VALUE ADDED TAX DIMENSION: THE CASE OF LITHUANIA

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Abstract. *The article sums up works of different scientists, dealing with the impact of value added tax (VAT) on the economy of some countries. The authors analyse the Lithuanian VAT structure, the dynamics of income from this tax and amendments in the Law on Value Added Tax in terms of narrowing and widening the taxable base according to the theoretical analysis of the sources. It is aimed to determine the impact of VAT standard tariff, reduced tariffs and shadow economy on income from this tax. Multiple regression, correlation, optimization and C-effectiveness ratio are used for the analysis. The analysis has revealed that amendments in the Law on Value Added Tax in terms of narrowing and widening the taxable base influenced the amount of income from VAT collected to the budget.*

Key words: *VAT, tax tariff, reduced tariff, C-effectiveness ratio, shadow economy.*

INTRODUCTION

Income from taxes is the main source of revenue for countries all around the world. Lithuania makes no exception: its income from taxes makes up to 90% of all the budget revenue. Indirect taxes, which are put on goods and services as well as transfer of revenue and assets, play an important role in this part of income. Their tariffs are included in the price of goods and services and are paid by the consumer upon purchasing them. Value added tax has to play an exceptional role in the structure of indirect taxes; the importance of this tax bears two aspects. **Firstly**, almost all individuals and active companies, institutions and organizations pay this tax. **Secondly**, this is a tax which provides maximum income to the state budget. The national budget of the Republic of Lithuania, excluding financial support from the EU and other foreign countries, collected around 38.5% in 2007, 39% in 2008 and 37% in 2009 of the total income from VAT.

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Value added tax is a contemporary tax used in modern countries. Before introducing this tax, the object of internal indirect tax was usually a narrow group of products or turnover and sales; however, it caused a distortion in the market. On the other hand, the state plays an active role in the economy of the country, it implements many costly social programs; therefore, the need for income from taxes increases. Thus, attempts to find alternative consumer taxation ways which would enable to increase the country's income without distorting the market have been made.

VAT was first introduced in France in 1948. The tax was applied to manufacturing process, and the deduction for the tax, which was paid upon purchasing goods used in the activities, was not applied. In 1954, VAT became a consumer goods tax, and in the sixties the tax became vastly spread: it has been introduced in many countries of Europe and of Latin America. The spread of VAT remained rapid until the seventies; then it slowed down and again in the eighties became speedy again. VAT in many European countries has become the main source of income; as many as 120 countries throughout the world administer this tax (Legeida, 2003).

The Law on Value Added Tax in Lithuania was adopted on December 22, 1993 and came into force on May 1, 1994; however in order to attain membership in the European Union, Lithuania had to harmonize local laws with the EU law. Therefore, certain amendments to the Law of VAT and other connected laws and substatutory acts have been made, and since July 1, 2002 a new version of the Law on Value Added Tax has come into force. The tax is attempted to be seen as a stimulator for the growth of economy, as taxation of objects of the tax and VAT collection is not complicated; the majority of goods and services are taxed, and the fiscal value of the tax is undeniable. When including VAT into the general tax system, there were some issues, as every citizen of the country has to carry out the burden of the tax, and the Government can put too large plans on collecting indirect taxes while increasing the number of taxation objects and while expanding the taxable base.

The world financial recession has forced government sectors in different countries to improve the systems of taxes in order to find additional resources to cover up the budget deficit and to stabilize the economy of the country. Stabilization of a country's economy is not a simple task which can be limited only to increasing the tax tariff and expanding the taxable base; it is a complex process which enhances political, economic, social, demographical and other factors. At the dawn of the financial crisis, a country's tax politics is exceptionally important as the revival of the whole economy and further business development largely depend on its positive reform.

Economy theories claim that while a country is undergoing a recession, the state policy has to be directed towards stimulation of economy, firstly, in terms of decreasing the tax burden. An important role in this context is given to indirect taxes and especially to VAT. This is due to the fact that the fiscal value of the tax is one of those most important not only in indirect taxes, but in the while country income structure as well. In

addition, while introducing a tax, certain groups of goods and services can be excluded and provided with tax exemption. The above-mentioned reasons indicate the importance of VAT, its urgency and the necessity to evaluate the Lithuanian Government politics towards value added tax in 1995–2009.

The purpose of the study was to determine the influence of different factors on income from VAT. Methods of systemic analysis, optimization, correlation, multiple regression and comparative analysis were applied. SPSS 12.0 and Microsoft Excel software was used for analyzing the data.

Value added tax has been analyzed many times on the global scale. The International Monetary Fund has carried out a research which deals with a set of key value added tax theoretical provisions, global trends and problems arising from introduction and administration of value added tax (Ebrill, 2001). Tijerina-Guajardo and Pagan (2000) have carried out a research on VAT in Mexico, in which they assessed the impact of various macroeconomic and value added tax regulation factors on income from VAT. Agha and Haughton (1996) have analyzed the impact of a standard VAT tariff on tax avoidance. Hybka (2008) analyzed the productivity and effectiveness of collecting VAT in Poland and determined that these factors improved when the VAT base had been unified and certain exemptions had been abolished.

It must be pointed out that VAT in Lithuania has rarely been analyzed on a complex base; more or less thorough studies are almost absent, especially in terms of the 2009 tax reform context. The controversy surrounding VAT and its topicality is dealt without excluding this tax from the whole tax system in the works of Lithuanian scientists. Tax burden, avoidance of taxes and tax system receive most coverage (Stačiokaset al., 2004; Paulauskas, 2006), whereas VAT is analyzed only fragmentarily. A research by E. Bikas and D. Sinkevičius (2010) has showed that Lithuania is the first country in the EU, which refused all VAT exemptions; however, the VAT system that was functioning until 2009 in Lithuania and included reduced tariffs, in terms of VAT effectiveness and productivity was more effective than the EU average.

1. Theoretical aspects of VAT

The object of valued added tax is provision of goods and services to the consumer. However, all countries have established the order that certain good and services are not liable to VAT taxation. The tax may be not applied for several reasons:

1. In order to protect certain economic activities while providing them with a more suitable environment; often this is the case with agriculture as the most vulnerable branch of economy.
2. VAT deduction. In some areas, it is difficult to detect the exact level of value added; therefore, a proper application of taxing becomes exceptionally complex (Auerbach, Gordon, 2002).

In order to tax the end consumer with the VAT and not to distort the economy, the following conditions have to be met:

- only value added has to be taxed in every step of taxation;
- in the chain of VAT taxation steps, periods where VAT is not applied should be absent;
- in the case of international trade, the country where in which goods or services will be utilized has to must be taken into account (Ebrill, 2001).

Meanwhile, when excluding certain goods or services from VAT taxation, the chain of VAT taxation steps is broken. Thus, VAT loses its neutrality in terms of economy. Therefore, with certain goods and services not liable to VAT, distortions arise as companies face a choice wherefrom goods and services can be purchased, which later will turn into expenditure for making other goods (Guido, 1995). Individuals who carry out economic activities under VAT are encouraged to less purchase from individuals who carry out economic activities not under VAT. One of the methods used is instead of choosing local produce, which is not VAT-taxed, to purchase imported products, which in the case of export are often taxed with a 0% tariff, but are not tax-free. On the other hand, individuals who carry out economic activities not under VAT have an incentive not to purchase products needed for expenditure from other individuals but to provide it themselves. This can encourage individuals who carry out economic activities to choose the activity implementation methods that are not effective but provide tax benefits (Piggott, Whalley, 2001).

There is one more problematic aspect connected with exemption from VAT on certain goods and services. Every single exception creates a precedent for other exceptions. Once certain goods or services are exempted from VAT in order to ease the tax burden of individuals who carry out economic activities, there is an incentive for groups of lobbyists to strive that VAT was abolished from another kind of goods or services. The argument behind such kind of pressure is that a company which is not VAT-taxed does not recover VAT for all the expenses taxed with VAT (Ebrill, 2001).

While dealing with the mentioned issues, some countries prefer a compromise, and instead of exempting certain goods or services from VAT, they tax it with a tariff of 0%. This measure solves the issue of breaking the VAT chain.

In general, the tariff of 0% VAT for exported goods and services must be examined. Such a tariff is based on the necessity not to distort international trade (Metcalf, 1995). This provision must be accepted, otherwise exported goods and services would be taxed several times (in the country which is exporting goods or services and in the country to which the goods and services are exported). Therefore, in the case of international trade, it is recommended to apply the principle of end-user of goods or services. The principle denotes that the taxed amount must be set according to the law of the country in which the goods or services will be utilized, and all the income from this tax must stay in this country (Metcalf, 1995).

VAT payers are usually described as individuals who are registered as VAT payers and who provide with goods or services (Marcijonas, 2003). It must be pointed out that various countries have different regulations regarding the issue when an individual who carries out economic activities must be registered as a VAT payer. Different countries set different turnover thresholds, so that when an individual reaches this threshold, he or she must be registered as a VAT payer (OECD, 2009). The economic logic behind setting such a threshold is that VAT as well as any other tax brings not only its income to the budget, but also accumulates its costs (Ebrill, 2001). The costs can be divided into two groups:

1. Tax administration costs incurred by the country.
2. Tax administration costs incurred by the business part.

It is only when an individual who carries out economic activities and reaches a certain volume of amounts, the paid VAT becomes bigger than the costs of this tax. Therefore, many countries in the world require that it is obligatory to register an individual as a VAT payer when a certain turnover level is attained. This is a means to ease the tax burden for small businesses and to save funds for administration of the tax.

There are various practices used for determining the tax tariff and reduced tariffs in different countries. To summarize the Organization for Economic Co-operation and Development statistical data for the year 2009, there is a visible trend that countries who apply one VAT tariff are in minority. The countries that belong to the organization employ various VAT tariff setting practices. In certain countries there is only one tariff, whereas in others there are several of them; other countries additionally apply reduced VAT tariffs for some regions. Standard tariffs in OECD countries also differ. In 2009, their scale varied from 5% in Canada to 25% in Denmark, Sweden and Norway. The reduced tariffs ranged between 0% and 25%.

Lithuania is among the countries that apply several VAT tariffs. Currently, there are several VAT tariffs, excluding a 0% tariff; there is a standard tariff of 21% and reduced tariffs of 5% and 9%. The reduced 5% tariff is applied to pharmaceuticals and medical help means and 9% tariff to heating energy, hot water and printed products (Lietuvos, 2002).

A study of the International Monetary Fund (IMF), which analyzed different factors influencing the collection of income from VAT, has revealed that an increase of the standard VAT tariff increased the income from VAT (Ebrill, 2001). A Mexican case study has confirmed this tendency (Tijerina-Guajardo, 2000). The IMF research has noted that statistically relevant is the difference between the standard VAT tariff and the lowest reduced tariff, but not the 0% tariff. The larger the difference, the bigger is the positive impact on the income from VAT to the budget. The results confirm countries' capacity to assess taxation elasticity of goods and services while applying different VAT tariffs. On the other hand, it enhances collection of income from this tax to the budget (Ebrill, 2001).

The Mexican case study evaluated another aspect connected with reduced VAT tariffs. It has raised the question, of the impact of other non-standard VAT tariffs on income from VAT. The results have shown that the number of tariffs is statistically important, and a larger number of tariffs increased income from VAT (Tijerina-Guajardo, 2000).

VAT income directly depends on a country's economy state because the object of the tax is consumption. Whereas, connection between other economic factors and VAT income level is not so apparent. Tijerina-Guajardo and Pagan (2000) have concluded that inflation has a huge negative impact on income from VAT. The results are explained by specific features of VAT legal regulation in Mexico. Large Mexican companies had to pay an advanced VAT payment to the country budget in 1997, while small and medium companies had the right to transfer VAT to the country's budget within three months.

Agha and Haughton (1996) have examined different VAT systems in various countries, with a major accent on tax avoidance when there is a high level of VAT in a country. They have concluded that increasing the VAT tariff by 1% increased tax avoidance by 2.7%.

To summarize the results, three main groups of factors that have an impact on income from VAT must be assessed:
- norms that set VAT tariffs, base, object, turnover level upon reaching which it is necessary to be registered as a VAT payer, and other elements of this tax;
- factors that describe the economic environment, i.e. the volume of taxed activities – the level of taxed consumption and inflation;
- tax avoidance level and the elements of the tax administration organization system, which have an impact on it.

It must be noted that a counteraction of the mentioned factors is of most importance. Due to the fact that VAT tariffs are set according to a country's need of income and level of consumption, VAT payment avoidance is largely dependent on VAT regulation and on the application of fair and plain principles of its administration .

2. Methodology of VAT income research

Based on VAT income collected to the budget, a research on certain factors influencing the budget income from VAT in the period 1995–2009 has been carried out. A multiple regression model was used for the research. The forecasted variable is the income from VAT, indexed depending on the level of inflation. The research was based on quarterly data. An attempt to include all significant factors into one multiple regression model did not justify itself due to the internecine multicollinearity and endogenity of the variable members. Therefore, in order to assess the impact of all possibly significant factors, two versions of regressive analysis were carried out; both of them included one independent

variable which represented the overall state of economy, i.e. end consumption and unemployment level.

TABLE 1. **Variables of multiple regression analysis**

Variable	Dependent or independent variable	Abbreviation	Function of transformation
VAT income indexed according to inflation	Dependent	VATinc	ln (VATinc)
End consumption indexed according to inflation	Independent	EC	ln (EC)
Standard VAT tariff	Independent	T	ln (1+T)
Number of reduced tariffs	Independent	NRT	0 when ST<2; 1 when ST=2
Difference between standard VAT tariff and lowest reduced tariff, but not 0% tariff	Independent	difLTS	ln (1+ difLTS)
Turnover level, upon reaching which it is necessary to be registered as a VAT payer	Independent	TH	Not transformed

In order to clarify the impact of end consumption on VAT income, in the multiple analysis we used VAT income, end consumption, standard VAT tariff and other variables (Table 1).

The quarterly income from VAT, indexed according to inflation (VATinc), was used for regression on a dependent variable; a smoothing of data line method (indexed VAT income transformation by a natural logarithm) was used. The transformation function was ln (VATinc).

Due to the fact that individuals are the main users and source of VAT, and the main source of income for individuals in Lithuania is salary, it was aimed to clarify the impact of unemployment on consumption. In the analysis, the quarterly level of unemployment

TABLE 2. **Variables used in multiple regression analysis**

Variable	Dependent and independent variable	Abbreviation	Function of transformation
VAT income indexed according to inflation	Dependent	VATinc	ln (VATinc)
Unemployment level	Independent	U	ln (1+U)
Standard VAT tariff	Independent	T	ln (1+T)
Number of reduced tariffs	Independent	NRT	0 when ST<2; 1 when ST=2
Difference between standard VAT tariff and lowest reduced tariff, but not 0% tariff	Independent	difLTS	ln (1+ difLTS)
Turnover level, upon reaching which it is necessary to be registered as a VAT payer	Independent	TH	Not transformed

(U) was used instead of end consumption. The following variables were used In the regression analysis, the number of reduced tariffs, the level of unemployment and other variables were used (Table 2).

In order to assess whether VAT income was collected effectively, whether the application of VAT exemption was effective and to clarity their impact on taxable income, C-effective norm was calculated (Ebrill, 2001; Hybka, 2008). This ratio **was calculated as a proportion of income from VAT to consumption in the country and divided by a standard tax tariff.** In such a case, the effectiveness of 100% is achieved when all consumption is taxed by the same tariff. It must be noted that a low ratio is usually interpreted as a proof that a number of exemptions and exceptions are applied in the country; therefore, the taxable base is very narrowed, and also there is a high number of individuals who avoid VAT (Ebrill, 2001).

3. Research of VAT situation in Lithuania

Income from value added tax has been providing a large proportion of income in the state budget of Lithuania (Fig.1) since its introduction in 1994. The increase of income from VAT during the period 1995–2000 can be explained by a promotion of this tax and the increased taxable base, as the country's economy was developing and the market of goods and services was expanding.

Income from VAT started decreasing from 2001 because the Lithuanian tax system and this tax were harmonized with the EU legislative acts, and this triggered changes in VAT tariffs. Before Lithuania joined the EU in 2004, the income from VAT on average comprised 37.14% of the total national budget income. Later, this level decreased on average to 30.83%; this was largely effected by a new source of the national budget income – the European Union financial support. The period 2004–2008 was seen as an increase of consumption and a good demand. This period is considered as a period of
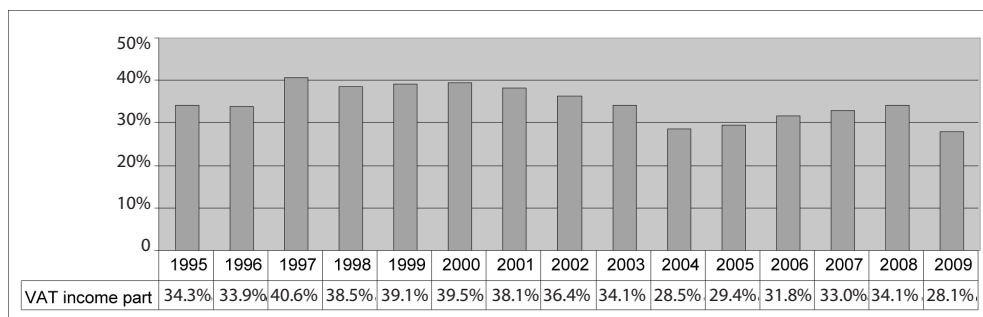

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
VAT income part	34.3%	33.9%	40.6%	38.5%	39.1%	39.5%	38.1%	36.4%	34.1%	28.5%	29.4%	31.8%	33.0%	34.1%	28.1%

FIG. 1**. VAT income part in Lithuanian national budget in the period 1995–2009**

Source: Data of the Department of Statistics.

economic growth in Lithuania. The expanded application of VAT exemptions is one of the reasons for the increase of the tax. However, since 2009 income from VAT changed its direction, and the reasons behind it were the increased tax tariff and abolished tax exemptions.

Undoubtedly, one of the key elements that influence income from this tax is its tariff. The amount of income largely depends on the number of applied tariffs, their level, and the tax base under application of reduced tariffs. The standard VAT tariff remained unaltered during the analyzed period: it was 18% and since 2009 has been 21%. The tariff was increased in two stages. It was set at the level of 19% on January 1, 2009 and at the level of 21% since September 1, 2009. There was never a case in Lithuania that only one tariff of VAT was applied. The number of tariffs has been gradually increasing from two (at the introduction of VAT) to four. The only exception was the first six months of 2009 when the reduced 5% tariff was abolished; however, since July 1 it has been applied again. Based on VAT income dynamics, the influence of several factors on income from this tax was analyzed according to the multiple regression model. The forecasted variable was income from VAT, indexed depending on the level of inflation. Upon processing the end consumption regression analysis, a regression equation was recorded, in which, in case of the element of significance $\alpha = 0.05$, end consumption was the only statistically relevant variable:

$$VATinc = 9.985 + 1.154 \times FC. \tag{1}$$

The above equation gives a good explanation of changes in VAT income in regard to changes in end consumption (Fig. 2). The coeffective of determination is 0.878. Therefore, the equation can be used to forecast income from VAT when only the volume of end consumption is taken into account.
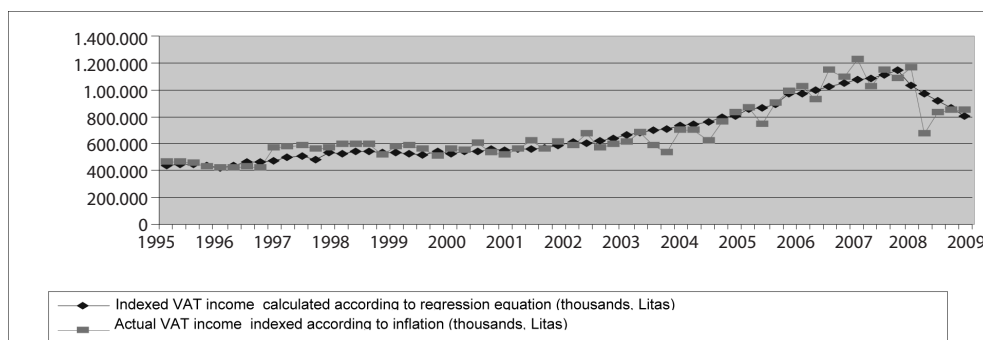

FIG. 2. **Value added tax income (quarterly data, thousands, Lt)**

Source: Department of Statistics database.

However, this model does not deal with the impact of any other factors on VAT income. Thus, a multiple regression model was compiled, in which end consumption was excluded and instead a quarterly level of unemployment (U) was used as a variable which describes the total level of consumption (Table 3). Individuals are the main users and source of VAT, and the main source of income for individuals in Lithuania is salary. Therefore, the level of unemployment would have a strong effect on consumption and represent the total level of consumption. This variable was transformed by a natural logarithm.

TABLE 3. **Results of regressive analysis**

	B	T	Sig.
Constant	17.604	25.706	.000
Standard tariff (T)	16.832	3.792	.000
Difference between standard VAT tariff and lowest reduced tariff, but not the 0% tariff (difLT)	2.489	1.171	.247
Unemployment level (U)	-6.108	-11.727	.000
Turnover level, upon reaching which, it is necessary to be registered as a VAT payer (TH)	0.000	3.370	.001
Number of reduced tariffs (NRT)	-.049	-.680	.499

The corrected coeffective of determination is 0.839.

While generating clarified calculations, the variables that had no influence on the VAT income level (turnover level, upon reaching which it is necessary to be registered as a VAT payer (TH) because it equals to 0, and another variable – the number of reduced tariffs (NRT), because it almost equals to 0 – was excluded (Table 4).

TABLE 4. **Results of regressive analysis**

	B	t	Sig.
Constant	17.735	24.041	.000
Standard tariff (T)	16.329	3.503	.001
Difference between standard VAT tariff and lowest reduced tariff, but not the 0% tariff (difLT)	4.632	4.407	.000
Unemployment level (U)	-5.974	-11.671	.000

The corrected coeffective of determination is 0.803

Upon completing the analysis, a regression equation (2) was recorded. The equation consists of statistically significant variables when the element of significance $\alpha = 0.05$:

$$\text{VATinc} = 17.784 + 16.329 \times \text{T-}5.974 \times \text{U} + 4.632 \text{ skLT}. \tag{2}$$
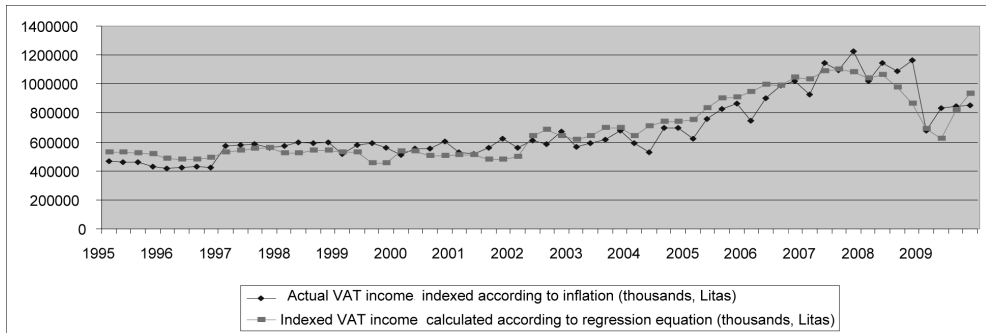
FIG. 3. **Value added tax income calculated according to regression equation (1)**

Source: The Department of Statistics data.

Quite a high corrected coeffective of determination shows that changes of the chosen independent variables give a good explanation of the change in indexed VAT income (Fig. 3).

The results of the research have revealed that the impact of the standard tariff on VAT income was positive and was the largest of all independent variables. The difference between the standard tariff and the smallest reduced tariff, but not the 0% tariff, had a significant positive influence. During the periods when the state taxed certain goods and services with a tariff smaller than standard, it received more VAT income if compared to cases when the reduced tariffs were abolished. **Therefore, in order to maximize VAT income, it is necessary to assess the elasticity of goods and services consumption and to differentiate the level of taxation.** Otherwise, in case of abolishing the reduced tariffs, a negative VAT income change is likely to occur. The analysis has revealed that the decision to abolish the reduced 5% tariff, which was in force during the first six months of 2009, decreased VAT income in the first quarter by 126 million Litas and in the second quarter by 112 million Litas, whereas the other independent variables remained stable during the period. **Unemployment has affected VAT income significantly.** The purchasing power of the unemployed is decreasing, and so is VAT collection. Reduction of unemployment by 0.1% would enable the state to collect up to 28 million Litas more of VAT (taking into account that other independent variables are the same as in the fourth quarter of 2009).

To analyze the influence of VAT tariff, exceptions, reduced VAT tariffs and shadow economy on the VAT income, changes in the C-effectiveness norm ratio in Lithuania in 1995–2009 were calculated (Fig. 4).

The results of the research have revealed that changes of the C-effective norm during the period under analysis were not connected with changes in the number of tariffs. In other words, the number of VAT tariffs had no influence on the mentioned norm change for several reasons. **Firstly,** the C-effective norm ratio assesses the influence of not
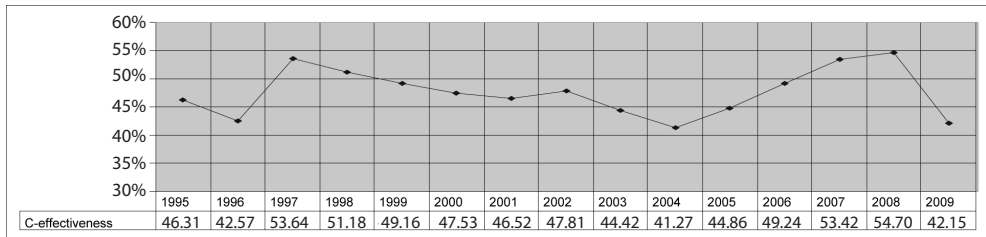
C-effectiveness	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
C-effectiveness	46.31	42.57	53.64	51.18	49.16	47.53	46.52	47.81	44.42	41.27	44.86	49.24	53.42	54.70	42.15

FIG. 4. **VAT C-effective norm change in Lithuania in 1995–2009**

Source: Department of Statistics data.

only reduced tariffs, but also of exemptions and shadow economy on income; therefore, the influence of other factors can be more significant. However, this ratio cannot be divided into parts and it does not denote the level of influence each component had on its amount. **Secondly,** while assessing the influence of reduced tariffs on the C-effective norm, the size of the taxable base to which they are applied is important. In order to extract the influence of shadow economy on C-effectiveness, the C-effective norm of end consumption volume without taking into account the level of shadow economy was calculated (Fig. 5).
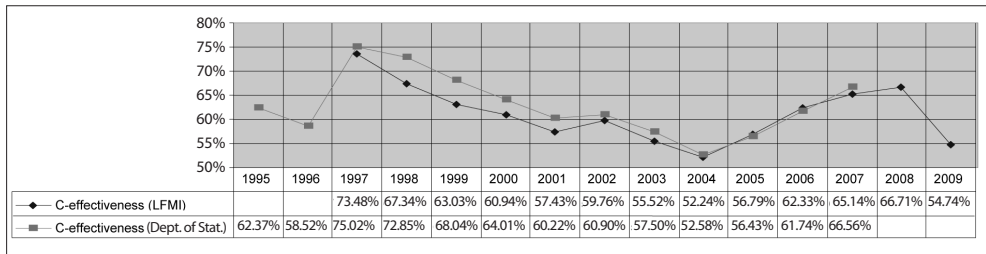

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
C-effectiveness (LFMI)			73.48%	67.34%	63.03%	60.94%	57.43%	59.76%	55.52%	52.24%	56.79%	62.33%	65.14%	66.71%	54.74%
C-effectiveness (Dept. of Stat.)	62.37%	58.52%	75.02%	72.85%	68.04%	64.01%	60.22%	60.90%	57.50%	52.58%	56.43%	61.74%	66.56%		

FIG. 5. **VAT C-effective norm changes in Lithuania in 1997–2009,
without taking into account the shadow economy part**

Source: The Department of Statistics and Lithuanian Free Market Institute data.

In this case, C-effectiveness has increased significantly and equaled to 61.19% on average. Considering the influence of shadow economy on C-effectiveness, the analysis showed that what influenced most the fluctuation of C-effectiveness in 1997–2009 was not the level of shadow economy, but changes in VAT-free and VAT reduced tariffs taxable base (Fig. 6).

In order to clarify more thoroughly the influence of factors on changes in the C-effective norm, the period under analysis was divided into two parts – 1995–2000 and 2001–2009. The first period saw greater VAT collection losses each year than in the later years,
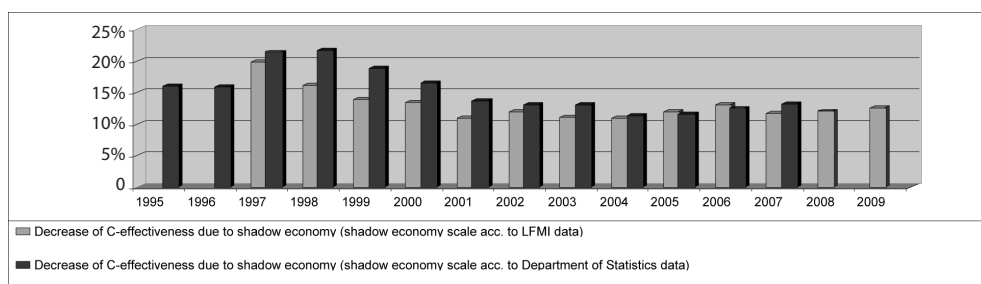
FIG. 6. **VAT C-effective norm reduction in Lithuania in 1995–2009 due to shadow economy**

Source: The Dpartment of Statistics and Lithuanian Free Market Institute data.

considering C-effectiveness losses due to the influence of shadow economy. According to data of the Department of Statistics, it was approximately 18.4% and according to data of the Lithuanian Free Market Institute (LFMI) 15.82%. Meanwhile, VAT losses in 2001–2009 were much less significant – approximately 12.63% according to data of the Department of Statistics (while calculating data up to 2007) and 11.97% according to data of the LFMI. The period 1995–2000 was the time of relatively greater VAT income losses due to the influence of shadow economy if compared to the later period.

In 1995–2000, the C-effective norm was fluctuating around 11.07%, and its decrease due to shadow economy was 5.43% according to data of the Department of Statistics and 6.43% according to data of LFMI. The standard deviation of the C-effective norm was 0.0387, and a decrease of the C-effective form due to shadow economy according to data of the Department of Statistics was 0.0265. **Therefore, the conclusion is that the influence of shadow economy on the change of VAT income in 1995–2000 was greater than in the later period; however, VAT exemptions and exceptions had a greater influence.**

The decrease of C-effective norm due to shadow economy in 2001–2009 according to the shadow economy level calculated by the Department of Statistics (data till 2007) and by the LFMI fluctuates around 2.5%. Meanwhile, the VAT C-effective norm for the same period was fluctuating even around 13.43%. Standard deviations also show that the VAT C-effective norm (standard deviation 0.0466) was fluctuating more than the C-effective norm without considering the shadow economy part (standard deviation 0.049). Meanwhile, C-effective norm losses due to shadow economy standard deviation were much smaller (0,007), showing that changes of the C-effective norm **of income from VAT in 2001–2009 were greatly influenced by VAT exemptions and exceptions, whereas shadow economy had a very little effect**. Besides, in general, changes in VAT elements did not increase the shadow economy part.

While analyzing the C-effectiveness norm without the effect of shadow economy, two periods when the ratio change was most significant must be distinguished: in 1996–1997 its growth was 16.50% and in 2008–2009 its slump was 11.97%. Changes in this ratio were influenced by the Law on Value Added Tax amendments (Table 5).

TABLE 5. **The Law on Value Added Tax amendments**

Date	AMENDMENTS OF THE LAW ON VALUE ADDED TAX	COMMENTS
January 1, 1997	Exemptions for VAT-free goods and services have been abolished for:	The taxable base is expanded, all kinds of energy are included in the definition of 'goods' as an object of taxation
	coal, liquid and natural gas, oil, heater fuel, fuel oil, wood, nuclear fuel;	
	water, electricity and heating energy for homes and housing estates as well as sewage from them;	
	services of agricultural companies and agricultural cooperatives for their members;	
	medical services supplied by private health care and veterinary care institutions;	
	Lithuanian-made combined fodder, fish, agricultural produce (except carnivorous fur animals, coypus and their fur) and food products made from the above produce.	
April 1, 2006	Additionally included into VAT-free list of goods and services:	There were more amendments to the law, which narrowed the taxable base. However new reduced tariffs were not introduced, smaller tariffs were not introduced and VAT-free volume amount was not increased.
	incoming services of tourism companies;	
	port, flight management and aero-navigation services levy, also local levy set by local municipality councils, which are included into non-budget funds;	
	house building, renovation, tapefying and design works, including engineering network construction and terrain handling, financed from the state and municipal budgets, privileged credits, provided by the state and funds from state special foundation;	
	goods with the UNICEF logo;	
	mobile and real estate cultural valuables – reconstruction and conservation works, included into the list of state-protected cultural valuables financed from the state and municipal budget.	
September 1, 2009	Until September 1, 2009 for goods and services which were taxed under reduced 5% tariff	Standard VAT tariff was raised from 18% to 19%, and from September 1, 2009 it was raised to 21%; the regulation of reduced tariffs was changed fundamentally
	passenger transportation, printing of publications (with exceptions), sales of pharmaceuticals, sales of various food products, hotel accommodation services, artistic activity services under royalties and sport, art and cultural event visiting services	
	Only reduced 9% VAT tariff for books and non-periodicals	
July 1, 2009	Exemption for pharmaceuticals and medical aid means, sale of the above goods is taxed by 5% tariff	
September 1, 2009	Heating energy provided for heating of living premises, the tariff was raised from 5% to 9%. Even though the provision of the goods was formally taxed under standard tariff till September 1, 2009, the end consumers had to pay only 5% VAT	

One of the main changes that expanded the taxable base was inclusion of all kinds of energy into the definition of 'goods' as an object of taxation. However, the effect of this provision on income from VAT was fully experienced from January 1, 1997. It

must be noted that energy resources are utilized widely, their usage has little elasticity; therefore, taxation of these goods (their provision) was significant to VAT income level and C-effectiveness. With this in mind, it must be concluded that it was the abolishment of exceptions that determined the C-effectiveness ratio jump in 1997.

While analyzing the period 2008–2009, special attention must be drawn to the fact that the regulation of reduced VAT tariffs was deeply changed. Amendments to the Law on Value Added Tax were adopted, and the amendments expanded the taxable base. Worth mentioning are the amendments that narrowed the taxable base during the period; these are exemptions for pharmaceuticals and medical aid means.

Thus, the VAT-taxable base has been expanded significantly in 2009 if compared to 2008. However, the effect was quite opposite than expected as the C-effectiveness norm decreased. This implies that shadow economy did not have a major effect on the decrease of C-effective norm, as losses of C-effectiveness due to shadow economy increased only slightly during the period under analysis. It must be noted that the structure of consumption changed in 2009 if compared with 2008. The part of standard tariff VAT-taxed goods and services decreased and VAT-free or reduced tariff taxed goods and services increased.

CONCLUSIONS

Value added tax is a contemporary tax used in modern countries. In the course of time it has become the main source of income in many European countries; at present, as many as 120 countries throughout the world administer this tax. VAT income directly depends on a country's economy state because the object of the tax is consumption.

IMF research, which analyzed the influence of different factors on collecting income from VAT, has revealed that increasing the standard VAT tariff increases the income from VAT. The larger the difference between the standard VAT tariff and the smallest reduced tariff, the bigger is the positive impact on the income from VAT to the budget.

The Lithuanian case study has confirmed that a greater difference between the standard tariff and the smallest reduced tariff, but not the 0% tariff, had a significant positive influence on VAT income level. Taxing certain goods and services with a reduced tariff increased the consumption of goods and services; moreover, the increased VAT income exceeded the losses due to tariff decrease. In order to maximize VAT income, it is necessary to assess the consumption elasticity of goods and services and to differentiate the taxation level. Abolishment of VAT exemptions can trigger a negative change in the income from this tax. In 1995–2009, unemployment affected VAT income significantly. The purchasing power of the unemployed decreased, and so decreased consumption and VAT income.

The research showed that it was not the changes in the level of shadow economy, but changes in the VAT-free and VAT reduced tariffs taxed base that influenced most significantly the fluctuation of C-effectiveness in 1997–2009.

Amendments to the Law on Value Added Tax had a negative effect on the level of income from VAT. In spite of the fact that the taxable base was expanded and the standard tariff increased, VAT C-effectiveness saw a significant decrease. The increase of the standard tariff had a positive effect on VAT income; however, expansion of the taxable base has a greater negative influence. It was manifested by changes in the structure of consumption when part of VAT-free and reduced VAT tariff taxed goods and services increased if compared with 2008, and since 2009 the decrease of goods and services taxed with the standard tariff exceeded the income increased due to the raised standard tariff; the part of shadow economy increased.

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