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## The impact of selected variables on the VAT gap in the Member States of the European Union

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**The impact of selected variables on the VAT gap  
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## The impact of selected variables on the VAT gap in the Member States of the European Union

**JEL Classification:** *H26, H32*

**Keywords:** *tax gap; value added tax; Corruption Perception Index; GDP growth; VTTL model; regression*

**Abstract:** One of the most serious problems of fiscal character is the issue of the tax gap. The tax gap is defined as the amount of tax liability faced by taxpayers that is not paid on time. The tax gap comes from three main areas of non-compliance with the tax law – firstly from underreporting of income, secondly from underpayment of taxes and thirdly from non-filing of returns. The tax evasions in the area of value added tax form one of the largest groups of tax gap. This article describes the current situation in the field of tax gap in selected countries of the European Union, namely the VAT gap. The aim of this paper is to determine a dependence of the VAT gap on three variables, the Corruption Perception Index CPI, GDP growth rate and the basic VAT rate. A method of the regression analysis has been used, performed on data in the years 2000-2011. In spite of the fact that it could be assumed that tax burden will affect the VAT gap the most, the highest dependence was shown in the case of the Corruption Perception Index.

### Introduction

Taxes began to be paid in ancient times, and since that time there is a problem called a tax gap. It is in fact a tax avoidance which creates a tax gap between what should be paid in taxes and what has really been paid. Tax authorities, not only in the European Union, are currently facing major challenges in this regard in achieving the goals that would reduce this gap.

The problem of the tax gap is considerable in the European Union countries (but stable as Ángeles Castro & Ramírez Camarillo, 2014 in the case of OECD countries in period 2001-2011 claims). Potential returns that do not end at tax collectors of individual tax administrations amount to one trillion Euros per year (in the US 345 billion dollars, according to IRS

data). Significant amounts of money currently end up in tax havens, which is a major obstacle in the period when most European countries have their budgets in deficit. That is the reason why the economic statistics focus on calculation of a tax gap. In this approach, it is important to quantify the theoretical amount of tax, from which the tax gap is established.

For the purposes of analysis in this article the VAT gap has been chosen, as it is the most important part of the tax gap. The VAT gap is calculated as the difference between the theoretical VAT liability ascertained from the national accounts and the VAT revenues accrued by the financial authorities (Zidkova, 2014, p. 514).

A motivation for writing this article was to determine whether a generally accepted view of the positive relationship of the tax burden and tax gap of that tax type actually exists and whether it is statistically significant. For the comparison two other indicators namely the Corruption Perception Index and GDP growth rate have been selected.

The paper concerns three parts - theoretical, methodological, and research. The first part describes the theoretical approaches and ways of measuring the tax gap and the VAT gap through fiscal sustainability and VTTL model. The second part describes the methodology of research, where the method of regression analysis has been chosen for determining the VAT gap, depending on three variables – Corruption Perception Index, GDP growth rate and the basic VAT rate. When examining the dependence, the data from 2001 to 2011 were used. The third part is devoted to the VAT gap in selected countries of the European Union and the application of the regression model for the member countries.

## **Theoretical Approach to the Tax Gap and VAT Gap**

Her Majesty's Revenue and Customs defines the tax gap as the difference between the selected taxes and tax, which should be selected, so the theoretical liability (HMRC, 2013). Theoretical liability is a tax that would be paid if all people and companies respected the tax law (Tyrie, 2012). Armstrong, Bloin & Larcker (2011, p. 395) defined the concept of the book-tax-gap as spread between aggregate financial statement income and aggregate taxable income.

According to Plumley (2005) or Warren & McManus (2007) there are three components of tax gap – non-lodgement (non-filing), under-reporting and under-payment. Hurst, Li & Pugsley (2014, p. 19) indicated that the self-employed systematically underreport their income in U.S. and

individual income represented over half of uncollected revenue (Branham, 2009, p.1507).

Tax gap also covers evasion of participants in legal activities in the informal economy; it means that part of the economic activity that does not pass through official economic statistics (more about hidden – illegal – economy see Giles, 1999). These participants are informal contractors, domestic workers and street vendors who do not report their income and do not pay taxes. On the other hand, the tax gap does not include unpaid taxes from people who work in the informal economy, which consists of illegal activities such as drug trafficking, illegal gambling and prostitution (Todler, 2013).

A typical feature of the tax gap is financial flows, which can be divided into two categories – (legal) avoidance and (illegal) evasion (Gemmel & Hasseldine, 2014, p. 275). The first one is the legal avoidance, which is inappropriate or irregular, because it is not permitted under rules and customs. It includes the avoidance of tax liabilities. To define tax avoidance is more difficult than to define the tax evasion, because in this case there is no legal basis. Tax evasion is characterized as an effort to minimize tax assessment without deliberate deception (which would be considered as tax evasion), but in contrary to the law. Therefore it is an abuse of gaps and deficiencies in the tax system and other legislation in a way that has not been foreseen by the law.

The other category includes unlawful flows. Concerning the tax evasion it means minimizing taxes. Tax evasion may be either legal or illegal. Legal tax evasion is a condition where the taxpayer uses the shortcomings in the law in a way that was not intended by the legislature. Illegal tax evasion is the case when the taxpayer receives a tax benefit in contrary to the law, ie by its violations. These tax evasions usually arise from a false tax statements denying taxes to tax authorities or stating false requirements for tax deductions.

The issue of tax evasion has been dealt with many scientific publications, for example Chiarini, Marzano & Schneider (2013) quantified the elasticity between tax evasion and average tax rate in Italy in the period 1980-2006, as well as Levaggi & Menoncin (2013). According to Di Lorenzo (2014) a lower tax rate on labour income enabling money to flow from households to companies through private consumption reduces incentives for tax evasion. Gillman & Kejak (2014) claimed that upward trend in good and human capital sectors gradually decreases tax evasion.

The tax gap is one of the most commonly used indicators of fiscal sustainability. The construction of this indicator is based on the same approach, firstly the level of sustainable fiscal variables is calculated, and then the gap is defined as the difference between sustainability and the

current level of the primary deficit or tax rate. Sustainable level of fiscal variables ensures the convergence of the debt ratio to a final value and its calculation is governed by the terms of sustainability:

$$\lim_{T \rightarrow \infty} \left[ \sum_{t=1}^T pd_t \left( \frac{1+r}{1+y} \right)^{-t} \right] = -b_0 \quad (1)$$

where  $pd$  is primary deficit,  $r$  is the interest rate,  $y$  represents the real GDP growth rate and  $b_0$  is the initial debt ratio.

This condition says that the present discounted value of future primary surpluses should be equal to the initial value of the debt. Then the primary deficit may be expressed as:

$$pd^* = -b_0 \frac{r-y}{1+y} \quad \text{or with omission } (1+y): \quad pd^* = -b_0(r-y) \quad (2)$$

Calculation of the primary gap is then expressed by the following equation:

$$pd^* - pd_t = -b_t(r-y) - pd_t \quad (3)$$

$b_t$  represents ratio of debt to GDP.

In the calculation of the primary gap is thus necessary to know the current primary deficit and debt, and it is necessary to draw assumptions of expected long-term average values of interest rates and the rate of real GDP growth. If the current primary deficit is higher than sustainable ( $pd^* - pd_t < 0$ ), the ratio of debt to GDP will increase without any constraints and fiscal policy can be called unsustainable. Sustainable primary deficit can also be used as the target of government towards sustainable deficit. This is an attractive factor, since fiscal balance is usually the ultimate object of the interests of creators of economic policies. The primary difference is a scale of the adjustments that need to be returned to the level of fiscal balance and sustainable level. The primary deficit can be expressed as the difference between expenditures and revenues:

$$pd_t = g_t + h_t - \tau_t \quad (4)$$

where  $g$  is a consumption (including investment),  $h$  are the transfers and  $\tau$  represents a current tax rate. All variables are measured as a share of GDP. It is important to calculate the sustainable level of the tax ratio:

$$\tau^* = \frac{r - y}{1 + y} \cdot \left\{ \sum_{t=1}^{\infty} \left[ (g_t + h_t) \cdot \left( \frac{1+r}{1+y} \right)^{-t} \right] + b_0 \right\} \quad (5)$$

By subtracting the current tax rate from sustainable levels we get a so called indicator of the tax gap:

$$tax\_gap = \tau^* - \tau \quad (6)$$

If sustainable tax ratio ( $\tau^*$ ) is greater than the current tax rate ( $\tau$ ), which means that the tax gap is positive, fiscal policy will be necessary to be adjusted to prevent excessive accumulation of debt. The tax gap indicator should not lead to the conclusion that the best way to correct the current policy is to raise taxes. For example Alvaiez-Martinez & Polo (2014) indicated the enormous difficulties of the government of Spain faces to close the deficit gap by raising taxes, Gemmel & Hasseldine (2012) claimed that an extra dollar in tax revenue not always reduce the tax gap by a dollar. This indicator only indicates that the current tax rate is not high enough to finance future spending and debt.

The estimation of the VAT gap can be done through the model VTTL. The Vat Total Theoretical Liability (VTTL) as a model, and VAT gap derived from VTTL are general indicators. The basic objective of measurement is to determine the overall level of the VAT gap comparing the pure theoretical tax with real revenues from the VAT. This difference is called the VAT gap. By subtracting net VAT revenues and net VTTL the VAT gap arises:

$$G_{VAT} = NR_{VAT} - VTTL_N \quad (8)$$

where  $G_{VAT}$  represents VAT gap,  $NR_{VAT}$  is the net revenue from VAT and  $VTTL_N$  is the net VAT total theoretical liability. The percentage difference is further calculated by dividing the VAT gap and net VTTL:

$$D = \frac{G_{VAT}}{VTTL_N} \quad (9)$$

where %D is the percentage difference.

### **Methodology of the research**

The aim of this paper is to determine the dependence of VAT gap on three variables; the regression analysis was performed on data from the years 2000-2011, from which the arithmetic mean was calculated. To implement the regression analysis, three independent variables explaining one dependent variable were selected. The dependent variable in the model is VAT gap, expressed as a percentage of the VTTL. The values of VAT gap for individual member states were taken from the study of CASE (2012). The exception is Cyprus, which was excluded from the analysis due to the revision of the national accounts. Three indicators as independent variables were selected, namely Corruption Perception Index, GDP growth rate and the basic VAT rate.

The Corruption Perceptions Index (CPI) represents the area of socio-institutional factors. Its main task is to sort countries according to how corruption is perceived in the public sector. Each country indicates the perceived level of public sector corruption on a scale of 0 to 10, where 0 means that a country is perceived as very corrupt, while 10 means that it is uncorrupt. This index is compiled annually by Transparency International in order to control factors relating to corruption in the public sector, which can directly affect the tax compliance of taxpayers. According Liu & Feng (2015, p. 57) countries with more complex tax system tend to be more corrupted than countries with less complex tax system. In the case of the CPI (according to CASE, 2012) the expected impact is negative, which means that the increasing value of corruption index (positive perception of corruption) decreases tax evasions. Regarding the results of this index within the European Union, the Nordic countries reach the highest values in average of twelve years. Finland reached the value of approximately 9.51, followed by Denmark with the average value of 9.46 and Sweden with the mean value of 9.24. Conversely, the lowest measured value was reached by Romania with the average value of 3.23, Bulgaria with the value of about 3.82 and Latvia, which reaches the average value of 4.17.

Other selected variable is GDP growth rate which has been chosen as an indicator in the area of economic determinants. The calculation of the annual growth rate of GDP volume allows comparing the economic



development dynamics both over time and among economies. For measuring the growth rate of GDP current prices recorded at prices of the previous year were used and thus calculated volume changes are kept in the values of the reference year. The used data were taken from the Eurostat statistics and then averaged over twelve years. The study of CASE (2012) expected a negative impact in this field, too, which means that the increase in economic growth reduces the VAT gap. Estonia reaches the greatest economic growth in average of the EU countries with the average growth of 4.76%, followed by Lithuania with the increase of 4.66% and Slovakia with the value of the average growth of 4.43%. As regards the countries with the lowest GDP growth rate, the worst results were achieved by Italy with the average of 0.67%, Portugal with the average growth of 0.8% and Denmark with the value growth rate of 0.9%.

The basic VAT rate has been chosen as the last independent variable representing tax factors. Regarding the expected impact, the study of Reckon (2009) assumes a positive impact on the VAT gap, which means that if the basic VAT rate increases, the tax evasion grows. The basic VAT rate in the European Union member states in the monitored period ranges from 15% in Luxembourg to 23.7% in Hungary. The statistics of the four selected indicators are specifically listed in Table 1.

**Table 1.** The basic characteristics of regression analysis in the selected EU-Members in the years 2000-2011

<b>Member state</b>	<b>CPI</b>	<b>GDP growth</b>	<b>Basic VAT rate</b>	<b>VAT gap, % of VTTL</b>
Austria	8,07	1,82	20,00	11,08
Belgium	7,14	1,64	21,00	13,42
Bulgary	3,82	4,08	20,00	16,08
Czech Republic	4,45	3,36	20,17	23,42
Denmark	9,46	0,90	25,00	9,75
Estonia	6,18	4,76	18,50	15,58
Finland	9,51	2,18	22,08	13,17
France	6,96	1,40	19,60	15,42
Germany	7,83	1,37	17,25	12,58
Greece	4,22	1,53	19,08	29,50
Hungary	5,00	2,16	23,75	26,42

Ireland	7,51	3,17	21,00	7,75
Italy	4,78	0,67	20,08	26,08
Latvia	4,17	4,23	18,83	23,92
Lithuania	4,73	4,66	18,58	34,67
Luwembourg	8,53	3,05	15,00	12,33
Malta	5,98	1,81	17,00	12,67
Netherland	8,84	1,52	18,88	5,25
Poland	4,25	3,98	22,08	13,17
Portugal	6,29	0,80	19,83	8,67
Romania	3,23	3,93	19,83	41,92
Slovakia	4,19	4,43	20,17	28,83
Slovenia	6,11	2,72	19,50	6,92
Spain	6,71	2,17	16,00	11,75
Sweden	9,24	2,46	25,00	4,00
United Kingdom	8,28	1,85	17,29	12,67
EU-26 average	6,36	2,56	19,83	16,81

Source: own according Transparency International, Eurostat, European Commission (2015), CASE (2012)

Regression analysis is carried out using a method of least squares. This method has several assumptions. Firstly, spatial correlation was determined by using the Pearson correlation coefficient, further constancy variance was tested using graphical methods and based on ARCH test and finally assumption of normality was assessed using the test model Jacque-Bera (Cipro, 2008). These assumptions were tested in program EViews.

The basic equation for expressing simple linear function is the following equation.

$$y = \beta_0 + \beta_1 x + \varepsilon \quad (10)$$

where  $\beta_0$  and  $\beta_1$  are the values of the parameters of the regression line,  $\varepsilon$  is a random component. These values obtained estimates  $b_0$  and  $b_1$ , which are called the regression coefficients, and can be calculated using the least squares method. Formulas for the calculation have a following form:

$$b_1 = \frac{\overline{xy} - \bar{x} \cdot \bar{y}}{\overline{x^2} - \bar{x}^2} \quad \text{and} \quad b_0 = \bar{y} - b_1 \bar{x} \quad (11)$$

Regarding the statistical significance of the model as a whole, it is necessary to establish a zero ( $H_0$ ) and alternative ( $H_1$ ) hypothesis and then test these hypotheses at the significance level  $\alpha = 0.05$ .

$H_0$ : The linear regression model is statistically insignificant.

$H_1$ : The linear regression model is statistically significant.

Another important requirement is to perform T-test, which examines each parameter  $\beta_0$  and  $\beta_1$  separately, if they are not equal to zero. Even in this case null and alternative hypotheses are determined and tested at a significance level  $\alpha = 0.05$

$H_0$ : Parameters  $\beta_0$  a  $\beta_1$  are equal to zero.

$H_1$ : Parameters  $\beta_0$  a  $\beta_1$  are not equal to zero.

### **The VAT Gap in selected EU countries and the application of the regression model**

The VAT rates differ in the EU Member States, causing that tax evaders are looking to profit from the gaps and incompatibilities between different national tax systems (Sharman, 2012, p. 17).

Estimated VAT gaps have a very wide dispersion among countries, ranging from 21 million Euros in Malta, to 36,134 million Euros in Italy (in 2011). Across the European Union is the average VAT gap in 2011 (20%) expressed as a percentage of the VAT total tax liability. The estimated total amount of the VAT gap of EU-26 is approximately 193 billion Euros, or expressed as a percentage of GDP EU-26 in 2.1%. Data are shown in Table 2.

**Table 2.** Estimating the VAT gap in the EU Member States in 2011

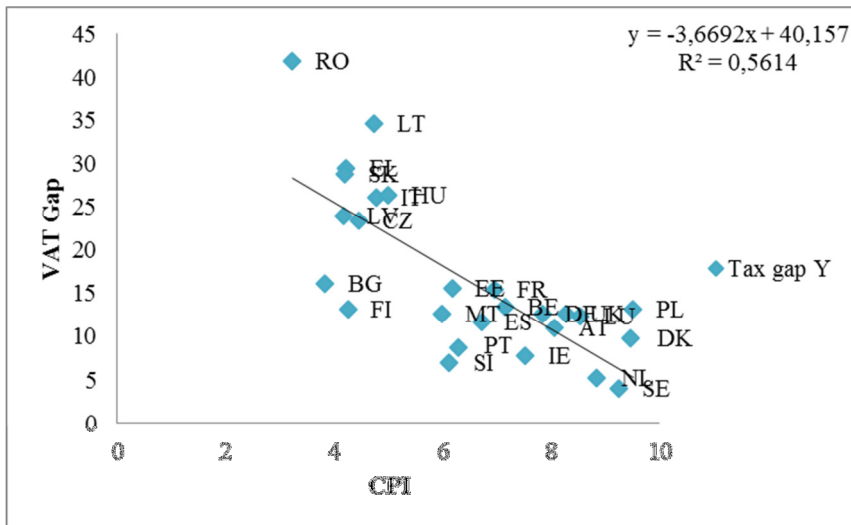
<b>Member state</b>	<b>VTTL 2011 (v bill. Eur)</b>	<b>VAT gap (in mil. Eur)</b>	<b>VAT gap as % of VTTL</b>	<b>VAT gap as % of GDP</b>
Austria	26 915	3 468	13	1,2
Belgium	30 991	4 970	16	1,3
Bulgary	3 956	604	15	1,6
Czech Republic	15 235	4 241	28	2,7
Denmark	26 436	2 566	10	1,1
Estonia	1 664	301	18	1,9
Finland	19 746	2831	14	1,5
France	172 739	32 233	19	1,6
Germany	216 830	26 910	12	1,0
Greece	24 790	9 763	39	4,7
Hungary	12 216	3 700	30	3,7
Ireland	10 890	1 108	10	0,7

Italy	134 691	36 134	27	2,3
Latvia	2 322	954	41	4,7
Lithuania	3 795	1 352	36	4,4
Luxembourg	3 242	551	17	1,3
Malta	541	21	4	0,3
Netherland	45 622	4 012	9	0,7
Poland	35 253	5 410	15	1,5
Portugal	16 999	2 764	16	1,6
Romania	21 760	10 348	48	7,9
Slovakia	7 484	2 773	37	4,0
Slovenia	3 375	326	10	0,9
Spain	71 744	15 197	21	1,4
Sweden	37 542	932	2	0,2
United Kingdom	150 064	19 487	13	1,1
EU-26 average	1 096 841	192 957	20	2,1

Source: own according CASE (2012)

To perform regression analysis, three independent variables have been selected, that explain one dependent variable. The dependent variable in the model is VAT gap, expressed as a percentage of VTTL. The Corruption Perception Index reached the highest significance from three selected explanatory variables. Figure 1 below shows the dependence of the VAT gap and CPI.

**Figure 1.** Dependence of VAT gap and Corruption Perception Index



Source: own calculation

Figure 1 shows that there is a relation between the VAT gap and Corruption Perception Index in this case. Equation of line of regression analysis has thus the form:

$$y = -3.669x + 40.157 \quad (12)$$

From the equation of line of the regression analysis it is evident that in this case the negative relationship of examined variables is confirmed, therefore, when the value of CPI raises, the tax evasion decreases.

Some countries deviate from the established regression dependence, Romania is one of these countries. If we focus on the individual average values of Romania in both indicators in the years 2000-2011, as regards VAT gap, Romania reached the highest value, namely 41.9%, and on the contrary in the case of Corruption Perceptions Index it has the lowest value, in average 3.225. This is the highest level of corruption in examined countries of the European Union. Lithuania is another deviating state is. With the indicator of the VAT gap (in terms of size of this indicator) it ranks in the second place behind Romania with the average of 34.6%. Lithuania is reaching the value 4.72 of the Corruption Perceptions Index and it belongs to the countries of the European Union with a very low level of its value, which shows a high level of corruption in this country. Sweden achieves the best results, as it has a low rate of the VAT gap and a high level of the CPI, which indicates a confidence in the field of corruption politics. According to the average values of Sweden from 2000 to 2011, the VAT gap stands at 4% and the corruption perception index is the third highest among European Union countries, with an average value of 9.2, just behind Finland and Denmark. The following table 3 shows the concrete results of the regression analysis.

**Table 3.** Output of regression analysis exploring the dependence of VAT gap and Corruption Perceptions Index

Regression statistics	
Multiple R	0.749271345
Value of reliability R	0.561407548
Set value of rel. R	0.543132863
Std. Error	6.474392256
Observations	26
ANOVA	

	Difference	SS	MS	Signif. F
Regression	1	1287.734562	1287.734562	1.05963E-05
Residues	24	1006.026122	41.91775509	
Total	25	2293.760684		
	Coefficients	Std. Error	tStat	Value P
Limit	40.15747544	4.399969179	9.126762895	2.83818E-09
Average	-3.669167634	0.661992983	-5.542608048	1.05963E-05

Source: own calculation

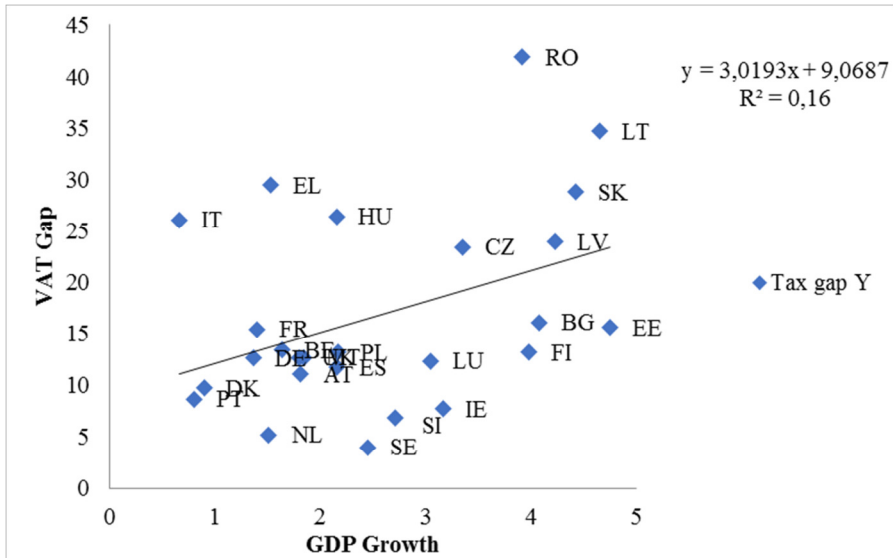
In this model, the probability value (significance F) is less than the tested significance level of 0.05, which means that the null hypothesis is rejected, and the regression model is statistically significant.

The value of correlation coefficient, which is shown in Figure as multiple R indicates the strength of dependence of selected variables. Specifically, it means that the VAT gap is approximately 75% dependent on changing of the Corruption Perceptions Index. Another value shown in the table is the value of reliability R – it is also a coefficient of determination. It indicates how much of the total variance of the dependent variable, i.e. VAT gap, is explained by the regression model. In this case it is about 56.1%.

The level of significance is compared with the value P in the table above. Thus, if P value is lower than the level of significance, as in this case ( $2.83818E-09 < 0.05$ ), we reject null hypothesis and so the alternative hypothesis is valid, therefore, both parameters are not equal to zero.

The second examined variable is GDP growth and its impact on the emergence of VAT gap. In this case a very little dependence has been found, which is shown in Figure 2 below.

**Figure 2:** Dependency relationship of VAT gap and GDP growth



Source: own calculation

Equation of line of regression analysis has thus the form:

$$y = 3.0193x + 9.0687 \quad (13)$$

There are many more countries that deviate from the established linear line in the case of the growth rate. It is Romania, which has the highest level of the VAT gap from all the EU countries, as mentioned above, and regarding GDP growth, Romania ranks among the countries of the European Union which have high GDP growth rate in average in twelve years, about 3.9%. Slovakia is another deviating country. As regards the size of the VAT gap, Slovakia ranks among the countries with the high level of gap and reaches the average value of approximately 28.8%. The GDP growth rate of Slovakia reaches high values that are the third highest among the EU countries, behind Estonia and Lithuania, with an average of approximately 4.4%. The lowest point is the result of Sweden due to its lowest rate of the VAT gap and its GDP growth rate with the average value of approximately 2.4%.

Table 4 shows the results of the regression analyzes exploring the dependence of VAT gap and GDP growth.

**Table 4.** Output of the regression analyzes exploring the dependence of VAT gap and GDP growth

Regression statistics				
Multiple R	0.400031345			
Value of reliability R	0.160025077			
Set value of rel. R	0.125026122			
Std. Error	8.95986759			
Observations	26			
ANOVA				
	Difference	SS	MS	Signific. F
Regression	1	367.0592	367.05923	0.042878191
Residues	24	1926.701	80.2792272	
Total	25	2293.761		
	Coefficients	Std. Error	tStat	Value P
Limit	9.068708251	4.023253153	2.254073484	0.033595657
Average	3.01930171	1.41201734	2.1382894	0.042878191

Source: own calculation

Pearson's correlation coefficient is approximately 40% of the value in this case, ie the dependence is much smaller than in the previous case. VAT gap is therefore 40% dependent on GDP growth, which is very low. The coefficient of determination shows that with the help of the regression analysis only 16% of VAT gap is explained.

By testing the statistical significance of the regression model, similarly to the previous case at a significance level  $\alpha = 0.05$ , the calculated probability shown in the figure is lower than the significance level  $\alpha$  ( $0.042878191 < 0.05$ ). The null hypothesis is again rejected and the linear regression model is statistically significant.

Furthermore, the tested value P is lower than the significance level  $\alpha$  ( $0.033595657 < 0.05$ ). The null hypothesis is rejected and it is valid that the test parameters are equal to zero.

However, it does not confirm the expected effect which the GDP growth should have on the VAT gap. According to the regression the expected negative impact that the VAT gap falls with the increase of the GDP growth is not valid.

The last monitored variable is the basic VAT rate and its impact on the VAT gap. Regarding this variable, the dependence is negligible, almost zero, which implies that the amount of the basic VAT rate has no effect on the size of the VAT gap. Table 5 shows the results of regression analysis, from which it is seen that the model as a whole is not statistically significant.



**Table 5.** Output of regression analysis exploring the dependence of VAT gap and the basic VAT rate

Regression statistics				
Multiple R	0.063507268			
Value of reliability R	0.004033173			
Set value of rel. R	-0.037465445			
Std. Error	9.756428543			
Observations	26			
ANOVA				
	Difference	SS	MS	Signific. F
Regression	1	9.251134	9.25113384	0.757922588
Residues	24	2284.51	95.1878979	
Total	25	2293.761		
	Coefficients	Std. Error	tStat	Value P
Limit	21.77969836	16.06305722	9.126762895	0.187756647
Average	-0.250762324	0.804369644	-0.311750109	0.757922588

Source: own calculation

The correlation coefficient regarding the dependence of the VAT gap and the basic VAT rate reaches the value of just 6.3%. It indicates there is no relation between these two variables and they are not mutually affected. The determination coefficient, which indicates what proportion of the total variance of the dependent variable is explained by the regression model, reaches only 0.4%. It means that this model is not explained by the selected dependent variable.

The calculated probability, which is shown as the significance F in the table, reaches a higher value than the specified level of significance level  $\alpha$  ( $0.757922588 > 0.05$ ). It confirms the null hypothesis, and this model is statistically insignificant and thus could not demonstrate any anticipated impact.

## Conclusions

Currently, one of the biggest problems in the fiscal area is called the tax gap. A failure of taxpayers to pay taxes creates important arrears that are subsequently missing in the budgets of individual states, which is in the period when most of the member countries of the European Union are in deficit, a major problem that needs to be solved. The tax gap arises in two ways, partly caused by tax evasion, partly by tax avoidance. The main cause is primarily omission of the tax laws by tax payers.

The European Union belongs to the areas with high tax burden. The overall tax ratio reaches 38.8% as regards the European Union. In comparison with the OECD countries, there are only two countries that exceed the 30% limit, which is Canada and New Zealand. Regarding the European Union member countries there are striking differences in the level of taxation as well - the overall tax ratio varies from 26% in Lithuania to 47.7% in Denmark.

In the article the influence of the dependence of the VAT gap and three selected independent variables, namely the corruption perception index, GDP growth rate and the basic VAT rate, were examined. Of these three variables the Corruption Perceptions Index demonstrated the highest dependence regarding the first mentioned. 75% dependence of the VAT gap on the Corruption Perceptions Index was demonstrated. According to the tests, the model was determined to be statistically significant. Regarding the GDP growth rate, the model is evaluated as statistically significant and the variable dependence is approximately 40%. Concerning the basic VAT rate there has been no evidence of dependency and the model is insignificant as a whole.

In 2012 the European Commission published an action plan in the engagement against tax evasion in the European Union that proposes options for reducing and preventing tax evasion. Within the action plan, the Commission proposes several measures to reduce the tax gap, including the establishing of the Forum of the VAT. It is a dialogue between the representatives of large, medium and small enterprises and tax authorities, who can exchange their views on functioning of the VAT in the European Union. Another possibility is the introduction of a rapid response mechanism against the VAT fraud, which would allow the Commission to react very quickly to the VAT fraud and allow a Member State to deviate from the standard measures. In the following years the Taxpayer Identification Number – TIN should be implemented, as the optimal means to identify taxpayers.

But as Hamemi (2014) claims the collaboration between policymakers and citizens would be the best solution and the most effective for reducing the tax gap.

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