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**VAT AND ITS INFLUENCE ON BUYING
BEHAVIOUR**

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VAT and its Influence on Buying Behaviour

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Keywords: *Value Added Tax; Price elasticity of demand; Buying behaviour; Food retail; Case study.*

Abstract

Research background: Value added tax, as an instrument of fiscal policy and also a very important 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 are 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 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.

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

Findings: The goal of the study is not only to propose the way how 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 (VAT) is nowadays the most widely used indirect tax system in developed countries. 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) set by the European Commission. (Revesz, 2014, pp. 9-12; Milana, 2016, pp. 335-336).

According to J.W Banks (Banks, 2010, pp. 548 - 648), a value added tax is less distortionary than other taxes. VAT is typically charged at a uniform, relatively low rate to a comprehensive and broad base. VAT does not distort business, export decisions or current and future consumption. A. Azmi (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. For business practices, it is evident that the VAT rate increase usually causes a rise in prices. The changes in prices have significant influence on customers' decision-making for purchase and consumption of goods, which is greater, the more unnecessary product for the consumers is.

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 market with food. The evaluation of buying behaviour is based on real data provided by a Czech retail chain, which associate 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 (Yin, 2003, pp. 4-49) that 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 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 that represents a “common” food shopping basket of Czech consumers.

Primary data represent volumes of sales, gross margins, purchasing and selling prices, in the period from January 2008 to mid-2012, provided by a Czech retail chain. During this period, there were three changes in the VAT rates. These corporate data are highly unavailable and sensitive, therefore the possibility of their obtaining and evaluating can be considered as very beneficial for economic theory as well as for retail practice. 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.

The analysis of the researched problem is divided into sequential steps that lead to finding the answers to the initial questions. Due to the nature of VAT, the influence of VAT tax on buying behaviour was quantified by price elasticity 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 of the study

R. Boadway (Boadway, 2016, pp. 65-66) states, that a key issue in tax policy concerns the use of differential commodity tax rates as part of the tax system. 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. According to I. Claus (Claus, 2013, p. 372), 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, distortionary taxes that cause both income and the substitution effect in behaviour of economic agents, and the non-distortionary taxes that cause only income effect. VAT is a distortionary indirect tax. (Široký, 2015, p. 18)

Many studies prove that the changes in tax system and also the changes in VAT rate affect consumers and their behaviour. The most striking feature of Czech customers 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 corporate strategy „cost leadership“. Therefore retail chain stores and their sales flyers campaigns are very popular in the Czech Republic.

L. G. Schiffman (Schiffman & Kanuk, 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. A. Hes (Hes, 2008, pp. 28-40) reports that among the most important criteria by which decisions are being made when purchasing food, there is quality, price, promotion and brand.

VAT in the Czech Republic

After the establishment of the Czech Republic in 1993, the VAT rates were determined on the value 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. Except the rates, there were several changes in the classification of items in the basic or reduced rate (VAT Act no. 235/2004 Coll., 2017).

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 (Široký, 2015, p. 57)

Price elasticity of demand respectively indirect tax elasticity of demand

A key feature of all indirect taxes is the fact that the tax is included in the selling price, so the amount of its rate directly affects the final price. Because the price is one of the most important factors that affect customers buying behaviour, each increase in the rate of value added tax affects consumers' purchases. But the size of the response is different for each product. The reaction is directly dependent on the amount of the price increase, importance of goods for customer, the level of customers' wealth, the share of goods in total consumption expenditure, etc. The responsiveness of a quantity demanded by customers to a change in price is measured by the price elasticity of demand. Because of the VAT characteristics, and possibilities to quantify buyers' response to changes in the VAT rate in a shop conditions, the calculation of price elasticity of demand was selected as key factor for measurement of the indirect tax elasticity of demand. The used price elasticity of demand for product x, denoted as E_{D_x} , is defined as an arc price elasticity. (Kučerová, 2015, pp. 202-209).

$$E_{Dx} = \frac{\frac{Q_2 - Q_1}{Q_1 + Q_2}}{\frac{P_2 - P_1}{\frac{P_1 + P_2}{2}}} = \frac{Q_2 - Q_1}{P_2 - P_1} \times \frac{P_1 + P_2}{Q_1 + Q_2}$$

[1.1] Formula of the Arc price elasticity of demand; where P_1 is the original price (in our case the price before the change in VAT rate), P_2 is the price after the change (with a new VAT rate), Q_1 is the demanded quantity of goods per the price P_1 and Q_2 is the demanded quantity of goods per the price P_2 .

The absolute value of the elasticity identifies the rate of responsiveness in a quantity to the changes in a price. Generally, less important goods, luxury goods or goods which can be easily substituted by similar products have a higher elasticity. Interpretation of the elasticity (Baye, 2008):

$E_D > 1$, relatively elastic or elastic demand,

$E_D < 1$, inelastic or relatively inelastic demand,

$E_D = 1$, unitarily elastic demand or unit elasticity,

$E_D = \infty$, perfectly elastic demand,

$E_D = 0$, perfectly inelastic demand.

Case Study: The Effects of changes in the VAT rate on the buying behaviour

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.

Initial questions of the study:

1. Do the consumers react to the increase in VAT rate by some change 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 a 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?

The study type, data and analysis

The data analysed are sales from the period from 1. 1. 2008 to 30. 6. 2012. The first evaluated change in VAT rate is its increase from nine to

ten percent in the year 2010 and the second one that came in the year 2012 from ten to fourteen percent.

The evaluated sample consists of ten commodities (see Table 2), which belong to the group of basic foodstuffs at a reduced rate of VAT. The analysis 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. All evaluated periods are 30 days long. 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. 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 $E_{D(J, F, S1, S2)}$ express the rate of change in a quantity of purchased goods caused by one percent 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}, P_{2F} 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. $E_{D \text{ average}}$ was computed as the average value of the VAT elasticity. The higher the coefficient E_D is the stronger the reaction of customers it causes.

Table 2 Selected products and their price elasticity of demand

	VAT rate change 1. 1. 2010					VAT rate change 1. 1. 2012					$E_{D \text{ average}}$	E_{DS1}	E_{DS2}
	P_1, Q_1	P_{2J}, Q_{2J}	P_{2F}, Q_{2F}	E_{DJ}	E_{DF}	P_1, Q_1	P_{2J}, Q_{2J}	P_{2F}, Q_{2F}	E_{DJ}	E_{DF}			
Cheese Edam	18.984	22.963	22.967	1.5	1.2	22.53	23.49	23.946	1.8	3.3	1.9	1.2	0.5
Mineral water	12.9150	16.557	16.538	3.7	4.9	15.964	19.246	19.251	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

Source: Own processing of company data

Case Study Conclusions and Interpretation of the Findings

Question no 1.

The calculated coefficients of elasticity show quite elastic behaviour. Consumers quite strongly react to the VAT rate changes in a purchased quantity, which is getting to be lower.

Question no 2.

The answer to the second question is a little bit complicated because the changes in prices do not correspond with the change in the VAT rate. The average growth of prices was by 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 4-percentage points VAT increase. We can say that the reaction of seller is not proportional to the change in the VAT rate and therefore the reaction of customers is also not proportional.

Question no 3.

For Czech consumers is typical a very high popularity of store flyers and their discounts. The answer to the question 3 is almost yes. The grey shaded boxes in Tab. 2 (six out of ten) show, that there is higher response to changes in the VAT rate than to the flyer discount. Consumers are willing to react stronger to the increase of prices due to VAT rate changes than to the decrease in prices due to store flyer discount.

Question no 4.

If the increase in prices is proportional to the increase of VAT rate and the increase of purchasing prices, the decrease in quantity sold will cause the decrease in profit. But the situation appears like an opportunity for 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 very useful tool, which allow 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. This effect is related to a possibility of substituting and compensating, when a decrease in a quantity of one product is compensated by an increase of demand of another one from the same product group.
- Products with higher elasticity and items, that from the view of sales are important, are the groups, which require accurate pricing.
- For relatively elastic products it is highly advisable not to raise the prices significantly more than is the percentage increase in the VAT rate.
- Shops with a competitive advantage or with lower concentration of competitors in the area can increase their prices by more than by the percentage increase in the VAT rate, especially for products with lower levels of elasticity.

Conclusion

The article presents an evaluating method for impacts of the VAT rate changes on consumers' buying behaviour and thereby also on shops and retailers. Buying behaviour is quite complex psycho-economic process, in which each customer tries to meet hers or his 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 require price. Therefore, the reaction is measurable as a price elasticity of demand. This knowledge allows 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.

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 reduces the purchasing power and the standard of living. Increases in the VAT rates affect customers quite strongly. We can state that the reaction of seller was not proportional to the change in the VAT rate.

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 ongoing research should be focused on the evaluation of whole product groups. 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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