

Dynamic Typology of Investment Activity of Oil Companies

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Abstract

Oil and gas are the most important gains for the Russian economy. So the improvement of these industries is very important and should be analyzed very well. In this paper we analyze the tendency in the development of these industries for the past ten years. We use a factor-analysis for the identification of determinants which have positive and negative effects on the development of the performance of these companies. Some of these determinants are the investment activities or the influence by the government. As a result we get three types of firms related to their performances. There are the leaders, the middle and the outsiders.

1 Introduction

Oil and gas complex in Russia is one of the largest in the world and has great potential for further development. Russian share of world oil resources is 5,6 %, of world gas resources over 23,7 %.¹

Oil and gas complex is one of the largest tax payers in Russian Federation that provides almost half of federal budget income. Investments in oil industry make the biggest gain of GDP (1,5 rubles for every 1 ruble invested) and improve growth of budget income. Besides, oil and gas complex provides orders for construction, metal industry, machinery, transportation, electric power industry and other industries in the country.

Perspective of oil and gas industry and its solid position can be evaluated by the dynamics of investment activity of oil-producing companies. To this issue was devoted our analytical paper and its goal is to reduce and analyze the tendency in development of oil and gas industry in Russia for the past ten years.

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¹ Compare Statistical Review of World Energy (2010).

2 Analysis

Main methods of research are factorial analysis – well known method of multivariate statistical analysis, and also statistical methods time series analysis.

Before conducting dynamic typology of oil and gas industry, first let's analyze development of oil and gas industry in general. In the period of 2000–2009 was observed growth of investment activity of oil companies presented in the increase of capital investments.

Capital investments of Vertically Integrated Oil Companies in 2000 were 116,18 bln. rubles or 4,13 bln \$ and in 2009 their amount reached 535,82 bln rubles or 16,88 bln \$. Dynamic of capital investments of VIOC in Russia (bln rubles) and chain rate dynamics for the period of 2000–2009 presented in Figure 1.

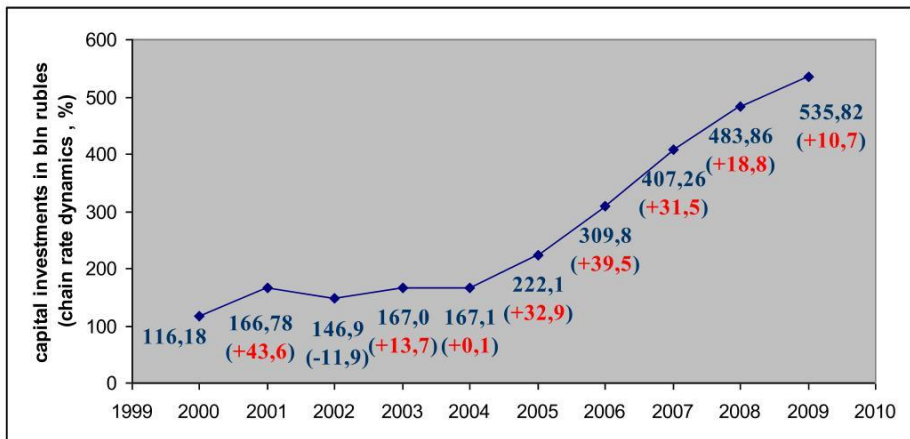


Fig. 1: Capital investments of VIOC in Russia

The biggest rate of increment was in 2001, it reached 43,6 %. For the period of 2006–2009 we see decrease in investment activity of oil companies. If chain rate of capital investments of VIOC in 2006 was equaled to 39,5 %, then for the next three years it respectively were equal to 31,5 %, 18,8 % and 10,7 %. Average growth coefficient of capital investments for 2000–2009 was 1,185, thus average increment rate for the period reached 18,5 %.

For the period of 2000–2009 oil companies invested 2722,8 bln. rubles into realization of

investment projects moreover for the period of 2000-2004 sum of capital investment was 763,96 bln. rubles or 28,1 % of total, and for the period of 2005–2009 – 1958,84 bln. rubles or 71,9 %.

For assessment of oil companies' investment activity we used relative index of capital investment volume per ton mined in order to compare investment activities of large and relatively small companies. Data of eight specialized oil companies' statistical base for the research present in Table 1.

For the past decade Surgutneftegaz and Rosneft have been leaders by that indicator. Also growth rate of state-controlled Rosneft was higher than Surgutneftegaz's. Main shareholder of Rosneft is state and it owns more than 75,16 % of shares.

The highest dynamic is shown by Lukoil's indicator of capital investment per ton, it improved its result in 3,6 times for 2000–2009.

In order to identify the companies with similar type of change in time was used the method of multidimensional statistical analysis – factorial S-analysis.²

Factor S-analysis was based on the data of eight oil-producing companies. For assessment of investment activity with factorial S-analysis every oil-producing company was viewed in coordinates “object-time” by subject “investment activity”. This method of classification is described in article by Eliseeva und Borozdina (2009).

By principal component analysis were gradually identified principal factors based on maximum contribution to total dispersion. Combined contribution of first two identified factors was 83,5 %. For each of two principal factors were determined parameters (investment activity of companies in particular year) that closely correlated with factors. Using rotation of principal components in the space of subjects was found an optimal solution by Varimax criteria.

First principal factor explains 53,4 % of total dispersion and is described by the next regression equation:

$$f_1 = \frac{1}{5,342} (0,918y_{2003} + 0,874y_{2004} + 0,859y_{2008} + 0,855y_{2009} + 0,810y_{2002} + 0,773y_{2000} + 0,751y_{2007}), \quad (1)$$

where y_t – normalized indicator of investment activity per t-year.

² See Aivazyan und Mkhitarian (1998).

Company	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Lukoil	323,82	518,83	306,58	383,90	429,36	507,98	762,44	1168,20	1213,08	1170,58
Rosneft	740,56	813,88	720,08	936,23	835,58	644,49	877,85	1159,94	1506,41	1812,26
TNK-BP Holding	409,08	494,29	280,44	268,64	278,28	384,38	444,69	581,39	710,10	752,91
Gazprom Neft	331,38	178,04	588,94	589,17	361,65	400,99	497,60	533,58	702,90	641,99
Surgutneftegaz	769,36	911,37	737,12	659,75	675,53	752,49	992,48	1297,27	1508,21	1812,66
Tatneft	482,68	477,22	413,65	340,86	309,82	312,61	325,81	433,25	549,06	500,94
Bashneft	425,46	808,44	628,70	630,94	551,16	585,63	593,78	700,37	962,82	639,36
Slavneft	352,52	488,17	351,08	225,42	288,56	660,39	855,77	267,00	306,67	136,49

Tab. 1: Capital investment per ton for 2000-2009, rubles/ton, Source: N.U. (2010), S. 96-130.

In 2000 decrease of investment activity was connected with uncertainty in business sphere caused by the election of new president and introduction of system of federal districts. The decrease of investments in 2002 was caused by the fact that from January 1st 2002 was brought into force Chapter 26 of Tax Code of Russian Federation that replaced payment of royalty and mineral replacement tax by the Mineral Extraction Tax. In 2003 were shown first signs of government pressure on oil companies that were appeared in several tendencies. First of all, it is “Yukos case” and the beginning of large-scale governmentalization of oil sector. Secondly, increase of tax rates. Thirdly, was blocked the production-sharing agreement on the territory of Russian Federation that stimulates investments into large oil and gas projects. As a result, rapid decrease of investment activity in 2003 and 2004. The period of 2007–2009 can be characterized as slow decrease of companies investment activity caused by several reasons: government continues to restrain the activity of private oil companies; support of oil companies controlled by the government; influence of global financial crisis; terminated the licensing process.

Interpreting the meaning of first principal factor we can conclude that it is a factor that characterizes investment activity of oil companies in years unfavorable for investment, because it most closely correlates with indicators in 2003 and 2004 (“Yukos case”), 2008 and 2009 (crisis period), 2002 (stiffening of tax policy), 2000 (election of new president) and 2007 (protectionism in favor of government-controlled companies).

Second principal factor explains f_2 30,1 % of total dispersion and is described by the following regression equation:

$$f_2 = \frac{1}{3,005} (0,934y_{2005} + 0,925y_{2006} + 0,640y_{2001}) \quad (2)$$

Since the second principal factor has high factorial weight with indicators for 2005 and 2006 (increase of activity in oil sector after “Yukos case”) and 2001 (decrease of turnover tax for business) factor f_2 characterizes investment activity during stable development of economy. Really, in 2001 were made changes in taxation. In 2001 turnover tax for business was decreased in four times: tax for housing and public utilities (1,5 %) was annulled, and tax for usage of highways decreased from 2,5 % to 1 %. In 2005 we could witness the growth of companies investment activity despite of negative effect of new tax regulations. On the positive side in this period was the growth of oil prices and opening of new exporting channels of raw materials. Besides capital investments were necessary for modernization of production base and they were made. In 2006 was allowed to pass tracts with mineral resources between the head company and its subsidiaries.

3 Conclusion

Let's move on to the assessment of research objects, identifying the groups of oil companies with similar type of change in time. In order to do that we will use matrix of normalized indicators of principal factors, that allow to evaluate investment activity of oil-producing companies in Russia.

Investment activity of companies in difficult years of development of the branch is adequately reflected by the value of first principal factor f_1 . Investment activity in favorable period – by the value of second principal factor. Since normalized values f_1 and f_2 vary from -3 to 3, it makes sense to use following values of f_1 and f_2 as criteria for companies' typology:

- $-1 \leq f_1 \leq 1$ - average level of investment activity.
- $-3 \leq f_1 < -1$ - below average.
- $1 < f_1 \leq 3$ - above average.

The similar borders are suggested to use for the second principal factor f_2 .

In the process of solving opposite factorial problem were determined normalized values of first two factors for each oil-producing company and they were graphically presented in the coordinate system.

Location of oil company in the figure characterizes its investment activity for the past 10 years (Figure 2). In the parentheses are shown the values of factors f_1 and f_2 .

Consequently we can see three groups of companies: leaders (Rosneft, Surgutneftegaz), middle (Lukoil, Bashneft, TNK-BP Holding and outsiders (Gazprom Neft, Tatneft, Slavneft).

To sum up we can conclude that this research with factorial S-analysis has allowed us to determine the factors that positively and negatively affect the development of companies and to assess investment activity of oil-producing companies in Russia for the past 10 years.

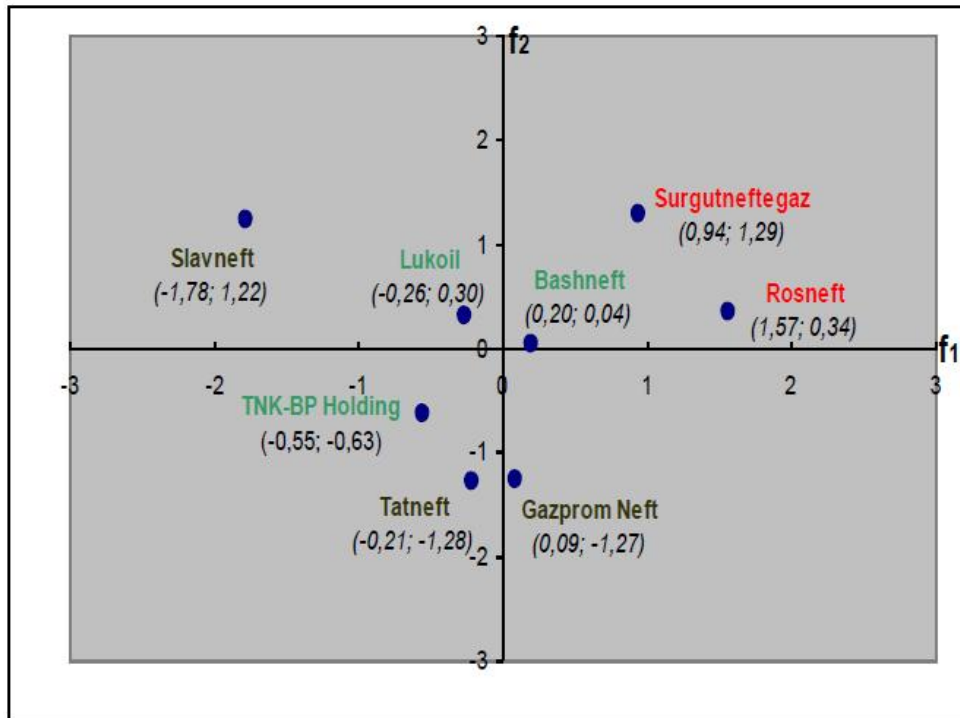


Fig. 2: Classification of the oil companies

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