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ECONOMIC IMPACTS OF CIGARETTE TAXATION DEVELOPMENT IN THE CZECH REPUBLIC AND THE SLOVAK REPUBLIC

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Abstract

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This paper presents the analysis of economic impacts of cigarette taxation development in the Czech Republic and the Slovak Republic in the period corresponding with the membership of both countries in the European Union, precisely from May 2004 until January 2016. After introduction focusing on the issue of cigarette taxation and the overview of the international scientific research in this area, the authors focus on the analysis of cigarette taxation increase in both of the countries. Then the analysis of cigarette taxation impacts on expenses of selected types of households on consumption of tobacco products in the analyzed period is provided, using the methods of correlation and regression analysis. Finally, the results from the Czech Republic and the Slovak Republic are compared. Dealing with tax rates in EURO, it is obvious, that the increase of cigarette taxation was higher in the Czech Republic than in the Slovak Republic in the period 2004–2016. However, the expenditures of households on tobacco products consumption in both of the countries have not been decreasing.

Keywords: Excise taxation, Cigarettes, Incidence, State budget, Expenses of Households, Czech Republic, Slovak Republic

INTRODUCTION

Cigarette taxation background

Generally, the taxation of cigarettes and tobacco products as a whole has a long history and the governments justify its existence by efforts to reduce harmful consumption and internalization of negative externalities (Boyes and Marlow, 1996). High tax rates together with low elasticity of demand are the main reasons why these taxes are significant and important for public budgets as a stable and significant tax revenue and why we can find these taxes in all standard tax systems.

The cigarette taxation is obviously applied also in the member states of the European Union. The obligation for member states to adopt a system of excise duties with object of taxation focused on "Energy Products and Electricity", "Manufactured Tobacco" and "Alcoholic Beverages" was introduced for the first time in year 1972 (Eur-lex, 2008).

The area of excise taxes imposed on cigarettes and tobacco products have been treated with Directive 95/59/EC, based on previous Directive 72/464/EEC and Directive 79/32/EEC on taxes other than turnover, which affect the consumption of tobacco products.

The first of above mentioned directives focused on cigarettes taxation and introduced the unusual method of taxation (and unique one within the excise duties in the EU), precisely so called "composite excise duties" when the final tax is a combination of a specific excise duty and ad valorem excise duty (the differencies between these taxes are mentioned for example in Nerudová and Široký (2009; pp. 420–439). The main reason for this specific taxation was caused by the use of ad valorem excise duty by the European's biggest tobacco

producers France, Spain and Greece, which tried to favor local tobacco products by imposing lower tax rate. The minimal tax rates was set by Directive 92/79/EEC and Directive 92/80/EEC.

In year 2010, the Directive 2010/12/EU was adopted. This directive replace the definition „the price category most in demand" (MPCC) by the definition of "the weighted average retail selling price." This directive was codified by the Directive 2011/64/EU (Eur-lex, 2011), which abolished existing legislative acts 92/79/EEC, 92/80/EEC, 95/59/EC and 2010/12/EC; the directive is effective to the present day and its' the most important articles are described in the following text (in the following text as the "Directive")

Article 7 of the Directive set that cigarettes manufactured in the EU and those imported from third countries shall be subject to an ad valorem excise duty calculated on the maximum retail selling price, including customs duties, and also to a specific excise duty calculated per unit of the product. The rate of the ad valorem excise duty and the amount of the specific excise duty must be the same for all cigarettes.

Article 8 of the Directive set, that the percentage of the specific component of excise duty in the amount of the total tax burden on cigarettes shall be established by reference to the weighted average retail selling price. The weighted average retail selling price shall be calculated by reference to the total value of all cigarettes released for consumption, based on the retail selling price including all taxes, divided by the total quantity of cigarettes released for consumption. It shall be determined by 1 March at the latest of each year on the basis of data relating to all such releases for consumption made in the preceding calendar year.

Article 10 of the Directive set, that the overall excise duty (specific duty and ad valorem duty excluding VAT) on cigarettes shall represent at least 57 % of the weighted average retail selling price of cigarettes released for consumption. That excise duty shall not be less than EUR 64 per 1,000 cigarettes irrespective of the weighted average retail selling price. From 1 January 2014, the overall excise duty on cigarettes shall represent at least 60 % of the weighted average retail selling price of cigarettes released for consumption. That excise duty shall not be less than EUR 90 per 1,000 cigarettes irrespective of the weighted average retail selling price.

Based on the previous text, it is obvious, that cigarette taxation area is specific in the following way: (a) object of taxation itself, (b) taxation by both specific excise duty and ad valorem tax, (c) national interests focusing on steady state budget revenues and last but not least (d) the need to implement EU legislation and the obligation to comply with the minimum tax rates.

The following Tab. I shows the development of cigarette taxation in the Czech Republic in the period 2004–2016.

I: *Cigarette taxation in CR 2004–2016 (Source: act no. 353/2003 Coll.; authors)*

Year	Tax rate
2004	0.48 CZK/unit + 23% from SP, min. 0.94 CZK/unit
2005	0.60 CZK/unit + 24% from SP, min. 1.13 CZK/unit
2006	0.73 CZK/unit + 25% from SP, min. 1.36 CZK/unit
2007	0.88 CZK/unit + 27% from SP, min. 1.64 CZK/unit
2008	1.03 CZK/unit + 28% from SP, min. 1.92 CZK/unit
2009	1.03 CZK/unit + 28% from SP, min. 1.92 CZK/unit
2010	1.07 CZK/unit + 28% from SP, min. 2.01 CZK/unit
2011	1.07 CZK/unit + 28% from SP, min. 2.01 CZK/unit
2012	1.12 CZK/unit + 28% from SP, min. 2.10 CZK/unit
2013	1.16 CZK/unit + 27% from SP, min. 2.18 CZK/unit
2014	1.19 CZK/unit + 27% from SP, min. 2.25 CZK/unit
2015	1.29 CZK/unit + 27% from SP, min. 2.37 CZK/unit
2016	1.46 CZK/unit + 27% from SP, min. 2.63 CZK/unit

Focusing on Tab. I, it is clear, that the minimal tax rate was increasing every year during the analysed period, except of years 2009 and 2011. The total level of minimal cigarette taxation increased in the Czech Republic by 180 % (in CZK), that means almost 2,8 times.

The following Tab. II shows the development of cigarette taxation in the Slovak Republic in the period 2004–2016.

II: *Cigarette taxation in SR 2004–2016 (Source: act no. 106/2004 Coll.; authors)*

Year	Tax rate
2004	0.91 Sk/unit + 20% from SP, min. 1.40 Sk/ unit
2005	0.91 Sk/unit + 20% from SP, min. 1.40 Sk/ unit
2006	1.10 Sk/ unit + 23% from SP, min. 1.70 Sk/ unit
2007	1.10 Sk/ unit + 23% from SP, min. 1.70 Sk/ unit
2008	1.41 Sk/ unit + 24% from SP, min. 2.10 Sk/ unit
2009	52.44 eur/1 000 units + 24% from SP, min. 81.32 eur/1 000 units
2010	52.44 eur/1 000 units + 24% from SP, min. 81.32 eur/1 000 units
2011	52.44 eur/1 000 units + 23% from SP, min. 85 eur/1,000 units
2012	52.44 eur/1 000 units + 23% from SP, min. 85 eur/1,000 units
2013	59 eur/1 000 units + 23% from SP, min. 90 eur/1,000 units
2014	59.50 eur/1 000 units + 23% from SP, min. 91 eur/1,000 units
2015	59.50 eur/1 000 units + 23% from SP, min. 91 eur/1,000 units
2016	59.50 eur/1 000 units + 23% from SP, min. 91 eur/1,000 units

Focusing on Tab. II, we can see, that the frequency of cigarette taxation increase in the Slovak Republic is lower than in the Czech Republic, during 13 years the tax rate increased in 7 years (in the Czech Republic in 11 years).

It can be caused mainly by EURO adoption in year 2009 – there was no need to change the cigarette tax rate since the exchange rate changes.

Literature overview

The history of the excise taxes is almost identical and equally long as the history of modern taxation; it is described in the Czech literature for example in Starý (2009), in the Slovak Republic for example in Grúň (Grúň, 2009). Both cultivation and consumption of tobacco (and tobacco products as a whole) became suitable subject to taxation.

A theory of excise taxes (including cigarettes) was provided by Ramsey in 1927 (Ramsey, 1927) and we can say that this theory has not been fundamentally changed to current days.

Focusing on actual scientific research in the area of cigarette taxation, we should mentioned for example David (David, 2010, pp. 25–43), who analyzed cigarette excise duties as a tool of anti-tobacco policy, including analyzes of medical costs of cigarettes' consumption; Svátková (Svátková, 2009), who analyzed the impact of European legislation on cigarette tax rates; microeconomic impacts of cigarette taxation were analyzed by Macnaughton and Mawani (2011, pp. 167-186); Cullis and Jones focused on positive and negative impacts of frequent tax rate increase (Cullis and Jones, 1992). Regarding the topic of cigarette taxation and its consequences for the area of public finance, we should mention key monographies by Samuelson and Nordhaus (2010) or James and Nobes (2010) and mainly key monography in the area of excise taxation by Cnossen (2005, pp. 20–55).

Regarding the up-to-date international research in the analyzed field, the authors focused also on the impacts of cigarette taxation on consumers' decisions, precisely the substitution and income effects of cigarettes' tax rates increase; the income effect is represented by the reduction of final consumption of cigarettes, the substitution effect is represented by changing the brand of cigarettes and preferring the cheaper ones (Liu *et al.*, 2015; Chen *et al.*, 2014; Chiou and Muehlegger, 2014).

The issue of cigarette taxation impacts on the households in both the Czech Republic and the Slovak Republic has not been adequately and comprehensively analyzed yet; the comparison of the cigarette taxation development in both countries is also insufficient. Therefore the authors focused on this area of research. The main objective of this paper is to evaluate the development of tax rates imposed on cigarettes both in the Czech Republic and the Slovak Republic and the impacts of cigarettes' taxation on expenditures on tobacco products of particular types of households in both analyzed countries. A partial objective of this paper is to determine the possible relationships between cigarette taxation and expenditures on tobacco products of the main category of households, including a comparison of results obtained in the Czech Republic and the Slovak Republic.

MATERIALS AND METHODS

Methods

Research presented in this paper is based on standard economic methodology, precisely the methods of analysis, comparison, deduction and synthesis, together with methods of correlation and regression analysis (more information in Hendl, 2012).

For the purposes of correlation analysis, we use Pearson's correlation coefficient, for the purposes of regression analysis, we use linear regression model.

For the purposes of detailed analysis of cigarette taxation impacts we choose the Czech Republic and the Slovak Republic, since these countries have similar tax history and they joined the European Union in the same year (2004). There are also similar characteristics in the analyzed area, for example number of cigarette smokers per 100 inhabitants, consumption of cigarettes per inhabitant and the yield of revenues from cigarette taxation in public budgets. We analyzed both countries in the period after joining the European Union – in years 2004–2016. During this period, the Slovak Republic joined the Eurozone (1. 1. 2009), the Czech Republic is not member of the Eurozone.

For the purposes of the main target achievement, we defined the following research assumptions:

1. Cigarette taxation increase was similar in both countries, after joining the EU;
2. Cigarette taxation increase caused decrease in expenditures of households on tobacco products consumption in both of the countries.

Data

For the purposes of correlation analysis in the Czech Republic, the following data are used: inflation, money expenditures of households in total - annual averages per capita in CZK, money expenditures of households of employees in total - annual averages per capita in CZK, money expenditures of households of employees with lower education - annual averages per capita in CZK, money expenditures of households of employees with higher education - annual averages per capita in CZK, money expenditures of households of self-employed - annual averages per capita in CZK, money expenditures of households of unemployed - annual averages per capita in CZK, money expenditures of households of pensioners without economic active members - annual averages per capita in CZK and cigarette tax rate in CZK per 1 unit.

For the purposes of regression analysis in the Czech Republic, the following data are used:

money expenditures of households in total – month averages per capita in CZK (quarterly statistics) and cigarette tax rate in CZK per 1 unit. Quarterly statistics is available for the period 4Q2008–4Q2015.

The main data source is the Household budget survey of Czech Statistical Office (CZSO, 2016).

For the purposes of correlation analysis in the Slovak Republic, the following data are used: inflation, money expenditures of households in total - annual averages per capita in EUR, money expenditures of households of employees in total - annual averages per capita in EUR, money expenditures of households of self-employed - annual averages per capita in EUR, money expenditures of households of pensioners without economic active members - annual averages per capita in EUR, money expenditures of other households - annual averages per capita in EUR and cigarette tax rate in EUR per 1000 units.

For the purposes of regression analysis in the Slovak Republic, the following data are used: money expenditures of households in total – month averages per capita in CZK (quarterly statistics) and cigarette tax rate in EUR per 1000 units. Quarterly statistics is available for the period 1Q2004–1Q2013.

The main data source is Household budget survey of Statistical Office of the Slovak Republic (SOSR, 2016).

RESULTS

Cigarette tax rates' comparison

Firstly, we analyzed the development of cigarette tax rates both in the Czech Republic and the Slovak Republic and compared the tax rates with the EU minimal tax rate.

The comparison of cigarette tax rates in EUR in period 2004–2016 is shown in Tab III.; for the purposes of tax rates conversion from national currencies to EUR (in the Czech Republic the whole period, in the Slovak Republic in the period 2004–2008) we used article 18 of Directive. For the purposes of conversion the tax rates in countries not using EUR, the exchange rate from the first working day of October and published in the Official Journal of the European Union should be used. These obtained values are then applied from 1 January of the following calendar year. The tax rates in Tab. III are therefore based on a previous year exchange rate, with the exception of year 2008 (exchange rate from 2. 10. 2007) and years 2007 and 2012 (exchange rate from 10.3).

The following Fig. I. shows the comparison of the development of cigarette tax rates the Czech Republic, the Slovak Republic and the EU minimal tax rates expressed in EUR in the period 2004–2016 in the graphical expression.

Based on both Tab. III. and Fig 1., it is obvious, that in the period after joining the European Union, the cigarette taxation in both countries was lower than EU minimal tax rates. The EU minimal tax rate level was achieved in year 2008 in the Czech Republic and in year 2009 in the Slovak Republic. We can say, that it was also supported by exchange rates of national currencies vs. EUR.

III: *Comparison of cigarette taxation tax rates in period 2004–2016*

Year	EU minimal tax rate	CZ tax rate	SK tax rate
2004	60.00	29.48	33.95
2005	60.00	35.74	34.95
2006	64.00	45.93	43.75
2007	64.00	57.97	45.47
2008	64.00	69.72	61.98
2009	64.00	78.34	81.32
2010	64.00	79.10	81.32
2011	64.00	82.28	85.00
2012	64.00	87.62	85.00
2013	64.00	86.92	90.00
2014	90.00	87.72	91.00
2015	90.00	86.18	91.00
2016	90.00	96.18	91.00

(Source: current legislation; ECB, 2016 and authors)

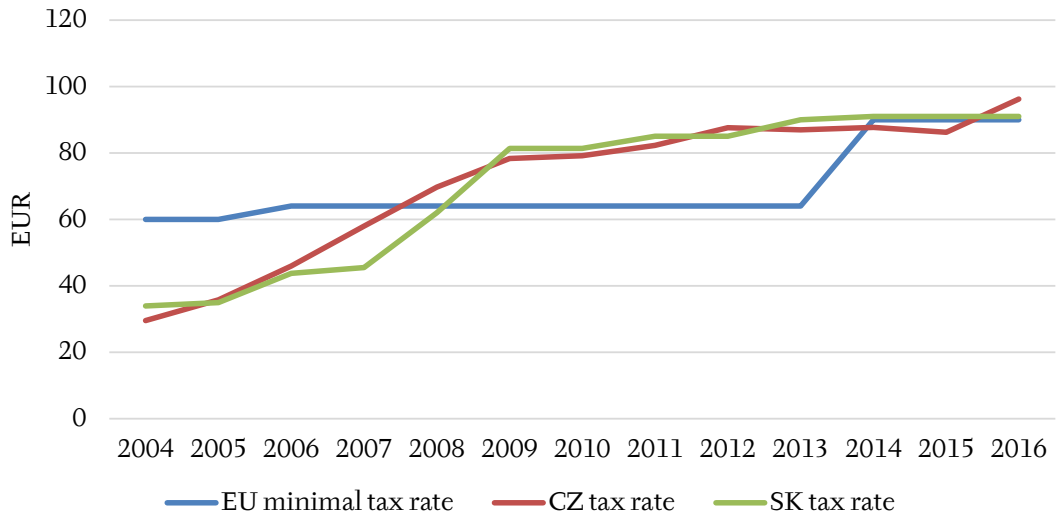
It is obvious, that after joining the Eurozone, the Slovak Republic has fulfilled the minimal cigarette tax rates in the whole analysed period (2009–2016); however the Czech Republic cigarette tax rate is depended on exchange rate fluctuations and after the weakening of the CZK/EURO exchange rate by Czech National Bank in years 2014 and 2015, the minimal tax rate was not achieved in these years.

Focusing on the whole period 2004–2016, we can say that cigarette excise duty in the Czech Republic increased by 226 %, in the Slovak Republic by 168 %. The difference can be depended on higher cigarette tax rate in the Slovak Republic in year 2004 and also the exchange rate SKK/EURO in the year of joining the Eurozone.

Comparison of cigarette taxation impacts on expenditures of households

In this part we will focus on research question no. 2 – cigarette tax rate increase has impact on decrease of households' expenditures on tobacco products. We will also compare the results for the Czech Republic and the Slovak Republic.

Firstly, we will focus on correlation analysis for the Czech Republic. We need the following variables: INF (inflation), HTOT (money expenditures of households in total – annual averages per capita in CZK), ETOT (money expenditures of households of employees in total – annual averages per capita in CZK), ELE (money expenditures of households of employees with lower education – annual averages per capita in CZK), EHE (money expenditures of households of employees with higher education – annual averages per capita in CZK), SELF (money expenditures of



1: *The development of cigarette tax rates in EUR in the period 2004–2016*
(Source: current legislation; ECB, 2016 and authors)

IV: *Correlation analysis – the Czech Republic*

	YEAR	INF	HTOT	ETOT	ELE	EHE	SELF	UNEM	PENS	TAX
YEAR	1									
INF	–0.34996	1								
HTOT	0.925513	–0.23162	1							
ETOT	0.854998	–0.14829	0.982049	1						
ELE	0.778066	–0.20629	0.913801	0.946022	1					
EHE	0.719923	–0.33569	0.955697	0.964005	0.84421	1				
SELF	0.835658	–0.25397	0.940057	0.910235	0.577417	0.850434	1			
UNEM	0.090688	0.425639	0.31283	0.517665	0.564937	0.342769	–0.08103	1		
PENS	0.975965	–0.39329	0.88739	0.791225	0.707791	0.703289	0.808814	–0.02078	1	
TAX	0.941985	–0.16453	0.980861	0.963492	0.909933	0.859868	0.914566	0.35124	0.876454	1

(Source: authors)

households of self-employed – annual averages per capita in CZK), UNEM (money expenditures of households of unemployed – annual averages per capita in CZK), PENS (money expenditures of households of pensioners without economic active members - annual averages per capita in CZK), TAX (cigarette tax rate in CZK per 1 unit). The results of the correlation analysis for the Czech Republic are showed in the Tab. IV.

You can see, that there is a strong positive correlation between cigarette taxation and money expenditures of almost all types of households in the Czech Republic, except of households of unemployed. It is clear, that we can focus in more detail on relationship between cigarette tax rate in CZK per 1 unit and money expenditures of households in total in the following step, using regression analysis. For the purposes of regression analysis, we use quarterly statistics, precisely money expenditures of households in total – month averages per capita in CZK and cigarette tax rate in CZK per 1 unit.

The following Tab. V shows the results of the regression analysis, where the independent variable is cigarette tax rate in CZK per 1 unit and the dependent variable is money expenditures of households in total – month averages per capita in CZK.

We can write the following regression equation:

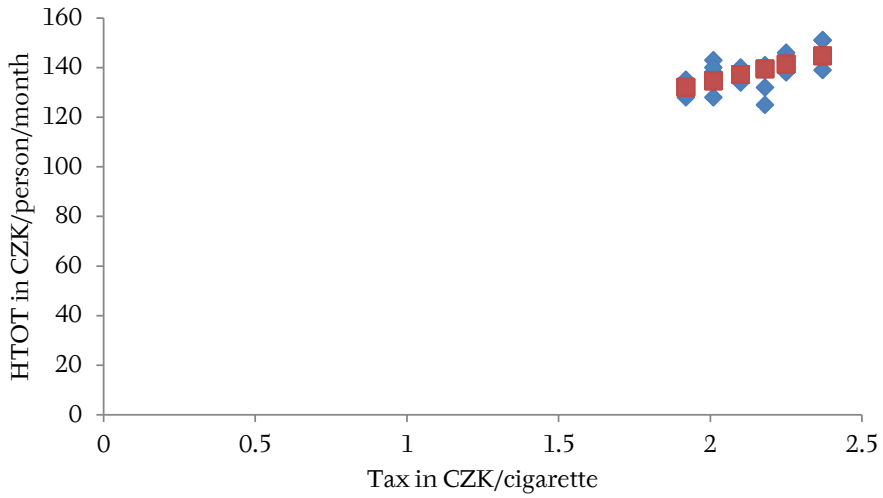
$$Y = 78{,}32 + 28{,}03*tax$$

Based on the results, it is obvious, that when we have households' expenditures on the tobacco products as the dependent variable and cigarette tax rate as independent variable, there can be observed the following relationship between the variables: cigarette tax rate increase by 1 CZK per one cigarette causes increase of households' expenditures on tobacco products per month and person by 28 CZK. We can say that regardless cigarette tax rate increase in the Czech Republic in the analysed period, the households' expenditures on tobacco products are not decreasing. The following Fig. 2 shows us

V: *Regression analysis – the Czech Republic*

Regression statistics						
Multiply R	**Value of Reliability R**	**Adjusted Value of Reliability R**		**Error of the Mean**		**Observations**
0.659197	0.434541	0.413598	4.880137	29		
ANOVA						
	Df	**SS**	**MS**	**F**	**Sig**	
Regression	1	494.1476	494.1476	20.74879	0.000100661	
Residues	27	643.0248	23.81573			
Total	28	1137.172				
	Coefficients	**Std. Error**	**t**	**P**	**LB 95 %**	**UB 95 %**
Constant	78.32515	13.03384	6.0009366	2.06E-06	51.58190	105.0684
TAX	28.02824	6.153179	4.555084	0.000101	15.40296	40.65352

(Source: authors)



2: *Dependence of households' expenditures on cigarette tax rate in CR*
(Source: authors)

the results for the Czech Republic in the graphical expression.

Regarding the Slovak Republic, there is not the same structure of Household Budget Survey, the statistics is based on a little different types of households; however the key categories are the same. For the purposes of the correlation analysis, we used the following variables: INF (inflation), HTOT (money expenditures of households in total - annual averages per capita in EUR), ETOT (money expenditures of households of employees in total - annual averages per capita in EUR), SELF (money expenditures of households of self-employed - annual averages per capita in EUR), PENS (money expenditures of households of pensioners without economic active members - annual averages per capita in EUR), OTHERS (money expenditures of other households - annual averages per capita in EUR), TAX (cigarette tax rate in EUR per 1000 units). The results of the correlation analysis for the Slovak Republic are showed in the Tab. VI.

You can see that there is a strong positive correlation between cigarette taxation and money expenditures of almost all types of households in the Slovak Republic, except of other, not classified, households. The results are similar as in case of the Czech Republic; however we have no information regarding households of unemployed. Although the structure of households is not same as in the Czech Household budget survey, we can also focus in more detail on relationship between cigarette tax rate and money expenditures of households in total in the following step, using regression analysis. For the purposes of regression analysis, we use quarterly statistics, precisely money expenditures of households in total – month averages per capita in EUR and cigarette tax rate in EUR per 1,000 units.

The following Tab. VII shows the results of the regression analysis, where the independent variable is cigarette tax rate in EUR per 1000 units and the dependent variable is money expenditures of households in total - month averages per capita in EUR.

VI: *Correlation analysis – the Slovak Republic*

	YEAR	HTOT	ETOT	SELF	PENS	OTHERS	INF	TAX
YEAR	1							
HTOT	0,958759	1						
ETOT	0,930437	0,985497	1					
SELF	0,910382	0,914434	0,862557	1				
PENS	0,934987	0,968338	0,927725	0,861228	1			
OTHERS	0,712975	0,766111	0,74125	0,522325	0,850221	1		
INF	-0,60938	-0,54025	-0,47429	-0,6476	-0,54242	-0,22772	1	
TAX	0,954681	0,932075	0,874993	0,866792	0,970127	0,808431	-0,59745	1

(Source: authors)

VII: *Regression analysis – the Slovak Republic*

Regression statistics						
Multiply R	**Value of Reliability R**	**Adjusted Value of Reliability R**		**Error of the Mean**		**Observations**
0,814989	0.664207	0.654613	0.340262	37		
ANOVA						
	Df	**SS**	**MS**	**F**	**Sig**	
Regression	1	8.015402	8.015402	69.23077	8.24442E-10	
Residues	35	4.052231	0.115778			
Total	36	12.06763				
	Coefficients	Std. Error	t	P	LB 95%	UB 95%
Constant	2.869606	0.185207	15.49409	3.06E-17	2.4936	3.2456
TAX	0.02312	0.002779	8.320503	8.24E-10	0.0175	0.0287

(Source: authors)

We can write the following regression equation:

$$Y = 2{,}87 + 0.02*tax$$

Based on the results, it is obvious, that when we have households' expenditures on the tobacco products as the dependent variable and cigarette tax rate as independent variable, there can be observed the following relationship between the variables: cigarette tax rate increase by 1 EURO per one thousands of cigarettes causes increase of households' expenditures on tobacco products per month and person by 0.02 EURO. Therefore we can say the similar sentence as in case of the Czech Republic - regardless cigarette tax rate increase in the Slovak Republic in the analysed period, the households' expenditures on tobacco products are not decreasing.

The following Fig. 3 shows us the results for the Slovak Republic in the graphical expression.

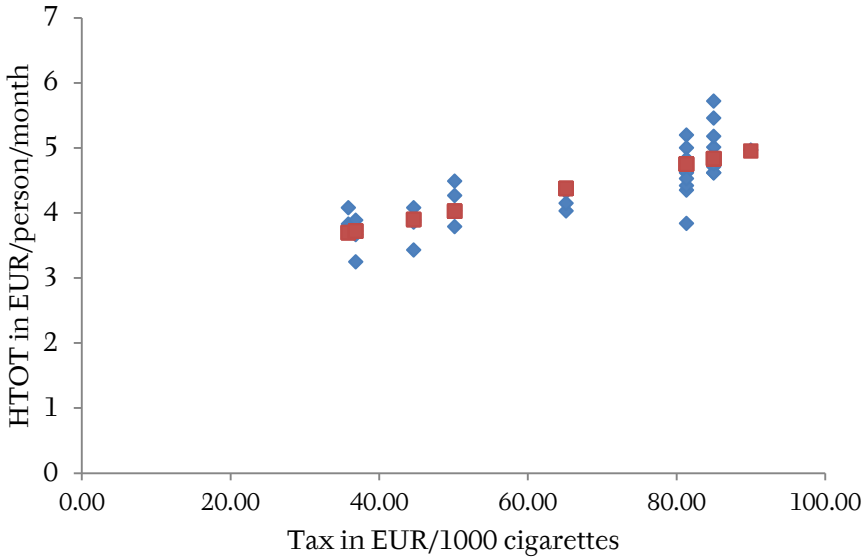
DISCUSSION

Firstly, we should focus on evaluation of two research assumptions, which were defined for the purposes of the main target achievement:

1. Cigarette taxation increase was similar in both countries, after joining the EU;
2. Cigarette taxation increase caused decrease in expenditures of households on tobacco products consumption in both of the countries.

Based on the results presented in the previous chapter, we can say that the research assumption (1) was not proved; dealing with tax rates in EURO, the increase of cigarette taxation was higher in the Czech Republic (excise tax rate increased 3.3 times) than in the Slovak Republic (excise tax rate increased 2.9 times). This difference was caused mainly due to changes in exchange rate CZK/EURO, which is visible from different results for tax rates in CZK and EURO; whereas increase of tax rate in CZK is 2.8 times, in EURO it is 3.3 times. The other reasons are also higher initial tax rate in the Slovak Republic and joining of the Slovak Republic to the Eurozone with the exchange rate 30,126 SKK/EURO. Generally, we can say, that EURO adoption in the Slovak Republic eliminated complications with tax rate setting in national currency.

The research assumption (2) was also not proved. Based on the results of both correlation and regression analyses, we can say, that regardless increase of cigarette tax rates in both of the countries, expenditures of households on tobacco products consumption are not decreasing. This is obvious both in the Czech Republic and the Slovak Republic. We can see differences between analyzed countries only in the amount of the cigarette tax burden; that



3: *Dependence of households' expenditures on cigarette tax rate in SR*
(Source: authors)

means that similar increase in cigarette tax rate has no similar impact on expenditures of households on tobacco products in both of the countries; however the differences are not in the amount of the order.

The cigarette taxation area is interesting both in microeconomic and macroeconomic view. From the microeconomic view, we should mention mainly the influence of VAT tax rate development on the total amount of cigarette taxation (more in Alm, El-Ganainy, 2013) and therefore influence of the total impact of cigarette taxation on final expenditures of households on tobacco products. From the macroeconomic view, we can analyse the yield of cigarette taxation on public budgets revenues, which can be also affected by awareness of negative impacts of smoking on health (more in Široký *et al.*, 2014). We should also mention the problem of tax evasion connected with increase of cigarette taxation, which can be more frequent in border areas (more in Zodrow, 2006).

The following Tab. VIII shows the comparison of cigarette taxation revenues both in the Czech Republic and the Slovak Republic in the period 2004–2016, the revenues are expressed as the percentage of total tax revenues, including insurance, on total taxation (% TT).

Since the cigarette taxation development in the analysed period 2004–2016 has increasing trend, we can see mild, but stable increase of the percentage of total tax revenues, including insurance, on total taxation both in the Czech Republic and the Slovak Republic. This trend can be expected also in the future.

VIII: *Comparison of cigarette taxation revenues in period 2004–2016*

Year	Czech Republic Revenues as % TT	Slovak Republic Revenues as % TT
2004	1.0	1.2
2005	1.1	1.6
2006	1.2	1.1
2007	1.5	1.2
2008	1.1	1.0
2009	1.4	1.3
2010	1.4	1.5
2011	1.5	1.5
2012	1.6	1.5
2013	1.6	1.5
2014	1.6	1.5
2015	NA	NA
2016	NA	NA

(Source: Denis et al., 2014; authors; NA – not available)

CONCLUSION

As was mentioned in the introduction part, the issue of cigarette taxation impacts on the households in both the Czech Republic and the Slovak Republic was not adequately and comprehensively analyzed before; moreover the comparison of the cigarette taxation development in both countries was also insufficient. Therefore the authors focused on this area in the research.

The main objective of the paper was to evaluate the development of tax rates imposed on cigarettes both in the Czech Republic and the Slovak Republic and the impacts of cigarettes' taxation on expenditures on tobacco products of particular types of households in both analyzed countries. A partial objective of the paper was to determine the possible relationships between cigarette taxation and expenditures on tobacco products of the main category of households, including a comparison of results obtained in the Czech Republic and the Slovak Republic.

Generally, we can say that the cigarettes' taxation is specific and unique within the excise taxation in the EU due to its tax rate and also due to its positive impact on public budget revenues, which is affected by the low price and income elasticity of demand.

Based on our analysis, we can say, dealing with tax rates in EURO, that the increase of cigarette taxation was higher in the Czech Republic than in the Slovak Republic in the analyzed period. However, expenditures of households on tobacco products consumption in both of the countries are not decreasing. This result can be caused mainly by low elasticity of demand for tobacco products in both of the countries, on the other hand, it should be analyzed in more details. Therefore the further research should be focused mainly on analysis of consumption of cigarettes by households in physical units and following comparison of elasticities of demand for cigarettes or tobacco products for different groups of households, for example households of employed, unemployed, pensioners and others, since the results can be different.

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