



Munich Personal RePEc Archive

Gasoline price as social phenomenon

Kossov, Vladimir and Kossova, Elena

Research University Higher School of Economics, Research
University Higher School of Economics

30 July 2013

Online at <https://mpa.ub.uni-muenchen.de/48720/>
MPRA Paper No. 48720, posted 31 Jul 2013 18:48 UTC

GASOLINE PRICE AS SOCIAL PHENOMENON

The English translation of "Ekonomicheskaya Politika (Economic policy)," 2010. Is.1;
P.149-166

Vladimir V. Kossov¹; Elena V. Kossova²

Research University Higher School of Economics, Moscow, Russia

2013

¹ Professor , email: kossov3@yandex.ru

² Ph.D. in mathematics, lecturer, email: e_kossova@mail.ru

Abstract

The gasoline price transform into the social phenomenon by its role in economy. For the state, it is a source of budget revenue through indirect taxes, which in majority of countries make up most of the price. The upper bound of a gasoline price is limited by risk of mass protests. For the citizens a gasoline price affects the cost of living. The lower bound of this price is limited to possibility of the authorities to subsidize it. Balances of interests of the authorities and citizens are estimated for the gasoline prices deviating from the normal.

Normal gasoline prices are offered as standard, with respect to which of the actual prices can distinguish high and low. We propose an econometric model for the estimation of the normal price. The analysis of the results of estimation is presented for 97 countries and the data for 2000, 2004 and 2006. Showing the problems emerging in Russia

JEL classification:

C23; E37; H2; Q48

Key words: gasoline price; normal price; budget revenue; oil rent; benefits and loses; mass protests

1. Statement of problem.³

A comparison of prices for various goods worldwide (with a conversion of national currencies into the US dollars by the market exchange rate) shows that for most part of the goods a relation of a maximum to minimum price is 1:10. It is determined by a difference in marginal costs for production and disposal of goods at the markets of these countries. The gasoline price is a different thing, for which this relation reaches 1:100. We have to point out that the aforesaid does not refer to an average gasoline price but its one grade, namely “super” gasoline

Such a great increase of the price dispersion (from 10 to 100 times) is caused by the fact that the differences in operational costs and gasoline marketing are imposed with strong differences in gasoline taxes across the countries. The gasoline excise tax is one of the main instruments of withdrawal to the oil rent budget. The countries importing oil have a high excise tax for gasoline and diesel fuel. In the majority of the countries exporting oil a considerable part of benefits from oil extraction is transferred to the users through low prices for motor fuel in kind. For example, in 2006 a price of 1 liter of super gasoline in Eritrea was 190 US cents, and in Turkmenistan was only 2 cents⁴.

A unique position of gasoline and diesel fuel as excisable goods becomes obvious when comparing for example with a trading range for Marlboro cigarettes countrywise, which constituted 20 times (18 times in 70 countries in 1991, and 23 in 85 countries in 2007).

The main difference of motor fuel from other excisable goods is that a demand for them within a short-term period is virtually nonflexible, and therefore, a price rise above a definite level forces people to hit the bricks. The property of the motor fuel price as a social phenomenon was clearly demonstrated in September 2000 in Europe, when law-abiding Europeans became to block ports and petroleum refineries Grinning Planet (2007). For this reason a relation of the government to a growth of prices for motor fuel in Russia shall be especially careful.

The aforesaid is a background on which one can assess not only the current status of gasoline prices in Russia, but also identify the way to proceed. The selection of the way is an exclusive right of the elite, but its approval or rejection depends on the electorate.

³ The article sets forth results of the investigation performed within the fundamental research program SU- HSE in 2008-2009.

⁴ All data on gasoline pump prices are taken from reviews of the German company GTZ.

The article consists of four parts. The first part addresses the main reasons for different prices for motor fuel among countries, namely, different proportions in distributing benefits from using motor fuel between the budget and its consumers. An instrument is proposed which allows to measure with a high accuracy a relation between the price and economy status of the country. The second part of the article sets forth calculations for 97 world countries for 2000, 2004 and 2006. The third part addresses a brand new phenomenon, namely massive protests worldwide against price growth for motor fuel, and makes a conclusion which can be made based on the phenomena analysis with respect to the future of democracy in Russia. The fourth part evaluates benefits and losses for Russia in implementation of various options of gasoline policy.

2. The price level.

The notion of “price level” is introduced in the article of Kossov (2005). By a price level (Z) is meant a relation of good price (P) to GDP per capita (Y) in prices of the same year. In calculation of the factor by countries:

$$Z \equiv P/Y \quad (1)$$

From (1) it follows that at one and the same price of fuel in two countries the price levels will be different due to different values of GDP per capita.

A great advantage (1) is an elimination of uniform inflation, that significantly simplifies a comparison of data referred to various periods. Let us draw our attention to the fact that prices relating to the same dates are used in the numerator and denominator (1), that makes it possible to cancel them. The price level Z can be decomposed to a product of two multipliers, the first of which is determined by rules common for all countries, it can be called “international component of price level”. The second multiplier is found by residual principle as a relation of the good price level to a value of the international component and is called “national component of price level”. An important condition for calculation of values of the international component is one and the same set of rules for its calculation. A specific set of these rules defines a form of implementation of the international component. It should be noted that there may be several of such forms. For selecting the best form it is necessary to enter at least one additional condition, for example, requirement for the best adjustment of the result to the fact, that necessitates the use of econometric models.

By definition,

$$\text{Price level} \equiv \text{International} \times \text{National} \quad (2)$$

$$\text{or } Z = \text{Int} \times \text{Nat}$$

Let us draw attention to the degree of the built measure by the example of fuel price:

$$[\text{dollar/liter}] / [10^3 \text{dollars}] = [\text{population} / 10^3 \text{liters}] \quad (2-a)$$

The idea (2-a) is to indicate the number of people which demands directly or indirectly are satisfied by 1000 liters of gasoline. They are satisfied directly through its procurement at the gas stations and indirectly through consumption of other goods, for which production and transportation gasoline was used. The aforesaid means that by its value this indicator is opposite to «per capita consumption of goods», which in each country is often calculated as a relation of the volume of apparent consumption of goods (a sum of production and import with the deduction of export) to the population size.

The decomposition of the gasoline price level into components (2) is significantly facilitated thanks to the International rating company GTZ (2007) , systematizing super gasoline prices in 171 countries as of the early November by even years.

Let us call the good price calculated for the country based on the international component of the good price level as a normal price of good price for the country (hereinafter referred to as normal price)

$$\text{NPice} = \text{Int} \times Y \quad (3)$$

For demonstrating advantages of the developed approach to price analysis by countries Figure 1 combines two notions with regard to them, namely, usual (US cents for 1 liter, transparent markers) and new price levels (painted markers). The values of both indicators are plotted on the coordinate axis (for scale compatibility the logarithms of price levels are multiplied by 10). GDP values are plotted along the X axis per capita per purchasing power parity in thousands of US dollars, further GDP per capita per PPS, and logarithms of these values (V) also multiplied by 10.

For each of two data arrays regression lines are constructed by arbitrary data which hereafter will be called “trends”, emphasizing that a transfer from a country with a lower income per capita to a richer country is similar to a time motion at continuous growth of economy. The equations of arbitrary regression lines, trends are provided on the plot. The top equation refers to prices, the lower equation refers to logarithms of price levels ($10 \ln Z$)⁵. The information presented on the plot gives evidence of significant differences between two data arrays defining gasoline prices.

The first difference is their opposite direction. For gasoline prices (upper part of the figure, blue markers) the trend is growing, and for logarithms of price levels (painted markers) the trend is decreasing.

⁵ $10 \times \ln z$ means that for location on the Y axis values of the algorithm of price level are multiplied by 10.

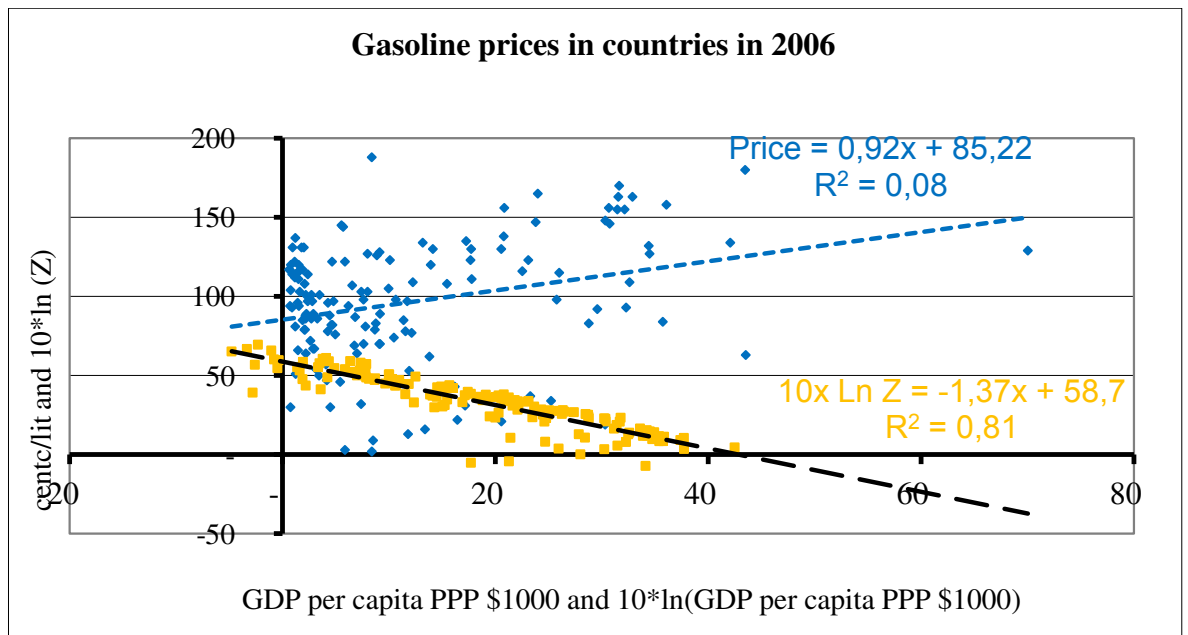


Figure 1.

The second significant difference between pixel arrays consists in a fundamentally different high correlation ratio: in a usual notion (the upper part of the figure, orange markers) the correlation is weaker by an order of magnitude than in the new notion (the lower part of the figure, painted markers): in the first case the value of coefficient of determination R^2 is 0.08 against 0.81 in the second case.

The main conclusion of the analysis is that a changed way of providing information on gasoline prices by countries radically changes the concept of price dependence on the size of the economy, for which a GDP per capita is taken based on the purchasing power parity.

2.1 Oil rent and its distribution

The specifics of prices of motor fuel transforming them into a social phenomenon is determined by the following.

1. Differences in gasoline prices across the countries in the same year cannot be explained by differences in costs of oil, its processing and logistics.

2. The motor fuel is a carrier of benefits which fully or partially monetized in a rent by the government. Among examples are a total exemption of rent into the budget in Denmark and Norway (price of 1 liter of gasoline in 2006 is 158 and 180 US cents respectively) or extension of benefits to the consumers via low prices thereof, namely 3 cents for 1 liter in Venezuela and 2 cents for 1 liter in Turkmenistan.

3. Exemption of benefits provided by using hydrocarbons to the budget is carried out through oil and gas specific taxes. In separate countries these taxes constitute the major part of the gasoline price. Via these taxes the government has an effect on the inflation.

4. In contrast to other excisable goods, alcohol and tobacco the use of gasoline within a short run cannot be replaced by using other goods.

5. The price of motor fuel is the most dynamic part of household spending to a car. A demand for motor fuel in the short run is not elastic, and for this reason the growth of price of motor fuel virtually cannot be compensated by reduction of other expenses for a car. For this reason there is an upper price limit, which exceedance gives rise to protests⁶. The aforesaid means that a price of motor fuel by its consequences for the life of the society radically differs from the prices for other goods, for example, bread and milk. A noticeable variation of prices of motor fuel by their consequences is far beyond the scope of satisfaction of needs in a separate good.

Distribution of benefits in oil-exporting countries

The oil-exporting countries have benefits from selling hydrocarbons and use them in their interests. As already stated, the forms of using benefits vary in a range from their collection into budget before transferring a considerable part to the consumers at symbolic prices. The extreme form of providing benefits to the population is a pre-election promise of the President of Iran Ahmadinejad saying that in case of election win, he will undertake a release of special "oil bonds", which will allow each citizen of the country make profit from oil sells.

The instruments by which the rent is collected into the budget are oil and oil products specific taxes, which can be incorporated into three groups.

The first group is a tax to adjust wholesale prices of crude oil. A zero rate of tax is applied to oil made at an oil field with the highest costs of production and delivery from the wells to the collecting point. Such oil fields are called marginal. Crude oil production at all other oil fields is liable for a tax which value theoretically equals a difference of expenditures connected with a unit of oil made at this oil field as compared to the marginal oil field. The taxpayers are oil extracting companies. In Russia it has a form of Mineral Extraction Tax (MET).

The second group of taxes is related to the use of oil products domestically. The payers of these taxes, namely an excise tax (included in the retail price of fuel), payments for motor vehicle registration and tax for the owner of motor vehicles (possession of a motor vehicle is paid), road use tariff (use of motor vehicles is paid) are consumers. The sources of payment are incomes available to consumers, that establishes the upper tax limit for the population, i.e. maximum allowable household spending for motor vehicles.

⁶ An increase of taxation of cars planned in 2010 will reduce a marginal value of increase of price of motor fuel, which do not cause massive protests.

The third group covers an income equalization tax when exporting oil and oil products and selling them in the country. A tax is laid on a price difference, namely export price excluding a retail price net of value-added tax and expenses related to exports of goods. The taxpayers are exporters. In Russia this tax is called an export duty. This group should also cover an import duty for oil and oil products.

Specific forms of taxes, or else their tax rate depend on the country, along with each country has its own specifics of taxes, which are paid by consumers of motor fuel. The root of the matter is not in this particulars, but in the fact that through these taxes the state as an owner of the resources takes into the budget a monetized part of benefits from the use of hydrocarbons. Each part of these benefits is monetized, and which is not monetized depends on the objectives pursued by the country government.

Any government tries to strengthen a loyalty of its citizens. For this purpose it sends a part of oil money or money from any other exported resource to pay for this loyalty. Two extreme directions can be identified in the solution of this task:

- provide gasoline to the consumers at symbolic prices, as it is done in Venezuela and Turkmenistan, or provide the population with a bond to acquire income from oil, as was proposed by the president of Iran in 2009 during the electioneering;

- sell gasoline at a market price, and use the oil rent for extension and improvement of quality of state-provided services, Denmark and Norway and (or) defer its utilization for the future, having established a special fund for that⁷.

Let us assume that the second way consists of only four actions, namely, tax collection, definition and concurrence of objectives, appropriation of funds to achieve the objectives and implementation of the assigned task. Let us also assume that probability of a satisfactory outcome for each action is 90%. This means that the probability of achieving the assigned objective is $(0.9)^4 = 65\%$. It follows from this example that this is possible only in the countries with strong institutions, including institutions of civil society and with virtually a total absence of corruption. Without observing these conditions the government intention to take the rent in the budget makes to recall a popular aphorism of V.S. Chernomyrdin⁸: «We wanted to do it better, but it turned out as it usually is». And «as it usually is» means that the gasoline price will be increased, and average citizens will see no benefits. For this reason the government of the most countries, oil exporters do not push luck and transfer a part of benefits to the consumers via low motor fuel prices. A rather detailed description of the situation in various countries can be found by a reader in book «Natural rent in the Russian economy » by B. Kutsyk et al (2004).

⁷ Such funds under different names exist in 52 countries (www.dcenter.ru/pdf/2008/world_08-01.pdf).

⁸ Prime-minister in 1993-1998, known for his unusual statements.

Out of three above-listed groups of taxes only in the first and third groups the tax essence gives rise to their administration rules. More difficulties relate to the second group of taxes, excise taxes. In a democratic society the taxation policy of the government is coordinated with the interests of the electorate. R. Goel and M. Nelson (1999) review a model in which a maximum of votes of electors at regular elections was selected as an optimality criterion in defining fuel taxes. Such an approach means that fuel taxes are considered as potential originators of protests in the society. The authors of another article with symbolic title «Political economy obstacles to fuel taxation » H.Hammar et al (2004) state that the article of R. Goel and M. Nelson is the only paper with an empirical analysis of the problem known to them.

The primary cause of fuel price differences among countries, specifically among countries exporting and importing oil, is a relation to rent. As stated by D.Newbery (2005), a specifics of the fuel rent is a significant market force of exporters, the culmination of which is the existence of OPEC.

Several rent calculation procedures exist. One of the most serious procedures is published in the aforesaid book «Natural rent in Russian economy». Among other procedures we will point to the paper of M. Aoun (2006), who separated the fuel rent into several parts: monopolistic (market forces of exporters and import duties) and differential (by mining conditions, fuel quality, location of mining places, technology, i.e. new and old oil fields). An explicit analysis of the fuel rent evolution was carried out by S.Bina (2003), who also provided assessments for the USA.

Hydrocarbon benefits are resulted from their significantly higher efficiency as compared to a marginal fuel, which is usually hard coal. The rent is collected by the state through a system of fuel-specific taxes. With identical (world) price of fuel and in a proposal of identical expenses for its transportation and processing, differences among countries in terms of taxation burden define differences between them in retail prices of motor fuel.

3. Econometric model of gasoline prices over the countries

3.1 Model

Figure 1 illustrates that it is convenient to present a price level as a function of GDP per capita (PPP). To explain the directions of dynamics of gasoline prices data for three years 2000, 2004 and 2006 are used. The list of countries is determined by the availability of data for three above years for each of them. A seven-year period makes it possible to judge about the stability of the found relationships.

A gasoline price level is a main dependent variable of the model. Independent variables are presented by three groups of indicators. As adopted in the models, dependent variables in models are prices, the values of indicators are expressed in logarithms (except for time variable).

The first group of independent variables defines a value of logarithm of the international component of the gasoline price level. In equation (5) its values are enclosed in square brackets. It is designed to identify differences among the countries on the common background across the countries. The variables listed in the group shall satisfy three conditions:

1) Express specifics of economy of each country. This is achieved by using the following indicators as independent variables:

(a) a general level of country development is expressed through GDP PPP per capita (V). Already one this indicator explains a difference between the countries by a fuel price level by 77%;

(b) a relation of national currency rates, which can be interpreted as a proximity of the economy of countries to an open market, $I=V/Y$, relation of GDP PPP to its value per at current prices (Y). It varies from 0.6 for Switzerland to 7 for Ethiopia (the latter points to a very high share in the economy of non-commodity sector). For developed countries values I are close to one. The introduction of this indicator increases the exposure of information on difference of gasoline prices among countries up to 80%.

2) Characterize good specifics. For this purpose the model includes oil price at the world market (Oil). The world oil price is taken common for all countries each year.

3) Track time. For this purpose the model includes variable T taking values 1; 5 and 7 (i.e. number of the year 2000, 2004 and 2006 — minus 1999).

The second group of independent variables forms a logarithm of the independent component of gasoline price level and underlines individual specifics of the countries. In (5) its values are enclosed in the round brackets. The national component is presented by a random error and dummy variables expressing fixed effects across the countries, which are connected to a sharp difference of policy pursuing by the country government with respect of gasoline prices (conspicuous feature), from a value averaged for all countries (international component of the gasoline price level). For this purpose the model incorporates variables fixing specifics of separate countries which for each country are considered to be similar for all years. An apparent severity of this condition is moderated by a variable representing a product of a specific effect in a country for a time that makes it varying over years. Coefficients with the basic independent model variables are flexibilities of price levels for appropriate indicators. Subindices refer to countries (i) and years ($t=2000; 2004$ and 2006).

$$\ln(Z_{it}) = [a_0 + a_v \ln(V_{it}) + a_I \ln(I_{it}) + a_{Oil} \ln(Oil_t) + a_t t] + (b_{1i} C + b_{2i} Ct + \varepsilon_{it}) \quad (5)$$

The initial data on gasoline prices is provided in GTZ -2007 for 171 countries. GDP data is taken from IMF (2008). The oil price taken in calculations (dollars /barrel), for 2000 is 27.1, for 2004 is 43.0 and for 2006 is 60.2.

3.2 Evaluation of model parameters

The total number of observations is 291 (97 countries for 3 years). All three basic variables are introduced in the solution from the first group of variables, and a “time” variable turned out to be statically insignificant.

Table 1

Parameters for estimation of a logarithm of the international component of the gasoline price level

Variable	Estimated coefficient	Standardized rates
Constant	2,60	
Ln(V)	-0,99	-0,70
Ln(I)	0,68	0,25
Ln(Oil)	0,55	0,11

All coefficients are significant at a level of 1%;

$R^2=0,992$;

DW=2,06.

The stated characteristics give evidence of a high quality of the constructed model. It follows from the values of standardized rates that the second of independent variables $ln(I)$ produces a three times lower effect on the price level as compared to $ln(V)$ and has an opposite direction. The coefficient value with $ln(V) = -0.99$ means that if GDP PPP is increased by 1%, the gasoline price level decreases by 1%, that is typical for developed countries, since their value $ln(I)$ is close to zero.

Table 2 which is a sort of continuation of Table 1 provides data for fifteen countries out of 97, for which values of second group coefficients turned out to be different from zero (at a one percent significance level). It is in these countries the gasoline price levels evidently fall out from a total number of points in Figure 1. Gasoline prices for years under study are given for reference in Table 2.

Table 2

Countries with second group variables different from a zero

		Gasoline price, cents/ litre			Coefficients b_1 and b_2 in model (5) ^{*/}	
		2000	2004	2006	original	standardized
		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Median		61	84	101		
1	Algeria	27	32	32	-0,96	-0,06
2	Bahrain	27	27	21	-1,39	-0,08
3	Brunei	31	32	34	-1,04	-0,06
4	Venezuela	12	4	3	-0,53	-0,16
5	Egypt	26	28	30	-0,99	-0,06
6	Indonesia	17	27	57	-0,89	-0,05
7	Iran	5	9	9	-2,28	-0,14
8	Yemen	21	19	30	-1,42	-0,09
9	Kuwait	21	24	22	-1,64	-0,10
10	Libya	25	9	13	-1,79	-0,11
11	Malaysia	28	37	53	-0,75	-0,05
12	United Arab Emirates	25	28	37	-1,28	-0,08
13	Saudi Arabia	24	24	16	-1,54	-0,09
14	Turkmenistan	2	2	2	-3,59	-0,22
15	Uzbekistan	14	35	85	-0,67	-0,04

* The only countries for which coefficients b_1 turned out to be statistically significant, coefficient b_2 turned out to be statistically significant only for Venezuela, The exclusiveness of Venezuela is visible in the dynamics of gasoline prices.

In 15 countries, for which fixed effects (conspicuous feature) were incorporated in the solution, the gasoline prices are significantly lower than medians for corresponding years, that defines their place in Figure 1 essentially below the trend. This can explain negative values of coefficients b , which is nonrandom element of the national component of the price level.

3.3 National component of gasoline price level

The identification of causes defining the dynamics of the national component for a specific country is one of the challenges, which are to be resolved for price forecasting for the years to come. A known assistance in its solution can be provided by grouping of countries by proximity of values of the national components. One may assume that in the countries with a similar dynamics of the national components of the price levels one and the same factors act which define a deviation of algorithms of the price levels from the trend. Such factors are easier to reveal when analyzing data by a group of countries. From this viewpoint specific attention shall

be given to the identification of common features for the countries listed in each group in Table 3, column 8.

The national component of gasoline price level identifies (with the above assumptions about similarity of all expenses for oil transportation and processing) differences in gasoline prices by countries, expression in parentheses in equation (5). In its turn the national component is determined as a difference between the actual price and normal price.

Formally only at $Nat = 1$ ($\ln Nat = 0$) one can state that good price is normal for the countries. In all other cases it shall be recognized as either undersized (at $Nat < 1$) or in reverse oversized (at $Nat > 1$). This approach is basically right, but too narrowly-specialized. For practical purposes it should be made rougher, for example, consider the gasoline price in a country undersized only at $Nat < 0,90$ and oversized at $Nat > 1,1$ ($\ln Nat < -0,1$ and $\ln Nat > 0,1$). The idea of roughening consists in stating that differences between logarithm of values of the national components, and it is in them the calculations are made, not exceeding 0.2, are considered as arbitrary and having no effect on price perception. Having taken $\ln Nat = 0$ for the center and zone of negligence of 0.2, split an array of national components into 9 groups, of which the first and the last groups have only one boundary (Table 3).

Table 3 has the following structure. The first column specifies numbers of each of nine country groups. Columns 2 and 3 specify boundaries for each group for logarithms of the national components. Column 4 contains names assigned to groups, which should be considered as the most preliminary ones. Columns 5-7 by years show a number of countries, which in an appropriate year was part of the groups. Column 8 contains data on a constant list of each group – countries present in the group for all three years.

Table 3

Distribution of national components of gasoline price level

№	Borders		Features of the prices	Number of the countries			The countries in group all 3 years
				2000	2004	2006	
1	2	3	4	5	6	7	8
1		<-0,69	Symbolical	18	17	16	Algeria, Angola, Bahrain, Brunei, Venezuela, Egypt, Iran, Yemen, Kuwait, Libya, Nigeria, United Arab Emirates, Saudi Arabia, Turkmenistan
2	-0,5	-0,69	Very low	3	4	3	
3	-0,3	-0,49	Low	10	11	10	Kazakhstan, Canada, New Zealand, Russia
4	-0,1	-0,29	Reduced	14	12	14	Benin, Taiwan, Tunis
5	0,1	-0,09	Normal	13	15	17	Chili

6	0,3	0,11	Raised	31	23	29	Belgium, Germany, India, Kenya, Peru, Slovakia, Croatia
7	0,5	0,31	High	7	14	5	
8	0,7	0,51	Very high	1	1	2	
9	>0,7		Prohibitive	0	0	1	

Even a casual perusal of country grouping in Table 3 shows that it is bimodal. It has two hills, modal values fall within groups of «symbolic» and «raised» prices. Such table structure is explained by the fact that it evidently consists of two clusters, let us call them oil exporters and importers. Oil exporters are presented by the first three groups – the lowest gasoline prices. Of the great oil exporters only Norway, and of great gas exporters only Denmark and Uzbekistan turned out to be in the second part of the table. Group No. 1 presented by countries with symbolic prices of gasoline turned out to be the most stable by its content. It had a maximum number in 2000, 18 countries, including 14 «permanent members» listed in column 8. These are «kings of world hydrocarbons». Group No. 2 had no «permanent members».

Group No.3 — «low prices » — closes the first cluster. All three years it included Canada, Kazakhstan, New Zealand and Russia. It is interesting to note the presence of New Zealand importing oil in this group. Low prices for motor fuel allow the government of this country to intensify a competitive ability of its farmers. New Zealand is the biggest exporter of agricultural products.

The second cluster is first of all presented by oil importers, but not only by them. As already stated it consists of the countries exporting hydrocarbons. A distinctive feature of this cluster is significantly higher prices of gasoline as compared to the countries making up the first cluster. Countries forming a cluster enter the six price groups – from reduced prices to out-of-limit prices.

Group No. 4 refers to «reduced prices». A permanent list is presented by three countries Benin, Taiwan and Tunisia, at that oil is not extracted in Taiwan. A country which does not extract oil in terms of gasoline prices was found in the list of oil-producing countries⁹. Normal price, Group No.5, is observed each year approximately in the sixth part of the countries. A permanent list is formed by one country, i.e. Chili, that points at a variable list of the countries.

Group No.6 refers to «raised», being the central point it consists of one third of countries. Out of seven «permanent members» (column 8) four countries are located in Europe.

⁹ A low thrust to government institutions in the oil-exporting countries is a reason for low excise taxes. The occurrence of a low thrust in the Taiwan society is mentioned by F.Fukuyama (cited by *Yasin E.G., Snegovaya M.V.* Tectonic progress in the world economy: what the factor of culture says. M.: Publishing house SU-HSE, 2009. page 50.

Group “high prices” (No. 7) is distinguished by the highest variability. There are no “permanent members” in it as in the second group. Groups No. 8 and № 9 appear occasionally and have no permanent members. Prohibitive price were observed only in 2006 in Ethiopia.

From this it follows that countries importing oil keep gasoline prices at an increased level. The exceptions to this rule reflect specifics of the economic policy of the countries. **A difference between these prices is an oil rent, which the government pays for the loyalty of their fellow citizens.**

3.4 Specifics of Russia

As already mentioned, the greatest difficulty in price forecasting is an evaluation of values of the national component of the price level for the future. For oil-exporting countries the task is facilitated by revealing its function against a volume of exported oil per capita.

For manifesting specifics of Russia data on oil-exporting countries which can be considered similar to Russia is used as a background. Among such countries are Canada similar in climate and Mexico similar in a level of economic development.

Figure 2 depicts data on $\ln(Nat)$ in two options: actual calculated by a model (5), and virtual, which is a trend of model connecting $\ln(Nat)$ with a volume of oil exported from the countries per capita¹⁰. Painted markers in Figure 2 refer to actual values, and transparent markers refer to virtual values of logarithms of the national components of gasoline price levels, $\ln(Nat)$. A comparison of the dynamic direction $\ln(Nat)$ with its virtual value makes it possible to see if the gasoline price control policy in a specific country corresponds to a common policy for the oil-exporting countries. A different direction of dynamics $\ln(Nat)$ (marked as “Nat” on the plot after the name of countries) and its virtual image (marked as “Virt” on the plot after the name of the country) is a feature of inconsistency of political courses.

¹⁰ Due to a limited scope of the article the model itself is not provided. It is constructed for the oil-exporting countries and links a logarithm of the national component with a logarithm of the oil export (barrels per day per person). A number of observations is 83; R=0,95; D-W=2,0.

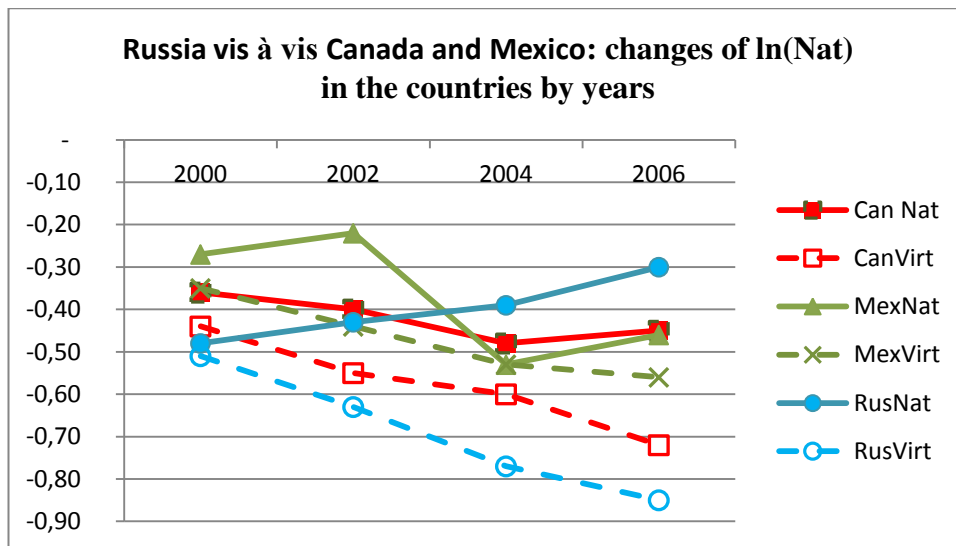


Figure 2

First of all, let us notice that all lines on the plot except for national component of the gasoline price level in Russia have a negative inclination. That means that in Canada and Mexico a size of oil-provided benefits transferred to the oil consumers increases. **Figure 2 clearly demonstrates a uniqueness of Russia: it does what other countries (Canada and Mexico are example) do not.**

So far the gasoline price in Russia remains below the normal, but it is approaching it by leaps and bounds. This growth on the plot is shown as a reduction of the national component logarithm in Russia from -0,5 in 2000 to -0,3 in 2006. In 2000, the price of gasoline in Russia was below normal for her at 39% ($1 - \exp(-0,5)$), and in 2006 this gap was reduced to 26% ($1 - \exp(-0,3)$). The opposite pattern is observed in Canada and Mexico, where the gap is widening.

The main hazard for Russia lies in the fact that the country once again went its own way. As shown below, although the gasoline price in Russia is below the parity, but it has already risen to such a level, that makes the situation unstable.

4. Protests against growth of motor fuel prices

In 2000 a so called “funnel” of protests was developed in the life of society, involvement of the counties in which was radically simplified thanks to Internet and mobile phones: growth of motor fuel prices – protests of the citizens – lack of fuel in the country – violations in the business life – growing in scale and strong measures taken by the government in order to keep the events under control. The protests of citizens form the upper edge of the “funnel”. The following developments depend on the status of the institutions of society: with normal institutions the events will settle into a normal pattern with a changed level of prices of motor

fuel, with weak institutions a change of power is inevitable, which at the best case will proceed peacefully. The evolution of protests in the countries follows the same rules as compared to the evolution of great revolutions: a new appeared problem cannot be solved within the established institutional structure, this is precluded by the formed psychological stereotypes of the countries I.Starodubrovskaya & V.May(2001, p. 26).

On August 4, 2000 года the OPEC oil price was 25 dollars per barrel EIA (2009) and started to grow at a rate of 5% per week, that on an annual basis means almost fourfold price growth. By August 25, 2000 the oil prices increased by 14%. A protest against high prices was started by French fishermen. They blocked the port stopping the way to tankers. This action was supported by the farmers and truck drivers. The protestants were supported by 88% of the French people. The French government retreated by decreasing the excise tax for the motor fuel by 15%, that reassured the public wrath in France, but intensified protests in other countries Grinning Planet (2007).

A representative of the British government made a self-confident statement saying that anarchists – galls and not law-abiding Englishmen are capable of such loud protests. However when the oil price raised up to 34.5 dollars/barrel, indignant Englishmen blocked petroleum processing plants, that paralyzed a number of economy sectors. For nine days of protests (September 5-14, 2000) the losses made up 1 billion pound sterling.

The protests (values $\ln(Nat)$ in 2000 are given in brackets after the name of the countries) extended to such countries as Belgium (0.17), Bulgaria (0.26), Great Britain (0.32), Hungary (0.27), Germany (0.11), *Ireland (-0.11)*, *Spain (-0.04)*, Italy (0.22), the Netherlands (0.23), Poland (0.17), Norway (0.31), *the Philippines (-0.37)*, Czech Republic (0.23), Sweden (0.06). The attention is given to the fact that for Ireland, Spain and the Philippines the values of the national components were negative, the names of the countries are written in italics. The populations of these countries pay less for gasoline than in other countries (adjusted for differences in levels of economic development (GDP per capita in PPP). So impetuous expiation of protests in different countries among law-abiding Europeans cannot be treated as accidental. The fact that according to the public-opinion poll, at least 75% of the population of these countries supported the protestants, cannot be considered accidental either. Our opinion is that the major conclusions from the massive protests in Europe in 2000 can be reduced to the following:

- 1) protests are primarily caused by a price velocity. The price advance by 14% for 20 days turned out to be sufficient for the beginning of insurgency of the citizens. Since at that time other components of the family and businessman expenses for cars remained unchanged, it was a price increase for motor fuel became a trigger of protests. Such a trigger can be any element of

expenses for cars provided that a total sum of expenses will exceed a certain threshold. One should pay attention to the fact that the higher are the prices, from which they start to grow, the lower price increase results in protests;

2) in 11 out of 14 protest-ridden countries $\ln(Nat) > 0$, i.e. the prices in any case were high, and only in three countries they were less as compared to the parities for these countries. The Philippines are specifically outlined, that requires an independent research falling outside this paper;

3) as it follows from the results of interviews, even in rich countries only 25% of population are on firm ground;

4) oil companies are capable of «pushing» necessary solutions forcing the government to repress population protests;

5) institutions of representative democracy over a period of centuries successfully protect interests of the citizens showed their inability in front of the oil companies;

6) new communications media including Internet and mobile phones radically facilitated a self-organization of citizens. It happened for people to be easier to unite and speak for moving the government to act, that achieve that from their representatives;

7) strong falling of the points down from the trend in Figure 1 have a profound meaning, namely government pay a loyalty of their citizens by low fuel prices.

A growth of oil prices resulted in a new wave of protests in 2008, which was not so tough as it was in 2000. In England these were protests of truck drivers demanding governmental grants for fuel NEWSru.ua (may 27, 2008), in Spain and France fishermen made up a great bulk protesters (NEWSru_ua; (may 30 , 2008).

In the history of science and technology one can very often find inventions which were made occasionally. We know a legend about a falling apple which pushed Newton to formulate the law of universal gravitation. Another example is penicillin, which started an era of antibiotics. In self-organization of protests against a growth of fuel prices one can notice material resources for direct democracy. It is Internet which utilization made it possible for protesters to take heaps of people to the street at the earliest possible date. In Internet one can manage a base of voters and account for election returns. A common database of voters excludes a revote and polls throw. The opinion of a voter is identified by his electronic signature. It is not difficult to make a voting program so that the electronic signature remained only at the system input and cannot be read by anyone, that is important for a secret ballot. The ballot itself can be arranged via Internet or SMS-messages.

Massive protests in Europe against the growth of fuel prices demonstrated that citizens learned to do without political parties as their mouthpieces for solution of their disturbing

problems. Algorithm of three steps to be participant of the protest movement is described. Google highlighted specified words for search. The procedure of asserting their interests via parties used for centuries is too long. Being comprehensible under conditions of dispersed small settlements at low data exchange rates, it turned out to be inefficient under conditions of almost instantaneous communications. The parties as mouthpieces of the citizens are replaced by social networks in Internet. One of such networks is a protest movement against growth of motor fuel prices.

The aforesaid shall be complemented that parties assume the citizens trust in them. This is virtually unachievable in Russia where egocentrism became a forced standard of behavior of the people Kossov (2000). Over ten years which have passed from the time when the article about egocentrism was published, the situation was not improved. Russia was found at the next divarication between the continued construction of the power vertical under conditions of sovereign democracy and society movement towards the direct democracy.

5. Benefits and losses for Russia by various options of price policy for motor fuel

The mentioned below refers to various kinds of motor fuel, despite of the fact that measurements were made for gasoline only. The GTZ investigations showed that gasoline and diesel fuel are two side of one medal.

Actual prices below the normal one

In 2000–2006 such situation was in 40 countries out of 97 investigated countries: Australia, Azerbaijan, Algeria, Angola, Bahrain, Belarus, Benin, Brunei, Venezuela, Vietnam, Honduras, Egypt, Indonesia, Iran, Yemen, Kazakhstan, Canada, China, Congo (Kinshasa), Kuwait, Libya, Malaysia, Mexico, Nigeria, New Zealand, United Arab Emirates, El Salvador, Saudi Arabia, Syria, USA, Sudan, Thailand, Taiwan, Tanzania, Tunis, Turkmenistan, Philippines, Switzerland, Ecuador, South Africa

First of all let us draw attention to the fact that oil-exporting countries make up only a part of the list. The USA, Taiwan, Switzerland and South Africa import oil, but the governments of these countries prefer a policy of reduced motor fuel prices.

Table 5

Gasoline price is below the normal one: benefits and losses for the countries

Benefits	Losses
Loyalty of the electorate	It is assumed that in this case a shortfall of a part of taxes is possible
Competitive advantages for gasoline consumers due to decreased costs	Motivation for fuel saving is impaired
	Due to reduced prices large investments to oil extraction and processing are problematic
	Development of alternative sources of energy is not actual.

It is reputed, that in terms of stability in the society the balance is shifted to the side of benefits.

Raised prices: actual prices are above the parities

In 2000-2006 such situation was observed in 33 out of 97 countries: Belgium, Bulgaria, Brazil, United Kingdom, Hungary, Germany, Denmark, Dominican republic, Israel, India, Italy, Cambodia, Congo (Brazzaville), Korea (South), Madagascar, Malawi, Mali, Morocco, Netherlands, Norway, Peru, Poland, Portugal, Senegal, Slovakia, Turkey, Uganda, Uruguay, Finland, France, Croatia, Czech republic, Ethiopia.

Attention is given to the fact that out of 33 countries only three are oil exporters, namely Denmark, Kongo (Brazzaville) and Norway.

Actual prices is above the normal one

Table 6

Gasoline price is above the parity: benefits and losses for Russia

Benefits	Losses
Motivation to reduce fuel consumption.	At high prices a black gasoline market appears.
Increase of tax collection, if the tax rate is not exceeded.	Increased level of expenses for motor fuel – deterioration of the competitively.
Meeting requirements of WTO members for increasing prices of energy sources.	Threat of dissolution of countries for economically isolated parts due to high prices of motor fuel ¹¹ .
Intensification of geological exploration for searching new deposits.	Escape of the population from scare populated territories
	Growth of resentment among consumers of motor fuel. Creation of protest movements.

It appears that a general balance is moved to the side of losses, i.e. risks of unfavorable developments significantly outbalance the effect from increase in taxes and membership in

¹¹ The government recognizes this problem. This is evidenced by the introduction of practice of tariff reduction for air transportation from the Far East to the European part of the countries.

WTO. An indirect confirmation of this is that out of 14 biggest oil-exporting countries only one Norway is in the list.

The general conclusion is that out of two considered options of policy regarding prices of motor fuel in Russia a preference shall be given to the first option, namely pursuing a conventional policy of price retention below its normal level for Russia, that means a direct transfer of a part of benefits to consumers.

A commonly pronounced idea of equalizing the internal and external prices is not consistent with psychological stereotypes of the most part of the society with all resulting consequences. This underlines a role of the motor fuel price as a social event.

According to mass media reports I.Vorobieva (2009), at a meeting with President D.A.Medvedev the head of Alfa-Group Mikhail Fridman stated that «business cannot know how to determine monopolistically high prices, for which establishment a top manager of the company is threaten with up to seven years of deprivation of freedom».

To identify the threshold beyond which the prices are recognized exclusively high, it is reasonable to use a estimation of the normal price. With regard to normal price an exclusively high price is determined, for example, as its exceedance at least by 75%.

The value of threshold beyond which the price is recognized an exclusively high shall be a subject of negotiations between the business and government.

For calculation of the normal price for Russia the following procedure can be used:

for goods, which price appears to be exclusively high, anti-monopoly department requests the major consumers of this good about the prices of procured substitute goods. If the use of a substitute good leads to an decrease of prices, then the consumers evaluate either an increased intensity of use of the good, or a rise in the cost of the processing activity ;

experts estimate the normal price acquire data on the internal prices for goods mentioned by the consumers in the countries being their biggest consumers. Collected data is updated to equalize the effect and the good for which the international the normal price is evaluated. The evaluation results, i.e. the value of normal price is submitted to the antimonopoly department.

a value of price which is suspected to be exclusively high is not reported to the experts;

the antimonopoly department using the value of the normal price for Russia takes a decision, including a decision to transfer the case to court.

6. Conclusion

The conducted investigation of the price level for gasoline showed that:

1. Virtually half of 97 countries sustain the prices for gasoline below their normal price for these countries, including net petroleum-importing countries from the ample territories, i.e. Kongo (Kinshasa), the USA and the Republic of South Africa.

2. Among the oil-exporting countries increased prices for gasoline are observed in Denmark and Norway, which differ greatly from Russia. These are protestant monoethnic countries with developed institutions of civil society. The trust of population in the institutions of civil society allows the government of these countries take the rent money into the budget with no protests of the population.

3. An increase for gasoline prices resulted in massive protests of citizens in 2000 in Europe showed that even in the developed countries with a centuries-long history of parliamentarism the institutions of civil society are unable to protect the interests of the citizens. People are forced to combine to assert their rights, that is significantly facilitated by Internet and mobile communication.

4. The trend analysis of gasoline price changes in Russia in 2000–2006 showed that the growing taking of rent into the budget with weak institutions of civil society is essentially an unlawful taking of earlier provided benefits.

5. The comparison of benefits and losses from different politics with regard to the gasoline prices shows that an increase of prices for motor fuel in Russia with its huge territory, sparse population and predominance of overland transport will inevitably increase expenses for products transportation and lead to an increase of competitiveness of the economy.

7. The chief executives of the companies shall bear responsibility for out-of-limit prices right down to the criminal responsibility. If for any political reasons the government takes a decision to equalize the internal prices for gasoline and gas with the external prices, it should be trade off to benefits to the population compensating for price increase. For the stability of society, the Government can not increase benefits, but it should not take away benefits already available.

8. Internet and digital signature provide prerequisites for a transfer from a representative democracy to a direct one. A referendum via Internet is the best form of solutions with regard to such issues as income tax duty and excise taxes, which directly affect the interest of the population. In this case each citizen takes over a responsibility for gasoline price, and he has a possibility to affect this social phenomenon.

Acknowledgements

The authors deem it duty to express appreciation to the Scientific Fund SU-HSE for making it possible to perform the investigation and write this article, and to I. Nikonov for his advisory assistance in material presentation

Reference

- Aoun, M.-C. (2006). *The oil rent effects on the economic performance of oil exporting countries.* // www.dauphine.fr/cgemp
- Bina, C. (2003). *On Differential Oil Rents.* // ricardo.ecn.wfu.edu/~cottrell/OPE/archive/0304/0038.html
- EIA. (2009). *EIA World Crude Oil Prices.* // tonto.eia.doe.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=WTOTOPEC&f=W
- Grinning Planet. (2007, 8 8). *Protest Gas Prices?* <http://www.grinningplanet.com/2007/08-08/protest-gas-prices-article.htm>
- GTZ. (2007). *International Fuel Prices 2007.* // www.gtz.de/fuelprices
- Hammar, H., Lofgren, A., & Sterner, T. (2004). Political Economy Obstacles to Fuel Taxation. . *The Energy Journal* , Vol. 25. Iss. 3. P.1-18.
- IMF. (2008). *GDP. World Economic Outlook*//www.imf.org/external/pubs/ft/weo/2012/01/weodata/index.aspx
- Kossov, V. (2000). Egocentrism as a Russian destroyer (russuian). *Mir Rjssii (Universe of Russia)* , IX (2), Vol. IX. № 2. P. 53-62.
- Kossov, V. (2005). Relative Prices as an Instrument of Medium-Term Forecasting of Retail Prices with Special Reference to Electricity Prices // *Studies on Russian Economic Development / English Translation of Problemy Prognosirovaniya* volume 16, Is. 6,P.603-616
- Kutsyk, B., Ageev, A., Volkonsky, V., Kuzovkin, A., & Mudretsov, A. (2004). *Natural rent in Russian economy // Fundamental basis of long-term (until 2050) development strategy of Russia and forecasting of innovation development of economic systems for a long period with regard to world tendencies (russian).* Moscow: Multimedia edition. Disk
- Newbery, D. M. (2005). Why Tax Energy? Towards a More Rational Policy. *The Energy Journal Cleveland* , Vol. 26. Iss. 3. P. 1–40.
- NEWSru.ua; may (2008). *Long-distance truck drivers of Great Britain are on strike due to high fuel prices (russuian).* // [/rus.newsru.ua/finance/27may2008/britania.html](http://rus.newsru.ua/finance/27may2008/britania.html)
- NEWSru_ua; may 30 . (2008, 5 30). *Spain takes direct action against high prices of oil products (russuian).* NEWSru_ua; may 30. <http://rus.newsru.ua/finance/27may2008/britania.html>
- Goel, R. K.& & Nelson, M. A. (1999). The political economy of motor-fuel taxation . *The Energy Journal. Cleveland* , 20 (1), Vol. 20. Iss. 1. P. 43–60.
- Starodubrovskaya, I., & May, V. (2001). *Great revolutions from Cromwell to Putin (rus).* Moscow: Vagrius.

Start your Gasoline Price Protest Meetup today! (2008, jan 18). //gasprotest.meetup.com/create/ as retrieved.

Vorobieva, I. (2009,) Time is going (russian)). *RBK daily 10 oct.*