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# VAT GAP DETERMINANTS IN THE EUROPEAN UNION

### Abstract

**Background:** The VAT gap is a key topic in the context of state budget revenues. The European Union introduced measures to support the member states in reducing the VAT gap. However, if such support is to be effective, it must be applied in the areas that are directly related to the VAT gap.

**Research purpose:** The study aims to identify significant determinants of the VAT gap in EU countries. The present study identifies factors that the EU as a whole can deal with to support member states in reducing the VAT gap.

**Methods:** The study concerns the analysis of descriptive statistics of selected variables and the econometric model with the GMM system, based on which it was possible to identify significant determinants of the VAT gap in the group of EU countries.

**Conclusions:** The key determinants of the VAT gap in the group of EU countries are economic growth and efficiency of governance. As a consequence, the EU policy aimed at reducing the VAT gap should focus mainly on those aspects that have a significant impact on the states' revenue and are under the jurisdiction of the EU. The most important aspects that the EU as a whole should focus on are the economic growth and the efficiency of the administration's activities. Indicating the directions of EU action fills the current research gap in this area.

Keywords: VAT gap, determinants of the VAT gap, GMM.

JEL classification: E26, H26, O17, O40

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## 1. Introduction

The VAT gap is defined as the difference between expected VAT revenues and the VAT actually collected.<sup>1</sup> VAT is a tax revenue in the budget, and it is often the largest share of tax revenues. The literature emphasizes that research related to the causes of the VAT gap is hampered by difficulties in measuring it.<sup>2</sup> Due to the problematic measurement of the VAT gap, it is also hard to analyze its determinants. However, despite these difficulties, each survey that examines the determinants of the VAT gap makes it possible to indicate the direction of change that may be the most effective in reducing the VAT gap.

VAT is a key tax that makes up the largest share of all taxes as a percentage of GDP.<sup>3</sup> EU countries have their own autonomous VAT systems, and the EU authorities have no direct influence on them. However, internal EU rules are emerging to support the systems of effective VAT collection in the member states. For the EU legislation to be effective, actions must be taken in areas that are realistically and effectively influenced by the EU directives.

The article identifies factors of the VAT gap among EU countries and the areas of the economy that can realistically deal with the EU to support internal policies related to reducing it. In addition, the influence directions of the VAT gap determinants are detected.

Based on an existing literature review of empirical research into the theories behind the factors that determine the VAT gap, three research hypotheses are formulated regarding the impact of macroeconomic factors, governance efficiency, and the size of the basic VAT rate related to the size of the VAT gap in the EU. The empirical study was conducted on panel data collected between 2000 and 2018 for 26 EU countries. The research hypotheses were verified using the OLS model with the GMM system applied. The results show that economic growth and governance efficiency significantly impact the size of the VAT gap in the EU.

The paper is organized as follows. First, the literature review is presented, followed by the data and methods. Then, the results are presented, and the paper ends with a discussion and conclusions.

<sup>&</sup>lt;sup>1</sup> European Commission, "VAT Gap – €140 billion in 2018, with a potential increase in 2020 due to coronavirus", https://ec.europa.eu/taxation\_customs/vat-gap\_en; accessed 23.07.2021.

<sup>&</sup>lt;sup>2</sup> H. Zídková, *Determinants of VAT gap in EU*, Prague Economic Papers 2014/23/4, p. 517.

<sup>&</sup>lt;sup>3</sup> S. Hodzic, H. Celebi, *Value-added tax and its efficiency: EU-28 and Turkey*, UTMS Journal of Economics 2017/8/2, p. 79.

### 2. Literature review

The literature overwhelmingly focuses on the theoretical analysis of the means of measuring the VAT gap. However, there is little empirical research on the determinants of the VAT gap that relate to the theoretical assumptions on factors that affect the size of the VAT gap in a particular country. This section reviews the publications that contain empirical analyses of the determinants that affect the VAT gap and discusses the impact of the most important factors that influence it.

Agha and Haughton (1996) analyzed the determinants of VAT revenues based on a study of 17 OECD countries with data from 1987. The results indicated that a smaller VAT gap is related to a lower standard VAT rate, fewer rates, a smaller population, longer education, and higher expenditure on administration. The findings indicated that a single VAT rate at an average level should effectively reduce the VAT gap and lower the administrative costs of servicing the tax system and expenses for verifying compliance with tax regulations.<sup>4</sup> They empirically verified the hypothesis about the impact of the tax system on the efficiency of VAT collection. The internal structure of the tax system affects its effectiveness. In the literature, authors indicate that a certain average level of the VAT rate has a positive effect on reducing the VAT gap, but the exact level has not been indicated. Agha and Haughton indicated that the average level differs from country to country and depends on the cultural conditions, traditions, and characteristics of a given market. This is exactly the point that Barbone et al. (2012) discussed in their paper, pointing out that countries with better citizenstate relations tend to have higher tax ratios than those in which unhappy citizens are less likely to fulfill their obligations.5

Research conducted by Zídková on 24 EU countries from 2002 to 2006 allowed them to identify typical determinants of the VAT gap in EU countries, i.e., final consumption expenditure of households and non-profit organizations with a positive impact on the VAT gap, and the share of VAT in GDP, reducing the VAT gap.<sup>6</sup> The large share of household consumption in GDP is a direct reason for the growing VAT gap, so countries with a high share of final consumption in GDP (for example, Poland) should allocate more resources to controlling VAT collection and the effectiveness of VAT collection.

<sup>&</sup>lt;sup>4</sup> A. Agha, J. Haughton, Designing VAT systems: Some efficiency considerations, The Review of Economics and Statistics 1996/78/2, p. 307.

<sup>&</sup>lt;sup>5</sup> L. Barbone, R.M. Bird, J. Vázquez Caro, The costs of VAT: A review of the literature, CASE Network Reports 2012/106, p. 51.

<sup>&</sup>lt;sup>6</sup> H. Zídková, *Determinants of VAT gap in EU*, Prague Economic Papers 2014/23/4, p. 514.

Majerová (2016) analyzed the determinants of the VAT gap in the European Union countries in the period 2000–2011. According to the findings, the Corruption Perception Index (CPI) had the most significant impact on the size of the VAT gap.<sup>7</sup> An increase in the CPI is related to a decrease in corruption in a given country, reducing the VAT gap. On the one hand, more citizens are forced to pay the right amount of taxes by limiting bribery; on the other hand, the integrity of citizens in paying their taxes reduces the need to resort to tax avoidance measures such as bribing a government official. Consequently, the relationship between lower corruption and a lower VAT gap is mutually reinforcing. Majerová also pointed out that the VAT gap in the EU is significantly influenced by economic growth, and the impact is positive. However, the impact of the basic VAT rate was not found.

Chan et al. (2017) analyzed the impact of the effectiveness of government spending on economic growth, taking into account the VAT system in 115 developing and developed countries.<sup>8</sup> They found that the VAT tax system increases the impact of effective government spending on economic growth. The very functioning of the VAT system fosters discipline in tax collection by the government and the effective management of these revenues.

It can be concluded that the analysis of the determinants of the VAT gap in the literature started with the structure of the tax system, i.e., the conditions related to the size of the standard rates of VAT and its variants, as well as the demographics of country-specific factors like population size. These determinants were then extended to include macroeconomic factors, and it turned out that some of the determinants related to the VAT system no longer had a significant impact on the size of the VAT gap. Current results indicate that the size of the VAT gap is also influenced by factors such as the efficiency of state governance, the level of corruption, and the shadow economy. Table 1 presents a chronology of the literature on the determinants of the VAT gap.

<sup>&</sup>lt;sup>7</sup> I. Majerová, The Impact of Some Variables on the VAT Gap in the Member States of the European Union, Oeconomia Copernicana 2016/7/3, p. 353.

<sup>&</sup>lt;sup>8</sup> S.G. Chan, Z. Ramly, M.Z.A. Karim, Government spending efficiency on economic growth: Roles of value-added tax, Global Economic Review 2017/46/2, p. 162.

Variable	Source	Impact
Standard VAT rate	Agha A., Haughton J. (1996)	positive
Number of VAT rates	Agha A., Haughton J. (1996)	positive
Population	Agha A., Haughton J. (1996)	positive
Longer the VAT system has been in operation	Agha A., Haughton J. (1996)	negative
Final consumption of households and non-profit organizations	Zídková H. (2014)	positive
Share of VAT in GDP	Zídková H. (2014)	negative
Shadow economy	Zídková H. (2014)	positive
GDP per capita	Zídková H. (2014)	negative
Share in intracommunity trade	Zídková H. (2014)	negative
Final consumption of restaurant and hotel services	Zídková H. (2014)	negative
Corruption	Majerová I. (2016)	negative
GDP growth	Majerová I. (2016)	positive
Government spending	Chan S.G., Ramly Z., Karim M.Z.A. (2017)	positive

TABLE 1: List of variables affecting the VAT gap based on a literature review

Source: own study.

# 3. Data and methods

The study uses data for 2000–2018 for EU countries collected by the European Commission. Due to data gaps, Cyprus and Croatia were omitted from the database. The remaining 26 countries, together with the United Kingdom, were included in the study. The following variables were taken into consideration:

- VAT gap the difference between the theoretical VAT receipts and the value of the state's actual VAT receipts (source: European Commission, Center for Social and Economic Research – CASE);
- Final consumption expenditure as % of GDP consumption expenditure of households and the public sector (source: World Bank);
- GDP growth as annual % percentage change in GDP (source: World Bank);
- Trade as % of GDP aggregated value of imports and exports divided by GDP (source: World Bank);

- Households and Non-profit institutions serving households' (NPISH) final consumption expenditure as % of GDP household consumption expenditure (source: World Bank);
- General government final consumption expenditure as % of GDP (source: World Bank);
- Control of Corruption a corruption index ranging from –2.5 to 2.5, where –2.5 means a completely corrupt country and 2.5 may be assigned to countries completely free from corruption (source: World Bank);
- Government Effectiveness government performance index ranging from –2.5 to 2.5, where –2.5 is assigned to the countries with the least effective governance, and 2.5 to the countries with the most effective governance (source: World Bank);
- Standard Rate basic VAT rate (source: European Commission, Center for Social and Economic Research CASE).

The above-described panel database was analyzed to verify the research hypotheses. First, descriptive statistics and Pearson's correlation indexes for the VAT gap and the other variables were calculated. Statistically significant relationships between the VAT gap and selected variables were shown. Then, in the second step, the unit root test was performed for the variables at different levels and first increments using the ADF test. In the third step, GMM models were built based on the conclusions drawn from the analysis in the first and second steps. The GMM system has been used in the literature for analogous research on the VAT gap<sup>9</sup> as its properties allow for a better fit of the model to panel data compared to alternative test methods.

The econometric analysis evaluates the dynamic panel model in its general form (the GMM system):

VAT 
$$\operatorname{gap}_{i,t} = \alpha_{i,t} + \beta_{i,t}$$
 VAT  $\operatorname{gap}_{i,t-1} + \gamma_{i,t} B_{i,t} + \mu_{i,t}$ 

where: B is the independent variables and  $\mu$  is the error that may be explained as follows:

$$\mu_{i,t} = \delta_{i,t} + \gamma_{i,t} + \varepsilon_{i,t}$$

where:  $\delta$  is the country-specific random effects,  $\gamma$  is the random effects assigned to the period, and  $\varepsilon$  is a random component with basic properties.

<sup>&</sup>lt;sup>9</sup> S. Cevik et al., Structural transformation and tax efficiency, International Finance 2019/22/3, pp. 341–379, or P. Di Caro, A. Sacchi, The heterogeneous effects of labor informality on VAT revenues: Evidence on a developed country, Journal of Macroeconomics 2020/63, 103190.

Based on the literature review, the following research hypotheses were formulated.

H1: Macroeconomic factors related to economic development have a significant and positive impact on the VAT gap in the EU.

H2: The quality of governance has a positive effect on the VAT gap in the EU.

H3: The VAT rate has a negative effect on the VAT gap in the EU.

The research hypotheses are verified based on the analysis of panel data collected for the European Union countries in the empirical part of the paper.

# 4. Results

Basic descriptive statistics were calculated for the analyzed variables, which are presented in Table 2.

	Mean	S.D.	Minimum	Maximum	VAT gap correlation
VATgap	0.1555	0.0988	-0.0090	0.4600	1.0000***
Final consumption expenditure	75.0600	8.3100	42.1600	92.4500	0.4636***
GDP growth	2.5550	3.5990	-14.8400	25.1800	-0.0292
Trade	106.9000	62.2100	-1.1750	408.4000	-0.2782***
Households and NPISHs consumption expenditure	53.1600	12.7400	-1.1750	71.1200	0.1806***
Government consumption	19.8400	2.8350	12.0000	27.9300	-0.3165***
Control of corruption	1.0760	0.8028	-0.4913	2.4700	-0.7204***
Government effectiveness	1.1600	0.6225	-0.3732	2.3540	-0.7212***
Standard rate	21.4200	2.2750	17.0000	27.0000	-0.0983**

TABLE 2: Descriptive statistics and Pearson's correlation

S o u r c e: authors' calculations with the usage of GRETL software. Significance levels for the parameters are given in the table: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

Between 2000 and 2018, the average VAT gap in the EU was 15.55%, and it ranged from -0.90% (Portugal in 2005) to 46% (Bulgaria in 2002). The average level of Final consumption expenditure was 75.06%, and its values, on average, deviated from the average by 8.31%. The correlation of Final consumption expenditure with the VAT gap was 46.36%, so the direction of change is statistically

significant and in line with theoretical assumptions (it is positive). The average GDP growth in the analysis period was 2.55%, ranging from -14.84% (Lithuania in 2009) to 25.18% (Ireland in 2015). The correlation coefficient for GDP growth was statistically insignificant and negative, as indicated by the theoretical assumptions, amounting to -2.92%. The average Trade level was 106.90%, with values deviating from the average by 62.21%, on average. The Trade and VAT gap correlation was statistically significant, but small, amounting to -27.82% (the direction of the correlation is consistent with the theoretical assumptions). The average value of Household and NPISH's consumption expenditure was 53.16%. Its correlation with the VAT gap was low but statistically significant and amounted to 18.06% (the direction of the relationship was consistent with the theoretical assumptions). The average value of Government consumption is 19.84%, while the correlation coefficient with the VAT gap was negative and amounted to -31.65%. This correlation was statistically significant, but the direction of the correlation was not in line with the theoretical assumptions. The average level of the Control of Corruption ratio was 1.076, and the correlation of this ratio with the VAT gap was high and amounted to -72.04% (the direction of the relationship was consistent with the theoretical assumptions). The average value of Government Effectiveness was 1.16, while the values of this variable deviated from the average by 0.62. The correlation of Government Effectiveness with the VAT gap was high and amounted to -72.04% (the direction of the relationship was consistent with the theoretical assumptions). The average value of the standard VAT rate in the EU was 21.42%, ranging from 17% (Luxembourg) to 27% (Hungary). The correlation ratio of Standard Rate and VAT gap was low and amounted to only -9.83% (the direction of correlation is not in line with the theoretical assumptions).

The above analysis indicates that EU countries differ in terms of the level of VAT collection, but also in terms of economic development, consumption, corruption control, and the effectiveness of governance. For Government consumption and Standard Rate, the Pearson correlation coefficient with the VAT gap did not show the direction of the relationship consistent with the theoretical assumptions.

In the next step, the data were tested for the occurrence of the unit root in the time series. With non-stationarity, the data cannot be used to test an econometric model in the proposed form. In the case of a unit root, the data should be transformed into first differences and re-tested in this form. The ADF test was used to test the occurrence of the unit root.<sup>10</sup> Table 3 shows the ADF test results and the p-value for the variable levels.

<sup>&</sup>lt;sup>10</sup> A. Welfe, *Ekonometria. Metody i ich zastosowanie*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2009, p. 367.

	Statistic	p-value
VATgap	-2.1275	0.0000
Final consumption expenditure	-1.3332	0.8393
GDP growth	-3.2798	0.0000
Trade	-1.2640	0.9024
Households and NPISHs consumption expenditure	-1.6590	0.2009
Government consumption	-1.7762	0.0793
Control of corruption	-1.5297	0.4707
Government effectiveness	-1.7486	0.1036

TABLE 3: Unit Root Test Results - ADF Test (Levels)

S o u r c e: authors' calculations using GRETL software.

For the p-value of 10%, it should be noted that the following variables are not stationary: Final consumption expenditure, Trade, Households, and NPISHs consumption expenditure, Control of Corruption. It was assumed that the ADF test values for the Government Effectiveness variable are within the range indicating the stationarity of this variable.

The study on the stationarity of variables was repeated for the data on the first differences. The ADF test results for the first differences are presented in Table 4.

TABLE 4: Unit Root Test Results – ADF Test (First Differences)

	Statistic	p-value
VATgap	-5.3284	0.0000
Final consumption expenditure	-3.6569	0.0000
GDP growth	-5.1495	0.0000
Trade	-4.1994	0.0000
Households and NPISHs consumption expenditure	-4.2519	0.0000
Government consumption	-3.6059	0.0000
Control of corruption	-4.1937	0.0000
Government effectiveness	-4.4203	0.0000

S o u r c e: authors' calculations using GRETL software.

According to the results, it should be indicated that all the variables in the first differences are stationary.

Based on the stationarity analysis, it was indicated that when choosing the variables in the model, the following variables should be transformed into the first differences: Final consumption expenditure, Trade, Households, and NPISHs consumption expenditure, Control of Corruption. In line with these findings, two models were proposed to describe the impact of selected variables on the VAT gap. Model 1 uses all the variables that were selected as determinants of the VAT gap in the EU based on literature analysis. Model 2, on the other hand, is a detailed model in which only the factors having a statistically significant impact on the VAT gap were examined. This procedure was performed to check whether excluding any determinants changes the influence of the determinants remaining in the model. When analyzing the results, it can be concluded that the impact of the lagged value of the VAT gap, economic growth, and the economic efficiency index is stable and independent of the inclusion of other determinants in the model.

On the basis of the ADF test, the following model was built, the results of which are presented in Table 5. The model can be written as follows:

VAT  $gap_t = const + VAT gap_{t-1} + \Delta Final consumption expenditure_t + GDP growth_t + \Delta Trade of GDP_t + \Delta Households and NPISHs consumption expenditure_t + Government consumption_t + \Delta Control of corruption_t + Government effect-iveness_t + Standard rate_t + \mu_{i,t}$  (1)

VAT 
$$gap_t = const + VAT gap_{t-1} + GDP growth_t + Government effectiveness_t + \mu_{i,t}$$
(2)

Models 1 and 2 were verified for correctness of construction using four tests: R(1), AR(2), Sargan's test, and Wald's test, based on which it should be indicated that the models are built correctly.

	Model 1	Model 2
	1	2
VAT gap (t–1)	0.5978***	0.5799***
const	0.1381***	0.1259***
$\Delta$ Final consumption expenditure	-0.0009	
GDP growth	-0.0025**	-0.0027***

TABLE 5: GMM models

	1	2
$\Delta$ Trade of GDP	-0.0005	
$\Delta$ Households and NPISHs consumption expenditure	-0.0004	
Government consumption~	0.0002	
$\Delta$ Control of corruption~	-0.0160	
Government effectiveness	-0.0458***	-0.0476***
Standard rate	-0.0010	
AR(1) p-value	0.0001	0.0001
AR(2) p-value	0.0969	0.1047
Sargan test p-value	0.0000	0.0000
Wald test	0.0000	0.0000

S o u r c e: authors' calculations using GRETL software. Significance levels for the parameters are given in the table: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

Based on the results in Table 5, it should be stated that economic growth and government effectiveness are significant factors that influence the VAT gap in EU countries.

## 5. Discussion

The research carried out in this paper allows the following conclusions to be made. Analyzing the impact factor of the delayed value of the VAT gap by 1 period indicates that the shocks in the value of the VAT gap impact the value of the VAT gap in the long run. Therefore, the values in the time series are characterized by "long memory". Furthermore, attention should be paid to the EU authorities' actions do not lead to a drastic increase in the member states' VAT gap because it will have consequences in the following years, and the effects of such a shock will "expire" only after a few years or more than a decade. Research carried out by Cevik allows us to confirm this conclusion.<sup>11</sup>

Another conclusion is that when examining the EU countries as communities, the only factors that influence the VAT gap are economic growth and government effectiveness. Research hypotheses 1 and 2 have been positively verified. As a consequence, the EU policy aimed at reducing the VAT gap should focus on

<sup>&</sup>lt;sup>11</sup> E.g., **S. Cevik et al.**, *Structural transformation...*, pp. 341–379.

those aspects that have a real significant impact and are under the responsibility of the EU bodies. According to the research carried out in this paper, it can be concluded that the most important aspects that the EU as a whole may focus on in the context of reducing the VAT gap are the growth of the economy and improving the effectiveness and efficiency of the administration's activities.

It can also be concluded that the determinants mentioned in the literature as factors that influence the VAT gap in EU countries do not significantly impact the EU member states at present. This is because EU countries are still significantly differentiated in terms of economic development, household consumption, consumption generated by state authorities, trade, and even such a key aspect of the VAT gap as the standard VAT rate. The differentiation of the EU countries in terms of the analyzed indicators was shown based on the analysis of basic descriptive statistics, and the results of the econometric study confirmed this. Research hypothesis 3 has not been positively verified.

Agha and Haughton also recommend applying a single VAT rate without additional exemptions and reduced rates.<sup>12</sup> However, as a result of the empirical research, this recommendation turns out to be incorrect. The theory of a simple relationship between the VAT rate and the VAT gap is refuted by, for example, Scandinavian countries where the average VAT gap is 4.51% and the basic VAT rate is 25%. Also, in the tested model, the VAT rate had no statistically significant impact on the VAT gap. This finding is consistent with the literature on the subject, with Barbone et al. (2012) pointing out the relationship between the citizen and the state in VAT collection efficiency.<sup>13</sup> They pointed out directly that: "the task of the revenue administration would be little more than to provide the facilities for citizens to discharge this responsibility".<sup>14</sup>

## 6. Conclusions

European Union countries do not have a top-down VAT system imposed by the European Commission, although the VAT systems in the EU are similar. They generally consist of one main VAT rate (plus reduced rates), and they are levied on the value-added. Consequently, VAT rates in the EU range from 17% to 27%, with the average rate being 21.42%.

<sup>&</sup>lt;sup>12</sup> E.g., A. Agha, J. Haughton, *Designing VAT...*, p. 307.

<sup>&</sup>lt;sup>13</sup> L. Barbone, R.M. Bird, J. Vázquez Caro, *The costs of VAT...*, p. 51.

<sup>&</sup>lt;sup>14</sup> *Ibidem*, s. 10.

Based on the findings presented in this paper, economic growth and efficiency of governance are significant determinants of the VAT gap in the EU. The EU policy aimed at supporting the member states in the fight against the VAT gap should be aimed at supporting economic growth and facilitating the effectiveness of governance in these countries. EU actions in other areas may not bring the expected result.

Further research should focus on identifying specific determinants for each EU member state to verify whether there are groups of countries with the same determinants of the VAT gap. EU countries should be grouped by specific determinants of the VAT gap that are significant. It would be interesting to identify the causes of such a state, and it would also show directions of support of the EU for the individual member states in the fight against the VAT gap.

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#### DETERMINANTY LUKI VAT W UE

#### Abstrakt

**Przedmiot badań:** Zagadnienie luki podatku VAT jest kluczowym tematem w kontekście dochodów budżetu państwa. Unia Europejska podejmuje działania wspierające państwa członkowskie w ograniczeniu luki VAT, lecz by to wsparcie miało realny wymiar, musi być skierowane na te obszary, które stanowią rzeczywisty czynnik luki VAT w UE.

**Cel badawczy:** Celem badania jest wskazanie istotnych determinant luki podatku VAT państw UE jako zbioru państw funkcjonujących we wspólnocie gospodarczej. Badanie pozwoli na wskazanie tych czynników, którymi może zająć się UE jako całość, by wspierać państwa wspólnotowe w ograniczaniu luki VAT.

**Metoda badawcza:** Badanie dotyczyło analizy statystyk opisowych wybranych zmiennych oraz zbudowania modelu ekonometrycznego za pomocą systemu GMM, na podstawie którego możliwe było wskazanie istotnych determinant luki VAT w grupie państw UE.

**Wyniki:** Kluczowymi determinantami luki podatku VAT w grupie państw UE są wzrost gospodarczy i efektywność rządzenia. W konsekwencji polityka UE nastawiona na redukcję luki VAT powinna skupiać się wyłącznie na tych aspektach, które mają realnie istotny wpływ i są w gestii organów UE. Najważniejszymi aspektami, na których może się skupić UE jako całość, to wzrost gospodarki oraz poprawa skuteczności i efektywności działań administracji.

Słowa kluczowe: luka VAT, determinanty luki VAT, GMM.