THE VALUE-ADDED TAX (VAT) ADMINISTRATION BENCHMARKING: A CASE STUDY OF WESTERN EUROPEAN COUNTRIES

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ABSTRACT

Given the instability of the economic environment, governments of even highly developed countries are facing the question of implementing changes to the VAT administration system. The study aims to analyse the specifics of VAT administration and accounting procedures in Western European countries based on the formation of criteria for the optimal administration model. The resulting criteria for the optimality of the VAT administration and accounting system serve as a basis for implementing changes to the current VAT administration models in the countries where this tax is not a key source of budget revenue yet, and for the countries that strive to increase the stability and volume of VAT revenues.

Keywords: VAT; tax base; tax rates; optimal model; VAT gap; VAT revenue ratio

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INTRODUCTION

An effective taxation system is an essential guarantee of state economic development. Its role is explained not only by the fact that taxation is the primary source of budget revenues but also by the severe consequences of the excessive tax burden on the economy. To support economic growth, governments need stable funding sources for all government programs in health, education, infrastructure, etc. (Jurva, 2016).

The role of taxation is growing amid the fact that the funds received from its implementation not only finance public goods and services but also ensure the execution of the social contract between citizens and the economy (The World Bank, n.d.). The way taxes are accumulated and spent can determine the legitimacy of the government as a whole. This creates a need to pursue a policy of stimulating the steady growth of budget revenues (Piontkivska, 2020).

VAT was the first tax widely harmonized across all European Union (EU) countries. Therefore, in 1970, defining this tax as a source of budget revenue for European countries on a par with customs import duties and agricultural taxes was a logical step (European Commission, n.d.). Laws for VAT administration are standard across the EU, but their application is different in each country. Manufacturers, wholesalers and retailers represent each party in the supply chain as VAT collectors.

The current EU rules on VAT have been around for 30 years. The external conditions connected to the administration of this tax have changed significantly and evolved. Considering this, modernization of the VAT administration is an urgent need. The European Commission has also supported this modernization. In their statements, the representatives of the Commission emphasized that the new rules give governments more flexibility in rates. In addition, the updated legislation allows for the introduction of VAT administration rules in the best EU member states, such as support for digitalization, health care and the fight against climate change (European Commission, 2021b).

The need to revise the VAT administration rules was also due to the impact of the COVID-19 coronavirus pandemic. Thus, the pandemic caused a fundamentally different response to the indirect tax regime than all the previous financial crises. Governments could not rely on policies of increase in demand and standard fiscal incentives for economic downturns. Under such conditions, state governments were forced to adjust real-time VAT administration regimes. This has helped to maintain the financial liquidity of households and businesses during the quarantine (Corbett, 2020). Given the above, the search for the optimal model of VAT administration is particularly relevant in the context of constant changes in the external environment of the economy and the government's attempts to preserve the state and achieve economic growth.

The study's direction, aimed at Western Europe countries, was chosen based on the country's level of economic development, where VAT is present as part of the tax system. Thus, according to the Statista study (2022), the level of economic growth in Western Europe has reached its highest level in decades. In particular, the total gross domestic product (GDP) in 2021 increased by about 5% after a significant decline in 2020. The maximum level of VAT growth for the entire researched period (from 2010 to the forecast for 2021-2023) was in 2017. Then GDP growth peaked at 2.8% (Statista, 2022).

Based on this, we can assume that a high level of development is also ensured through the implementation of the optimal policy of VAT administration. Despite the high degree of consideration of the VAT administration procedure in the economies of different countries, there needs to be a comparative analysis of its administration procedure and accounting in highly developed countries. Conducting such an analysis allow for revealing key parameters that ensure the success of VAT and form the optimal model of its administration based on the obtained results if such a model is not revealed during the study.

The study aims to conduct a comparative analysis of the peculiarities of VAT administration in Western Europe to determine the optimal administration mechanism.

During the writing of this paper, we aim to confirm or disprove the following hypotheses:

H1. The growth of VAT rates leads to increased budget revenues in Western Europe.

H2. Expanding the tax base in Western Europe is the most effective lever for increasing VAT revenues.

H3. There is a connection between the average income per capita and the level of revenues from the value-added tax administration in Western Europe.

In this paper, the term "optimal model" is used, considering the conditions and limitations of the work, as well as the key characteristics of efficient taxation in the analysed countries.

LITERATURE REVIEW

One of the most essential elements of the tax systems of developed countries is the value-added tax (VAT) (Hassan, 2015; Jalata, 2014). VAT is currently administered in over 140 countries, including all European countries (Asen, 2021). In most cases, VAT is paid on goods and services at all supply chain stages, including sales to the final consumer (Your Europe, 2022). Anggadini et al. (2022) argue that tax compliance, including VAT, depends on tax literacy, including tax knowledge, modernization of the tax administration system, and taxpayer awareness. Olexová et al. (2022) note that the role of VAT is exceptional and depends on the corruption component.

It has been claimed that the income level from this tax directly depends on the tax literacy of citizens (Ahmad & Stern, 1991), on which the main weight of VAT drops (CBO, 2018). OECD research has shown that low-income citizens pay higher amounts of VAT than well-off individuals (OECD, 2019) because different classes of goods are taxed at different tax rates. In addition, non-cash circulation of money, for example, in the service sector, leads to avoiding VAT payment, making it more challenging to account for and collect this tax. VAT is also criticized for increasing the price of goods (CBO, 2018). That is why most countries worldwide try to optimize this tax to find some "optimal" VAT model.

The optimal tax system minimizes the adverse effects on the living standards and welfare of the population, as well as on the productivity of taxpayers. At the same time, it maximizes the positive impact of resource allocation. It corrects market failures by limiting the consumption of certain groups of goods, imposing additional taxes on activities that cause environmental pollution, etc. (Abdin, 2018). Although set rates on this tax vary within the same scope, they differ in every country that implemented it. In particular, in the EU, according to the Asen study (2021), the highest VAT rate is set in Hungary - 27%, and the lowest in Malta - 19%.

The high prevalence of VAT in the structure of the existing tax systems is caused by this tax stimulating economic growth (Sarwar et al., 2021). The studies by Ayoub and Mukherjee (2019) that used research on VAT turnover in the Republic of China and the survey by Dahal (2020), conducted in the example of Nepal, confirm this fact. OECD (Organization for Economic Cooperation and Development) experts have a similar opinion. They claim that corporate taxes are the most harmful to economic growth. Personal and consumption taxes, including VAT, are less harmful (Bunn, 2021).

Maska and Leleu (2022) prove the effectiveness of VAT through a system of indicators. The authors also describe the mechanism of VAT as a consumption tax and VAT distribution, as well as the rules of VAT collection in the European Union. Therefore, the researchers grouped four classes of EU countries for 2016-2020. After taxing their customers, they must include administered VAT in their income and reflect this in their VAT return (Owino, 2019). Subsequently, taxpayers are entitled to a partial refund of the VAT charged to them by their suppliers (Revenue, 2022).

In April 2022, the EU Council approved drastic changes to value-added tax rates. The new rules allow for the broader use of zero and reduced tax rates on food, pharmaceuticals and medical products (Baker McKenzie, 2022). Following the adoption of the new rules of the EU Council, it is necessary to hold a lobby for reduced rates at the level of member states to start the process of their practical implementation. Member States are expected to be given more flexibility in this process (Hody et al., 2022).

However, with the positive impact of tax legislation, it is necessary to consider the social aspects of taxpayers. There are many theoretical advances in the optimal procedure of levying taxes. However, theoretical information can only sometimes be applied to natural tax systems, as it does not account for different life situations (Piontkivska, 2020). This is due to the additional solvency of citizens and distant views of society on what the government should give to citizens and how much they should pay for it (Neog & Gaur, 2020).

Thus, the analysis of value-added taxation is crucial in assessing developed European countries. The researchers prove this taxation system is effective, despite some minor drawbacks. Further improvement of the taxation system aims to simplify the procedures for VAT accrual and refund through the declaration system.

METHODOLOGY

The study focuses on the VAT administration's peculiarities in the following Western European countries: Germany, the Netherlands, Belgium, Austria, Switzerland, France, and Luxembourg.

The Consumption Tax Component of the International Tax Competitiveness Index (ITCI) was used to assess the effectiveness of the tax system in the studied countries. The International Tax Competitiveness Index (ITCI) measures the effectiveness of a country's tax system and covers two important aspects of tax policy: competitiveness and neutrality. To determine the competitiveness of the state's tax system, a list of factors for their assessment is formed. As a rule (Swank, 2016), such factors include the tax burden on business, the taxes amount, the tax administration efficiency, the pace of economic development, the level of wages, and even the level of corruption in the state. Consumption taxes occupy one of the prominent places in countries' tax systems and the structure of public revenues (Baskaran & da Fonseca, 2016). Value-added tax and taxes on individual goods and services represent them. In many countries, VAT is a crucial source of tax revenue and the public finance system (Helgason, 2017). A competitive tax system maintains a macroeconomic balance and stabilizes aggregate demand and gross domestic product (Acemoglu et al., 2018). Ultimately, this affects the overall price level, aggregate demand and supply (Fuller & Geide-Stevenson, 2014). The Consumption Tax Component of the International Tax Competitiveness Index is formed by assessing the tax base, rate and complexity of VAT in OECD countries (Bunn & Asen, 2020). That is why it is interesting to analyze the competitiveness of the tax system precisely because of the consumption tax, which will act as a limitation of this study. The assessment of the effectiveness of the tax systems of the Western European countries was conducted based on the analysis of rating scores in the context of index components as of 2020.

The MCDA (Multiple criteria decision-aid) comparative method determines the rank (Pugachev et al., 2019). The limitation of the method is the number of alternatives. When the number of other options increases beyond 20, the accuracy is lost, and small changes in the criteria values significantly affect the rank (Keshavarz Ghorabaee, 2015). The results are obtained in percentages. The higher the percentage, the more competitive the tax system.

The MCDA method is also used for expert system ranking (Pugachev et al., 2019). To do this, the criteria are first ranked, a comparison is made, and then the Kendall rank (Kendall, 1970) is used to evaluate alternatives with a given degree of freedom. But this method is used when increasing the number of other options. Considering the study's limitations, only MCDA is used in the paper with rounding results to the tenth.

VAT Revenue Ratio in Western Europe was studied separately to measure the tax base through the value-added tax. This ratio makes it possible to analyse the difference between the actual accumulated VAT and VAT revenue levied at the standard rate of total final consumption. This difference between real and potential revenues is explained by the policy of excluding certain goods and services from VAT, taxing them at a reduced rate or underpayment VAT due to tax evasion. The forecast of the studied indicator in 2020-2021 is based on the trend analysis.

To assess the revenue losses from VAT evasion and deficiencies caused by administrative miscalculations and mistakes, we analyse the value of the VAT Gap. A difference between the VAT due and the actual VAT revenues defines the VAT revenues lost compared to a theoretical VAT estimation.

The interdependence between the tax rates and the level of revenue from its administration and the volume of VAT administration, and the average wage in Western Europe in 2017-2019 was established by calculating the correlation coefficient.

The study is based on the analysis of the data from the official website of the EU Council, the European Commission, OECD reports data from the OECD Library, Statista information, as well as reviews of the tax systems in the EU and Western Europe.

RESULTS

Several standard features of the VAT administration mechanism in the European Union exist. First, it is possible to only register as a VAT payer if the turnover for the previous reporting period is, at most, the amount determined in the country. Then such a payer is classified as a small enterprise. They do not have to charge VAT to their customers. The primary condition is to indicate the non-collection of VAT in the invoice. The limit turnover that allows not to register as a VAT payer is: in Austria - 35,000 euros; in Germany - if the turnover for the previous reporting period does not exceed 22,000 euros, and if it is not expected to exceed 50,000 euros in the current reporting period; in Luxembourg - if the total turnover including VAT during the calendar year did not exceed 35,000 euros; The Netherlands - 20,000 euros; Belgium - 25,000 euros; France - 85,000 euros; Switzerland - 93414 euros (N26, 2022; Klatt, 2021; Business.gov.nl. Government information for entrepreneur, n.d.; Maunder, 2022; Locher, 2021b).

At the same time, in the Netherlands, the Tax and Customs Administration (Belastingdienst), after registering as a taxpayer with the Chamber of Commerce, independently assesses and informs taxpayers whether they are entrepreneurs for VAT taxation purposes.

In France, the possibility of not paying VAT is beyond turnover limits. In particular, three tax schemes are common in this country. The first one is "Franchise". Under this regime, the annual limit of 85,800 euros is set for the sale and provision of housing and 34,400 euros for the provision of services for 2020-2022. A negative aspect of using this regime is the inability to reimburse VAT.

The second scheme is a "Simplified regime". Under this scheme, companies must make two payments during the year: 55% VAT in July for the previous year before deducting VAT on investment and 40% the second payment. The payer is exempt from advance payments if the tax for the previous financial year did not exceed 1000 euros (French Business Advice, 2020).

The third scheme is Standard. Within it is a standard VAT collection that compares the received and paid VAT (French Business Advice, 2020).

The second common feature is the opportunity for companies to take advantage of the input tax rebates (tax refunds). In other words, the tax paid on goods or services by other companies is deducted from their VAT liability. Reimbursement occurs under the condition of the tax debt absence. The application for reimbursement is submitted to the tax authorities online.

The third common feature is the requirement to indicate a VAT number in all invoices. Filling the invoices correctly is crucial because they are the basis for further VAT calculations. The correct invoice, in addition to the VAT number, must contain the following details: date of issue, unique number, complete addresses of suppliers and customers, data on the number of goods, unit price, delivery date, a complete description of goods and services supplied or provided, the net value of taxable supply, VAT rates, the total amount of VAT broken down into rates and the total sum of the invoice (Kampisty, 2022).

The VAT rates and the individual transactions they apply differ in Western Europe. The current rates in Western Europe are analysed based on the data in Table 1.

Table 1: Value-added tax rates in Western Europe

Country	Tax rate
Germany	Basic rate: 19% Reduced rate: 7% on food, books, hotel accommodation, cultural services and other goods and services Special rates for farmers: 5.5% and 10.7% 0% for domestic and international transport (except the road, rail and, in some cases, water)

Table 1: Continued

Netherlands	Basic rate: 21% Reduced rate: 9% for services of hairdressers and workshops on bicycle repair; for food, medicine and books. 0% for international public transport, supply to an entrepreneur in another EU country
Belgium	Basic rate: 21% Reduced rate: 12% on the supply of phytopharmaceutical products, social housing, and restaurant services, excluding beverages 6% on work on real estate, necessities, art objects, supplies for specialized groups, including the disabled, intellectual property, etc. 0% on export and supply of goods within the community, import of goods to combat the effects of the COVID-19 pandemic (until 31.12.2021), cross-border passenger transfers by air and sea, certain digital periodicals and supply of recovered goods or products
Austria	Basic rate: 20% Reduced rate: 13% on domestic flights, attending sports competitions and cultural events, certain agricultural products, wine production, sale of cut flowers for decorative use 10% on food, takeaway food, international and domestic road and rail transfers, pharmaceuticals, periodicals and printed books, garbage collection and waste cleanup, pay TV, cut flowers, certain agricultural products and the work of writers and composers 0% on domestic and international transport (road and rail excluded), hotel accommodation
Switzerland	Basic rate: 7.7% Reduced rate: 3.7% on hotel accommodation 2.7% on food and beverages, agricultural goods, water, printed matter, cultural and sporting events 0% zero export, supply of goods and services for airlines
France	Basic rate: 20% Reduced rate: 10% on unprocessed agricultural products, an overhaul of apartments, social housing, firewood, transportation 5% on food, books, electricity, gas 2.1% on state-funded medicines, sale of animals for slaughter, cultural events, press releases 0% on domestic and international transport, excluding road and domestic water transport
Luxemburg	Basic rate: 17% Reduced rate: 14% on certain wines, advertisement brochures, management of securities 8% on gas or electricity supply 3% on food, pharmaceuticals, books, radio and television broadcasting, footwear, accessories, and clothing for children under 14

Source: Author's development based on (Avalara, n.d.; TMF Group, n.d.; Business.gov.nl. Government information for entrepreneur, n.d.; PWC, 2022; Kampisty, 2022; Klatt, 2021).

The analysis shows that considering the synchronized system of VAT administration implemented in the EU, the principles of ranking tax rates and operations to which they apply largely coincide. In particular, the use of the reduced tax rates for taxation of food, international and domestic transport, periodicals and publications, cultural events, agricultural products, pharmaceuticals, etc. However, the degree of rate reduction varies from 12% in Belgium to 7% in Germany. Generally, each studied country has from 3 to 5 tax rates.

A particular case is the tax rates in Switzerland. As the country is not a part of the European Union, the government does not need to follow any instructions on the allowed range of rates, which is set for other studied countries at a level of at least 15%. This is expressed in the fact that the basic VAT rate is only 7.7%, and reduced rates are 2.7% and 0%.

The synchronicity of the VAT administration system in setting the reporting periods for taxpayers and determining the tax-paying procedure is also clearly monitored. Let's consider the tax reporting periods for reporting and payment of VAT in Western Europe:

1. Germany - VAT has to be reported and paid to the tax office every quarter. If the annual VAT liability exceeds 7,500 euros, preliminary reporting is required monthly, in case it is less than 1,000 euros – only once yearly (TMF Group, n.d.).
2. The Netherlands. The Tax and Customs Administration independently inform the taxpayer when they need to file a VAT return and pay it; monthly, quarterly or once a year. Usually, the reporting period is a quarter (Business.gov.nl. Government information for the entrepreneur, n.d.).
3. Belgium - the tax is paid 20 days after the end of the reporting period (monthly or quarterly). The standard reporting period for filing a return is one month. The quarterly reporting period applies if the total amount of IP deliveries is less than 50,000 euros in the current or one of the four previous quarters. The annual turnover has to be less than 2.5 million euros for companies selling energy products – 250,000 euros. The annual reporting period does not apply (Marosa, n.d.).
4. Austria - monthly and quarterly periods are applied for VAT administration. The tax return must be filed by the 15th day of the month following the end of the period. The final annual declaration is submitted by June 30 following the reporting year. The tax is paid simultaneously with the report submitted (Avalara, n.d.; Klatt, 2021).
5. Switzerland - reporting and payment of taxes occur 60 days after the end of the tax period, which may be a month-, quarter-, half-year- and year-long (Ch.Ch., 2021).
6. France - the tax is paid monthly or quarterly if the annual tax liability does not exceed 4,000 euros. The declaration is submitted by the 19th of the month following the end of the reporting period (Kampisty, 2022).
7. Luxembourg - if the turnover is less than 112,000 euros, the tax is paid, and the return is filed once a year. If the turnover ranges from 112,000 euros to 62,000 euros, quarterly and annual tax periods apply for reporting and paying taxes. If the turnover exceeds 620,000 euros, a monthly tax period with the requirement to file a return for the year is set for the payer (Lovat Compliance, 2022).

Based on the above information, Switzerland has the most loyal procedure for reporting and paying taxes, while it is the most strictly regulated in Belgium.

To analyse the quality of tax structuring in the context of the tax base, rates and complexity of administration, we analyse the studied countries' rating assessment as of 2020 (Table 2).

Table 2: Rating of the Western European countries for 2020 in the context of the VAT tax base, tax rates and complexity of administration

Country	Overall Score	Rate Rank	Rate Score	Base Rank	Base Score	Complexity Rank	Complexity Score
Germany	74.7	12	53.1	12	55.4	19	82.4
Netherlands	72.7	19	45.0	16	62.7	13	86.9
Belgium	60.2	19	45.0	22	55.6	28	66.3
Austria	74.2	14	49.1	15	62.9	14	86.4
Switzerland	100	2	98.8	19	58.9	1	100.0
France	65.5	14	49.1	33	34.6	11	88.4
Luxemburg	93.2	9	61.2	2	94.6	5	93.0

Source: Author's development based on (Bunn & Asen, 2020).

According to the assessment given in the table, on two of the three points, the leading position is held by Switzerland, which has the best tax rate and the best approaches to establishing the tax base among the studied countries. It is followed by Luxembourg, which, along with leading positions in tax rates and tax base, also holds one of the leading positions regarding ease of administration. Germany, in its turn, could be better in the ranking due to the complexity of tax calculation. The lowest values among the given countries are in Belgium and the Netherlands. According to tax rates, they rank 19th, according to the tax base, 22nd and 16th, respectively, and according to the complexity of administration, 28th and 13th.

Let's consider the positions of the studied countries according to the final value of the Consumption Tax Component of the International Tax Competitiveness Index for 2019-2021 (Table 3).

Table 3: Ranking of countries according to the Consumption Tax Component of the International Tax Competitiveness Index for 2019-2021

Country	2017 Rank	2018 Rank	2019 Rank	2020 Rank	2021 Rank	Change from 2020 to 2021
Germany	12	12	12	10	11	-1
Netherlands	12	11	10	15	14	1
Belgium	25	25	26	30	30	0
Austria	10	10	11	11	13	-2
Switzerland	1	1	1	1	1	0
France	20	20	20	21	21	0
Luxemburg	4	4	4	4	4	0

Source: Author's development based on (Bunn, 2021; Asen, 2019).

Switzerland holds the leading position in the ranking throughout the study period. This is because the mechanism for levying VAT in Switzerland is one of the simplest in the world. It is estimated that, on average, only 8 hours per year is enough to service all stages of VAT administration. Germany, the Netherlands and Austria occupy the middle positions in the ranking. Belgium holds the lowest rank. Among the 30 places in the ranking is 30th. During 2019-2021, countries' positions in the ranking have barely changed. Slight positive deviations are observed in Germany and Austria, while the Netherlands fell to one position.

To assess the place of value-added tax in the income structure of Western Europe, we analyse the share of value-added tax revenues in the total income of the studied countries by drawing a parallel with the current tax rates (Table 4).

Table 4: The share of VAT revenues in the total income of Western Europe and the standard tax rate in them in 2017-2019

Country	Share of total tax revenue from VAT, 2017	Standard VAT rates, 2017 (%)	Share of total tax revenue from VAT, 2018	Standard VAT rates, 2018 (%)	Share of total tax revenue from VAT, 2019	Standard VAT rates, 2019 (%)
Germany	18.4	19	18.3	19	19.1	19
Netherlands	17.4	21	17.9	21	19.1	21
Belgium	15.2	21	15.2	21	16.4	21
Austria	18.3	20	18.1	20	18.2	20
Switzerland	12.0	8.0	11.4	7.7	11.4	7.7
France	15.3	20	15.1	20	16.5	20
Luxemburg	15.9	17	15.2	17	16.3	17
Correlation coefficient	0.765072		0.802934		0.881876	

Source: Author's development based on (Statista, 2021a; Dore, 2021; Vat Update, 2021; OECD iLibrary, 2019; OECD, 2020).

VAT takes the largest share of Germany and the Netherlands' income, primarily due to the high tax rate and strict control over its collection. Despite the lowest rate in Switzerland, VAT revenues are pretty high. In Belgium, where the tax rate is the highest among the studied countries, VAT revenues are among the lowest.

The correlation coefficient is calculated based on the data from the Table. Four allows us to conclude that there is a strong correlation between the share of value-added tax revenues and standard rates. One indicator's growth affects another's growth, which confirms H1. However, the experience of certain countries, notably Belgium, suggests that raising the tax rate is only sometimes an effective tool for increasing revenue.

To assess the VAT tax base by determining the gap between the planned VAT revenues in Western European budgets and the actual amounts accumulated from taxpayers, we examine the VAT Revenue Ratio for 2009-2019 (based on a published OECD report) and the forecast for 2020-2021. The results of the study are presented in Figure 1.

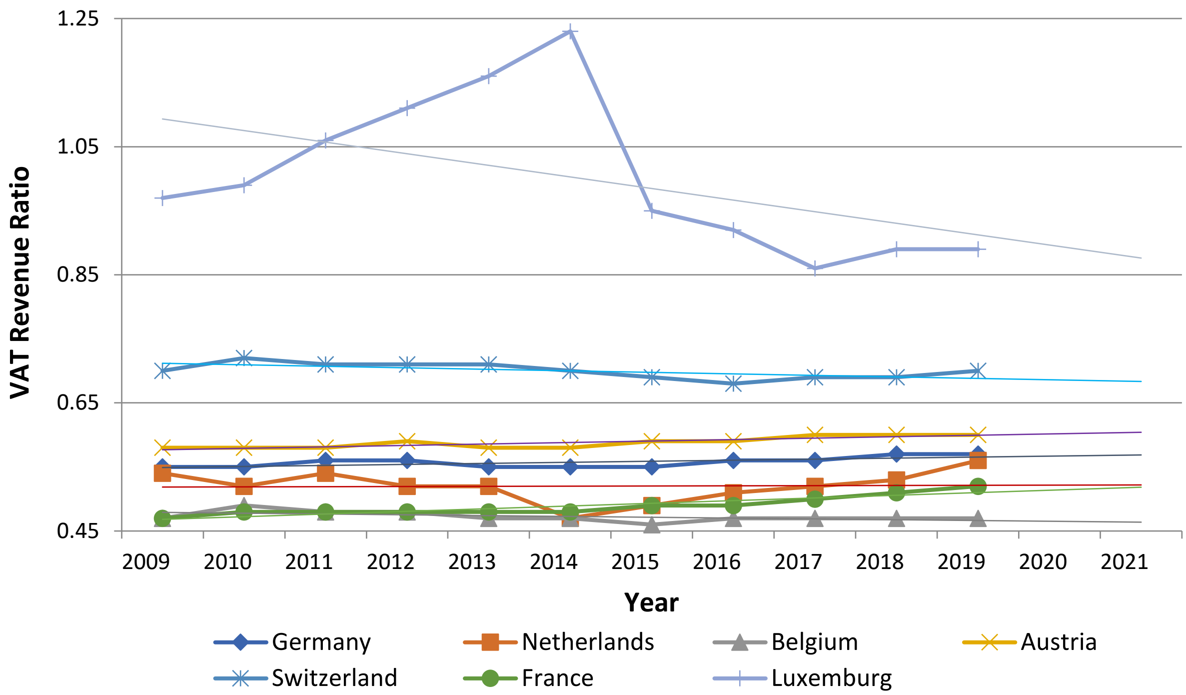

Figure 1: VAT Revenue Ratio in Western Europe in 2009-2019 and forecast for 2020-2021.
Source: Author's development based on (Kalmuk, 2021; Locher, 2021a).

During the analysed period, the VAT Revenue Ratio was the highest in Luxembourg and the lowest in Belgium. According to the forecast, by building a trend line, we can track the decline of the VAT Revenue Ratio in 2020-2021 in Luxembourg, Switzerland, the Netherlands and Belgium. In other countries, the VAT Revenue Ratio may increase slightly. In 2021, after the gradual recovery of the Western European economies from the effects of quarantine caused by coronavirus infection COVID-19, the VAT rate was planned to be increased by 3.2%. Still, the level of 2019 will not be reached.

Due to the significant problems with receiving funds during the quarantine period, it was confirmed that countries are highly dependent on using an expanded VAT tax base. Such conclusions are also confirmed by the practice of the Great Depression when only revenues from value-added tax administration remained a relatively stable source of budget replenishment. This combined forms the basis for the confirmation of H2.

In December 2021, the report of the European Commission was published. It presents the results of calculating the VAT Gap for European countries in 2017-2019. The data is shown in Table 5.

Table 5: VAT Gap for Western European countries for 2017-2019

Country	VAT Gap 2017, %	VAT Gap 2017, EUR million	VAT Gap 2018, %	VAT Gap 2018, EUR million	VAT Gap 2019, %	VAT Gap 2019, EUR million
Germany	9.3	23.212	9.4	24.291	8.8	23.443
Netherlands	6.0	3.190	5.5	3.039	4.4	2.660
Belgium	12.2	4.126	11.4	4.007	12.3	4.444
Austria	8.4	2.605	9.4	3.033	8.7	2.895
Switzerland	-	-	-	-	-	-
France	8.6	15.329	7.9	14.428	7.4	13.858
Luxemburg	6.3	3.338	8.5	3.563	6.6	267.0

Source: Author's development based on (European Commission, 2021a; European Commission, Directorate-General for Taxation and Customs Union, 2021).

According to the latest report submitted by the European Commission, we can see that the most significant VAT gap during 2017-2019 was in Belgium – 11.4% - 12.3%. The VAT gap in Germany and Austria in 2019 was almost equal – 8.8% and 8.7%, respectively. However, the trend of its change is different. In Germany, the gap has significantly decreased compared to 2017, and in Austria, it exceeded the level of 2017 and amounted to 8.4%. The smallest VAT gap during the entire study period is in the Netherlands – from 6.0% in 2017, the gap decreased to 4.4% in 2019. As Switzerland is not a part of the European Union, there is no data on the gap between actual and planned VAT revenues.

The results suggest that the Netherlands has one of the lowest VAT tax fraud and tax evasion levels, with a high financial capacity and a high-quality national statistics system.

No data on the extent of the COVID-19 pandemic's impact on consumer demand and, consequently, on the government revenue from VAT was not available at the time of the study. Nevertheless, the reverse effect of the positive trend achieved during 2015-2019 is reasonably expected.

To confirm or disprove H3, we examine the relationship between VAT revenues and the average wage in the studied countries of Western Europe. Data for calculating the correlation coefficient is displayed in Table 6.

Table 6: VAT revenues in Western Europe and average wages in these countries for 2017-2019

Country	VAT revenues, EUR million, 2017	Average income, USD thousand, 2017	VAT revenues, EUR million, 2018	Average income, USD thousand, 2018	VAT revenues, EUR million, 2019	Average income, USD thousand, 2019
Germany	226697	45.24	235130	48.78	244111	47.60
Netherlands	49833	52.72	52712	55.85	58131	54.12
Belgium	29763	50.37	31053	54.11	31702	52.56
Austria	28304	48.04	29323	51.53	30405	50.11
Switzerland	20620	88.22	19611	89.72	20236	59.59
France	15329	42.73	14428	45.51	18781	43.80
Luxemburg	3338	71.91	3563	77.0	3763	73.76
Correlation coefficient	-0.36724		-0.37402		-0.39018	

Source: Author's development based on (Statista, 2021b; WorldData.info, n.d.; OECD, 2022; UNECE, 2021).

Calculated based on Table 5, the correlation coefficients show the need for a stable relationship between the average wage in the studied countries and the value-added tax (consumption) revenues. Thus, tax rates do not affect the increase or decrease in the consumption level of goods and services on which they are imposed, as the accumulation of VAT revenues does not determine the income level of citizens. The obtained results disprove H3.

Given the significant impact of the events in the world over the past few years, the need to support tax revenues in the budgets of countries that administer it at a stable level becomes apparent. The EU Council amended the European Union Value-Added Tax Directive in these circumstances. Fundamental changes affected tax rates. Under the new rules, EU member states have the right to apply up to 5 different VAT rates: one standard, two reduced by at least 5% (one of which is applied only to 7 of 24 points of the determined list of services subjects to VAT, another – up to all 24), tax exemption, which gives the right to deduct tax from the general liability, and two reduced rates for the specific goods. At the same time, the base of taxation is being expanded with reduced rates by including rental of real estate for residential use, environmentally friendly goods, health care products such as face masks, access to live broadcast of the event via the Internet, supply and installation of solar panels, electricity and heat supply, children's clothing and bicycle supply. The use of the lowest and zero rates will continue to apply to the operations described in Table 1, but the supply and installation of solar panels are also added. The existence of a crisis mechanism for the rapid reduction of value-added tax rates in humanitarian crises, pandemics or natural disasters allows for minimizing their negative impact on the level of budget revenues from VAT.

However, under the new conditions, Member States will still be forced to maintain a minimum effective rate of 12% to maintain a balanced range of taxable supply. This will prevent the development of tax competition and distortion of the EU single market.

DISCUSSION

Value-added tax in the revenue structure of Western Europe takes up a significant share, sometimes reaching 1/5 of total budget revenues. The achieved results in the accumulation of large amounts of revenues from the studied tax are of interest in determining VAT administration mechanisms to form the key characteristics to build their model, which can act as the optimal one for the taxation system of an individual country. In the study, it was determined that setting high rates only sometimes guarantees significant budget revenues. Countries with a relatively stable economy and a balanced tax system were selected for the study—nevertheless, the questions raised in the works of A. Ehtisham and N. Stern remain open regarding the excessive tax burden on the final consumer (Ahmad & Stern, 1991) and some features of the corruption component in VAT collection. This requires further research detailing the specifics of VAT in different countries, including countries with a crisis, unstable economy and a tax system in the reform process with a high VAT rate. The latter is particularly interesting because of the high correlation between the tax rate and the level of VAT revenue in the structure of budget revenues, determined by the correlation coefficient. The example of Belgium shows that a high rate only sometimes allows the accumulation of more money. Assessing the tax base in Belgium by determining the VAT revenue ratio confirms that one of the key roles in securing consumption tax revenue is using an expanded base, which is a different case in this country.

This fact is also confirmed by Acosta-Ormaechea and Morozumi (2021), who concluded in their study that, in total, the increase of VAT revenues by expanding the base with fewer benefits or achieving a more unified rate structure with more irregular reduced rates might incentivize growth more than an increase of revenues from raising the standard rate. This is because a constant rate increase can lead to a complete loss of effectiveness of such actions (Acosta-Ormaechea & Morozumi, 2021).

The analysis proved that there is no "perfect" VAT system, which most countries developing or improving their tax systems are trying to create (Pugachev et al., 2019). De Mooij and Swistak (2022) state that a perfect VAT system has a broad base that includes all final consumption and a single tax rate, usually 15% to 20%. This means consumers are not incentivised to switch to lower-tax goods and services.

In 2021, the EU Council decided to amend the standard mechanism for VAT administration by increasing the number of reduced rates and expanding the tax base. However, along with the reduction of rates on specific groups of goods, the developed changes proposed to include taxable transactions at reduced rate operations that were not previously subject to VAT (European Commission, 2021b).

Thus, it becomes clear that a broad tax base should be the basis for filling the budgets of European countries during the quarantine and after its cancellation. Therefore, to form the optimal mechanism of VAT administration, it is necessary to balance the tax rates and the tax base to which they apply. From this position, as well as guided by the results of the study, the optimal mechanism of VAT administration is traced to the example of Switzerland. According to the research conducted by experts of Sig Fiduciaire (2022), the effectiveness of the Swiss VAT administration system is conditioned by the fact that all profits received in this country are subject to this tax. It can be argued that the Swiss tax system is a positive example of balance and efficiency. The study determined that VAT is 11.4% of budget revenues despite the low tax rate. An effectively organized system of VAT collection has allowed the country to ensure the sustainability of its work in an unstable environment associated with the introduction of quarantine caused by the spread of COVID-19 virus infection. This is expressed in one of the highest rates of VAT revenue among Western European countries.

Nevertheless, it is worth emphasizing that Switzerland implemented the most straightforward mechanism of VAT administration, which includes only three rates and a single deadline for filing reports and paying taxes, which does not cause additional difficulties and inconsistencies for taxpayers. The administration of value-added tax is also greatly simplified, and it is estimated that it takes no more than 8 hours a year. According to the Consumption Tax Component of the International Tax Competitiveness Index in 2019-2021, this combination allowed Switzerland to maintain its leading position in the rankings.

The introduction of changes to VAT rates in the European space by the EU Council is one of the steps toward transforming the current VAT administration system, accounting for the optimality criteria established in the research. The example of Switzerland is interesting, but it is only possible to apply the same tax system in another country without any changes. As mentioned above, VAT also has negative features, which can negatively affect the tax system and the country when various social and political circumstances coincide. That is why, in the course of further research, it is planned to carry out a detailed analysis of the tax systems of individual countries. This includes developing countries, with a study of time series, an in-depth analysis of separate indices, and a breakdown of factors that negatively affect the development of the tax system.

CONCLUSION AND RECOMMENDATION

Taxes are the primary source of filling the budgets of all countries worldwide. To ensure that the state performs its functions at the appropriate level, governments must create the preconditions for the stable replenishment of budgetary resources. Given that value-added tax is one of the most common taxes. As it is one of the most significant and stable components of countries' income, it is necessary to identify key components of the optimal tax administration system.

As a result of the study, we found that despite the strong correlation between tax rates and budget revenues, high rates do not always guarantee high incomes (Belgian experience). Just a complex and extensive administrative mechanism does not always guarantee low rates of tax evasion and fraud (for example, Germany, Belgium and France). On the other hand, the correlation coefficient calculation between tax revenues and average wages showed no stable relationship between these variables. This means that the size of the tax rate does not affect the increase or decrease in the level of consumption of goods and services subject to VAT because the level of citizens' income is not determined in the administration of VAT revenues. Compared with the research of scientists and experts, all this allows us to conclude that constructing an optimal VAT administration system is based on an expanded tax base, which covers as many goods and services in the country as possible.

A striking example of the optimal system of VAT administration is Switzerland, whose tax system has the following key optimality characteristics: moderate basic tax rate; simplicity and convenience of administration; use of reduced VAT rates on critical goods; the use of a high marginal turnover limit as a condition for mandatory VAT registration and the introduction of a unified reporting system and tax payment by setting the same deadlines regardless of the length of the reporting period.

The obtained results can further become the basis for the gradual unification of national VAT administration systems in the EU based on the positive experience of member states, where revenues from this tax are a stable and vital source of budgetary replenishment.

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