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EFFECT OF VAT RATE REDUCTION FOR FRUITS AND VEGETABLES ON PRICES IN LATVIA: EX-POST ANALYSIS

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ABSTRACT. Latvia reduced Value Added Tax (VAT) rate for some fresh fruits and vegetables in 2018. The reduced VAT rate is set at 5%, while the standard VAT rate in the country is 21%. The rate was reduced for a 3-year period, during which it is intended to assess the impacts of the policy and to decide whether to keep the reduced VAT rate after the period ends. This research aims to evaluate whether VAT reduction reduced retail prices of fruits and vegetables. As prices on various fruits and vegetables are quite volatile, we used prices for exactly the same products in neighbouring Estonia and Lithuania as controls. We found that although in the first year after the VAT reduction retail prices decreased considerably, the decrease was smaller than the VAT reduction – the pass-through effect was 88%. However, due to the limited competition in the retail sector, it is important to continue observation in order to draw conclusions about the long-term effect.

Introduction

Since Latvia introduced Value added tax (VAT) in the 1990ies, there were many discussions about whether it is necessary to introduce a reduced VAT rate on food products. In 2018, VAT rate was reduced for those fresh fruits and vegetables, which are typical for Latvian agro-climatic conditions. The main objectives of this decision were: 1) to reduce level of VAT avoidance and share of informal economy in the sector; 2) to support local producers in terms of financial flows; 3) to reduce retail prices for the consumers. The reduced rate was set at 5%, while the standard VAT rate in the country is 21%. Fresh fruits and vegetables is the only group of food products with the reduced 5% VAT rate in Latvia[1] (12% reduced VAT rate is applied to specialised baby food). VAT for fresh fruits and vegetables was reduced for a period of three years, during which it is intended to assess the impacts of the policy and to decide whether to keep the reduced rate after the 3-year period.

The present research aims to evaluate whether the VAT reduction converted into retail prices of the fresh fruits and vegetables with the reduced VAT rate. Scientific literature gives no clear conclusion on whether, to what extent and under what circumstances reduction of the VAT rate on food products contributes to reduction in retail prices. The spectrum of conclusions from international experience is broad. Bernal (2018) analysed whether the small reduction in the VAT rate on groceries from 7% to 5% in Poland in 2011 resulted in lower prices for consumers and concluded that the VAT reduction had no effect on the prices. Šálková *et al*. (2017) analysed the introduction of a reduced VAT rate on gluten-free food in Czechia in 2015 and concluded that it did not significantly affect retail prices. In contrast, Viren (2009) studied the effects of changes in consumption taxes on consumer prices and concluded that more than a half of a tax increase shifts to consumer prices. Gábriel and Reiff (2006) concluded that while a large part of VAT increase transmitted to consumer prices, the effect of VAT decrease on consumer prices was moderate.

[1] List of products with reduced 5% VAT rate are in the annex to the Value Added Tax Law, https://likumi.lv/ta/en/en/id/253451

Nevertheless, Gaarder (2018), using a regression discontinuity design, concluded that a VAT reduction from 24% to 12% in 2001 on food products in Norway completely shifted to consumer prices.

Benkovskis and Fadejeva (2014) evaluated the effect of three major VAT rate changes in Latvia (increases in January 2009 and January 2011, reduction in July 2012) on inflation. They concluded that VAT increase pass-through to prices was 84% in 2009 and 113% in 2011. This means that the VAT increases almost completely converted to prices. Nevertheless, they also concluded that there was only 36% pass-through for the 2012 VAT reduction, which means that the price reduction was only about 1/3 of what was expected. Other researchers agreeing that there is high pass-through in the case of VAT increase, while the pass-through is rather low in the case of VAT reduction (Jonker *et al.*, 2004; Carbonnier, 2005; Gábriel, Reiff, 2006; Ván, Olah, 2018) also share the conclusion about this kind of asymmetric effect.

Nevertheless, not all researchers agree about asymmetric pass-through for VAT increases and reductions. Benedek *et al*. (2015), based on monthly panel data on prices and VAT rates on 67 consumption items and 1231 VAT changes for 17 Eurozone countries, concluded that on average pass-through is much less than full in the case of VAT reduction and also in the case of VAT increase. They also insist that there is no systematic tendency for pass-through to be greater for tax increases than for tax cuts. David (2012) analysed the effect of an increased value added tax burden on food products in Czechia in 2008 and concluded that consumers carried a considerable part of the increased tax burden. However, in his research there is also a conclusion that pass-through is similar for VAT increases and decreases.

There are also conclusions that the effect is different for different products. Benkovskis and Fadejeva (2014), based on data for Latvia, stressed that pass-through is higher for goods, especially food (but not fruits and vegetables), and lower for services. Ván and Olah (2018) evaluated 2016–2017 VAT changes in Hungary and concluded that different food products had different pass-through.

There are also debates about the duration of the adjustment process. Politi and Mattos (2011), based on the Brazilian case, concluded that price adjustments after VAT changes happen within four months. Based on EU level data, Benedek *et al*. (2015) stressed that the main effects apper in the first five months after the reform. Gábriel and Reiff (2006) insisted that 70% of the pass-through in the case of Hungary happened within the first three months.

Taking into account how different are conclusions, we suppose that the effect of VAT changes should be measured on a case-by-case basis. It is also clear that it is not correct to assume that VAT changes, by definition, have a 100% pass-through effect on prices, and it is especially so for the cases of VAT reduction. In the case of a low pass-through effect, one can often see this problem after the first five months after VAT changes took effect.

Materials and Methods

One of the reasons why food prices do not always decrease proportionally to the VAT rate reduction pertains to the competition level in the food supply chain and in retail sector in particular. Unlike for many other goods and services, the demand for food is relatively price inelastic – 1% decrease in price leads to a considerably smaller increase in demand. Brekis and Nipers (2013) found that the price elasticity of demand for food in Latvia ranged from -0.43 to -0.83. That is in line with the results of a review of 160 research studies on price elasticity of demand, conducted by Andreyeva *et al*. (2010), which concluded that the price elasticities for foods and non-alcoholic beverages were below 1 and ranged from -0.27 to -0.81. This means that reduction of price proportionally to the VAT rate reduction leads to a relatively small increase in sales. However, if the price is not reduced after the VAT rate reduction (keeping the same equilibrium between the demand and the supply), the demand would not change, while the reduced amount of VAT tax paid to the government allows businesses to increase their profits. Results of Gábriel and Reiff (2006) supported this argument. This is a strong motivation for businesses not to reduce food prices despite VAT rate reduction. Such a strategy is quite realistic when there are competition problems on the supply side of the retail sector (Auzins *et al*., 2008).

Under perfect competition, if some market actor wants to increase their profit at the expense of the VAT, other market actors would crowd the actor out of the market, as they would continue to operate at the same profit margin than before the VAT rate reduction (Auzins *et al*., 2008). For this reason pass-through of the VAT rate reduction largely depends on the level of competition in the market.

As a result of the ex-ante assessment of a potential VAT rate reduction on food products in Latvia, Nipers *et al*. (2013) concluded that a VAT rate reduction from 21% to 12% might reduce prices by 5.5% (73% pass-through effect). Nevertheless, the authors also pointed out that in a situation where two retail chains dominate the market (as it is in Latvia) it is difficult to predict the actual outcome – the effect depends on decisions of small group of economic actors.

In the ex-ante assessment of potential effects of the VAT rate reduction specifically for fruits and vegetables, Nipers and Pilvere (2017) concluded that not all small shops would reduce their prices. In some small shops, prices could even increase because they would exit the informal economy and register as VAT payers. The average decrease of fruits and vegetables prices should be less than the VAT rate reduction, as one of the objectives of the VAT rate reduction was to reduce the share of the informal economy in this sector.

In assessing how "fairly" retailers have decreased their prices after the VAT rate reduction, the analysis

should exclude the retailers that were not VAT payers before the VAT rate reduction, including direct sellers, most of the small farmers and resellers, because of the abovementioned reason.

Two retail chains dominate the food retail market of Latvia – Rimi and Maxima; in 2016, their total market share was 55%, with approximately equal market shares for each. Their shares are significantly higher than that for the third largest retail chain – Top – operating primary outside Riga[2], based on the small shops concept and owned by 18 entrepreneurs, with about 9% market share. Maxima and especially Rimi have concentrated their business in Riga and other cities where proportion of self-consumption and direct sales of fruits and vegetables is lower than the national average. Accordingly, one can assert that in the group of fruit and vegetable retailers paying the VAT, the market share of Rimi and Maxima is higher than 55%. According to an indicative assessment, it could be 70%[3].

Based on the above, we assumed that fruit and vegetable retailers in Latvia could be classified into two categories: price makers and price takers. Two explicitly dominant retail chains could be considered price makers, while the other retailers – price takers. To identify the decrease in prices after the VAT rate reduction for fruits and vegetables, the research analysed the dominant price makers – Rimi and Maxima.

For research purposes, the authors performed price surveys – the first one in December 2017 (the last month before the VAT reduction) and then starting from March 2018 until February 2019 on a monthly basis. Benedek *et al*. (2015) assumed that there is some VAT change anticipation effect on prices. We, however, assumed that in our case it is non-existing, as for businesses it became clear that there would be VAT reduction only shortly before it happened.

The seasonality factor significantly affects prices of fruits and vegetables. Besides, the seasonality cycle is different for different fruits and vegetables, which complicates the choice of a control group of fruits and vegetables for which the VAT rate was not reduced in Latvia. For this reason, prices for exactly the same fruits and vegetables in neighbouring Estonia and Lithuania are considered as a control group, as in both countries the VAT was not changed. Both control group countries are closely located to Latvia, have similar agro-climatic conditions, highly integrated economies with Latvia, and the Rimi and Maxima retail chains are also present in both countries. Prices were collected for the largest cities of all the three countries – Riga, Tallinn and Vilnius.

For the purpose of the control group, data from three retail chains in Lithuania – Maxima, Rimi and Norfa – were collected. Maxima is the largest retailer in Lithuania with about 1/3 market share, while Rimi has less than 10% market share. To ensure that in our calculations Lithuanian data are not dominated by Maxima (as the country's average is calculated taking into account the retailer's market share), we also added data from Norfa, a retailer with about 1/10 market share.

In Estonia, there are four large retailers – Coop, Maxima, Rimi and Selver. Coop is the largest one with 22% market share in 2016, but in addition to being present in larger towns, it is very much working in smaller towns and rural areas. Owned by 19 regional consumer cooperatives, the Coop states that they use profit to maintain and develop life in different regions of Estonia[4]. In addition, Coop is known to have lower barriers of entry for local producers. From this perspective, it is not the best-suited option for the control group. For other three biggest retailers – Maxima has a market share of about 19%, Rimi 17% and Selver 16%. Among all the four, Rimi and Selver have relatively similar market positioning. Price information was collected from the Maxima and Selver retail chains.

The price survey included 25 fruit and vegetable items: carrots, beetroots, cabbages, red cabbages, cauliflower, broccoli, Chinese cabbages, kohlrabi, lettuce pots, lettuce Iceberg, dill, cucumbers, and two types of tomatoes, potatoes, garlic, onions, onions red, zucchini, and celery, three types of apples, pears and garden blueberries. As the authors collected the data, we ensured that the data on prices on identical food products were collected in all the monitored shops in all the Baltic States. For all prices, data was collected on a monthly basis around the same date of the month (maximum deviation ± 3 days).

Since the present research does not aim to identify the effect of the VAT rate change on the Consumer Price Index or inflation, the weight of each product in the consumer basket was not taken into account in identifying the price index. Each product was assigned an equal weight to calculate the overall monthly price index. Average prices in each country were calculated as a weighted average, taking into account the relative market shares of the retailers:

$$p_i = \frac{\sum_j^n p_{ij} \cdot s_j}{\sum_j^n s_j} \quad (1)$$

where p_i – price of the ith product,

S_j – market share of the jth retail chain.

The overall price index for the group of fruits and vegetables in the mth month was determined as a deviation from the starting point p_0, which, in this case, was December 2017. The price index at the starting point p_0 is equal to 100 and the total number of monitored products is k:

$$I_m = \frac{\sum_i^k \frac{p_{im}}{p_0} \cdot 100}{k} \quad (2)$$

The index for food in Latvia was compared with the price index for the control group of food in the mth

[2] Riga is the largest city with about 1/3 of all country inhabitants and close to a half of the economy

[3] Authors' indicative calculations based on official statistics and annual reports

[4] About Coop Estonia: https://www.coop.ee/about-coop-estonia

month as the difference between the price index for food in Latvia and the price index for the control group:

$$\Delta_m = I_m^{LV} - \frac{I_m^{LT} + I_m^{EE}}{2} \quad (3)$$

When collecting the data on prices, normal prices and discount prices were not distinguished, and the actual price was registered. This could potentially affect the price index calculated, increasing its fluctuation range.

Results and discussion

VAT rate for fruits and vegetables in Latvia was reduced by 16%-points from 21% to 5%. This means that if this VAT reduction was 100% converted to prices, it had to lead to 13.2% decrease in gross prices. As it was mentioned before, to evaluate the actual reduction we compared prices for fruits and vegetables with reduced VAT in Latvia (LV group) with prices in control groups. Three control groups were used: 1) prices for the same products in Lithuania (LT group), 2) prices for the same products in Estonia (EE group) and 3) average prices for the same products in Lithuania and Estonia (LT&EE group). Figure 1 presents price indexes calculated as a mean (a) and as a median (b) of all prices in the all mentioned groups.

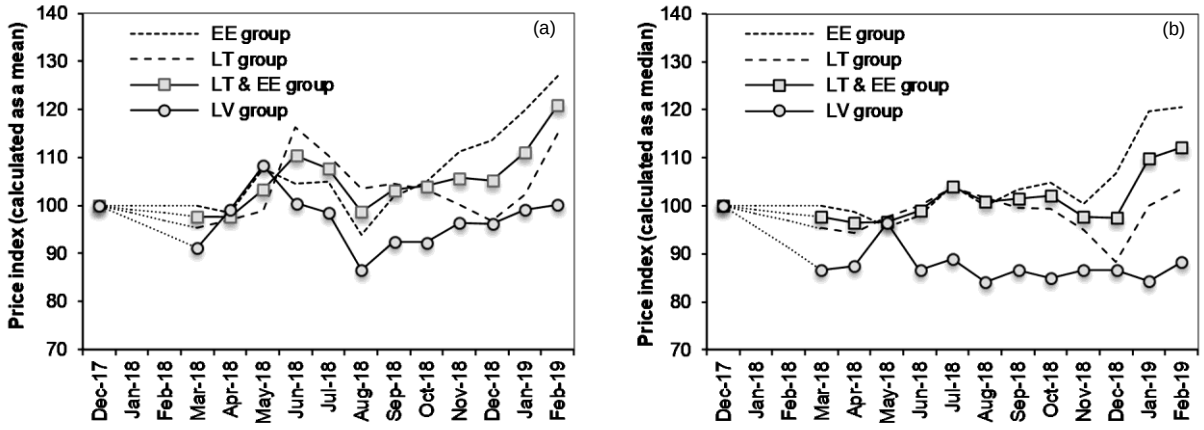

Figure 1. Price indices for LV and control groups calculated mean (a) and median (b)

As sample sizes are small and data do not satisfy assumption about normal distribution, non-parametric approach was used for calculation of statistical significance of the results was used. As we compare paired data, Wilcoxon signed-rank test (one sided) for paired data samples.

It was found that after VAT reduction in January 2018, price index in Latvia decreased in comparison to LT control group (Table 1). On average, mean difference from March 2018 to February 2019 between LV and LT groups was 6.9%, but for the more stable period from June 2018, the difference was 10%. The median differences in several months were significantly higher than mean difference due to some outliers. Almost for all observations, mean difference was negative (except for April and May) and median difference was negative for all observations. Not for all months, we can conclude that the difference is statistically significant. However, for half of the cases P-value is lower or equal to just 2%, meaning that there is a statistically significant difference between the groups.

Table 1. Monthly difference in price indexes between LV and LT groups and statistical significance of the difference

Trait	Dec-17	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19
Difference, mean	0	–4.2	2.2	9.3	–15.8	–12.0	–17.0	–12.2	–10.9	–3.6	–0.7	–3.3	–14.8
Difference, median	0	–8.6	–6.8	–1.1	–13.3	–14.9	–17.5	–12.9	–14.5	–8.2	–1.6	–15.6	–15.5
P-value		0.01	0.33	0.52	0.02	0.16	0.02	0.01	0.01	0.27	0.55	0.13	0.00

Results for April and May contradict the assumption that there should be negative mean difference between LV and control groups. That could be explained by the higher prices for several goods in Latvia – namely, for carrots, Chinese cabbages, dill, one type of apples and some increase was observed for the price of potatoes and broccoli. It is related to two factors: shortages of those products just before the new season products arrived, and due to the fact that Latvia started selling the new season products (which are more expensive) earlier than the neighbouring countries did.

Similarly to comparison with LT control group, comparison of LV group with EE control group shows that the mean difference for almost all months (except for the same April and May) is negative (Table 2). On average, mean difference for the period from March 2018 until February 2019 between LV and EE groups was 10.6%, but for the more stable period starting from June, the mean difference is 13.3%. Median difference is negative for all months. For 7 out of 12 observations, P-value is lower than 6%, and for the last 5 month, P-value is lower than 3%.

Table 2. Monthly difference in price indices between LV and EE groups and statistical significance of the difference

Trait	Dec-17	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19
Difference, mean	0	–8.8	0.6	0.5	–4.0	–6.4	–7.4	–9.5	–12.6	–14.8	–17.3	–20.8	–26.7
Difference, median	0	–13.3	–11.3	0.9	–11.2	–15.3	–15.9	–16.6	–19.9	–13.7	–20.0	–35.2	–32.3
P-value		0.05	0.45	0.19	0.26	0.23	0.16	0.06	0.03	0.01	0.02	0.01	0.00

There was an "unsynchronised" movement of prices in Lithuania and Estonia in around the Christmas and New Year period (November-December-January), as prices decreased significantly in Lithuania, but at the same time sharply increased in Estonia. We assume it was due to the differences in strategies and intensity of competition of the retail companies around the Christmas and New Year period.

To reduce the impact of short-term fluctuations in control group countries, difference between LV group and average price index for mixed LT&EE control group was calculated (Table 3). In this case, the mean difference for the period from March 2018 until February 2019 was 8.8%, which is between the results of the first two calculations. However, statistical significance of the difference is higher than in the each of the previous two cases. The mean difference for the period from June 2018 is 11.7% and the results for all observations for this period are statistically significant with p-value 5% or lower.

Table 3. Monthly difference in price indexes between LV and LT&EE groups and statistical significance of the difference

Trait	Dec-17	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19
Difference, mean	0	–6.5	1.4	4.9	–9.9	–9.2	–12.2	–10.9	–11.8	–9.2	–9.0	–12.1	–20.8
Difference, median	0	–11.0	–9.1	–0.1	–12.3	–15.1	–16.7	–14.8	–17.2	–11.0	–10.8	–25.4	–23.9
P-value		0.01	0.30	0.25	0.03	0.05	0.02	0.01	0.01	0.02	0.04	0.01	0.00

As it could be seen from the previous examples, price difference between countries is not constant, but changes over time. One of the reasons why different price fluctuations could be observed and the VAT reduction did not completely convert to price decrease is price policies of the retail chains. Setting prices on fruits and vegetables, the supermarkets do not apply fixed mark-ups but round the final price according to their price policies. For example in Latvia, 29% of all Maxima prices and 49% of all Rimi prices are ending with "9" (such as 1.19 or 0.79). In Rimi, 71% of all prices are ending with either "9" or "5". At the same time, only 3% of Maxima and 1% of Rimi prices are ending with "1" (Table 4).

Table 4. Frequency of the last numerical digit in the prices

Shop	Frequency of the last numerical digit in prices, %									
	"1"	"2"	"3"	"4"	"5"	"6"	"7"	"8"	"9"	"0"
Rimi (Latvia)	1	7	3	1	22	4	4	3	49	7
Maxima (Latvia)	3	7	9	7	11	11	6	8	29	8

This suggests that the shops are rounding prices based on the target price, not just a mathematical default mark-up. This approach alone guarantees that a price reduction will be not be transferred by the same proportion as a VAT reduction. It is a significant factor for price deviations especially in the case of cheaper goods. That is not something unique for Latvia. According to Pike *et al*. (2009), this kind of target pricing was one of the reasons why prices were not reduced proportionally to the VAT reduction in the analysis in the UK. Leesment (2017) found that after the adoption of Euro currency in Estonia in 2011, the share of last digits other than "0", "5" and "9", in Estonian food prices increased due to the campaign 'Euro will not change the price'. The idea was that retailers will recalculate prices to Euros using fixed exchange rate and will not round up prices so that they will end with nine or zero, thereby increasing the profits of retailers. However, by 2015 the share of prices ending with "0", "5" and "9" increased to 2010 (pre-Euro) level, indicating that retailers shifted back to odd pricing. It seems that in Latvia, in case of the VAT reduction it happed even quicker. This also suggests that it will be worth to look at the price dynamics in Latvia in the long term.

Table 5. Retail prices in November 2018 in Rimi and Maxima, EUR / kg

Shop	Retail prices in November 2018, EUR / kg							
	carrots	cabbages	red cabbages	beetroots	onions	red onions	Chinese cabbages	kohlrabi
Rimi (Latvia)	0.45	0.43	0.55	0.39	0.49	0.65	0.75	0.49
Maxima (Latvia)	0.44	0.42	0.54	0.38	0.48	0.64	0.74	0.48

Despite the fact that the two dominant retailers in Latvia have about the same market share, it seems that there is at least a silent agreement between the two retailers. Rimi is playing a more dominant role, defining prices, often based on target prices (preferring prices ending with "9" or "5"), while Maxima's pricing is based on the policy to be cheaper. For goods with the price below 1 EUR, it is often precisely a 0.01 EUR difference (Table 5). That is clearly a sign of unhealthy competition.

Conclusions

1) For the calculation of the impact of VAT reduction on gross prices difference between average prices in Latvia and control groups in Lithuania and Estonia was used. We suggest that April-May abnormality should be excluded from calculations and statistically significant data for the last 9 months starting from June should be used. Calculations using average LT&EE control group show the average decrease in prices due to the VAT reduction was 11.7 percentage points.

2) An opinion dominates in the scientific literature that a VAT rate reduction does not lead to a proportionate decrease in price, and there were many instances where pass-through effects were very low. In our case, the prices decreased by considerable 11.7%, but less than the mathematically expected 13.2 percentage points – an 88% pass-through effect of VAT reduction was observed for fruits and vegetables that are typical for agro-climatic conditions in Latvia.

3) This effect was larger than expected in the ex-ante assessment and could be largely explained by the policies of the dominant retail chains. Before VAT reduction, the major retail chains confirmed their readiness to decrease prices in proportion to the VAT reduction. Yet, it is still not full 100% pass-through, despite the fact that retail chains were involved in discussions about the possible VAT reduction before it was implemented and confirmed their readiness to decrease prices proportionally to the VAT reduction.

4) The price decrease effect was relatively long lasting. The effect of the VAT reduction was observed since June 2018 and it persisted until February 2019. Although it is a long enough period for reaching a new price equilibrium, it would be advisable to continue price monitoring for long-term impact assessment.

There is a reason to suggest that two dominant players in the retail market have achieved at least a silent agreement about pricing strategies. For the broad list of products one retailer have higher prices but use psychological target pricing (prices mainly ended with nine and five), while the other had minimally lower prices just to show the products were cheaper. We assume that this is one of the reasons why there was no 100% pass-thought effect of VAT reduction.

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

Author contributions

AN design/sampling/analysis, writing of the manuscript, editing and approving the final manuscript;
IU design/sampling/analysis, writing of the manuscript;
IP design/sampling/analysis, editing and approving the final manuscript;
AS design/sampling/analysis, editing and approving the final manuscript;
A-HV editing and approving the final manuscript.

References

Andreyeva, T., Long, M.W., Brownell, K.D. 2010. The Impact of Food Prices on Consumption: A Systematic Review of Research on the Price Elasticity of Demand for Food. – American Journal of Public Health 100(2): 216–222, doi: 10.2105/AJPH.2008.151415.

Auzins, A., Nipers, A., Kozlinskis, V. 2008. Effect of Value Added Tax Rate Changes on Market Equilibrium. – Management Theory and Studies for Rural Business and Infrastructure Development, Academia. UDK 658(474.5) (06), 24:15–23.

Benedek, D., De Mooij, R., Keen, M., Wingender, P. 2015. Estimating VAT Pass Through. – IMF Working Paper WP/15/214.

Benkovskis, K., Fadejeva, L. 2014. The Effect of VAT Rate on Inflation in Latvia: Evidence from CPI Microdata. – Applied Economics, Taylor & Francis Journals, 46(21): 2520–2533, doi: 10.1080/00036846.2014.904492.

Bernal, A. 2018. Do Small Value-Added Tax Rate Decreases on Groceries Imply Lower Prices for Consumers? – Eastern European Economics, 56(1): 81–98, doi: 10.1080/00128775.2017.1412265.

Brekis, E., Nipers, A. 2013. Latvian Households' Demand Elasticity For The Main Food Groups. – New Challenges of Economic and Business Development 2013, /5/9.

Carbonnier, C. 2005. Is Tax Shifting Asymmetric? Evidence from French VAT reforms, 1995–2000. – PSE Working Papers 2005-34, 24 pp.

David, P. 2012. Distribution of the Increased Tax Burden for Agricultural Products and Food in the Czech Republic. – Agricultural Economics (Czech Republic), 58(5): 239–248, doi: 10.17221/58/2011-AGRICECON.

Gaarder, I. 2018. Incidence and Distributional Effects of Value Added Taxes. – The Economic Journal, 129(618):853–876, doi: 10.1111/ecoj.12576.

Gábriel, P., Reiff, Á. 2006. The Effect of the Change in VAT Rates on the Consumer Price Index. – MNB Bulletin, Magyar Nemzeti Bank.

Jonker, N., Folkertsma, C., Blijenberg, H. 2004. An Empirical Analysis of Price Setting Behavior in the Netherlands in the Period 1998-2003 Using Micro Data. – ECB Working Paper No. 413, 52 pp.

Leesment, M. 2017. When 4.99 is better than 5.00: background and application of odd pricing. – Economic and Labour Market Trends, Statistics Estonia, pp. 112–133.

Nipers, A., Pilvere, I. 2017. Assessment of Value Added Tax Reduction Possibilities for Selected Food Groups in Latvia. – Proceedings of the 8th International Scientific Conference Rural Development 2017, pp. 1225–1231, doi: 10.15544/RD.2017.048.

Nipers, A., Pilvere, I., Kozlinskis, V. 2013. Effects Of Reducing The Value Added Tax Rate On Food In Latvia. – WMSCI 2013 17th World Multi-Conference on Systemics, Cybernetics and Informatics, Proceedings, 2:124–129.

Pike, R., Lewis, M., Turner, D. 2009. Impact of VAT Reduction on the Consumer Price Indices. – Economic & Labour Market Review, 2009, 3(8):17–21.

Politi, R.B., Mattos, E. 2011. Ad-valorem Tax Incidence and after-tax Price Adjustments: Evidence from Brazilian Basic Basket Food. – Canadian Journal of Economics, Canadian Economics Association, 44(4):1438–1470.

Šálková, D., Kučera, P., Moravec, L. 2017. Effect of Introducing Second Reduced Rate of VAT on Consumer Purchase Behaviour with Gluten-free Food. – Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, 65 (3): 1045–1053, doi: 10.11118/actaun201765031045.

Ván, B., Oláh, D. 2018. Does VAT Cut Appear on the Menu? The Consumer Price Impact of Hungarian VAT Decreases of 2016-2017. – Public Finance Quarterly, State Audit Office of Hungary, 63(3):355–375.

Viren, M. 2009. Does the Value-Added Tax Shift to Consumption Prices? – Czech Economic Review, Charles University Prague, Faculty of Social Sciences, Institute of Economic Studies, 3(2):123–142.