

SELECTED ASPECTS OF THE COPENHAGEN ECONOMICS STUDY ON REDUCED VAT RATES IN THE CURRENT CONDITIONS OF THE MORAVIAN-SILESIA REGION

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Abstract: This paper deals with a long-debated issue of the application of value added tax rates to labour-intensive services. The level of value added tax rates has a dominant influence on the tax liability of suppliers of these services and subsequently on the amount of available funds that they could use for development of their business. The aim of this paper is a presentation of results of the student grant “Quantification of Impacts of Application of Reduced Value Added Tax Rate to Locally Supplied Services on the Suppliers of these Services”, which is focused on selected aspects of the “Study on reduced VAT applied to goods and services in the Member States of the European Union” in the conditions of the providers of these services from the Moravian-Silesian Region. For this paper the methods of regression analysis and analysis of variance – ANOVA were used. The deductive method and method of analysis have also been used.

Keywords: Value Added Tax, VAT Rates, Labour-intensive Services, Regression Analysis

JEL Classification: C81, D22, H25, K34

Introduction

The issue of VAT rates is currently a highly topical theme in the Czech Republic. The Czech Republic is preparing the unification of VAT rates. However, this procedure is not in accordance with the current trends in the European Union. Most Member States of the European Union take advantage of application of reduced VAT rates for selected goods and services on a permanent basis.

The aim of this paper is to provide information about the objectives, procedures, methods and partial results of the above mentioned research project, which is processed in the Student Grant Competition of the Faculty of Economics, Technical University Ostrava.

The main objective of this research project is to confirm or (partially) refute the conclusions of selected areas of “Study on reduced VAT applied to goods and services in the Member States of the European Union” from 2007 (hereinafter referred to as “Copenhagen Economics Study”) with respect to the VAT payers in the Moravian-Silesian Region.

The period of the grant is the year 2011. Currently research regarding tax payers is being conducted using a questionnaire.

The obtained data will be subsequently processed by regression analysis, which will quantify the impact of the transfer of labour-intensive services from the standard to the reduced VAT rate on the tax liability of the VAT payer.

Furthermore, decision analysis will be used for selection of the most appropriate use (investment) of available funds of the tax payers, suppliers of these services, and costs incurred as a result of this possible legislative change.

This paper describes the calculation of changes of the VAT payer's tax liability in dependence on VAT rates by using regression analysis, namely the least-squares method. Furthermore, using the statistical method - analysis of variance ANOVA - we answer the question of whether the subject of supplied services has an influence on the change of their prices in relation with change of VAT rates.

Also the method of analysis and deductive method have been used for processing of this paper.

This research project corresponds with the discussion initiated by the European Commission in December 2010 under the name "Green Paper on the future of VAT – Towards a simpler, more robust and efficient VAT system."¹

Theoretical Background

The VAT is a general tax on consumption that falls on the total value of the transaction undertaken. The weight of the tax compared to the price of the goods and services paid by the end consumer is always proportional, depending on the fixed VAT rate. Contrary to other consumption taxes, the VAT system allows treasuries to collect a portion of the total

¹ The aim of this public consultation is to give all stakeholders a chance to express their thoughts and views on the problems that currently exist with regard to VAT, and how these can be addressed.

VAT each time a value is added in the supply chain. Opposite to the final consumer, the neutrality of the tax is guaranteed to the businesses as VAT is not a cost for them. This ingenious system was initially adopted by France in 1954 and applied through that country's economy in 1966.²

The importance of the value added tax continues to grow due to fiscal reasons and its relative ease of control, selection and administration.³ Differentiation of VAT rates occurs in most countries due to socio-political pressures and interventions so that goods and services providing basic living needs are burdened with lower VAT rates. The standard or higher rate is applied to goods and services that are relatively less necessary.⁴ In the Czech Republic detailed research on the impact of the value added tax has not occurred, but it was found that the growth of the standard rate by one percentage point has an entirely proportional character.⁵

The key results of the above mentioned Copenhagen Economics study showed that the labour-intensive services transfer from standard to a reduced VAT rate in the EU predicts enhanced productivity, higher employment, increased wages and lower prices. Higher wages and lower prices should increase consumption in the EU, which in turn should lead to increases in demand for both goods and services. Copenhagen Economics also predicts that small and medium sized enterprises (SMEs) will greatly benefit and that a reduction in barriers which mainly protect the large incumbent firms from competition and allow them to keep prices artificially high, will make it possible for smaller firms to enter markets.⁶

The Legal Framework (for the Application of VAT Rates)

The legal framework for application of VAT in the Member States of the European Union is based on Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax (hereinafter referred to as "VAT Directive") as amended.

The rules for the application of VAT rates are included in the VAT Directive, in particular in Articles 93 to 130 and relevant Annexes.

The basic rule for the application of VAT rates in Member States is:

- supplies of goods and services subject to VAT are normally subject to a standard rate of at least 15%;

² comprehensively Platteew, Pestana (2011), pp. 2-2 – 2-3 and Jensen, Schjelderup (2011), p. 522

³ Široký (2010), p. 119

⁴ Široký (2008), p. 181

⁵ Kubátová (2010), p. 233

⁶ COPENHAGEN ECONOMICS (2007)

- Member States may apply one or two reduced rates of not less than 5% to goods and services included in a restricted list.⁷

The application of VAT in the Czech Republic is regulated by the Value Added Tax Act, No. 235/2004 Coll. as amended (hereinafter referred to as the “VAT Act”).

Currently the standard VAT rate in the Czech Republic is 20%, and the reduced VAT rate 10%. The reduced VAT rate will be increased to 14 % beginning at the start of 2012 and at the start of 2013 there will be a unification of both of the rates to one rate of 17.5 %.

The Copenhagen Economics Study mainly examined the impact of reduced VAT rates and derogations on locally supplied services, especially in terms of job creation, economic growth and proper functioning of the internal market.⁸

Based on the results of the consultation of the European Commission relatively strong economic arguments for application of the reduced VAT rates to some very specific sectors were found.

Subsequently the Council Directive 2009/47/EC of 5 May 2009 amending Directive 2006/112/EC as regards reduced rates of value added tax was adopted. It allows Member States to include supply of labour-intensive local services to a reduced VAT rate on permanent bases. This Directive entered into force on 1 June 2009⁹.

Consequently, the Czech Republic has several times prepared an amendment of the VAT Act which would allow the application of the reduced VAT rate to e.g. restaurant services, hairdressing services, minor repairing of bicycles, shoes and leather goods. In this context, the legislators were worried about the negative impact on the state budget due to the expected decline in VAT collection. One of the major arguments against the approval of this amendment was the argument that the impact of this tax relief would not be measurable. But as mentioned above, the Copenhagen Economics Study conclusions show that this potential legislative change would have for many reasons a positive effect on business of suppliers of these services and consequently on the state budget.¹⁰

That is why we decided to conduct research regarding the providers of these services and confirm or (partially) refute the conclusions of selected areas of the Copenhagen Economics Study in conditions of the Moravian-Silesian Region.

⁷Council Directive 2006/112/EC of 28 November 2006 on the common system on value added tax.

⁸Randová (2010)

⁹ Council Directive 2009/47/EC of 5 May 2009 amending Directive 2006/112/EC as regards reduced rates of value added tax. Publication office, Official Journal of the European Union, 2009.

¹⁰ for more details see the COPENHAGEN ECONOMICS (2007), p. 8.

The calculations in this research project are carried out with the VAT rates applicable under current legislation.

Empirical research

Method of empirical research:

- a questionnaire study conducted directly among entities in the Moravian-Silesian Region.

The Moravian-Silesian Region has been chosen as the subject for the research because of its proximity to the location of our university and the availability of the respondents. In the future, we plan to continue the research in other regions of the Czech Republic or as a comparison with other Member States.

The samples of respondents are providers of catering services, hairdressing services, or minor repair of bicycles, shoes and leather goods.

The respondents will be divided into several groups according to the subject of service and location of their establishment (according to municipality size and specific geographical location- the central or the peripheral part of the area).

The sample of respondents contains the VAT payers, as well as the small suppliers of these services who are not VAT registered yet. For the analysis of the VAT payers we used data relating to determination of their VAT liability and other documentation which are used for the preparation of the records for VAT purposes. For assessment of the non-registered suppliers of these services the data from the materials and documents for preparation of income tax returns were used. In the case of non-registered persons there were carried out calculations of the expected data as if they became VAT payers. The non-registered persons were also included into the research because the results of previous research show that excess VAT deduction would be generated in the case of some suppliers of these services e.g. hairdressing services due to changes in VAT rates, which would lead to their interest in the voluntary registration for VAT.¹¹

The questionnaire contains the actual data for the 4th calendar quarter taxable period of 2010 or in case of a month taxable period - December 2010. Also, it contains the data that are presupposed by the VAT payer in case of the transfer of these services from the standard to the reduced VAT rate.

¹¹ for more information see Randová (2010), pp. 9-13.

Specifically: sales excluding VAT, costs excluding VAT, output tax according to VAT rates, input tax according to VAT rates, tax liability, trade margin, number of employees, and labour costs.

Furthermore, the questionnaire includes the questions whether the providers of these services:

- would reduce the average cost of supplied services (if so, quantifying how much %)
- would expect the increase in demand (if so, quantifying how much %)

Furthermore, there were given questions related to how available free funds generated by this legislative change would be used: amount and type of investment in fixed assets, criteria for decision making and the perceived risk associated with these investments.

Before starting the very research it was necessary to determine the sample size (number of respondents) in such a way to get results to at least average reliability and accuracy. In cases where the research is conducted at institutions within the region it is recommended to obtain a sample size between 200 to 500 respondents.¹²

For this reason we temporary set out to obtain from the respondents 250 completed questionnaires for the purposes of our empirical research. Then we found out the real size of the populations from the data that we obtained from the Czech Statistical Office, including the number of providers of selected services broken up by individual subgroups (see Table 1). From this data we calculated the percentage shares of the subgroups in relation to the overall size of the population based on the initially determined number of respondents of 250.

Fig. 1: The calculations to determine the sample size

<i>Population</i>	13 472	100 %	250 questionnaires (100 %)
<i>Restaurant Services</i>	8 658	64.27 %	161
<i>Hairdressing Services</i>	4 515	33.51 %	84
<i>Minor repair of shoes and leather goods</i>	122	0.91 %	2
<i>Minor repair of bicycles</i>	177	1.31 %	3

Source: authors' calculations according to data from the Czech Statistical Office

¹² Sudman (1976)

Further adjustments in the last two subgroups were necessary for the analysis. The data in Table 1 show that according to these calculations the sample size of the subgroup “minor repair of shoes and leather goods” would only require two respondents and only three respondents would be needed for the subgroup “minor repair of bicycles”. Such a number of respondents does not have sufficient statistical power.

To fulfill the conditions of the Moivre-Laplace theorem on the convergence of a binomial distribution, sufficient predicative ability must be provided.

According to Newbold et al. (2009) a good rule is that the normal distribution provides a good approximation for the binomial distribution when

$$nP(1 - P) > 9 \quad (1)$$

Substituting the value $p=0.5$ to relation (1) renders the condition of the Moivre-Laplace Theorem true if data were collected from at least 36 entities for minor repair of shoes and leather goods and 36 entities for minor repair of bicycles.

$$n0.5(1-0.5) > 9$$

$$36 > 9$$

Based on the application of relation (1) the sample size is expanded up to 317 respondents. This step will allow analysis of the population as a complex, but also its subgroups (i.e. restaurant services, hairdressing services, minor repair of shoes and leather goods and minor repair of bicycles).

Fig. 2: Population and sample size according to the subgroups

<i>Population</i>	<i>Sample size</i>
<i>Restaurant Services</i>	161
<i>Hairdressing Services</i>	84
<i>Minor repair of shoes and leather goods</i>	36
<i>Minor repair of bicycles</i>	36
<i>Total</i>	317

Source: authors' calculations according to data from the Czech Statistical Office

After the adjustments, the sample size is sufficiently representative for the subsequent analysis.

The project is conceived as a one year study. The data from the respondents are acquired and analysed continuously.¹³

For data processing and subsequent analysis quantitative models will be used. After obtaining all the data, data will be verified (statistical, economic and econometric) in the model.¹⁴ Data evaluation will be conducted by regression analysis using Least Squares Method. In addition, we will use a method of mathematical statistics – analysis of variance ANOVA and Decision Analysis.

Analysis of dependence of tax liability on applied VAT rate

As previously mentioned, the respondents filled into the questionnaires with the actual data for the taxable period of the 4th quarter of 2010 or in the case of month taxable periods - December 2010. Also, participants filled in the figures estimated in the case that transfer of the labour intensive services from the standard to the reduced VAT rate takes place.

The anonymous questionnaires are gathered among the suppliers of these services by a student of Master program from Faculty of Economics of VSB – Technical University Ostrava. So far, there have been collected 201 questionnaires from 317 planned until now. After achieving this number, all planned calculations will be carried out.

The application of the Least Square Method will show (mathematically and graphically) the relation between the VAT rate and tax liability. For processing the example model we chose the VAT payers with a month taxable period. A randomly selected respondent from each interviewed category is always chosen.

The restaurant services supplier

This is a VAT payer with establishment in the centre of Ostrava, the data obtained from the research are showed in Table 1. Most of the respondents suppose (in accordance with the results of the Copenhagen Economics Study) that a decrease in the prices of their services (due to lower VAT rate) would cause an increase in demand. All the data showed in the tables are based on the assumption that the standard VAT rate would remain at the 20% level, and only the reduced VAT rate level would be changed (see column VAT rate).

¹³ Randová, Krajňák (2011)

¹⁴ for more about using statistical methods see e.g. Friedrich et. al (2005)

Tab. 3 VAT rate and Tax Liability at Restaurant services

VAT rate	Tax Liability (x_i)	Income (y_i)
10 %	- 22 847	474 590
14 %	- 3 349	411 311
17.5 %	14 808	385 492
20 %	35 570	351 548

Source: authors' calculations according to data obtained from the questionnaire research

Using data obtained from the questionnaire research shows the relation between VAT rate and tax liability, respectively sales. The method that is used most frequently is the method of Ordinary Least Squares.¹⁵

We would like to find the best curve where the sum of the squares of deviations is a minimum, it must pay that $\sum e^2 = \sum (Y_i - \hat{Y}_i)^2$ (2)

For finding the minimum $\sum e^2$ this system of equations is used¹⁶:

$$\sum Y_i = nb_1 + b_2 \sum X_i \quad (3)$$

$$\sum Y_i X_i = b_1 \sum X_i + b_2 \sum X_i^2$$

Where n is number of respondents (sample size), b_1 and b_2 are values that satisfy the rule for the minimum sum of the least squares.

To find the best way to show and mathematically express the relation between dependent and independent variable the software MS Excel can be used.

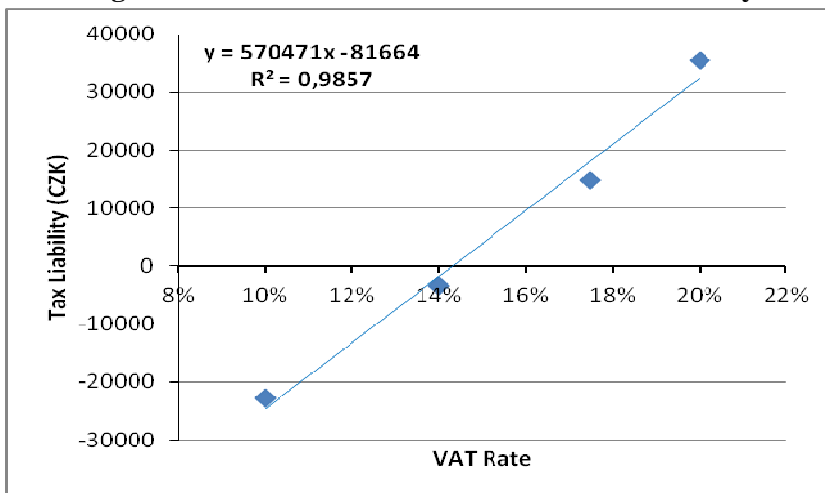
The restaurant services supplier reports higher sales with the higher VAT rate, the relation between the VAT rate and tax liability is opposite.

If restaurant services were burdened with a reduced VAT rate, the VAT payer would use the available funds for staff training and investment in tangible assets – purchase of a new machine. Few respondents would be willing to reduce the price by so many percentage points of what would be the difference between standard and reduced VAT rate.

¹⁵ see GUJARATI (1992), p. 130.

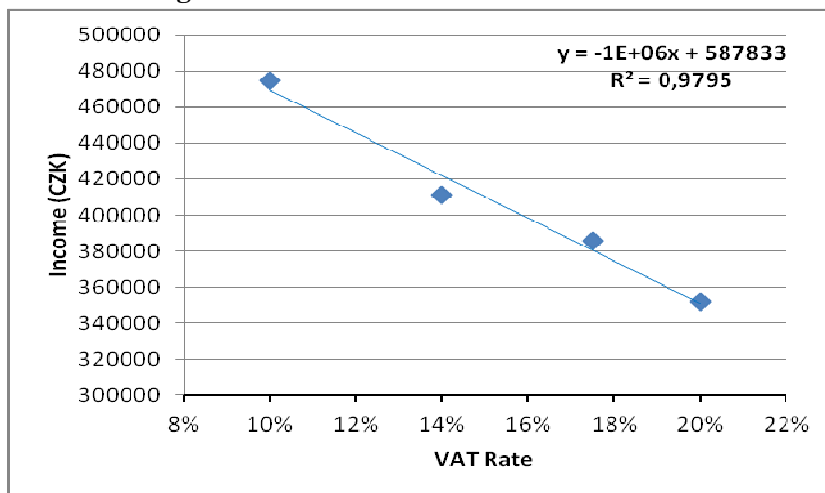
¹⁶ see GUJARATI (1992), p. 133.

Fig. 4 Relation between the VAT rate and tax liability



Source: authors' calculations according to data obtained from the questionnaire research

Fig. 5 Relation between VAT rate and sales



Source: authors' calculations according to data obtained from the questionnaire research

The supplier of hairdressing services

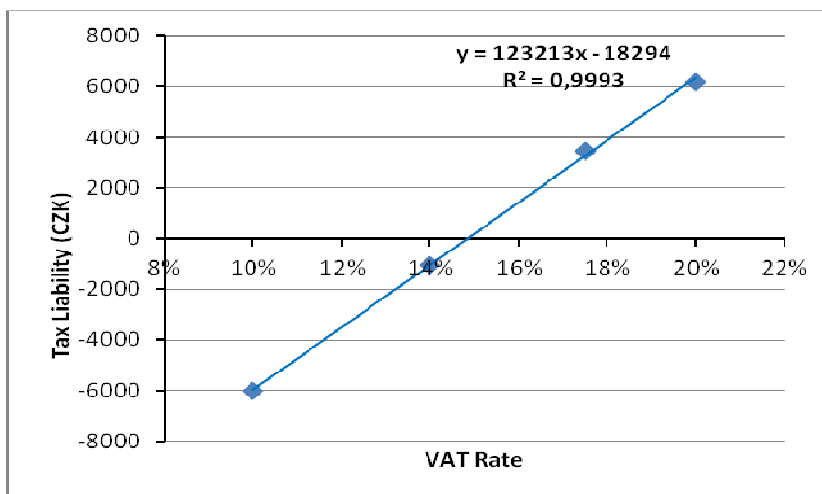
This establishment is also located in Ostrava but in the suburb of the City. The owner of this establishment does not have any permanent employee, only one temporary staff person who helps in case of a high demand for these services.

Fig. 6 VAT rate and Tax Liability at Hairdressing Services

VAT rate	Tax Liability (x_i)	Income (y_i)
10 %	- 6 021	120 393
14 %	- 1 048	119 064
17.5 %	3 467	118 084
20 %	6 200	117 000

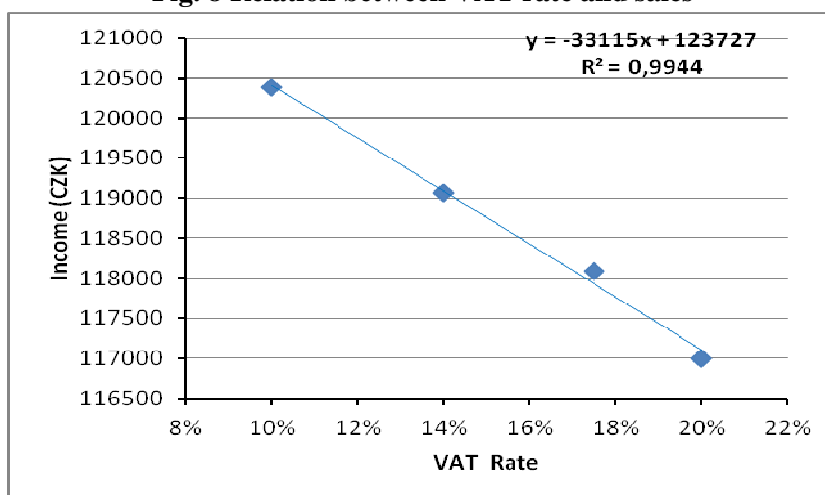
Source: authors' calculations according to data obtained from the questionnaire research

Fig. 7 Relation between VAT rate and tax liability



Source: authors' calculations according to data obtained from the questionnaire research

Fig. 8 Relation between VAT rate and sales



Source: authors' calculations according to data obtained from the questionnaire research

In case of transferring of these services from the standard to the reduced VAT rate the sales will grow to this VAT payer. As the VAT rate increased, the sales rate would decrease. The conclusions are the same as in case of the supplier of restaurant services.

The respondent answered that a free fund would be created . However, he does not have any employees, he would use these available funds to expand the range of services, production capacities and he would use part of these available funds as a share of the profits.

If he expands the production capacity, he will probably employ a staff person, which would be another positive effect.

The supplier of minor shoe repair

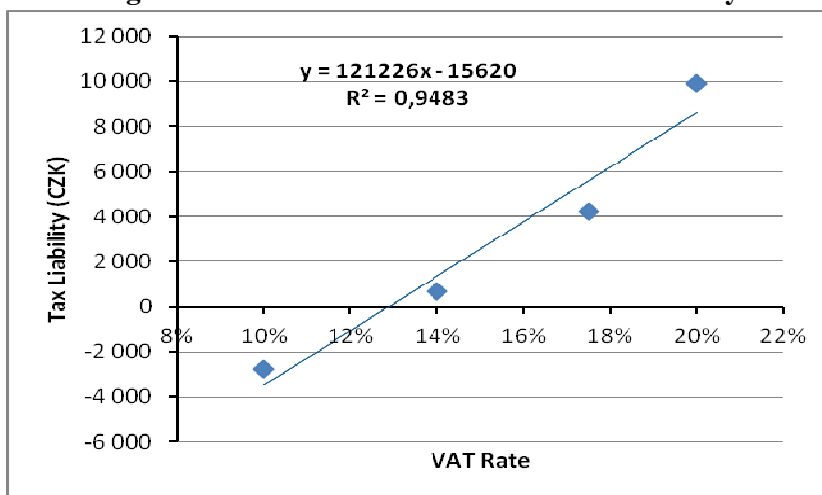
Most of respondents from the segment of minor shoe repairs had lower turnover and sales than the previously discussed respondents, suppliers of restaurant and hairdressing services. The establishment is located outskirts of the town. This town has less than 100 000 inhabitants. The respondent has a relatively high business margin – 40%.

Fig. 9 VAT rate and Tax Liability for shoe repair

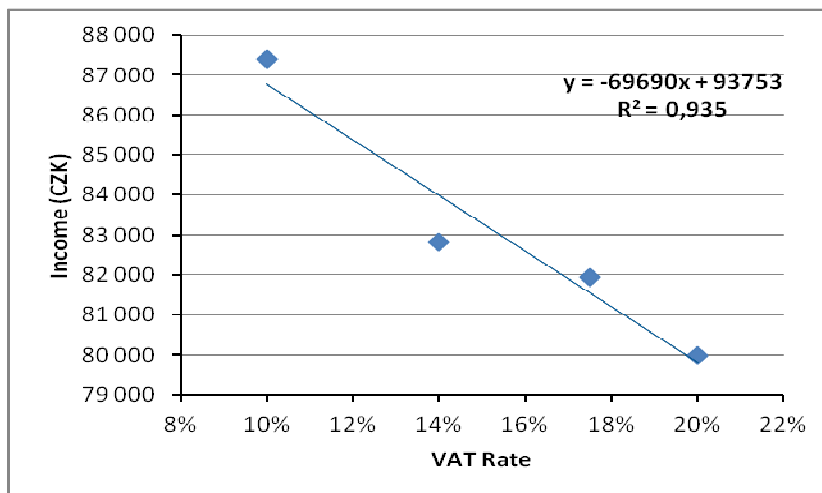
VAT rate	Tax Liability (x_i)	Income (y_i)
10 %	- 2 760	87 387
14 %	697	82 828
17.5 %	4 218	81 950
20 %	9 920	79 988

Source: authors' calculations according to data obtained from the questionnaire research

Fig. 10 Relation between VAT rate and tax liability



Source: authors' calculations according to data obtained from the questionnaire research

Fig. 11 Relation between VAT rate and sales

Source: authors' calculations according to data obtained from the questionnaire research

Minor bicycle repair

The place of business of this services provider is located in the outskirts of the district town. The respondent has four employees; the average business margin is 30 %. Average labour costs per calendar month are 50 900 CZK.

Fig. 12 VAT rate and Tax Liability at bicycle repair

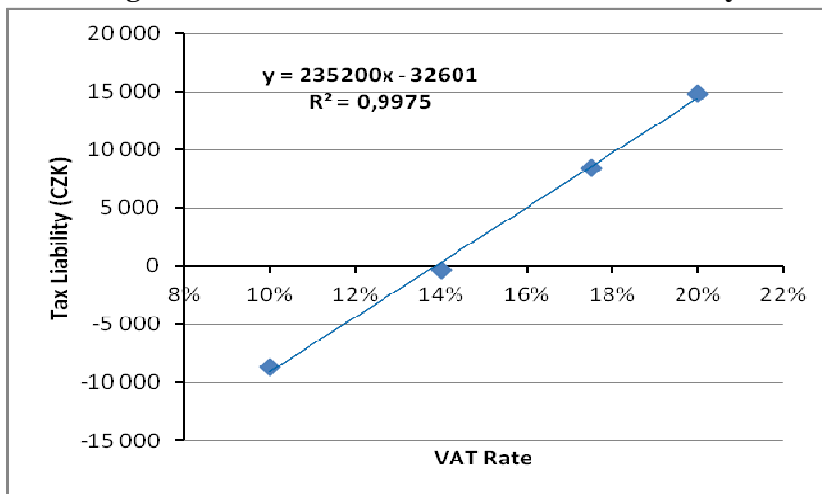
VAT rate	Tax Liability (x_i)	Income (y_i)
10 %	-8 648	172 846
14 %	-330	184 642
17.5 %	8 402	191 962
20 %	14 819	197 584

Source: authors' calculations according to data obtained from the questionnaire research

The results for a representative of the minor bicycle repair segment are identical regarding the relation of tax liability and VAT rate, i.e. higher VAT rate = higher tax liability. A similar conclusion is also based on the relation of VAT rate and sales. The higher VAT rate occurs with a higher rate of sales. This is true because the respondent is willing to cut prices of its services by up to 19 %. However, this is a very rare case where the VAT payer is willing to make such a significant price reduction.

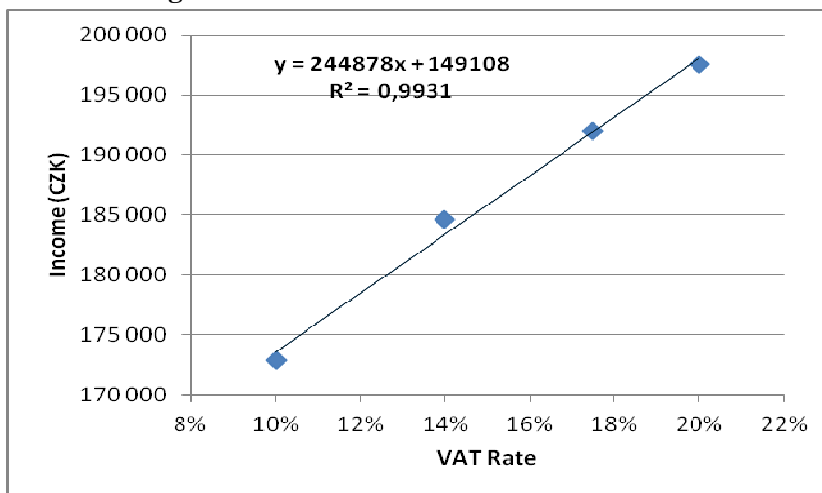
If these services were subject to reduced 10% VAT rate, the VAT payer would have excess VAT deduction. This means he would obtain other free funds from the tax administration. These available funds would be used for employees training and range of services extending.

Fig. 13 Relation between VAT rate and tax liability



Source: authors' calculations according to data obtained from the questionnaire research

Fig. 14 Relation between VAT rate and sales



Source: authors' calculations according to data obtained from the questionnaire research

The regression analysis results

All four interviewed respondents would save funds if the labour-intensive services were transferred from the standard to the reduced VAT rate due to lower tax liability. They could use the available funds for developing their business.

The figures and tables show the dependence that is captured using the least-squares method. The trend line shows a dependency in numerical values together with the general variable “x”, which is always a VAT rate.

The extent to which the equation calculated by application of the relation reflects the dependence on the above mentioned dates will be measured by the coefficient of determination (R^2). This quantity varies between 0 and 1, where higher values indicate a better regression.¹⁷

The difference between the value 1 and the value specified by the software shown in charts (Fig. 4, 5, 7, 8, 10, 11, 13, 14) expresses the influence of the random value on the variance value “y”. The higher the difference in value, the less precisely the dependency is expressed by the regression function and thus the more the random component is involved in the variance.

In the above shown graphs R takes values higher than 0.9. The regression functions describe the dependence of the value “y” to the value “x” very accurately.

Hypothesis testing – influence of the subject of the supplied services to change prices

This research considered the question of whether the suppliers of these services would reduce the price of services if there was a transfer of these services from the standard to the reduced VAT rate. The answers to this question were highly differentiated. This part of the paper is focused on testing the hypothesis of whether the subject of the supplied services influences the change of the price.

These are the types (ranges) of services:

- restaurant services,
- hairdressing services,
- minor repair of shoes and leather goods,
- minor repair of bicycles.

¹⁷ see NEWBOLD (2007), p. 423.

To get the answer to this question through a method of induction, we will analyze the variances using the ANOVA method. The principle of testing by ANOVA is similar to a standard method of hypotheses testing.

The data collected through the questionnaire research (Fig. 15 – 18) will be used to verify the hypothesis (H0) that the subject of supplied services has no effect on the behaviour of the suppliers of these services in the field of price policy, i.e. $\mu_1 = \mu_2 = \mu_3 = \mu_4$. An alternative hypothesis H1 claims on the contrary, that the subject of the supplied services affects the contemplated change in prices of services.

These hypotheses will be verified on the basis of data collected through the questionnaire research, which was so far conducted for 201 respondents. The validity of this working hypothesis is verified at a 5 % significance level¹⁸.

The data were gained by the questionnaire research. The suppliers of the restaurant services would be willing to reduce prices within an interval from zero to 20 %, the suppliers of hairdressing services from zero to 30 %, and suppliers of bicycle repair reports the same interval as suppliers of minor repair of shoes and leather goods, from zero to 40 %.

Many suppliers of these services would not be willing to reduce prices at all, despite the possibility of lower VAT burden. The most frequent answer was “0 %”. These conclusions contradict the Copenhagen Economics study, which shows that lower VAT rate will manifest in lower prices.¹⁹

Suppliers of the restaurant services reported values 5 and 10 %. Decreases of more than 10 % occurred only three times during the research.

The suppliers of hairdressing services most often mention the decrease of prices by 5 percentage points. One respondent stated that he would be willing to cut his prices by up to 30 %. Such a pricing policy assumes that it proportionally increases sales and spreads the fixed costs on more production units.

The suppliers of minor bicycle repair and shoe and leather goods repair were often characterized by lower sales and turnover in comparison with the above mentioned segments. A large number of respondents with positive answers were ready to cut their prices by more than the percentage decrease from the VAT burden.

¹⁸ see BARROW (1988), p. 137.

¹⁹ more details in COPENHAGEN ECONOMICS, 2007.

The suppliers of minor shoes and leather goods repair most often reported in the questionnaires the values 0, 5 and 10 %. An interesting thing is that one of the respondents is willing to reduce prices by more than 40 %.

We will test the null and alternative hypotheses formulated in the beginning to validate whether to accept or refuse the null hypothesis.. Now remains determination of the test criteria. The Fisher distribution will be used.

$$F = \frac{S_M / (k - 1)}{S_V / (n - k)} = \frac{(n - k) \cdot S_M}{(k - 1) \cdot S_V} \tag{4}$$

where SM is factorial sum of the least squares and SV residual sum of the least squares.

The calculation is made more effectively and simply using the software MS Excel – data analysis tool – ANOVA: Single Factor.

Fig. 15 ANOVA: Single Factor

Factor

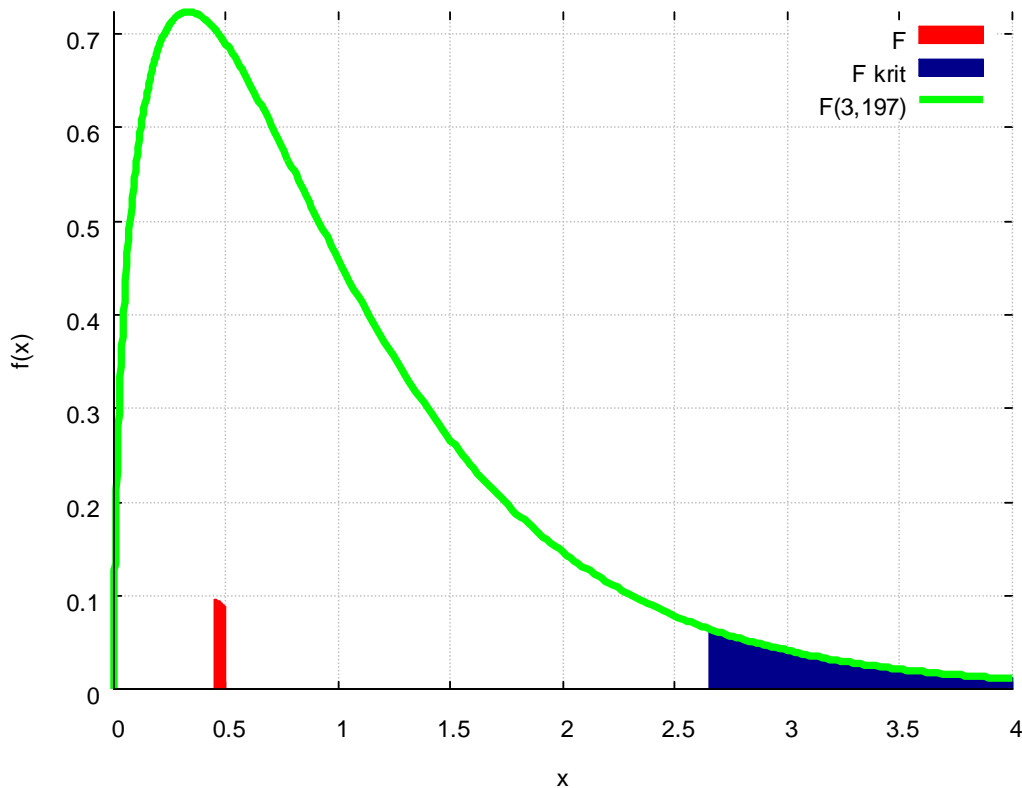
<i>Sample Size</i>	<i>Number of Respondents</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
Line 1	69	195.5	2.8333333	19.828431
Line 2	60	184	3.0666667	32.537853
Line 3	36	151	4.1944444	57.246825
Line 4	36	128	3.5555556	55.053968

<i>Source of Variability</i>	<i>Sum of Squares</i>	<i>Difference</i>	<i>Mean Square</i>	<i>F value</i>	<i>Value P</i>	<i>F krit</i>
<i>The selections</i>	49.33092	3	16.44364	0.450004	0.717575	2.650441
<i>All Selections</i>	7198.594	197	36.54108			
<i>Total</i>	7247.925	200				

Source: authors' calculations according to data obtained from the questionnaire research

The decision to accept or reject the null hypotheses of equal variances is made by using data obtained from Fig. 19. The test criterion (F) takes a value of 0.45 while the critical region (F krit) lies in the interval (2.650, ∞).

Fig. 16 Graphical presentation of hypothesis testing



Source: authors' own source with using program Maxima

Since the test criterion value does not lie in the field of critical values, the null hypothesis is accepted at the 5% significance level. The behaviour of the analysed respondents in the prices policy in the case of transfer of labour-intensive services from the standard to the reduced VAT rate would be the same.

In the analysed sample the suppliers of the restaurant services have the lowest willingness to reduce the final price of their services (the average price reduction in conversion to one respondent in this category reached 2.83 %). On the contrary, the providers of bicycle repair were more flexible – around 4 %. As we can see in Fig. 19, the difference in the mean is just 1 percentage point, which confirms the acceptance of the null hypothesis for this structure population.

Since all the data from suppliers of the restaurant and hairdressing services are not available, this analysis can be the basis for the confrontation and comparison with the final results. The results of the subgroup suppliers of bicycle repair and minor repair of shoes and leather goods are final. The number of respondents was determined in accordance

with the recommendation of the sample size for the regional research and subsequent calculations for determination of the optimal size of the subgroups.²⁰

In the case of transfer of these services from the standard to the reduced VAT rate the suppliers of these services would reduce prices by an average of 3.3 %. The research is adapted to the conditions of the Czech Republic in accordance with the current legislation (i.e. the level of the standard rate is 20%, the reduced rate 10%). It is worth nothing the fact that 10% drop in VAT rate would be reflected in less than 4% decrease of final prices of these services.

The respondents' answers obtained from the questionnaire research suggest that the flexibility in decreasing prices is lower than in the opposite direction. Even if the services suppliers will not reduce prices of their services, we cannot say that the lower rate has no economic benefit. Many suppliers would invest available free funds in the purchase of new machines. The positive effect on employees such as training, wage growth and creation of the new vacancies cannot be ignored.

Conclusion

The transfer of labour-intensive locally supplied services from the standard to the reduced VAT rate in the European Union would generally have, as the Copenhagen Economics study results show, a positive impact on the business development of the suppliers of these services. The study predicts enhanced productivity, higher employment, increased wages and lower prices that would lead to the higher demand for these services. The selected conclusions of the Copenhagen Economics study from 2007 were stated as hypotheses for our questionnaire research that was made among suppliers of the labour-intensive services (restaurant services, hairdressing services, minor repairing of bicycles, shoes and leather goods) in the current conditions of the Moravian-Silesian region. Most of respondents answered that in case of this legislative change there would be created free funds, which could be used for the investments and innovations. Only suppliers of these services with higher sales would be willing to employ more staff. Only a few respondents would increase wages and most of them prefer investing to human capital by organizing training for their employees. Furthermore, most of the respondents would not lower prices of their services. If the respondents would decrease prices, they could expect growth in demand. As we can notice some of the results of our research are not exactly consistent with the conclusions of the Copenhagen Economics Study. The recapitulation of the results is summarized in the Appendix to this article.

²⁰ Randová, Krajňák (2011)

References

BARROW, M. (1988) *Statistics for Economics Accounting and Business Studies*. 1st ed. London: Longman

COPENHAGEN ECONOMICS. (2007). *Study on Reduced VAT Applied to Goods and Services in the Member States of the European Union*. Retrieved from <http://ec.europa.eu/taxation_customs/resources/documents/taxation/vat/how_vat_works/rates/study_reduced_VAT.pdf>.

FRIEDRICH V., HRBÁČ, L., ARENCIBIA, O.M. (2005). Using Statistic Tools in Stochastic Input – Output Model of Regional Economics. In *Proceedings of the Aplimat 2005 – 4th International Conference*. Bratislava: Slovak University of Technology in Bratislava, pp. 427-436.

GUJARATI, D. (1992). *Essentials of econometrics*. 1st ed. New York: McGraw-Hill.

JENSEN S., SCHJELDERUP, G. (2011) “Indirect taxation and tax incidence under nonlinear pricing”, *International Tax and Public Finance*, 5, pp. 519-532

KUBÁTOVÁ, K. (2010) *Daňová teorie a politika*. 5th ed. Praha: Wolters Kluwer.

MAREK, L. (2007). *Statistika pro ekonomy aplikace*. 2nd ed. Příbram: Professional Publishing.

NEWBOLD, P., CARLSON, W. L., THORNE, B. (2007) *Statistics for Business and Economics*. 6th ed. Upper Saddle River: Pearson Education.

PLATTEEUW, C., PESTANA, P. (2011) *Quick Reference to European VAT Compliance*. 1st ed. Alphen aan den Rijn: Kluwer Law International.

RANDOVÁ, K. (2010). “Analysis of Potential Impacts of Inclusion of Locally Supplied Services into Reduced VAT Rate on the Suppliers of these Services”. *Financial Assets and Investing*, 1, pp. 6-14

RANDOVÁ, K., KRAJŇÁK, M. (2011) Analýza cenové politiky poskytovatelů služeb s vysokým podílem lidské práce při možném přeřazení těchto služeb do snížené sazby DPH. Proceedings from the conference *Vývojové trendy v účetnictví a daních v kontextu vědy, výuky a praxe*. Ostrava: VŠB – TU Ostrava.

SUDMAN, S. (1976). *Applied Sampling*. New York: Academic Press.

ŠIROKÝ, J. (2010). *Daně v Evropské unii*. 4th ed. Praha: Linde Praha.

ŠIROKÝ, J. (2008). *Daňové teorie*. 2th ed. Praha: C.H. Beck.

Council Directive 2006/112/EC of 28 November 2006 on the common system on value added tax. Retrieved from

<http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:347:0001:0118:en:PDF>.

Council Directive 2009/47/EC of 5 May 2009 amending Directive 2006/112/EC as regards reduced rates of value added tax. Retrieved from <<http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:116:0018:0020:EN:PDF>>.

Appendix: Comparison of the Students grant 2011/126 results with the selected conclusions of the Copenhagen Economics Study

Copenhagen Economics Study results (always positive)	Student Grant 2011/126 results
Productivity enhancement (p. 9)	Accepted: Productivity enhancement would be reached by most of the respondents. They would use these created funds for investments and innovations.
Higher employment (pp. 13, 20)	Accepted only partially: rather among respondents with higher sales (restaurant and hairdressing services)
Increasing of wages (pp. 8, 12, 13)	Accepted only partially: Very seldom. However, many respondents would invest in human capital by organizing staff training for their employees.
Decreasing of prices (p. 82)	Rejected: Most of the respondents would not lower prices of their services. If so, reducing prices in all segments of the respondents was on average the same.
Higher demand (pp.84, 93)	Partially accepted: If the respondents would decrease prices of their services, they would expect growth in demand.

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