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Oil price developments and government budget revenues in Croatia

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The crude oil market recorded a significant decline in prices in the second half of 2014, which led to a fall in the retail price of petrol and diesel on the Croatian market as well. In mid-February 2015, Eurosuper 95 came to 9.32 HRK per liter and Eurodiesel to 8.84 HRK. Since then fuel prices have slightly increased, primarily due to the increase of crude oil prices and a stronger HRK/USD exchange rate. Therefore, the average price of petrol on 8 March 2015 was 9.56 HRK/l and 9.01 HRK/l for diesel. Compared to the average retail price from 2014, prices in March 2015 were still on average 10% lower. The analysis shows that lower fuel prices in the long run should not have a negative impact on the revenues of the government budget due to positive price elasticity of demand, the effect of redistribution of revenues from VAT and lower public sector own expenditures.

CRUDE OIL PRICE DEVELOPMENTS

Crude oil is one of the world's most important resources, daily traded on the global market, classified according to various characteristics, mainly by geographic origin, specific gravity and sulphur content. In trading on the world's market some standardized types of oil are used as benchmarks, in order to reference prices more easily. Dated Brent is used as a benchmark on the European market - a mixture of 15 types of crude oils from the North Sea[1]. Crude oil prices derived from Europe, the Middle East and Russia are linked to Brent as well.

According to historical data from the Energy Information Administration (EIA, 2015), the average Brent price in 2013 amounted to approximately 109 USD per barrel. The price was at a similar level in early 2014, kept up by the Libyan, Ukrainian and Middle East crisis. As ISIS advanced towards Baghdad, the Ukrainian crisis was still not subsiding the price was further supported by reduced supply from Libya, and a barrel of Brent exceeded 115 USD in June 2014. In July 2014 the situation in Iraq started to calm and Libya reopened two major export ports (Es Sidra and Ras Lanuf), at which the price of crude oil began to decrease gradually. In the second half of 2014 crude oil prices were pushed down by revived

[1] Dated Brent is a marker used in physical trading of crude oil cargoes in the North Sea and relates to certain delivery dates where contracted prices are linked to Brent. Due to the mentioned reasons, Dated Brent is used as a benchmark for daily crude oil prices. Originally, Brent is an acronym for the members of the Jurassic Brent Group that make up the field: Broom, Rannoch, Etive, Ness and Tarbert formations.

US shale oil production. In September 2014 Brent fell below 100 USD per barrel, for the first time since April 2013. According to the EIA (2015b), in October 2014 oil production in the US amounted to over nine million barrels per day, which is almost equal to the peak level of production recorded in 1970. In Europe and Asia, primarily resulting from a slowdown in the Chinese and German economies, crude oil demand was decreasing. It was expected that members of the Organization of Petroleum Exporting Countries (OPEC) would cut production in order to prevent further declines in crude oil prices, but some members – primarily Saudi Arabia as the largest producer of OPEC – decided not to do so. After the OPEC meeting held in Vienna at the end of November 2014, it was officially decided not to reduce production, so crude oil prices continued their downward trend (Vox, 2014). In December 2014, the Brent price fell below 60 USD per barrel, and the downward trend continued into early 2015. In January 2015, a barrel of oil fell below 50 USD, prompted by a low expectation of growth in the world's largest economies and by ample supply. Over time, however, a significant decline in prices affected production. Information on the 23% fall in the number of active rigs in the US compared to January is considered one of the major factors behind renewed growth in crude oil prices in early February[2]. As a Kuwaiti minister stated that lower supply would support prices in the second half of the year, the escalation of the conflict with Islamic militants and an attack on the Libya pipeline pushed crude oil prices to 60 USD per barrel. Once again, the crude oil market proved its unpredictability (Poslovni dnevnik, 2015). However, even this price level is only just slightly more than half of that of a year before.

The implications of such a huge fall in crude oil prices are twofold. Countries where GDP and budget revenues are closely linked to the export of oil and gas – such as Russia, Iran and Venezuela – are faced with significantly lower budget revenues. On the other hand, countries that are large importers of oil – such as China and EU countries – should spend significantly less on crude imports. A further drop in oil prices could also lead to lower production in the US and Canada. Since shale oil and tar sand production is more expensive than conventional, these sources could become unprofitable, although the marginal profitability level is still not clearly determined. According to the UBS data, current low prices are beneficial to many, and among 54 countries, the Philippines, Turkey and Croatia may profit the most. It is estimated that the Croatian GDP could be 0.4% higher due to low oil prices (Business Insider, 2014). Research conducted by Oxford Economics showed that in of the event of a price fall to the level of 40 USD per barrel throughout 2015, the positive effect on Croatian GDP growth would be even higher – around 0.8% (Fortune, 2015).

The aim of this paper is to clarify the impact of crude oil prices on the government budget revenues – from excise duties and VAT.

CRUDE OIL PRICE TO FUEL RETAIL PRICES

Prices of crude oil and oil products are globally influenced by various economic, political, technological, seasonal and speculative factors. Although any increase in crude oil prices on the world market usually automatically triggers an increase in the prices of oil products, it does not always have to be like that. The excess of supply over demand for crude oil on the world market leads to a price fall. However, if at the same time a technical problem appears in the work of a refinery that processes crude oil into motor fuels, refinery activities could be suspended for some time. In that case, the fuel price could rise due to the insufficient supply of motor fuels in the local market despite a simultaneous decline in the prices of the crude oil used as raw material at the refinery. The retail price of fuel also depends on transportation costs, and if these increase, prices may grow independently of the movement of crude oil prices in the market (e.g. it can be also driven by an increase in insurance costs of transport).

[2] The number of active oil rigs in the US is monitored and updated once a week, and the data are available at web site. Once a month international data on the active oil rigs are also published.

Since the production of crude oil from domestic sources is insufficient, Croatia mainly imports crude oil to meet the demand of refineries, but also imports a certain amount of oil products, diesel fuel in particular[3]. Since the crude oil is bought in US dollars on the market the price also indirectly depends on the HRK/USD exchange rate.

Structurally, the level of the retail price of oil products in production is generally determined by the price of crude oil, but also by the margin, excise duty and VAT. The margin includes the costs of transportation and insurance, cost of crude oil refining and the costs of storage and distribution of products to consumer sales.

In Croatia, the retail price of oil products (petrol, diesel, gas and fuel oils) until February 2014, when the New Act of oil market and oil products (OG 19/14) was enacted, was regulated by the government, which determined the maximum retail price for the so-called accounting period. The maximum available change in the maximum retail price of a certain oil product was prescribed on a day of calculation in comparison to the previous accounting period, by which price fluctuation between accounting periods was limited[4]. Within the accounting period, oil companies were able to sell oil products at prices that were not permitted to be higher than the maximum.

The method of calculation of the maximum retail price of oil products for the accounting period was prescribed by the Ordinance, and the formula for the calculation was based on the following components:

- basis for the calculation of selling prices;
- dependent costs (storage and handling);
- costs of wholesale and retail trade (margin);
- excise duty;
- VAT.

The basis for the calculation of selling prices of oil products for the accounting period was formed from the average price of oil products on the Mediterranean market (average value of stock exchange quotations Mediterranean Cargoes CIF Med Genova/Lavera) in the accounting period, which preceded the new accounting period, converted into HRK according to the exchange rate for USD in the same period[5]. On the accrual basis, dependent costs and the premium of the energy operator (margin) would be added in a fixed amount prescribed by the Ordinance. This calculation derives the price of oil products without any state levies. To get the retail price, it is necessary to add a fixed amount of excise duty for a specific oil product and calculate VAT on top of all that.

Although the formula for calculating the maximum prices was changed several times by amendments to the Ordinance, in each calculation of retail price of products, it was always based on the price of oil products in the Mediterranean, rather than on the crude oil price. Figure 1 shows the movement of maximum retail prices of gasoline Euro 95 BS and Eurodiesel BS in the period 2010-14. It is realistic to assume that the actual retail price was on average almost equal to the maximum retail price at the time when it was regulated by the Ordinance (until 20 February 2014) and since the moment of free formation of prices, the average daily prices of oil products were used according to data available on the internet[6].

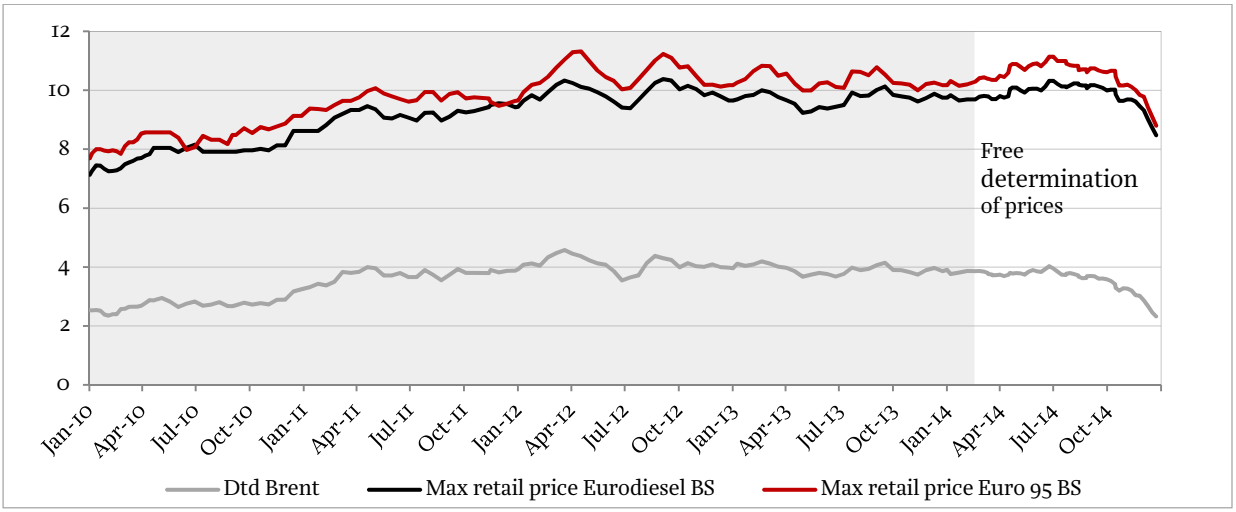
[3] According to data from INA, just over 20% of the 4 million tons of crude oil processed per year is domestic, while the rest is imported (Vorša, 2012).

[4] E.g. changes in the retail price of oil products could not be more than 3% higher or 6% lower than the price in the previous accounting period (Ordinance of the determining the highest retail prices of oil products, OG 145/12).

[5] Until the entry into force of the Ordinance on establishing the prices of oil products (OG 46/10) in April 2010, the average selling rate of the CNB was used, after which the price was calculated according to the middle exchange rate of CNB.

[6] On www.cijenegoriva.info prices of fuel at gas stations across the Croatia are published, which vary at individual stations, depending on the pricing policy of the company.

Figure 1
Movement of maximum prices of diesel and petrol compared to price of Dated Brent crude oil in the period 2010-14, in HRK per liter of fuel



Source: The Ministry of the Economy (2015), EIA (2015a), authors' adjustment

The average maximum retail price of diesel in the observed period stood at 9.07 HRK/l, and of petrol at 9.65 HRK/l[7]. Price trends of oil products basically followed the movement of Brent prices, since the price of oil products is closely linked to the price of crude oil. Oil products and crude oil reached their highest prices in April 2012. While the average price of crude oil was about 120 USD per barrel (the equivalent of 4.3 HRK/l), the average price of petrol was 9.93 HRK/l and diesel 9.38 HRK/l. There was a somewhat lower crude oil price in June 2014 (3.93 HRK/l). The price of petrol was then 9.93 HRK/l and of diesel 9.38 HRK/l.

As stated before, in the retail prices of petrol and diesel, two components of the government budget revenues were contained: excise duty and VAT[8]. Excise duty is a special form of tax, which is calculated on petrol and diesel fuel in an absolute amount per unit of product (1,000 liters at the temperature of +15 C). In other words, for every 1,000 liters a fixed price is paid regardless of the retail price of fuel. The amount of excise duty together with other elements (purchase price of feedstock, dependent costs, margin, etc.) enters the tax base for calculation of VAT at the general rate of 25%. Table 1 shows the movement of excise duties on petrol and diesel fuels in the period from 1994 to 2014.

An act on a special tax on oil products was applicable from July 1, 1994 until the beginning of 2010. In the period of 2002-10, the absolute amount of the excise duty decreased. In 2010 Croatia had gradually started harmonizing with the EU legislation, so it enacted the Excise Duty Act, which among other things regulates excise duty on energy sources[9]. The Act has been changed several times and the rates of excise duties have changed on several occasions by separate regulations[10]. In January 2010 excise duties were increased significantly to 72% for gas and 120% for diesel fuel. After a slight drop in 2011, excise duties started gradually increasing which is partly a result of compliance with the minimal excise rates in the EU (for example in diesel fuel), but it was mainly about fiscal motives, i.e. to provide a rise in

[7] The term "price of diesel and petrol" hereinafter refers to the price of oil products Eurodiesel BS and Eurosuper 95 BS.

[8] Besides the excise duty, by the end of 2012 fuel prices included a fee for financing the work of the Croatian agency for compulsory stocks of oil and oil products (HANDA) and the amount for each year was separately defined by decisions. Since the January 1, 2013 Act on Amendments of the law on oil and oil products (OG 144/12), the Agency's work has been financed from the government budget.

[9] Excise Duty Act regulates the so-called harmonized excised duties, i.e. the excise duty on the product group (alcohol and alcoholic beverages, tobacco and energy products), for which the legal framework was adopted on January 1, 1993 in the establishment of the EU common market.

[10] In addition to increasing excise duties on motor fuels with the new Excise Duty Act from 2013, the taxation of natural gas, coal, coal and electricity was introduced.

budget revenue. The last increase of excise duties was in April 2014 when the excise duty for motor gasoline increased from 3.46 HRK/l to 3.66 HRK/l and for diesel fuel from 2.66 HRK/l to 2.86 HRK/l. These amounts of excise duty are higher than the minimum excise duty prescribed by the EU, which amount to 2.74 HRK/l for petrol and 2.52 HRK/l for diesel fuel[11].

Table 1

Excise duties on petrol and diesel fuels in period from 1994 to 2014, in HRK per liter of fuel

Start of application	Unleaded petrol	Diesel fuels	Source
1 July 1994	1.60	1.40	Act on special tax on oil products (OG 51/94)
1 July 1999	1.80	1.60	Act on Amendments of the Act on special tax on oil products (OG 67/99)
1 July 2000	3.00	2.10	Act on special tax on oil products (OG 55/00)
October 2000	2.40	1.50	Act on Amendments of the Act on special tax on oil products (OG 101/00)
1 January 2002	1.90	1.00	Act on Amendments of the Act on special tax on oil products (OG 27/01)
1 May 2007	1.65	1.00	Regulation on the amount of special tax on oil products (OG 44/07)
1 January 2010	2.85	2.20	Excise duty act (OG 83/09)
1 September 2010	3.10	2.20	Regulation on excise duty amount for unleaded petrol (OG 102/10)
March 2011	2.95	2.05	Regulation on excise duty amount for unleaded petrol and gas oil (OG 28/11)
1 January 2013	3.151	2.354	Regulation on excise duty amount for unleaded petrol, gas oil and kerosene for fuel (OG 137/12)
2 March 2013	3.15	2.45	Excise duty act (OG 22/13)
23 July 2013	3.36	2.56	Regulation on excise duty amount for unleaded petrol, gas oil and kerosene for fuel (OG 93/13)
3 September 2013	3.46	2.66	Regulation on excise duty amount for unleaded petrol, gas oil and kerosene for fuel (OG 109/13)
April 2014	3.66	2.86	Regulation on amending the Regulation on excise duty amount for unleaded petrol, gas oil and kerosene for fuel (OG 48/14)

Source: authors' adjustment

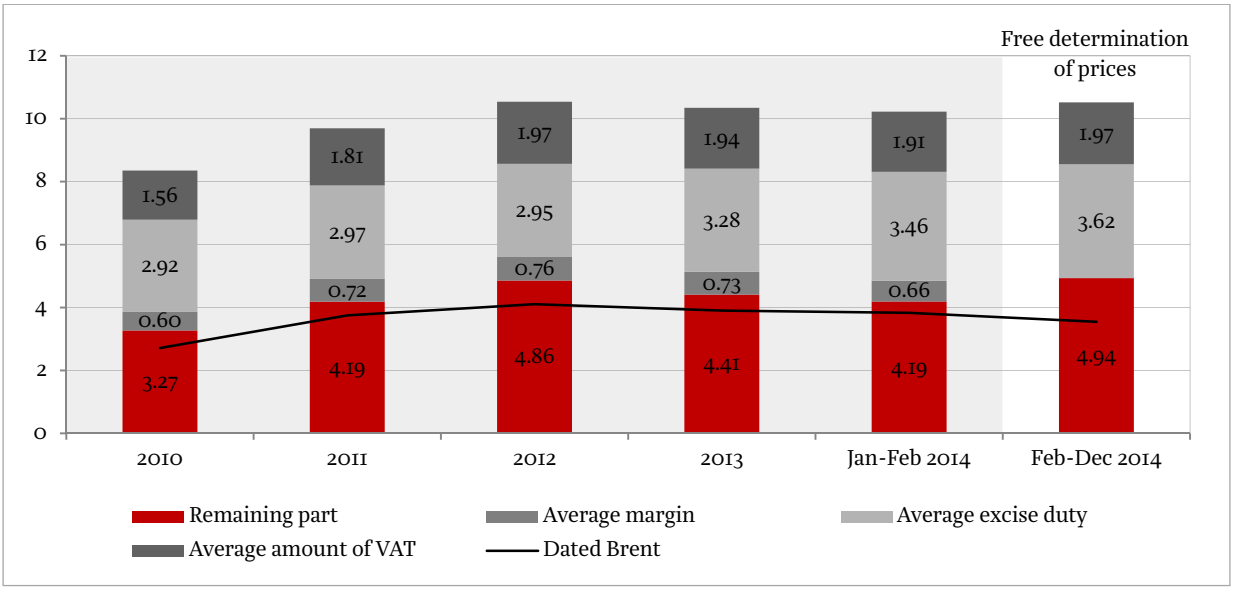
A part of the revenue from excise duties of oil and oil products has a strictly specified purpose. Out of every liter of petrol or diesel fuel, taxpayers pay exactly 1 HRK for financing the construction and maintenance of public roads (Highway Act, art. 91 – OG 148/13), from which 20 lipa (lp) goes to the account of Croatian Highways Ltd. (HAC) and 80 lp to the account of Croatian Roads Ltd. (HC). An additional 20 lp from every liter of fuel bought by taxpayers goes to pay for the financing of the railway infrastructure (Railway Act, art. 21.a – OG 94/13, 148/13) which goes to the expense of Croatian Railways Infrastructure Ltd.

Bajo and Petrušić (2014) state that the liabilities of road companies are big and could not be financed without support from the state budget. Financial risks of road companies are high due to their high indebtedness. If the proposal to monetize HAC is not accepted (which is very likely, considering the negative public perception), it is very likely that the funding of HAC will be provided by an additional rise in the excise duty on motor fuels.

If the total price of oil products in the period of regulation of retail price is separated according to regulations that were applied to the amount of VAT, excise duties and margins, the structure shown on Figures 2 and 3 is obtained. The remaining part refers to the sum of accrual basis and other prescribed fees and costs, which were not singled out separately here.

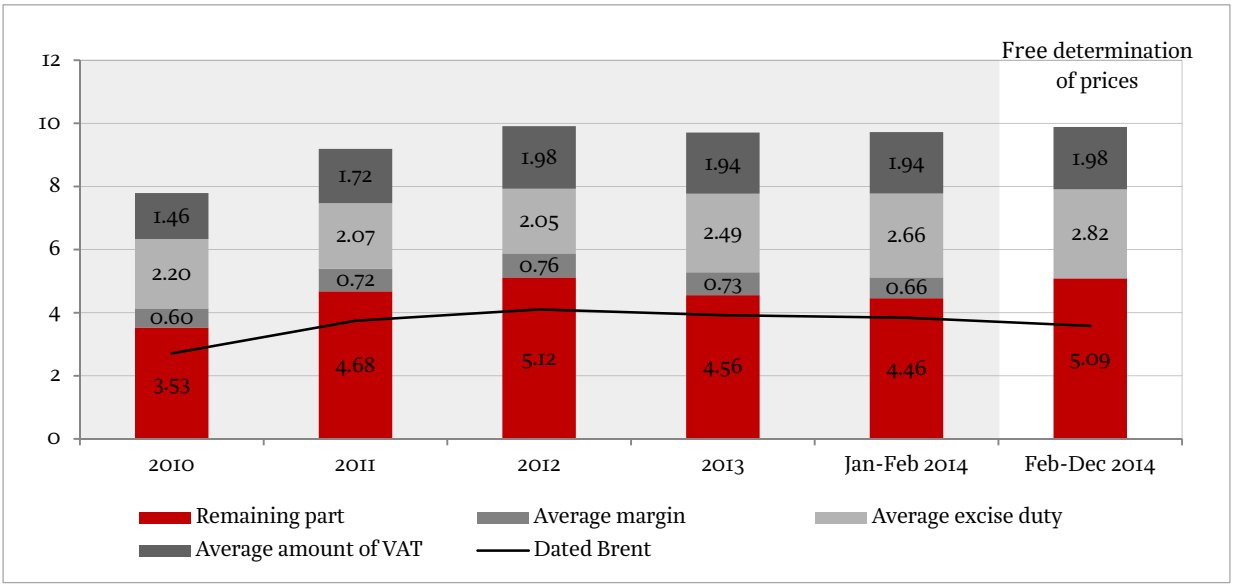
[11] Minimal amounts of excise duty prescribed by Directive 2003/96/EC were converted to HRK/l for the sake of comparability.

Figure 2
Structure of retail price of petrol Eurosuper 95 BS in period 2010 to 2014, in HRK/l



Source: The Ministry of the Economy (2015), EIA (2015a), authors' calculation

Figure 3
Structure of retail price of diesel Eurodiesel BS in period 2010 to 2014, in HRK/l



Source: The Ministry of the Economy (2015), EIA (2015a), author's calculation

Of the total price of Eurosuper that the end buyer paid at petrol stations in the period 2010-14, state levies (excise duty and VAT) on average, accounted for 48-52% of total retail price. Since the amount of excise duty is paid per liter, it is independent of the movement of prices of crude oil or oil products on the market, so with the change of retail price, the share of taxes in total retail price was altered as well[12]. On average, the margin ranged between 60 and 76 lp/l, which is approximately 8% of the total price. The initial amount of the margin of 60 lp/l was increased to 76 lp/l by the Ordinance for determining the highest retail price of oil products (OG 37/11) from April 2011, since the accrual basis omitted the cost of storage and manipulation. In September 2013, the margin for petrol and diesel fuels was reduced

[12] This situation is quite common in the world. That is shown by the Newbery (2005) analysis according to which in 1981 (when oil prices were high) the average tax rate on oil products in the European OECD countries was 41% and in 1994 (when oil prices were extremely low) it reached 200%.

to 66 lp/l, while the movement of margins cannot be precisely determined for the period of free price determination.

The situation is almost the same with diesel. Excise duty and VAT on average accounted for 44% of the total price, mainly because the excise duties on diesel are lower than the excise duties on petrol. The same absolute amount of margin on average makes up 7% of the total price. The amount of excise duty had grown 30% in 2014 since 2010. The prescribed absolute amount of margin was the same as for motor petrol and it accounted for on average 7% of total price.

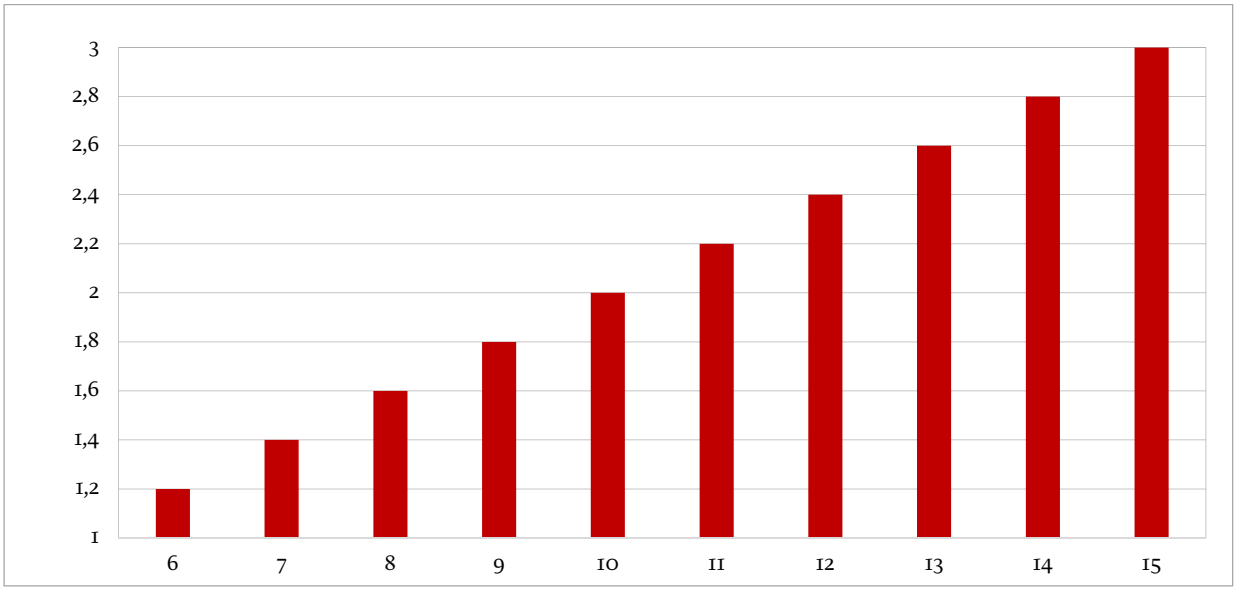
The amount of excise duty in principle moved in the opposite direction to the movement of crude oil. When there was a significant increase in the price of crude oil and therefore of oil products, the government used to intervene by reducing the excise duties and vice versa.

The New Act of Oil and Oil Products (OG 19/14) prescribed that energy entities are free to determine the margins, which were up to that point fixed and equal for diesel fuels and petrol. Since then, the amount of the margin has been very difficult to determine. The prices of products can vary at certain gas stations, depending on the pricing policy of that company, so in theory they are subject to change at any time, and oil companies are no longer obliged to publish fuel prices. Exceptionally, in order to protect consumers, regulate the market or in some other justifiable reasons, the government can prescribe by a regulation the highest level of retail price for certain oil products, for a continuous period of no longer than 90 days.

ASSESSMENT OF THE IMPACT OF LOWER FUEL PRICES ON GOVERNMENT BUDGET REVENUES

The retail price of petrol on 8 March 2015 was 9.51 HRK and of diesel 9.01 HRK. These prices are 9.8% lower in the case of petrol and 9.6% lower in the case of diesel than the average retail prices for the same products in 2014. The average price of Eurosuper 95 in 2014 amounted to 10.50 HRK, and the price of Eurodiesel was 9.87 HRK.

Figure 4
VAT amount depending on the retail price (in HRK)



Source: Authors

The key question from the point of view of this paper is how the lower prices of oil products affect the government budget revenues. In order to be able to answer this question, one should recall that the budget collects two types of revenue from oil and oil products: excise duties and VAT. As shown in Table 1, the amount of excise duty is determined per liter (or 1,000 liters), so it is completely independent of

the change of price of oil on the market, depending solely on the consumption of oil and oil products. In other words, for every liter of fuel put in the tank at a gas station, the government collects a specific amount of excise duty (3.66 HRK for petrol fuel and 2.86 HRK for diesel fuel), regardless of whether the retail price of fuel is 8, 10 or 12 HRK/l.

On the other hand, government budget revenues from VAT significantly depend on the retail price of fuel. Exactly 20% of retail price consists of VAT, so when the retail price of fuel falls, the VAT revenues fall as well, and vice versa. Figure 4 shows the amount of VAT obtained depending on the fuel retail price.

It is clear from Figure 4 that a higher retail price of liter of fuel means higher VAT revenue. However, the figure should be seen from a broader perspective, taking into account at least three things: price elasticity of demand, the effect of redistribution and general government budget own expenditures.

PRICE ELASTICITY OF DEMAND

Prices are the direct and comprehensive cost of the good or service. Transportation price may include actual monetary costs (fuel, maintenance), but also non-monetary costs and benefits such as time savings, comfort, risk and similar[13]. Changes in fuel prices can therefore influence – for instance – the frequency of travelling, direction, way, destination, type of transport means, parking place etc. (Litman, 2013). The effects of price changes on the changes of consumer behavior are usually measured by coefficient of elasticity, as defined by the following formula:

$$E_{D,P} = \frac{\frac{\Delta D}{D}}{\frac{\Delta P}{P}} = \frac{relative\ change\ of\ demand}{relative\ change\ of\ price}$$

The coefficient of elasticity described by the formula above expresses how much in relative terms (in percentages) the demand changes for a particular good, if the price of good is changed by some percentage. For example, the elasticity of -0.1 means that a price increase of 10% reduces the demand by 1%[14]. The price elasticity of demand depending on the price is – at least theoretically – always negative, meaning that upon a price decrease, the demand for some good will always rise, and vice versa.

Litman (2013) reports the results of numerous studies according to which short-term price elasticity of demand for fuel are at the level of -0.25, while long-term elasticities are somewhat higher, on average -0.6. That means that the demand for energy products is actually inelastic and that changes in price lead to a minor relative change in demand (e.g. a 10% decrease of fuel prices leads to a growth in demand of 2.5% in the short term and 6% in the long term). Based on the simple calculation the net effect on the Croatian government budget can be determined (Figure 5).

Calculated net effect on government budget implies a direct drop in revenues from VAT due to the fall of the retail price and additional revenues from VAT and excise duties because of rising consumption[15].

[13] Non-monetary costs and benefits denote those costs or benefits whose actual value is not expressed in pure monetary units. For example, it is impossible to determine accurately how much a saving of one hour or a lower risk of a traffic accident is worth.

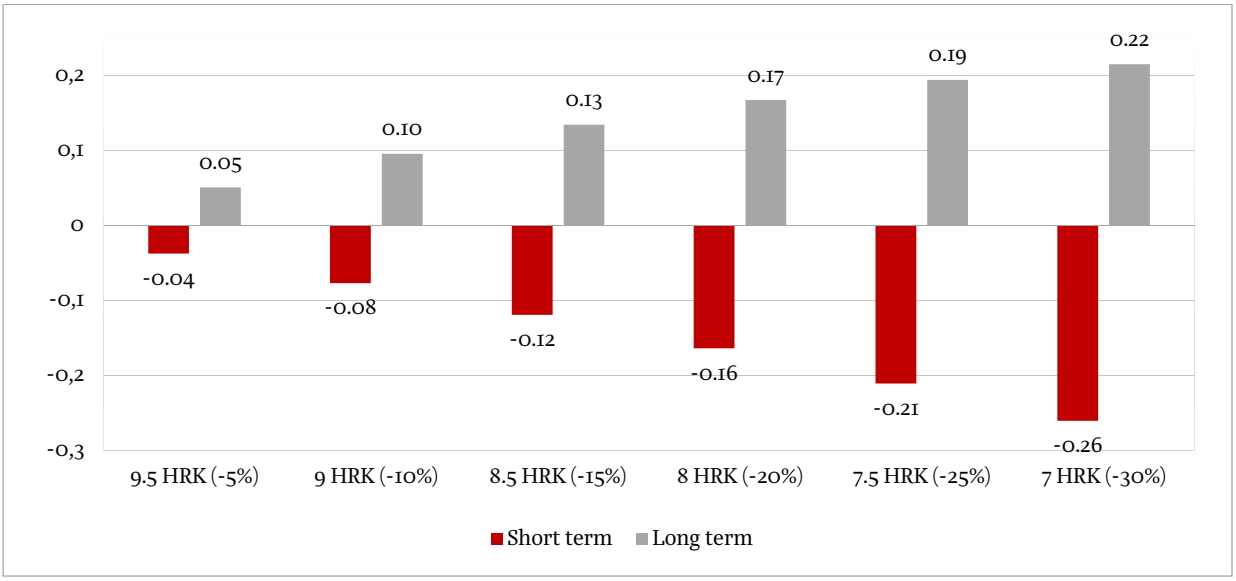
[14] Calculated from the formula: -0.1x10%=-1%.

[15] For example, let us imagine that in case of stable prices the consumption is 100 liters of fuel. Due to the price fall from 10 to 9 HRK (10%), the government revenues from VAT at 100 liters are 20 HRK lower. However, the price fall affects the growth demand of 2.5% in the short- and 6% in the long-term. That means that from 100 liters consumed with stable prices, an additional 2.5 liters would be consumed in the short-term upon a price fall of 10%, or 6 liters in the long run. On this additional spending, VAT of 1.8 HRK/l and excise duty of 3.13 HRK/l (weighted average of the excise duty on unleaded petrol and diesel fuel where unleaded petrol accounts for weighting of one third and diesel of two thirds) is paid. In short-term, the government gets an additional 4.5 HRK from VAT and 7.83 HRK from excise duty, which implies a net cost of 7.68 HRK per 100 liters (-20+4.5+7.83) or 8 lp/l. In the long run, the situation is significantly better because the government gets an additional 10.8 HRK from VAT and 18.75 HRK from excise duty, which gives a net benefit of 9.58 HRK per 100 liters (-20+10.8+18.78) or around 10 lp/l.

The simulation shows that the decline in fuel prices leads to a short-term shortage of budget revenues from VAT, which is dependent on retail price. A price fall of 10% (from 10 to 9 HRK) implies a net loss of 8 lp/l, a drop of 20% means 16 lp less in the budget per liter of fuel and 30% price drop means 26 lp less[16].

However, in the long term, the picture changes significantly and thus a drop in fuel price of 10% in the long run leads to a net increase in revenues of the budget of 10 lp/l of fuel. A price drop of 20% means 17 lp more and a 30% price drop leads to as much as 22 lp more revenue in the budget per liter.

Figure 5
Simulation of net costs/benefits for the government budget depending on the fall of retail prices (starting price of 10 HRK), in HRK per liter of fuel for the consumption as in stable prices scenario



Source: Authors

The used estimates of elasticity are a summary of the research results for some other markets that are different from the Croatian (USA, Europe), and the authors have no knowledge of whether there is any recent study for Croatian market. Therefore, it makes sense to doubt the correctness of these results, which significantly depend on the elasticity of demands depending on the price. Marginal coefficients of elasticity of demand for oil products depending on the retail price, which should apply so that the net fiscal impact of a price fall should be neutral (equal zero), are coefficients such that the decline in revenues from VAT due to a lower retail price of fuel will be fully compensated for by revenues from excise duties and VAT due to the increased demand. Simulations show that the marginal elasticity coefficients for Croatia are at the level of around -0.4%.

The main shortcoming of these analyses is that they do not include assessments of secondary effects, such as rising profits of oil companies due to increased sales, profit growth of companies that supply the distribution network due to lesser costs of business, but also the fall in profit of carriers due to the substitution of public transport (train, tram, bus) by personal car etc[17].

[16] "Per liter of fuel" actually always in these simulations means "per liter of fuel" spent in the scenario of starting prices of 10 HRK.
[17] Assuming that the price reduction is not reflected in lower product prices, which usually is not the case.

THE EFFECT OF REDISTRIBUTION

Starting from the assumption that all individuals are dealing with a certain income that they spend on various goods and services, the effect of redistribution is an essential component, which should be kept in mind when considering the lower revenue from VAT due to the fall in the price of fuel. Namely, if an individual, due to the lower price, spends on fuel 100 HRK per month less than before, that amount will be spent on some other goods and services and it will also include paying VAT, probably at the general rate[18]. It can be concluded that the decrease of fuel price for the most part only leads to redistribution of revenues from VAT. If a decrease in revenues from VAT occurs due to consumption of goods or services to which the reduced rate is applied, then this reduction is negligible.

GENERAL GOVERNMENT BUDGET OWN EXPENDITURES

Keeping in mind that the public sector is also one of the consumers of oil and oil products, lower fuel prices are favorable for reducing the expenditure side of the budget. For every kuna of lower fuel price the net effect on the public sector is positive and it amounts to 80 lp, because under the assumption that unchanged fuel consumption in the public sector reduces budget expenditures by exactly 1 HRK (the price of fuel is lower by 1 HRK), at the same time lower revenue from VAT of only 20 lp is recorded.

The total net benefit for the public sector cannot be adequately estimated, because data on the total consumption of oil products by the public sector is not publically available; the most detailed view of expenditures of state and local budgets and extra-budgetary funds is at the section level (section 3223 energy), which in addition to expenditures for petrol and diesel fuel (basic account 32234) also includes expenses for electricity, hot water (district heating), gas and other materials for energy production (coal, wood, heavy oil, etc.).

From all the explanations listed above, it can be concluded that the lower retail price of fuel should not have significant negative effects on the budget, since the lost revenue from VAT will be compensated for by increased consumption, redistribution of VAT revenue, and lower costs of the public sector for petrol and diesel fuels.

FUEL PRICES AND EXCISE DUTIES IN THE EU

At the beginning of 2015 the average price of petrol in all EU member states amounted to 1.22 EUR, but prices considerably vary by countries. For example, on 14 January 2015, the price of petrol was the lowest in Poland (0.93 EUR) and the highest in the Netherlands (1.56 EUR), i.e. 67% higher than in Poland. The retail price of petrol in Croatia (1.12 EUR) is slightly lower than EU average[19].

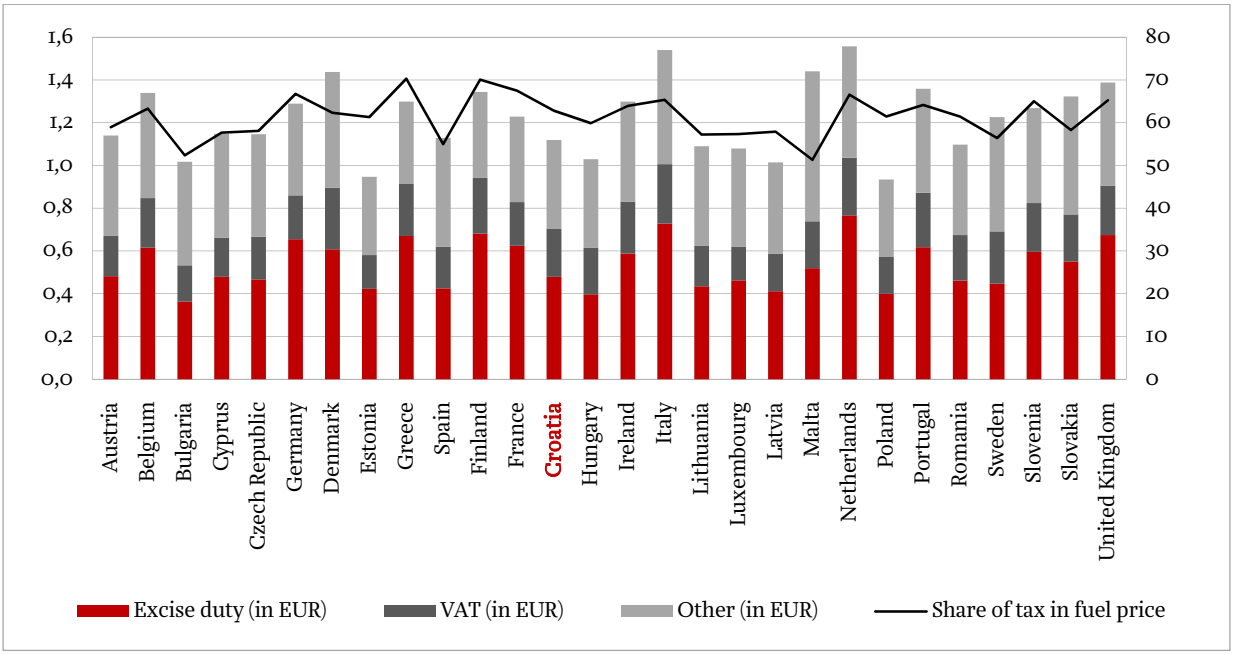
On the same day, the average price of diesel in the EU amounted to 1.16 EUR. The lowest price was recorded in Poland (0.95 EUR) and the highest in the UK (1.49 EUR). When it comes to diesel, the difference between the highest and the lowest price is slightly lower than that for petrol (the price in the UK is 56% higher than in Poland). In Croatia the price of diesel fuel was 1.07 EUR, which is also slightly lower than the EU average.

[18] Although there are reduced rates of VAT, they are applied to basic goods such as bread, milk, baby food etc. that are assumed to be consumed in identical amounts regardless of the increase or decrease of available income.

[19] If gasoline prices are expressed as a ratio to the living standard of citizens, i.e. if they are divided by GDP per capita (in EUR), according to purchasing power standards (Eurostat, 2015), the real calculated price of petrol is derived. Real prices are expectedly significantly less favorable in countries with low standards of living compared to the EU average. The real price of petrol is the highest in Bulgaria, Romania and Croatia. For example, the real price of petrol in Croatia is about twice as high as in Austria, and 20% higher than in neighboring Slovenia.

Figure 6

Comparison of the structure of the price of petrol within the EU (in EUR, left scale) and the share of excise duty and VAT in petrol retail price (in %, right scale), situation at 14 January 2015

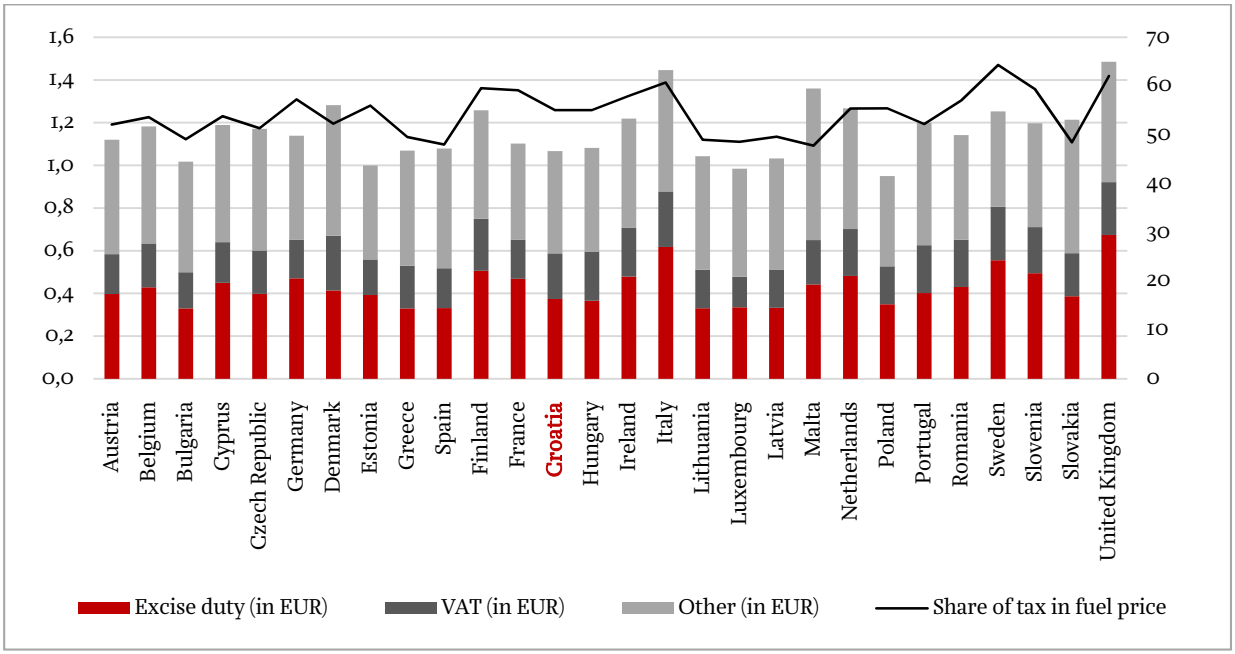


** The amount of excise duty and VAT rate applicable at 1 January 2015.*

Source: Fuel Prices Europe Info (2015); European Commission (2015); author's calculation

Figure 7

Comparison of the structure of the price of diesel within the EU (in EUR, left scale) and the share of excise duty and VAT in diesel retail price (in %, right scale), situation at 14 January 2015



** The amount of excise duty and VAT rate applicable at 1 January 2015.*

Source: Fuel Prices Europe Info (2015); European Commission (2015); author's calculation

Fuel prices differ mainly due to the application of different rates of excise duties and VAT. There is only Directive 2003/96/EC, by which only minimum excise duty rates are regulated at the level of the EU – 359 EUR per 1,000 l for petrol and 330 EUR per 1,000 l for diesel fuel. So it is evident that there are numerous differences among EU member states in the application of excise duties. Since the VAT in the

price of motor fuels is paid at the standard rate, part of the difference comes from the application of different rates of VAT. Some countries also apply additional taxes on fuel to discourage the consumption of fossil fuels. These different taxation policies lead to different price levels of motor fuels. Figures 6 and 7 show the structure of the petrol and diesel prices by EU member states and the tax share in the retail price of fuel.

Out of the 1.22 EUR average retail price of petrol in the EU, on average 43.6% is accounted for by the excise duty and 17.7% by VAT. Accordingly, in the retail price of fuel in the EU on average 61.4% refers to taxes, which go into national budgets. In Croatia, the tax share in retail price of petrol is only slightly higher than the EU average, making up approximately 62.8%. Although the share of excise duty in Croatia is slightly below the EU average, the higher share of taxes in the retail price of petrol comes from the relatively high rate of VAT (25% versus 21.6% in the EU average). The highest tax shares in the retail price of petrol are found in Greece (70.3%) and Finland (70%), and the lowest in Malta (51.3%) and Bulgaria (52.4%).

The average retail price of diesel in the EU amounts to 1.16 EUR and 36.6% of it on average consists of excise duty (0.43 EUR). As with petrol, 17.7% of the retail price is the average VAT (0.21 EUR). Accordingly, on average 54.3% of the retail price of diesel in the EU refers to taxes, which fill government budgets. Croatia is in this case also at the EU average level (55.1%). The highest shares of taxes in the retail price of diesel are paid in Sweden (64.3%) and the UK (62.1%), while the lowest are found in Malta (47.8%) and Spain (48%).

Comparative analysis shows that the price of fuel in Croatia is slightly lower than the average of EU countries. Every liter of petrol sold produces 39 lp less for the Croatian budget (from excise duty and VAT) than the EU average, and every liter of diesel also produces 35 lp less. Nevertheless, the real price of fuel for Croatian citizens is more expensive than for the citizens of other EU Member States, mainly because of the lower standard of living and the high rate of VAT.

There is another dimension in all of this, which is of particular importance in the last couple of years and it requires a few more sections in this paper. It is about the effective spending of energy resources. The increase of energy efficiency is among the key objectives of European development strategies (Europa 2020[20] and Energy 2020[21]) and the measures for a transition to a competitive low carbon economy by 2050. Climate and energy strategies for the period until 2020 are better known as "20-20-20" and at the EU level they set three key goals for 2020, and that is a 20%

- Reduction of emission of greenhouse gases from the 1990 level;
- Increase in the share of energy consumption from renewable sources;
- Improvement of energy efficiency.

Achievement of these goals of increasing the energy efficiency at the EU level is only possible with an adequate contribution from all member states, which is why the EU legislative framework is binding on all states. By joining the EU, Croatia has committed to apply the *acquis communautaire* and assume the obligation of achieving the goals of increasing energy efficiency by 2020.

Of the total direct energy consumption and emission of CO2 in Croatia, traffic accounts for approximately 30%, almost 90% of this relating to road transport (IRMO, 2013). It should be examined whether, and to what extent, the taxation of energy products with excise duties contributes to the stabilization of prices and the promotion of the efficient use of energy resources. In the report of the

[20] Europe 2020 is a strategy of economic growth of the EU for the period until 2020, in order to develop a smart, sustainable and inclusive economy which will provide high levels of employment, productivity and social cohesion.

[21] Energy 2020 is a strategy of European Commission (2010) which sets goals of competitive, sustainable and safe energy, and defines priorities which include energy savings, development of the market with competitive prices and secure supplies, development of technology and negotiations with the exporting countries.

European Parliament (2014) a number of guidelines were defined by which the authorities are able to minimize the effect of change of oil prices on energy prices:

- Avoiding any decrease of the tax/excise duties on energy products upon an increase of oil prices. Short term mechanisms of tax reduction can be applied, but only if targeted to low-income households.
- To determine a tax rate that will encourage lower demand for oil products;
- Encouragement of the use of alternative fuels in transport for further reduction of demand for fossil fuels.

Conclusion

Crude oil prices in the world market in the second half of 2014 recorded a significant decline, which led to the fall of retail prices of fuels on the Croatian market as well. Oil importing countries, including Croatia, could significantly benefit from the fall of oil prices. It is anticipated that the Croatian GDP in 2015, due to relatively low oil prices, could be 0.4-0.8% higher. Citizens in particular are looking forward to lower oil prices, since the average fuel tank price went down 50 HRK from the middle of 2014.

However, not everyone is happy with the decline of fuel prices. The main goal of this paper was to analyse the impact of movements in fuel prices on the revenues of the government budget, which is considered the biggest loser. For every liter of fuel, two types of tax are paid into the budget – excise duty and VAT. Although the declines of fuel prices will not influence revenues from excise duty on petrol and diesel, since these are fixed and are accrued per liter, it will definitely tend to bring about a decline in VAT revenues. However, the analysis conducted in this paper shows that the long-term effect of the fuel price fall on the revenues of the government budget should not be negative, because:

- Lower price leads to higher consumption;
- Part of the available income is spent – instead on fuel – on some other goods and services;
- Government own revenues from VAT are lower, but also own expenditures for cost of fuel are lower, whereby the net effect is positive.

Comparative analysis shows that the fuel price in Croatia is slightly lower than the average of EU countries. For each liter of petrol in Croatian budget (from excise duties and VAT) goes 39 lp less when compared to the average of all EU countries, and 35 lp less per every liter of diesel. From each liter of petrol bought, 39 lp less (from excise duties and VAT) goes to the Croatian budget than the EU average and 35 lp less from each liter of diesel. Nevertheless, the real price of fuel for Croatian citizens is more expensive than for the citizens of other EU member states, primarily because of the lower standard of living and high rate of VAT. An additional increase of excise duty might be necessary and justifiable if the proposal to monetize HAC is not accepted (which is very likely because of the negative public perception) and in such a case the revenues collected could be dedicated to the financing of future maturities of HAC liabilities.

Increasing energy efficiency is among the key objectives of European development strategies, and in traffic/transportation accounts for 30% of total direct consumption of energy and emission of CO_2 in Croatia. Thus, in the transport sector there is an enormous potential for the more efficient spending of energy resources. A gradual transition to a more energy-efficient society is a long-term process; there is a need for further investigation to see if this can be brought about with a combination of incentives for consumption of alternative fuels and the gradual demotivation of consumption of fossil fuels by higher excise duties.

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