

# The role of the value added tax on foodstuffs in the consumer basket

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**Abstract:** When looking for economic policy instruments in the times of economic crisis, even tax instruments are considered, particularly the changes (increases) of the value added tax rates. Most of the EU member states have two VAT rates, while foodstuffs and non-alcoholic beverages are included under a reduced rate. If increasing the reduced VAT rate, the significance of the foodstuff or non-alcoholic beverages in the consumer basket, the regression of the VAT in these commodities and the significance of the impact on households should be considered. This article tries to point out this issue by analyzing the impacts of changes in the VAT rates, or the actual VAT paid by the average households in the Czech Republic in the period from 2005 to 2010.

**Key words:** value added tax, vat rates, changes of rates, consumer basket, tax burden, foodstuffs and non-alcoholic beverages

Value added tax (VAT) is a general indirect turnover non-duplicate tax on the final consumption of goods and services, which is the only permissible general tax on consumption in the European Union. Its development is strongly specific and very difficult to compare with the history of other taxes. The VAT is considered as a modern, simple tax in its basic application, with large potential tax revenues with the elimination of the tax burden levied on the taxpayers (Tait 1988, p. 352 or Cnossen 1998, p. 403).

A uniform VAT application in the EU has already been implemented by the Treaty of Rome in 1957. The legislation of the VAT was primarily treated with the so-called First Directive on Value Added Tax 67/227/EEC<sup>1</sup>, Sixth Directive 77/388/EEC and its Recast, Directive 2006/112/EC, which (of course as amended) is currently in force.

An area that is not clearly resolved either in theory or practice is the existence of different VAT rates, or the existence of a different number of the VAT rates. The usual, or expected practise of the only non-zero VAT rate (Schenk and Oldman 2007, p. 136) is accompanied by the presence of other reduced rates in many countries.

After complicated discussions, the model with two types of the VAT rates – standard and reduced – is considered as a basic fundamental VAT model in the

EU. However, the conclusions of the European Union emphasize the necessity of a further harmonization of the member states' attitudes towards the VAT rates and the tax bases, so that the relationships among the countries could be considered as transparent and flexible. Currently the VAT rates are considered to be highly diverse and relatively complicated (Study on reduced VAT applied to goods and services in the member states of the European Union, p. 52; or Bogetić and Hassan 1993, pp. 7–9).

However, the basic rules for the application of the VAT rates are simple: goods and services subject to the VAT are taxed at least by 15%, while the individual member states may apply the reduced VAT rate on goods and services enumerated in the Council Directive 2006/112/EC on the common system of the value added tax<sup>2</sup> (Široký and Kovářová 2010, pp. 128–130); nevertheless, this rate is not less than 5%.

This practice is used in the vast majority of member states; only Denmark has used a single VAT rate for a long time. If there exists a reduced rate in the particular country, it is applied on food products (including non-alcoholic beverages), which are the main subject of this article.

The aim of the text is to determine how the weight of the reduced VAT rate for the consumer basket of the “average” household in the Czech Republic

<sup>1</sup>Source of all the Directives: the law system EUR-LEX.

<sup>2</sup>Mainly in the Annex III of this Directive. Nevertheless, the reduced rates are also regulated in the articles of the Council Directive 2006/112/EC, but these exceptions are often used for only one Member State.

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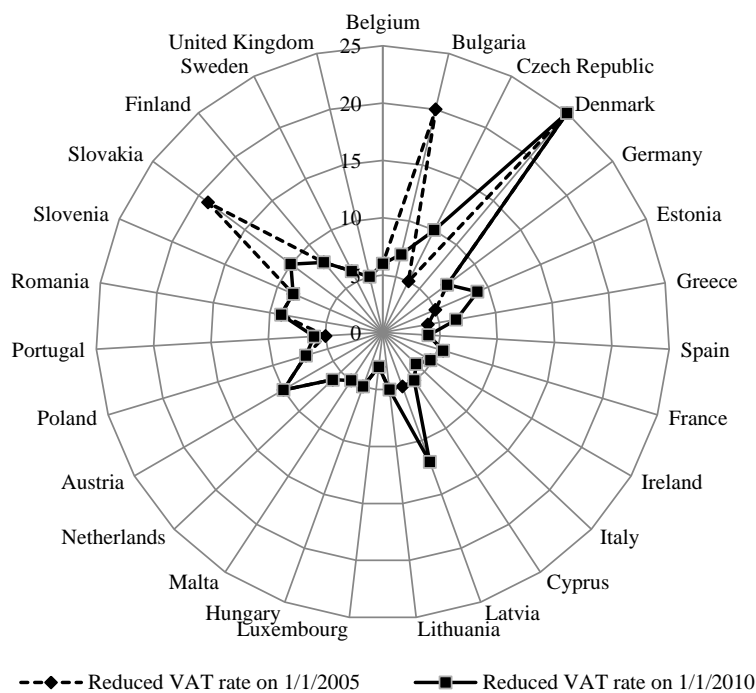


Figure 1. Reduced VAT rates in the member states at the beginning and end of the reporting period

Source: Taxation and Customs Union (2011), Fantini (2011), Ostaszewska (2011)

in 2005–2010 was developed, and to specify this regarding foodstuffs and non-alcoholic beverages.

## MATERIAL AND METHODOLOGY

The importance of the VAT mainly lies in its revenues, not only for the state budget, but also for the regional and municipal budgets. It is the major income tax item in public budgets of the Czech Republic.

When looking for the economic policy tools to mitigate the impacts of the economic crisis, tax instruments have not been ignored. The most visible change in the VAT sphere is the increase of the VAT rates, by which the states want to saturate the revenue shortfalls of public budgets, or to decrease (not increase) the budget deficits. From 2005 to 2010, 13 member states increased the VAT rate (for details, see Šíroký and Kovářová 2011, pp. 341–344). This increase was also related to the reduced VAT rate in six of these states (Figure 1).

The VAT burdens of course also the consumption of goods and services purchased by the households because it is included in the prices of goods or services purchased by the consumer. Such a consumer pays the tax in the payment of his/her purchases (James and Nobes 2010, pp. 239, 244). The impact of the VAT as a consumption tax is basically dif-

ferentiated in comparison to the changes in direct taxes (comprehensively Nerudová and Šíroký 2010, pp. 542–544) whether their potential regression, which has been proved for the observed foodstuffs and non-alcoholic beverages (Schroyen 2010, p. 45 or in the Czech Republic David 2011), or their impact on the changes in the price level.

The price level in the Czech Republic is examined according to the changes in the final prices (including VAT) of the consumer basket commodities<sup>3</sup>. Even if the change of inflation is the result of many factors (where some of them act in a contradictory way), it is clear that increasing the VAT rates can – *ceteris paribus* – lead to the increase of the price level (e.g. Mankin 2011, pp. 341–346).

For this article, the consumer basket is only used as an etalon for the research of the significance of the impact of the VAT changes in the selected period (it does not primarily serve for an analysis of inflation that is largely eliminated by the methodology of the research which compares the relative values).

The consumer basket is built to describe the structure of the average household's consumption (the methodology in details in the Czech Statistical Office 2010). The consumer basket includes foodstuffs (food, beverages and tobacco), other goods (clothing, furniture, household utensils, miscellaneous pharmaceutical and small articles, goods for transport and

<sup>3</sup>According to the international classification COICOP (Classification of Individual Consumption by Purpose), the consumer basket monitored in the Czech Republic is divided into 14 divisions, 58 groups and 157 classes and it includes a total of 730 reported items. The article focuses only on 12 items; the remaining two items are not monitored in the Household Budget Statistics.

leisure, personal care goods, etc.) and services (in the areas of repair, housing, household running, health and social care, transport, leisure, education, catering and accommodation, personal care and financial services) in the international division into the following basic items: (1) food and non-alcoholic beverages, (2) alcoholic beverages, tobacco, (3) clothing and footwear, (4) housing, water, electricity, gas and other fuels, (5) furnishings, household equipment and routine maintenance of the household, (6) health, (7) transport, (8) communication, (9) recreation and culture, (10) education, (11) restaurants and hotels, (12) miscellaneous goods and services.

The consumer basket is compiled on the basis of a statistical investigation survey on the household consumption, which is an important part of social statistics. In the Czech Republic, it is part of the Household Budget Statistics.

For this article, the time period 2005–2010 was selected, where two factors were analyzed, which have a major influence on the status of foodstuffs and non-alcoholic beverages, or their weight in the consumption basket of households according to the following equation:

$$\Sigma \Delta_{i=1}^n = \Sigma \Delta B_{i=1}^n + \Sigma \Delta T_{i=1}^n + \Delta UI_{i=1}^n \quad (1)$$

where:

$i$  = explored six years period ( $n = 6$ )<sup>4</sup>, i.e., 2005, 2006, 2007, 2008, 2009, 2010

$\Delta T$  = relevant changes in value added tax in year  $i$ , which is valid according to (2):

$$\Sigma \Delta T_{i=1}^n = \Sigma \Delta TR_{i=1}^n + \Sigma \Delta TL_{i=1}^n \quad (2)$$

$\Delta TR$  = changes in the VAT together with the change of the VAT rates in year  $i$

$\Delta TL$  = changes in the VAT without change of the VAT rates in year  $i$

$\Delta B$  = relevant changes in the consumer basket composition in year  $i$

$\Delta UI$  = other possible relevant changes affecting the explored issue not monitored by the authors (e.g. household savings or changes in the household consumption) in year  $i$ .

Standard scientific methods were chosen to achieve the aim of the article. The method of analysis is used to identify the key characteristics of the studied economic effects; the method of comparison is used to classify the described variables. By using abstraction and analogy, the basic assumptions were set which were based on the use of economic methodology. In order to generalize the findings and to summarize conclusions, the methods of induction and synthesis were used. The text comes from the study of the national and community legislation in force by January 1 of the given year.

## RESULTS AND DISCUSSION

### Changes in the value added tax ( $\Delta T$ )

The value added tax was introduced in the Czech Republic on January 1, 1993. Since that date until

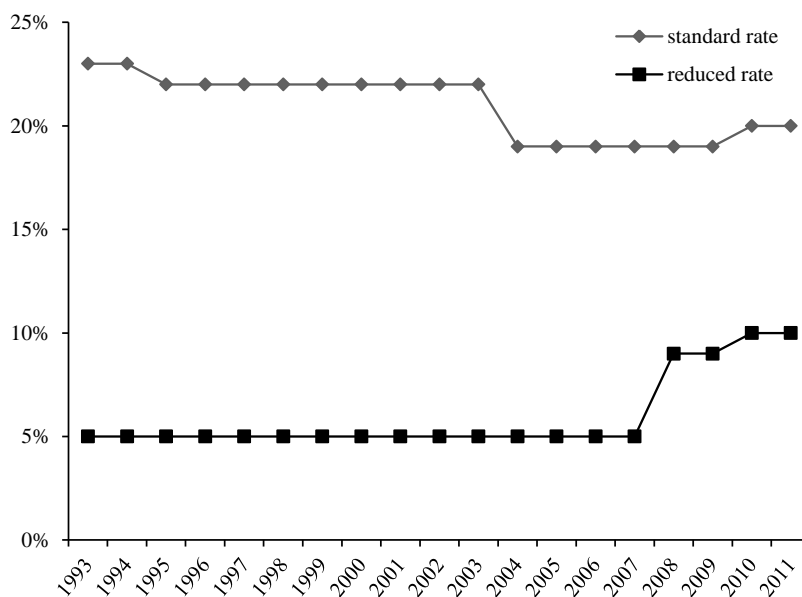


Figure 2. Development of the VAT rates in the Czech Republic (in %)

Source: Collection of Laws of the Czech Republic (1993–2011)

<sup>4</sup>The beginning of the analyzed period is chosen with regard to the new VAT Act adopted in connection with the accession of the Czech Republic to the EU (Act No. 235/2004 Coll. on value added tax).

Table 1. Commodities transferred to reduced VAT rate in 2006

Nomenclature code	Title
1704	Sugar confectionery including white chocolate, not containing cocoa (white chocolate, chewing gum, caramels, throat pastilles and cough drops, boiled sweets, gum confectionery, liquorice)
09 210111, 210112	coffee, tea, maté and spices extracts, essences and concentrates based on coffee
18	cocoa and cocoa preparations

Source: Collection of Laws of the Czech Republic (2006)

now<sup>5</sup>, it has two rates, which of course also applies to the entire analyzed period with the trend of their convergence illustrated in Figure 2.

For the purposes of this article, the relevant rates are 5% and 19% (1. 1. 2005–31. 12. 2007), 9% and 19% (1. 1. 2008–31. 12. 2009) and 10% and 20% (1. 1. 2010–31. 12. 2010).

In 2006 in addition to the change of its own tax rate, the amendment to the VAT Act was approved (by the Act No. 319/2006 Coll. on some measures for transparency of financial relations in the field of public support and amending the Act No. 235/2004 Coll. on the Value Added Tax, as amended) that certain foodstuffs until then subject to the standard VAT rate were transferred to the reduced rate. This change is the most important event (except for the increase of the actual VAT rate) for the analysis of

the tax burden on foodstuffs. It concerned the commodities listed in Table 1.

### Changes in the consumer basket ( $\Delta B$ )

The structure of the consumer basket sections has been fixed since 2005, because its statistical survey is very demanding. Since 1997, the Czech Statistical Office has been using the Classification of Individual Consumption by Purpose (CZ-COICOP) that is developed on the basis of the International Classification COICOP, which is used in the System of National Accounts. The subject of the Classification CZ-COICOP is the categorization of all kinds of the individual consumption of goods and services made by their purpose.

Table 2. Composition of the consumer basket in the years observed

Divisions COICOP	Title of the consumer basket division	Weight		
		2005, 2006	2007–2009	2010
0	Total	1000.00	1000.00	1000.00
01	Food and non-alcoholic beverages	<b>197.57</b>	<b>162.63</b>	<b>170.29</b>
02	Alcoholic beverages and tobacco	79.24	81.72	86.00
03	Clothing and footwear	56.93	52.43	47.22
04	Housing, water, electricity, gas and other fuels	236.40	248.29	253.40
05	Furnishings, household equipment and routine maintenance of the house	67.92	58.06	55.24
06	Health	14.35	17.86	24.98
07	Transport	101.41	114.10	114.91
08	Communication	22.54	38.73	39.90
09	Recreation and culture	95.53	98.66	93.66
10	Education	4.50	6.18	7.77
11	Restaurants and hotels	74.15	58.39	44.23
12	Miscellaneous goods and services	49.46	62.96	62.40

Source: Czech Statistical Office (2011)

<sup>5</sup>As of the date of submission of this article, the unification of the VAT rates or increase of their number are not expected.

Although the composition of the consumer basket has not changed in the analyzed period, there were changes in the weight of the items.

In 2005 and 2006, the composition of these weights was based on the consumer basket, which was compiled on the data from the Household Budget Statistics for the year 1999. In 2007–2009, it was based on data of the Household Budget Statistics in 2005 and in 2010, it was based on the data from the Household Budget Statistics from 2008.

The weights of individual items of consumer basket are illustrated in Table 2.

### Assigning VAT rates to the individual items of the consumer basket

To determine the proportion of food and non-alcoholic beverages in the total consumer basket and to establish the importance of the VAT on food and non-alcoholic beverages in total, the VAT rates of the individual items of the consumer basket need to be assigned. This assignment is the actual result of the authors' analysis that involved all 730 items of the consumer basket.

#### F01. Food and non-alcoholic beverages

All the items in this division are subject to a reduced VAT rate at the date 1.1.2007.<sup>6</sup> The commodities listed in Table 1 were subject to the standard VAT rate at the date 1.1.2005 and 1.1.2006<sup>7</sup>.

#### 02. Alcoholic beverages and tobacco

All the items in this division are subject to the standard VAT rate throughout the period.

#### 03. Clothing and footwear

Almost all the items in this division are subject to the standard VAT rate. An exception is cloth nappies.

#### 04. Housing, water, electricity, gas and other fuels

Less than half of this division of items are subject to the standard VAT rate. An exception is the rent that is exempted from the VAT as well as the water supply, sewage and repairing of private dwellings that are subject to a reduced VAT rate. With effect from 1. 7. 2007, the following have been transferred from the standard to the reduced rate: wood fuel in logs, billets, twigs, faggots or similar forms and wood in chips or particles, sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms, to be used

as fuel, and since 1.4.2009, the same change was implemented in the communal waste collection and transport.

#### 05. Furnishings, household equipment and routine home maintenance

The majority of items in this section are covered by the standard VAT rate. The exceptions include the care for children in their homes, carpet cleaning and supplying of the household appliances, including installation.

#### 06. Health

Pharmaceutical and medical products intended for human healthcare are subject to the reduced VAT rate. The health care is exempt from the VAT.

#### 07. Transport

Highway signs are exempt from the VAT. Passenger transport among the member states and the member states and third countries is exempted. All regular domestic public transport of passengers and their baggage is subject to the reduced VAT rate in all studied periods.

#### 08. Communication

Postage and postal services are exempt from the VAT if the service is performed by a postal licence holder. Other items of this division are subject to the standard VAT rate.

#### 09. Recreation and culture

The reduced VAT rate covers especially trees, animals, and tickets to sporting events, theatre tickets, newspapers and books. In addition, sports recreation is covered by the reduced VAT rate (recreation with accommodation is included in the division 11 of the consumer basket). Live animals that were subject to the reduced rate in 2005–2008 are included since 2009 in the reduced VAT rate only if they are animals that are usually used for food. Animals for recreation (pets) have been therefore included in the standard VAT rate since 2009. Since 2006, trees, shrubs and bushes, grafted or not, which bear edible fruit or nuts are included in the reduced VAT rate. Flowers and other plants, bulbs, roots and the like, cut flowers and ornamental foliage are covered by the reduced VAT rate since 2009. Radio and television fees are exempt.

#### 10. Education

Almost all items of this division are exempt from the VAT. Language courses are exempted only if

<sup>6</sup>In fact, it occurred with effect from 15.7.2006. However, the authors always studied the legislation in force by 1.1. of the given year.

<sup>7</sup>Since 1.1.2009, the category of food products that are subject to the reduced VAT rate was clarified (there were added: live animals, seeds, plants, additives, food supplements and substitutes). This legislative change did not affect the calculations made in relation to the consumer basket.

Table 3. The expenditure size according to the VAT burden in the consumer basket in total and in the food and non-alcoholic beverages item (in %)

	2005	2006	2007	2008	2009	2010
Consumption expenditures including the VAT (in %) – TOTAL for the whole consumer basket	100.00	100.00	100.00	100.00	100.00	100.00
– exempt from the VAT	16.76	16.74	16.12	16.10	16.06	16.61
– with the reduced VAT rate	26.49	26.41	25.91	25.91	25.96	26.85
– with the standard VAT rate	56.75	56.85	57.97	57.99	57.98	56.54
Consumption expenditure including the VAT (in %) only in food and non-alcoholic beverages (Division 1)	100.00	100.00	100.00	100.00	100.00	100.00
– exempt from the VAT	0.00	0.00	0.00	0.00	0.00	0.00
– with the reduced VAT rate	92.88	92.88	100.00	100.00	100.00	100.00
– with the standard VAT rate	7.12	7.12	0.0	0.0	0.0	0.0

Source: The authors' calculations are based on the analysis of 730 consumer basket items

an accreditation is obtained from the Ministry of Education, Youth and Sports.

#### 11. Restaurants and hotels

Accommodation is subject to the reduced VAT rate. Other items in the vast majority of cases are under the standard VAT rate. However, when food services are included in the price of accommodation, these are subject to the reduced VAT rate. Catering in educational facilities (except universities) is exempted from the VAT.

### Summary of changes and their evaluation

The research was based on relation (1), which after an analysis can be specified in relations (3) and (4):

$$\Sigma \Delta_{i=2005}^{2010} = \Delta B_{i=2007,2010} + \Delta T_{i=2007,2008,2010} \quad (3)$$

$$\Delta T_{i=2007,2008,2010} = \Delta TR_{i=2008,2010} + \Delta TL_{i=2007} \quad (4)$$

The calculations and obtained results are illustrated in Tables 3 and 4 and Figure 3.

The initial data in Table 2 and the obtained values in Tables 3 and 4 should reflect the changes in the studied factors  $B$ ,  $TR$  and  $TL$ , whose distribution in the analyzed time period is shown in Table 5.

The obtained values of the studied indicators are shown and compared in Figure 3. The lower curve in the figure shows the proportion of the studied item 1 of the consumer basket (food and non-alcoholic drinks) in the total consumer basket, the composition of which has changed twice during the described

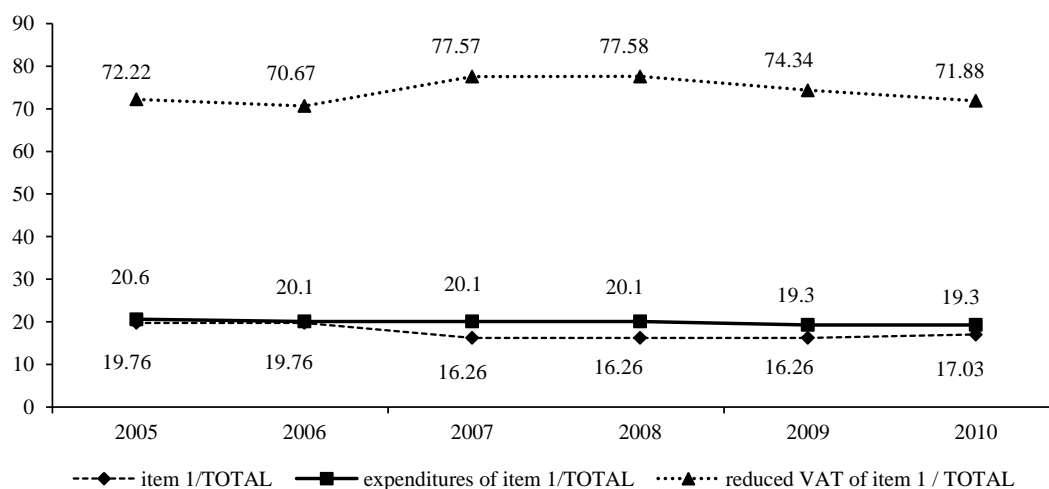


Figure 3. Comparison of the relative values of the studied variables (in %)

Source: Authors' calculations

Table 4. The expenditure amount according to the VAT burden in the consumer basket in total and in the food and non-alcoholic beverages item (in CZK, in %)

	2005 (5, 19)*	2006 (5, 19)	2007 (5, 19)	2008 (9, 19)	2009 (9, 19)	2010 (10, 20)
Consumption expenditure including VAT TOTAL (in CZK)	213 139	223 887	239 239	257 066	261 751	262 711
– exempt from the VAT	35 722	37 479	38 565	41 388	42 037	43 636
– with the reduced VAT rate	56 461	59 128	61 987	66 606	67 951	70 538
– VAT itself	2 689	2 816	2 952	5 499	5 611	6 413
– with the standard VAT rate	120 956	127 280	138 687	149 072	151 763	148 537
– VAT itself	19 312	20 322	22 143	23 801	24 231	24 756
Consumption expenditure including the VAT on Division 1 (in CZK)	43 907	45 001	48 087	51 670	50 518	50 703
– exempt from the VAT	0	0	0	0	0	0
– with the reduced VAT rate	40 781	41 797	48 087	51 670	50 518	50 703
– VAT itself	1 942	1 990	2 290	4 266	4 171	4 609
– with the standard VAT rate	3 126	3 204	0	0	0	0
– VAT itself	499	512	0	0	0	0
Proportion of consumption expenditure on Division 1 to TOTAL expenditures (in %)						
Total in consumer basket	<b>20.60</b>	<b>20.10</b>	<b>20.10</b>	<b>20.10</b>	<b>19.30</b>	<b>19.30</b>
– exempt from the VAT	0.00	0.00	0.00	0.00	0.00	0.00
– with the reduced VAT rate, resp. VAT itself	<b>72.22</b>	<b>70.67</b>	<b>77.57</b>	<b>77.58</b>	<b>74.34</b>	<b>71.87</b>
– with the standard VAT rate, resp. VAT itself	2.58	2.52	0.00	0.00	0.00	0.00

\* The rates valid for the year are given in the brackets

Source: The table is based on the data on consumption expenditures of an average household, which in the years 2005–2009 were 2.3 members according to the Statistical Yearbook of the Czech Republic 2010. The authors' calculations according to data sources for the years 2005–2009: [www.czso.cz/csu/2010edicniplan.nsf/kapitola/0001-10--0900](http://www.czso.cz/csu/2010edicniplan.nsf/kapitola/0001-10--0900), and for the year 2010: [www.czso.cz/csu/2011edicniplan.nsf/t/B60021F16B/\\$File/30011111.pdf](http://www.czso.cz/csu/2011edicniplan.nsf/t/B60021F16B/$File/30011111.pdf), [www.czso.cz/csu/2011edicniplan.nsf/t/B60021F185/\\$File/30011113.pdf](http://www.czso.cz/csu/2011edicniplan.nsf/t/B60021F185/$File/30011113.pdf)

period (see Table 5). The middle curve shows the proportion of the average household expenditures in Czech crowns on item 1 of the consumer basket of its total expenditures in Czech crowns and the upper curve illustrates the proportion of the paid reduced VAT rate of the expenditures on item 1 of the consumer basket to the reduced VAT payment in the total average household expenditures.

When comparing the overview of changes (Table 5) with the achieved values of the calculated parameters (Figure 3), we can see that the biggest change in the proportion of the reduced VAT rate paid in the expenditures on item 1 of the consumer basket in the total sum of the paid reduced VAT rate (an increase by nearly 7 percentage points) is between 2006 and 2007, when the composition of the consumer basket

Table 5. Overview of changes in the studied variables

B	Consumer basket 1		Consumer basket 2			Consumer basket 3 VAT rate 3 (10%, 20%)
TR	VAT rate 1 (5%, 9 %)		VAT rate 2 (9%, 19%)			
TL	range of the reduced rate 1		range of the reduced rate 2			
Year	2005	2006	2007	2008	2009	2010

Source: authors' calculations according to the VAT laws

Table 6. Size of changes in the proportion of the reduced VAT rate paid on food and non-alcoholic beverages in the total paid sum of the reduced VAT rate

Order	Years	Difference	$\Delta B, \Delta TL, \Delta TR$
1.	2007/2006	+6.90	B, TL
2.	2009/2008	-3.24	0
3.	2010/2009	-2.46	B, TR
4.	2006/2005	-1.55	0
5.	2008/2007	+0.01	TR

Source: authors' calculations

was changed and all foodstuffs were also moved to the reduced VAT rate. Another change of this indicator (a decrease by almost 2.5 percentage points, the third biggest change in the studied period) was achieved between 2010 and 2009, when the consumer basket changed again and the reduced VAT rate increased by one percentage point. Both described changes can be considered as a result of the studied variables, particularly changes of the consumer basket  $\Delta B$ .

On the contrary, the second-biggest change (a decrease by 3.2 percentage points) between the years 2009 and 2008 occurred at the same composition of the consumer basket, the same VAT rates and the same range of item 1 of the consumer basket. It is obvious that this change was a result of the changes in the household expenditures among the individual items of the consumer basket.

The results concluded that the amount of the paid reduced VAT on food and non-alcoholic drinks influences the highest level of the change of the household consumer behaviour that is reflected by the changes in the consumer basket (Korkeamäki and Uusitalo 2009 or Cremer et al. 2011), the scope of reduced VAT rate applied to foodstuffs and non-alcoholic drinks, while the change of the VAT rate itself in the studied indicators was not registered. An overview of the significance of the achieved changes is shown in Table 6.

## LIMITATION OF RESULTS

The contextual analyses were conducted on the average household whose consumption expenditures were based on the consumer basket determined by the CSO.

The text of the article comes from the original authors' analysis, which classifies the consumption of this "average" household; however, it is possible that in the real economy, no real household corresponds

to the "average" household. The problem is outlined at the theoretical level and its practical verification requires a follow-up research on specific households.

## CONCLUSION

The value added tax is the only permissible general consumption tax in the countries of the European Union. Although mainly due to ensuring freedom of the movement of goods and services, it is the most harmonized tax which gives the Member States a certain level of freedom in the particular VAT areas; it also concerns the size of the reduced VAT rate. The range of commodities at this rate is harmonized in principle; however, its real size and how much it will deviate upward from the minimum size are decided by the national governments (comprehensively Sinn 1990, pp. 491–494).

Since the upper limit of the reduced VAT rate is not fixed, this permits the member states to follow their own fiscal interests, which is also reflected in the period of economic crisis.

The results of the authors' analyses also confirm on the "average" household level that the amount of the paid VAT will primarily depend on the consumer habits and on the structure of the household expenditures (increasing living expenditures). This also applies to the analysis of foodstuffs and non-alcoholic drinks when a steep increase of the size of the reduced VAT rate (from the 5% rate in 2007 to 9% in 2008) did not reflect in the change of the percentage of the paid tax of this commodity group in the total paid tax.

The expected unification (or even the total unification to the one VAT rate) will probably have a similar impact as the results of the amount of the paid VAT will also probably primarily depend on the consumer behaviour of households. During the increase of the expenditures on food, other changes of the consumer basket can be expected in terms of reducing the weight of some sections, as the households will change their consumption behaviour.

The analysis of the influence of revenue on the quantity of the demanded goods and the subsequent analysis of the impact of price on the quantity of the demanded goods during recognition of the VAT regression on food is important for a correct interpretation of the complex effects of changes in the VAT.

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