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VAT and its influence on buying behaviour in the Czech Republic

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Abstract

Research background: Value added tax (VAT) is nowadays the most widely used indirect tax system in developed countries. Value added tax, is an instrument of fiscal policy and also a very important source of income for the state budget. It is one of the universal indirect taxes, which has a significant influence on the price level in the country. The European Union's system of value added tax on goods and services is primarily governed by "the 6th VAT Directive" set by the European Commission.

Purpose of the article: The paper deals with the question of how changes in the rates of value added tax influence the buying behaviours of customers. Buying behaviour could be expressed as decisions of customers about spending their own resources such as money, effort and time, on items related to their consumption in order to meet their needs.

Methods: The area of the research is the Czech retail food market. Due to the nature of VAT, the influence of this tax on buying behaviour was quantified by price elasticity of demand and indirect tax elasticity of demand, respectively. The article is conceived as a case study, according to the principles of R.K. Yin. The evaluation of buying behaviour is based on real data, which deals with the volumes of sales and sales prices realized in a specific Czech retail chain, which associates more than 200 shops.

Findings & Value added: The goal of the study is not only to propose the way to identify buyers' response to the changes in the VAT rate, but also to bring the knowledge about customers' response to the realized changes, and finally to propose how to use this knowledge in a development of pricing strategy in case of further changes in the VAT rate.

Introduction

Value added tax (hereinafter VAT) is nowadays the most widely used indirect tax system in developed countries. Many studies which deal with taxation perceive income taxation as more detrimental to work incentive than indirect taxation because of the disincentive effects of higher marginal income tax rates. No similar disincentives are mentioned with regard to consumption taxes (Revesz, 2014, pp. 9–12; Milana, 2016, pp. 335–336).

VAT is a multiphase indirect non-duplicate tax. It is an instrument of fiscal policy and also a very important source of state budget income. The European Union's system of value added tax on goods and services are primarily governed by "the 6th VAT Directive" (Council Directive 2006/112/ EC, 2006) set by the European Commission. This directive establishes a framework for determining the VAT in EU member states. EU members must follow basic rules, which include a minimum rate of VAT, which is 15 % in the case of standard rate. In addition to the standard rate, member states may apply reduced rates of at least 5%. The limit of maximal standard rate is not fixed. At present, the highest standard rate of VAT, which, is 27% applies Hungary (Avalara, 2016).

According to A.J. Auerbach (2008, pp. 27–74) and J.W Banks (2010, 548–648), the value added tax is less distortionary than other taxes for several reasons. First, VAT is typically charged at a uniform, relatively low rate to a (more or less) comprehensive and broad base. This lowers the economic costs of taxation, which tend to increase the higher the tax rate and the narrower the base. Second, in theory VAT does not distort business or export decisions. This is because the tax paid on production inputs and exports is deductible. Third, VAT does not distort between current and future consumption, i.e. savings and investment decisions. A. Azmi (2016, pp. 1–4) states that VAT has a different effect on businesses, increasing both their start-up and ongoing operating costs; this effect is stronger for small and medium-sized enterprises.

Indirect taxes are paid and levied in the prices of goods, services, transfers and leases. The decisive moment of taxation is usually the very act of purchase or consumption of a commodity. Taxes are unaddressed (Široký, 2015, p. 17; Keen, 2010, pp. 138–141). VAT, by its nature, directly enters the selling price of a product or service. Therefore, any change in the VAT rate corresponds to the change in the product price. For business practices, it is evident that a VAT rate increase usually causes a rise in prices, but the impact of this rate reduction on the decrease in sales prices is not entirely clear. The changes in prices have significant influence on customers' deci-

sion-making for purchase and consumption of goods, which is greater, the more unnecessary the product is for the consumers.

The paper deals with the question of how changes in the rates of value added tax influence buying behaviour of customers. Buying behaviour could be expressed as decisions of customers about expending their own resources such as money, effort and time, on items related to their consumption in order to meet their needs. The area of the research is a Czech retail food market. The evaluation of buying behaviour is based on real data provided by a specific Czech retail chain, which associates more than 200 small and medium-sized grocery shops.

Research methodology

The paper is elaborated as a case study according to the principles R.K. Yin (2003, pp. 4–49), which state that the structure of the case studies is a logical process connecting initial research questions with empirical data and the final drawing of conclusions. The starting point of the research plan is a group of questions that characterize the problem, and the answer to them is the objective of the research.

The purpose of the study is to evaluate the impact of the changes in the VAT rates on buying behaviour of customers, which is studied on a group of selected products. The group of goods represents a “common” food shopping basket of Czech consumers. The selection was designed considering the representativeness and consistency of the data.

Primary data, which were provided by a Czech retail chain, represent the volumes of sales, gross margins, purchasing and selling prices, in the period from January 2008 to mid-2012. During this period, there were three changes in the VAT rates. Although it is not entirely current data, the possibility of obtaining and evaluating them can be considered as very beneficial for economic theory as well as for the retail practice, since these corporate data are highly unavailable and sensitive. Theories and knowledge of taxation, with a focus on indirect taxation, shopping behaviour and evaluation of price elasticity of demand, create the second most important source of the study. These secondary data were utilized in a formulation of research questions and criteria for assessment.

The analysis of the researched problem is divided into sequential steps that lead to finding the answers to the initial questions. All of indirect taxes are indirectly imposed on sales or turnover of manufacturers and traders who include them in the price for the consumers. Due to the nature of VAT, the influence of VAT tax on buying behaviour was quantified by price elas-

ticity of demand respectively indirect tax elasticity of demand. The proposed methodology uses the principle of calculation of the arc price elasticity of demand for commodities in the selected sample.

Theoretical background

R. Boadway (2016, pp. 65–66) states that the key issue in tax policy concerns the use of differential commodity tax rates as part of the tax system. Goods that are relatively more complementary with leisure should bear correspondingly higher tax rates. Some arguments appeal to taxing more lightly goods with low elasticity of demand to improve redistributive outcomes (preferential rates for a VAT system). J.T. Revesz (2014, pp. 9–66) divides goods into two groups, necessities and luxuries. He assumes that the structure of consumption preferences differs between high- and low-income consumers, and that the low-income group rather consume necessities only. It is this assumed that there is a difference in preferences which leads to different taxations of necessities and luxuries in a setting where otherwise commodity taxes would be uniform. Many studies provide a rationale for differential commodity taxes generally the authors do not single out goods with low elasticity of demand for special treatment.

According to I. Claus (2013, p. 372), a variable VAT would disproportionately distort business decisions of certain sectors of the economy. It would increase compliance costs as businesses would need to change prices more frequently. In response to rate changes, businesses would have to conduct physical stock-takes and value work-in-progress to re-price goods and services. VAT alters the effective price of consumption. The effectiveness of VAT would be reduced if consumers try to mitigate the impact of tax rate changes by “panic buying” or “consumer strikes”.

When sorting taxes according to their negative impact on the market mechanism the taxes are divided into two groups. The distortionary taxes that cause both income and the substitution effect in behaviour of economic agents, and the non-distortionary taxes that cause only the income effect, and economic entity is not motivated under their influence to change their consumer behaviour. VAT is a distortionary indirect tax, a universal tax, which is collected for non-specific purpose, and also turnover tax, positive central and obligatory tax (Šíroký, 2015, p. 18).

Many studies prove that changes in the tax system and changes in the VAT rate affect consumers and their behaviour. The most striking feature of the Czech consumers when buying food is the focus on price. This price orientation is directly linked with the development of standards of living,

and is also very favourable for the corporate strategy of „cost leadership“. Therefore, retail chain stores and their sales flyers campaigns are very popular in the Czech Republic.

L.G. Schiffman and LL. Knauk (2004, pp. 16–30) define the buying behaviour as the behaviour that consumers express in search, shopping, use and evaluation of products and services, from which they are expecting the satisfaction of their needs. According to A. Hes (2008, pp. 28–40), when consumers are buying food, their behaviour is mainly based on the necessity of needs' satisfaction, but it is also affected by a number of social, cultural, personal and psychological factors. He reports that among the most important criteria by which decisions are made when purchasing food, there are quality, price, promotion and brand.

After the establishment of the Czech Republic in 1993, the VAT rates were determined at the level of 23% for the standard rate and 5% for the reduced rate. Since that, the standard VAT rate has changed four times and the reduced rate has recorded 5 changes. Apart from the rates, there have been several changes in the classification of items in the basic or reduced rate. In the year 2015 a second reduced rate of 10% was introduced. The reduced rate is applied to goods such as baby food, some cereal products, selected drugs, and printed books. The last change in the Czech VAT directive was the reduction of the VAT applied on catering services and serving drinks except alcohol, which was reduced from 21% to 15% (VAT Act no. 235/2004 Coll., 2017).

Case study: the effects of changes in the VAT rate on the buying behaviour

Case study is one of the research methods. Case study may be defined as an intensive analysis of an individual unit (e.g., a person, event), stressing the developmental factors in relation to the context. The aim of the presented case study is to evaluate the influence of VAT rate changes on consumers' buying behaviour, which is demonstrated by a purchased amount of selected products that represent usual consumers' shopping. This knowledge is important for retailer in pricing and in the building of competitiveness.

Initial questions of the study:

1. Do the consumers react to the increase in VAT rate with changes in the purchased quantity?
2. Is the reaction of customers proportional to the change in the VAT rate?

3. Is the reaction to the VAT rate change stronger or weaker than the response to the discount promoted by a store flyer?
4. Do these changes in the customers' behaviour affect earnings of a retailer?
5. How to use the knowledge of the elasticity of demand for pricing and improving the competitiveness of the company?

Set of initial presumptions of the case study.

1. Although the VAT is a type of indirect tax, which means that the decision to pay or to not pay is in consumers' competence, for basic foods that belong to the daily needs they do not have too many options. They can avoid paying the VAT only by reducing the consumption.
2. The buying behaviour represents the changes in the bought quantity of goods depending on the price changes, in terms of *ceteris paribus*.
3. VAT rate change will increase the selling price.
4. VAT rate increase causes the decrease in demanded quantity.
5. Higher price elasticity of demand means higher impact of VAT changes on consumers buying behaviour.
6. Price elasticity close to 1 means that the VAT changes on consumers buying behaviour is minimal.

The study type, data and analysis

This individual case study deals with a real data knowledge base. The data analysed are sales from the period from 1. 1. 2008 to 30. 6. 2012, where there were three changes in the reduced VAT rate during this period. Unfortunately, the first change is impossible to evaluate, because we do not have the data from previous period. The first evaluated change in the VAT rate is its increase from nine to ten % in the year 2010 and the second one, which came, in the year 2012 from ten to fourteen %.

The evaluated sample consists of ten commodities, which belong to the group of basic foodstuffs at the reduced rate of VAT. The selection was made with respect to the data from the Czech Statistical Office, which publishes the consumption of individual kinds of grocery products. The evaluated group of products includes: Edam cheese, bread (500 g), semi-skimmed milk (1 l), butter (250 g), mineral water (1.5 l), pasta (400 g), vegetable butter (500 g), cream cheese (140 g), gelatine candies (90 g), waffle (47 g).

The analysis, which solves initial questions, is based on calculation of the price elasticity of demand of each product according to formula [1.1] in

four time periods. Customers generally count the increase in the VAT rate as a price increase. When it is possible, they usually try to defend themselves against it by stockpiling and cutting consumption of goods. These facts had to be taken into account when the analysed periods had been selected. Further factors that can distort the explanatory ability of collected data are store flyers discounts, sales and other short time or seasonal quantity and prices fluctuations. Each of this VAT rate changes was valid from the beginning of the year, therefore the period before the VAT change is not November and December (when the buying quantity is the highest because of Christmas shopping), but October. All evaluated periods are 30 days long. The two periods after the VAT change are months January and February. The values of price elasticity due to the VAT rate changes were compared with values of price elasticity of demand caused by the discount promoted in a store flyer. These types of changes show opposite buyers' reaction, because they response to the decrease in selling prices. They are presented to illustrate the overall behaviour of consumers and their reaction to price changes.

Data analysis

The Tab. 2 represents the results of the VAT elasticity of demand that were used for evaluation of the buying behaviour in reaction to the VAT rate changes. The values of $E_{D(J, F, F1, F2)}$ express the rate of change in a quantity of purchased goods caused by one % change in the selling price. Prices P_1 are the selling prices before the change in the VAT rate, and the amounts Q_1 are the sum of goods sold per the price P_1 in the period before the VAT rate change. P_{2J} (January), P_{2F} (February) prices represent selling prices after the VAT rate increase and the corresponding amounts Q_{2J} and Q_{2F} are the sum of goods sold in the reported periods (January and February) after the change in the VAT rate. The resulting values $E_{D(J, F, S1, S2)}$ are the values of the computed VAT coefficients of elasticity, $E_{D(J, F)}$ for January and February, and $E_{D(S1, S2)}$ are the values of price elasticity of demand when the price changes were initiated by discounts promoted in store flyers. E_D average was computed as the average value of the VAT elasticity.

If the coefficient E_D is greater than 1, consumers respond to a 1% change in the price by more than one percentage change in a demanded quantity. The higher the coefficient of price elasticity, the stronger the reaction of customers it causes. Elastic behaviour is just the category of consumers' response that is the most affected by the changes in the VAT rate. Therefore, the price strategy for the group of products with this characteristic must be thoroughly thought-over. Customers may try to exclude these

products from their consumption, to substitute them with other products or to choose competitive shops for their purchases.

Case study conclusions and interpretation of the findings

Question no 1.

The calculated coefficients of elasticity show quite elastic behaviour. The lowest average value of elasticity was observed in the case of semi-skimmed milk, with 1.7. Therefore, the answer to the question number 1 is a positive one. Consumers quite strongly react to the VAT rate changes in a purchased quantity, which is getting lower.

Question no 2.

The answer to the second question is a bit complicated. Since the changes in prices, especially the first VAT change, do not correspond to the change in the VAT rate. The prices for Edam Cheese were increased by 21.2% in the year 2010, and by 4.3% in the year 2012. Other products' increases were: mineral water 27.9%; 20.7%, semi-skimmed milk 16.2%; 5%, bread 0.4%; 4%, butter 32.1%; 2.6%, vegetable butter 7.7%; 6.1%, cream cheese 10%; 3.2%, pasta 11.2 %; 10.1%, waffle 18.6%; 5.9%, gummy candies 30%; 5.9%. The average growth of prices was 17.53%, as a response to the increase of VAT rate by one percentage point in the year 2010, and by 6.78% in the year 2012 as a result of the VAT increase by 4-percentage points. In view of these results, it is not surprising that customers perceive the VAT rate increase as a strongly negative factor that rises prices of goods and thus reduces the purchasing power and the standard of living. We can say that the reaction of the seller is not proportional to the change in the VAT rate, and therefore the reaction of customers is also not proportional.

Question no 3.

A very high popularity of store flyers and their discounts is typical among Czech consumers. The response of customers to the store flyer is often expressed by a share of goods purchased at the promotional prices in total volume sales. In Europe, the leaders in this share are the Czech and Slovak Republics with the share of 50 %. For example, Germany has the share of 21 %, Austria 36 % and Poland 29 % (Novák, 2016). Although the

flyers are used for almost all consumer goods, the most important area is the grocery retail.

The answer to the question whether the reaction of consumers to the VAT rate changes is stronger than to flyer discounts or not, is almost certainly “yes”. The grey shaded boxes in Tab. 2 show that there is a higher response to changes in the VAT rate than to the flyer discount. Six out of ten cases show a stronger reaction. Consumers are willing to react more strongly to the increase of prices due to VAT rate changes than to the decrease in prices due to store flyer discount.

Question no 4.

The behaviour which is described as the VAT elasticity of demand shows a decrease in the shopping quantity. If the increase in prices is proportional to the increase in the VAT rate and the increase in purchasing prices, the decrease in the quantity sold will cause a decrease in profit. But the situation appears like an opportunity for a rise in prices for which sellers have an alibi in the form of the legal VAT rate regulation.

Question no 5.

Generally, the knowledge of price elasticity of demand is a very useful tool, which allows the sellers to plan the demanded quantity and thus the planning of sales, stock and pricing. Setting the prices correctly is a presumption of successful entrepreneurship and a building of a competitiveness. According to realized findings, following recommendations were summarized:

- The price elasticity of demand at the level of individual items is higher than the price elasticity of the whole group of the same product. For example, the pasta product group covers all types of pasta, but an individual product can be spaghetti. This effect is related to the possibility of substituting and compensating, when a decrease in a quantity of one product is compensated by an increase in demand for another one from the same product group. Therefore, it is necessary to evaluate not only individual VAT elasticity of demand, but also the elasticity of the whole group.
- Products with higher elasticity and items that are important from the point of view of sales are the groups which require accurate pricing. On the other hand, inelastic or relatively inelastic products can not cause a noticeable outflow of customers. Consumers’ reaction to a rise in prices of those products is simply very weak.

- For relatively elastic products, it is highly advisable not to raise the prices significantly by more than the percentage of increase in the VAT rate.
- It is important to monitor one's competitors' reaction to the VAT change. Shops with a competitive advantage or with lower concentration of competitors in the area can increase their prices by more than the percentage of increase in the VAT rate, especially for products with lower levels of elasticity (elasticity close to 1) or inelastic. It can also be assumed that the goods in the shops with high competitive advantage have lower price elasticity than the goods in the less competitive shops. The competitive advantage results from customers' requirements put on shops' qualities.

Conclusions

The article presents an evaluating method for the impacts of the VAT rate changes on consumers' buying behaviour, and thereby also on shops and retailers. Indirect taxes, where VAT plays a significant role, are based on the aspect of use. All of them are indirectly imposed on sales or turnover of manufacturers and traders, who include them into the price for the consumer. Indirect tax affects equally the households where they cover a significant proportion of their expenditures and the households where they constitute only a minor part (Široký, 2015, p. 21).

Buying behaviour is quite a complex psycho-economic process, in which each customer tries to meet their individual needs and wishes by buying preferred items. Due to the nature of the data upon which the retailer can evaluate buying behaviour of his customers, we can simply define consumers' response to the VAT rate change as a purchase or rejection of some product for the required price. The rejection is proven by a decrease in sales. Therefore, the reaction is measurable as a price elasticity of demand.

Despite the high utility of knowledge of the price elasticity of demand, in practice the surveys of price elasticity of demand are not common. This knowledge allows for planning customer's reactions to the price changes on the level of individual items and thus it helps to determine the prices that are not only competitive, but also those that can help with a building of competitive advantage. It is not necessary to sell cheaply, but to sell effectively.

The fulfilment of the aim of this study has brought many interesting findings. Increases in the VAT rates affect customers quite strongly. In fact, they affect them even more than store flyers discounts, which are very fa-

voured in the Czech Republic. In general, the behaviour of customers based on the reference sample of products was quite flexible. The highest average values of price elasticity of demand given to the change in the VAT rate shows the vegetable butter, cream cheese and waffle. If we focus on the price elasticity of demand shortly after the change in the VAT rate, it is possible to observe a higher tendency to have a lower level of price elasticity in January than in February, which can be interpreted as a lower ability of consumers to adapt their consumption in reaction to the rise in prices in a short time than in the longer time.

From the case study results, it is not surprising that customers perceive the VAT rate increase as a strongly negative factor, causing a rise of prices of goods and thus reducing the purchasing power and the standard of living. We can state that the reaction of seller was not proportional to the change in the VAT rate. Although the value of the reduced VAT rate in 2010 compared to 2009 increased by one percentage point, the average percentage increase in sales price was 17.53% and 6.78% in the year 2012 as a result of the VAT increase of 4 percentage points. Purchase price in the year 2010 compared to 2009 increased by 9.73%, but in the year 2012 compared to 2011 the average purchase price was reduced by 0.62%.

The main limitation of the study is the extent of the evaluated sample and the length of the time period. The purpose of the research was to inquire the possibility of evaluation of the changes in consumers' buying behaviour as a reaction to the VAT rate increase and the application of the formula for calculation of demand price elasticity. Unfortunately, it is very difficult to find some practically oriented studies, which deal with the questions of indirect taxes and their influences on customers' behaviour or with any kind of elasticity. The on-going research should be focused on the evaluation of whole product groups and not only on individual products. The data describing the products' groups should be more consistent, so they have better ability to give evidence about the elasticity and consumers reactions.

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Annex

Table 1 Data of the VAT implementation and the changes of the VAT rates in the Czech Republic

Dates	Number of rates	Standard rate	Reduced rates
Implementation 1. 1. 1993	2	23 %	5 %
1. 1. 1995	2	22 %	5 %
1. 5. 2004	2	19 %	5 %
1. 1. 2008	2	19 %	9 %
1. 1. 2010	2	20 %	10 %
1. 1. 2012	2	20 %	14 %
1. 1. 2013	2	21 %	15 %
1. 1. 2015	3	21 %	15 %, 10 %

Source: own processing according to VAT Act no. 235/2004 Coll., 2017 and J. Široký (2015, p. 57).

Table 2. Selected products and their price elasticity of demand

	VAT rate change 1. 1. 2010					VAT rate change 1. 1. 2012					$E_{D,average}$	E_{DS1}	E_{DS2}
	P_1, Q_1	P_{2I}, Q_{2I}	P_{2F}, Q_{2F}	E_{DJ}	E_{DF}	P_1, Q_1	P_{2I}, Q_{2I}	P_{2F}, Q_{2F}	E_{DJ}	E_{DF}			
Cheese Edam	18.9 84	22.9 63	22.9 67	1.5	1.2	22.9 53	23.9 49	23.9 46	1.8	3.3	1.9	1.2	0.5
Mineral water	12.9 150	16.5 57	16.5 38	3.7	4.9	15.9 64	19.2 46	19.2 51	1.7	1.2	2.9	2.5	1.1
Semi-skimmed milk	18.5 172	21.5 163	21.5 158	0.4	0.6	19.9 330	20.9 292	20.9 279	2.5	3.4	1.7	1.7	1.6
Bread	22.9 210	23 206	23 209	4.4	1.1	24.9 156	25.9 136	25.9 135	3.5	3.7	3.2	0.8	1.5
Butter	24.9 224	32.2 166	33.9 56	1.2	3.9	38.9 202	39.9 192	39.9 186	2.2	3.2	2.6	4.8	1.4
Vegetable butter	25.9 38	27.9 27	27.9 23	4.6	6.6	32.9 20	34.9 18	34.9 14	1.8	6	4.7	3.4	4.8
Cream cheese	29 26	31.9 15	31.9 25	5.8	0.4	30.9 15	31.9 12	31.9 13	7	4.5	4.4	7	10.5
Pasta	8.9 76	9.9 65	9.9 45	1.5	4.8	9.9 75	10.9 65	10.9 63	1.5	1.8	2.4	3.9	4.2
Waffle	7.5 67	8.9 29	8.9 37	4.6	3.4	8.9 37	9.9 26	9.9 20	3.3	5.6	4.2	3.2	4.2
Gummy candy	12.9 154	16.8 52	16.9 75	3.8	2.6	16.9 58	17.9 47	17.9 44	3.6	4.8	3.7	1.4	0.4