



ANATOMY OF ENERGY PRICES АНАТОМИЯ ЦЕН НА ЭНЕРГОНОСИТЕЛИ

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Annotation. This article deals with the formation of energy prices, in particular prices for natural gas and electricity. The main factors that influence price levels are identified. The statistical data used in the article confirm the conclusions that prices can be flexible depending on the situation on a particular territory. The article gives an example of comparing the statistical data of the two countries. Such a comparison is useful for clarifying the opportunities and weaknesses of governments in different countries. The article will be useful both for a narrow circle of readers who have an impact on energy prices and for a wide range of public who are interested in these issues.

Key words: energy, energy prices

Introduction

Energy prices are one of the tools to influence the overall financial market and the distribution of financial flows both within the energy industry and in society as a whole. As is known from the general rules of the economy, the price level depends on the ratio of demand and supply in the market of the goods. However, prices in the energy sector of the economy have other equally important factors that significantly affect the pricing process. The most similar and related prices of energy prices are natural gas and electricity.

Main Part

Prices for natural gas and electric energy are quite dependent on fluctuations in producer prices, organizations that extract natural gas or trade in the domestic wholesale energy market.

The market for electric energy is prone to cyclical. Unfortunately, today the possibilities for accumulation and storage of electric energy are very limited. As a result, fluctuations in prices in the electricity market are quite substantial. The electricity market tends to follow these two cycles -

-seasonal. There is a high level of consumption in the winter due to the heating of premises and in some countries increased consumption in the summer due to the use of electric energy for the needs of cooling of rooms and moderate levels of consumption in the spring and autumn.

- cycles of the wholesale electricity market. This is the daily changing of electricity consumption, which depends on the needs of consumers and the impact of the use of different sources of electricity to meet the needs of the market.

The natural gas market has similar cycles.

-the seasonal cycle is caused by an increase in natural gas consumption by households and businesses as a result of using it in winter for heating the premises and increasing the use of natural gas for the production of electric energy for the needs of the cooling of premises in the summer.



- cycle of use of natural gas from storage facilities – this cycle arises from the accumulation of surplus extracted natural gas in gas storage facilities and the use of it from these gas storage facilities during periods of increased consumption relative to the level of extraction.

Even under normal conditions of the market for electric energy and natural gas, their prices are influenced by state regulation and even political events.

The general (common) factors that influence the level of prices for natural gas and electricity are the following

1. Weather. Changes of the weather conditions throughout the year, even well-predicted, will have a significant impact on the level of energy prices.

2. Extreme weather conditions.. Weather conditions such as hurricanes, overclouded snowstorms, rainstorms, tornadoes, and so on can also have a significant impact on energy prices, especially in short-term contracts.

3. State regulation. The state has the right to stimulate the development of various sectors of the economy, taking into account the needs of society as a whole, including encouraging the protection of the environment from negative impacts. These may be special allowances for producers to implement environmental projects and green tariffs. The state can also respond to the social situation of consumers, especially if it has mass character.

4.-Outages

From time to time, energy producers stop production capacities either for current or major repairs of equipment. Also, old production capacities are sometimes withdrawn from operation and new production capacities are introduced. Such a change in the structure of producers or carriers leads to a change in the value of electricity and natural gas, and this is also reflected in these energy markets

5.Sources of energy

Pricing for natural gas and electric energy depends both on each other, and on the overall structure of energy resources in general.

In the modern world, the energy of wind, the sun and other renewable sources that can meet the needs of consumers is increasingly being applied. It also has a significant effect on prices.

Many energy companies are trying to use the cheapest types of energy and fuel to reduce their own costs. As a result, demand for these cheap energy resources increases and prices rise accordingly. As a result of such processes there are additional fluctuations of prices in energy markets.

6.Export-Import

The distribution of energy resources to domestic consumption, imported and intended for export, fluctuations in their volumes also have a significant impact on the level of energy prices. More dependent on import of energy resources of the country are guided by the prices of imported energy resources and their number at different periods of the year. Non depended from import of energy the countries have significant advantages, since own energy prices are significantly lower, which adds additional benefits to its own industries.

7.Geopolitical events.

Countries, especially those importing or exporting a significant amount of



energy, largely depend on geopolitical events, from the presence or absence of hostilities, financial crises, and general political events. The market reacts very quickly for such events. Energy prices are changing momentarily, especially in short-term contracts. Sometimes political events have a long-term impact on prices for natural gas and electricity.

8. Technological features

Technological peculiarities of electric networks and gas pipelines lead to different levels of energy losses in each particular case of supply of energy resources to a particular consumer. Such specificity in costs energy resources of the each consumer leads to significant differences in energy prices not only for entire groups of consumers, but also for individual consumers.

9. Special services

The offered services by the suppliers also have an additional influence. It may be additional maintenance of power equipment, higher than the basic quality of energy carrier, a higher than a base level of reliability of energy supply. The quality, reliability, uninterrupted supply of energy resources to consumers are sometimes considered to be the same for all consumers. However, in practice, all these terms of supply to energy consumers are very different not only in certain groups of consumers, but also in some individual consumers. and the requirements of different consumers to the quality and terms of their supply are significantly different because of their various uses and the ability to pay for additional terms and services.

The enormous variety even of the average energy prices reflects the influence of all the above-mentioned factors. The influence of these factors manifests itself in different ways in different regions of the country and in different categories of consumers. However, despite all this variety of prices you can see some trends and patterns that will help professionals make important decisions.

The statistics give us the opportunity to compare these data among themselves to make decisions within the country and also allow us to compare the data of different countries in order to find the best solution to our own problems.

One of the greatest influences on the economy of each country, including the prices of the energy sector, is state regulation. In order not to harm society, it is useful to analyze the statistics of one's own and other countries in order to make strategically correct decisions by taking into account their own experience and experience of other countries. So, the comparison of energy prices established for industrial consumers can show how competitive the products of energy-intensive industries in the foreign market.

For example, if you compare the prices of natural gas and electricity to the US and Ukraine, then it is clear that even with equally high production methods, Ukrainian goods will either be sold at a loss or not at all sold in markets where they compete with US goods. This means that high energy prices in Ukraine can ruin the country's economy. On the other hand, the output seems to be in the prices for the population. They are two times lower than in the United States and many European countries. But this is only at first glance. Income of energy companies in this consumer sector is part of the household budget. The budget of the households consists of the income of its members, that is, of their wages. Therefore, to qualify for



these revenues, an analysis of the average salary is required. And such an analysis and comparison of Ukraine's average salaries not only with the United States (less than 10 times), but also other European countries immediately indicates that rising energy prices for the population will not lead to higher incomes of energy companies, but to the huge problems in the country, as the population will not be able to pay bills. That is, instead of money the Ukrainian energy companies can get financial problems in the form of non-payment of the impoverished population, and dissatisfaction of the people with the actions of the government and other negative trends in society.

Table 1

**Average Price of Electricity to Ultimate Customers by End-Use Sector
by State, December 2017 (Cents per Kilowatthour)
(December 2017)**

Census Division and State	Residential	Commercial	Industrial	All Sectors
New England	18.97	15.15	12.64	16.45
Connecticut	19.65	15.77	13.14	17.40
Maine	15.25	11.68	9.22	12.64
Massachusetts	19.61	15.45	14.08	16.90
New Hampshire	19.40	14.97	12.89	16.68
Rhode Island	18.00	15.37	15.17	16.54
Vermont	17.33	14.47	10.15	14.55
Middle Atlantic	15.44	11.71	6.86	12.18
New Jersey	15.59	11.62	9.84	12.96
New York	17.00	13.44	5.94	13.75
Pennsylvania	14.09	8.81	6.75	10.30
East North Central	12.80	9.85	6.90	10.01
Illinois	12.38	8.60	6.18	9.16
Indiana	11.29	10.17	7.27	9.49
Michigan	15.17	10.95	7.20	11.42
Ohio	12.04	9.67	6.68	9.73
Wisconsin	14.21	10.83	7.65	10.98
West North Central	11.09	9.02	6.73	9.17
Iowa	11.49	8.63	5.49	8.13
Kansas	12.64	10.04	6.80	10.04
Minnesota	12.64	9.64	7.24	10.01
Missouri	9.91	8.31	6.55	8.85



Continuation of the table 1

Census Division and State	Residential	Commercial	Industrial	All Sectors
Nebraska	10.21	8.72	7.01	8.72
North Dakota	9.41	8.68	8.36	8.79
South Dakota	11.24	9.48	7.77	9.88
South Atlantic	11.48	9.51	6.33	9.87
Delaware	12.99	9.55	7.73	10.76
District of Columbia	13.28	11.87	8.08	11.96
Florida	11.94	9.70	7.80	10.67
Georgia	10.66	9.90	5.55	9.21
Maryland	13.25	10.89	8.39	11.86
North Carolina	10.42	8.37	5.93	8.90
South Carolina	12.27	10.53	6.16	9.80
Virginia	11.10	8.32	6.45	9.30
West Virginia	11.29	9.23	6.48	9.01
East South Central	10.92	10.56	5.85	9.21
Alabama	11.87	11.50	5.95	9.53
Kentucky	10.40	9.57	5.43	8.42
Mississippi	10.91	10.42	6.02	9.03
Tennessee	10.56	10.57	6.14	9.65
West South Central	10.47	8.16	5.35	8.06
Arkansas	9.68	8.24	5.72	7.85
Louisiana	8.95	8.80	5.14	7.35
Oklahoma	9.41	7.44	5.16	7.52
Texas	11.11	8.16	5.39	8.35
Mountain	11.57	9.17	5.93	9.08
Arizona	12.24	9.91	5.76	9.99
Colorado	11.73	9.50	6.90	9.57
Idaho	10.11	7.85	5.63	8.35
Montana	10.93	10.06	5.13	9.13
Nevada	12.34	8.04	5.19	8.43
New Mexico	12.38	9.44	5.52	9.01
Utah	10.32	7.90	5.45	7.96
Wyoming	11.15	9.50	6.80	8.26



Continuation of the table 1

Census Division and State	Residential	Commercial	Industrial	All Sectors
Mountain	11.57	9.17	5.93	9.08
Arizona	12.24	9.91	5.76	9.99
Colorado	11.73	9.50	6.90	9.57
Idaho	10.11	7.85	5.63	8.35
Montana	10.93	10.06	5.13	9.13
Nevada	12.34	8.04	5.19	8.43
New Mexico	12.38	9.44	5.52	9.01
Utah	10.32	7.90	5.45	7.96
Wyoming	11.15	9.50	6.80	8.26
Pacific Contiguous	14.47	12.64	8.51	12.55
California	18.48	14.39	11.35	15.25
Oregon	10.58	8.77	5.99	9.09
Washington	9.63	8.66	4.52	8.16
Pacific Noncontiguous	26.24	23.91	22.58	24.28
Alaska	21.63	19.09	16.93	19.58
Hawaii	30.75	28.91	25.01	27.99
US. Total	12.50	10.32	6.63	10.26

Table 2

Natural Gas Prices in US
(Dollars per Thousand Cubic Feet)

Prices	2016	2017
Import	2.24	2.72
Export	2.79	3.54
City gate	3.71	4.16
Residential	10.05	10.98
Commercial	7.28	7.89
Industrial	3.52	4.14
Electric Power	2.99	3.52

**Table 3****Energy Prices of Ukraine, December 2017**

Customers	Natural gas, UAH/1000m ³	Natural gas,\$/1000ft ³	Electricity, UAH/kWth	Electricity, cents/kWth
Residential	5930	5,88	1,68	6,33
Industrial	9690	10,34	1,948	7,34
For electric power production	9488	10,12		
Others	9690	10,34	1,747	6,58

Table 4**The average wages in December 2017**

	Ukraine, UAN/ month	Ukraine, \$/hour	US, \$/hour
December,2017	8777	2,06	22,34

Conclusions

A general analysis of the prices for natural gas and electricity has shown that there are many factors affecting the prices of energy carriers. One of the most influential factors is government regulation. Analysis of the country's statistics, which has been developing freely for many years (USA) and Ukraine, shows that in Ukraine, despite the effect of market relations, a lot of problems accumulated due to incorrect state regulation over many years.

These are too high tariffs for industry, which solved the problems of payments from the population, and low wages that are not coordinated with the level of prices for energy consumed by them. The solution to the situation may be to increase the incomes of the population and to thoroughly research of all the factors influencing the price of energy carriers in order to coordinate the prices of energy carriers with their sources of coverage. This can be helped by the global measures that the government is now trying to take, as well as the application of the marketing as an instrument that allows more responsive responses to the diversity of consumers on the market.

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