reduced in recent years. This, in turn, suggests that there is a chance to enhance compliance by further lowering the tax rate to an optimal level.

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