

## **RESEARCH OF THE INNOVATION ACTIVITY IN THE OIL-GAS-CHEMICAL INDUSTRY OF THE REPUBLIC TATARSTAN**

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### ***Abstract***

*The article discusses the features of the gross regional product and gross value added of the Republic Tatarstan. The basis of the regional economy of the republic is the oil-gas-chemical sector of the industry. The study of the above sector of the regional economy is assessed innovation in the industry.*

**Key words:** *innovation activity, the structure of gross output and gross domestic product, oil- gas-chemical sector of the economy, regional economy, gross added value.*

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### **1. Introduction**

Oil and gas industry is also a major branch of the regional economy of the Republic Tatarstan. If in the 1990-1994 years, in the Republic Tatarstan extracted 7.2% oil, in the 2006-1012 years 4.7% of all produced in the Russian Federation. Crude oil is an important article of export earnings in the regional economy of the country. Regional economy of the Republic Tatarstan is a significant place in the national economy of Russia. Gross Regional Product (GRP) at basic prices in 2013, according to preliminary statistics about – 1.5 trillion rubles [3, p.14], and in 2012 - 1.4 trillion rubles (2.2% of Russia's GDP). If the value of the gross domestic product (gross value added at basic prices) of Russia in 2012 and 2011, respectively amounted to 50.2 trillion rub. and 45.3 trillion rubles, the Republic Tatarstan in 2012 and 2011 respectively, it 1.44 and 1.27 trillion rubles (or 2.86% and 2.8% of Russia's GDP).

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By volume of GRP regional economy of the republic took 5th place among 85 subjects of Russia after Moscow, Tyumen region, including the Khanty-Mansiysk Autonomous Okrug - Yugra, Moscow Region, St. Petersburg. The Republic Tatarstan produced 18.16% of GRP Volga Federal District (14 regions of Russia) [3, p.51]. In terms of gross regional product per capita per year (376,889.2 rubles) Republic took 13-th place in 2012 among 85 subjects of the Russian Federation (per capita rate in the country - 348,598.9 rubles). For this indicator our country is on track for a place rich in natural resources and financial subjects of Russia: Tyumen district, Sakhalin district, Chukotka Autonomous district, Moscow, the Republic Sakha (Yakutia), the Republic of Komi, Magadan district, St. Petersburg, Krasnoyarsk Territory, the Kamchatka Territory, Arkhangelsk region, Leningrad region [3, p.52-55].

## **2. The structure of the regional economy of the Republic Tatarstan.**

Regional structure of the economy of the Republic Tatarstan characterized by the following table 1 [3, p.21].

**Table 1: Structure of gross value added by economic activities in the Republic Tatarstan in 2012 (at current prices as a percentage of the total).**

Gross value added by type of economic activity	Republic Tatarstan
1	2
Total:	100
Agriculture, hunting and forestry	5,1
Fishing, fish farming	0,0
Mining and quarrying	15,5
Manufacturing	30,2
Production and distribution of electricity, gas and water	4,0
Construction	10,4
Wholesale and retail trade, repair of motor vehicles, motorcycles and personal and household goods for personal use	12,0
Hotels and restaurants	1,0
Transport and communications	7,2
Financial activities	0,3
Real estate, renting and business activities	6,8
Public administration and defense; social insurance	2,7

Education	1,9
Health and social services	1,9
Other community, social and personal services	1,0

The main sectors of the regional economy of the Republic Tatarstan in proportion in the total output are: wholesale and retail trade; repair of motor vehicles, motorcycles, household goods and personal items (12.0%), manufacturing (30.2%), mining (15.5%), real estate, renting and business activities (6.8%), transport and communications (7.2%), accounting for 71.7%. In the Republic Tatarstan such important economic activities such as agriculture, hunting and forestry (5.1%), construction (10.4%); fishing, fish farming (0.0%); production and distribution of electricity, gas and water (4.0%); education (1.9%); health and social services (1.9%) had only 19.3% of gross output.

With weight Tatarstan regional economy of 2.8% in the national economy of Russia the share of certain economic activities republic in Russia is a higher rate of: agriculture, hunting and forestry, mining, construction - from 4% to 6%.

The basis of any economy is industry. Consider the state oil and gas chemical industry in the Republic Tatarstan. Oil-gas-chemical industry represented by the following activities: mining production (extraction of fuel and energy minerals), manufacturing (production of coke and refined petroleum, chemical industry and the production of rubber and plastic products) and the production and distribution of electricity, gas and water. In turn, the major extractive industries include the extraction of fuel and energy resources, and to the manufacturing industry - production of coke and refined petroleum, chemical industry, rubber and plastic products.

If we denote the physical variable costs of production (raw materials, fuel, electricity, etc.) – with -  $c'$ ; fixed costs of production (depreciation of equipment, machines, buildings, etc.) - with -  $c''$ ; the wage fund -  $v$ ; profit or business income -  $m$ , then the monetary expression of value (price of production) is:  $c' + c'' + v + m = w$ . The structure of the cost price of production and innovative products different from ordinary commodities in that it is high share of labor costs ( $v$ ), the entrepreneurial income or profits ( $m$ ), and depreciation ( $c''$ ) and vice versa, and the low proportion of material costs ( $c'$ ) by reducing the losses and the use of relatively cheap current, new types of raw materials and fuel. However, the absolute and relative amount of

reduced costs above ( $c' + c''$ ) and their share in the cost structure innovative product. Reducing the cost of innovative products at the expense of the cost of past labor increases its competitiveness [1, p.481-482].

Gross output of products and services in terms of value in the Republic Tatarstan had the following structure (material costs and gross value added):

$$2009: 52,78c' + 47,22(c'+v+m) = 100,0w$$

$$2010: 54,81c' + 45,19(c'+v+m) = 100,0w$$

$$2011: 53,05c' + 46,95(c'+v+m) = 100,0w$$

$$2012: 52,83c' + 47,17(c'+v+m) = 100,0w$$

This is determined by the fact that the structure of the economy of the Republic Tatarstan, a higher proportion of capital-intensive industries that have high material costs (table 1) [3, p.23].

As can be seen from the table in the economic structure of the Republic Tatarstan higher proportion of the following economic activities: mining, manufacturing, and production and distribution of electricity, gas and water. However, despite the fact that the share of production of mining, manufacturing and the production and distribution of electricity, gas and water, respectively, accounted for in the gross output of 15.5%, 30.2% and 4.0% (a total of 49.7%), the share of these economic activities in the gross value added of the entire economy of the republic were respectively 21.3%, 18.3% and 2.5% (42.1%) [3, p.21]. Mining increases the total value added, and the manufacturing and the production and distribution of electricity is significantly lower value added. In general, these activities reduce the total value added by 7.6% (49.7% -42.1%).

Applied to oil-gas-producing and oil-and-gas processing industries, this means that the production of oil, gas and mining industries includes a large share of value added (wages, profits and indirect taxes) than the production of oil and gas processing of economic activities. This is confirmed by statistical data: the share of mining and manufacturing, production and distribution of electricity, gas and water in the total material costs in the economy of the republic in 2012, respectively, accounted for 10.26%, 40.84% and 5.39%, while the share of their added value respectively 21.3%, 18.3% and 2.5% in the total value added of the Republic Tatarstan [3, p.20].

Consider the structure of gross value added (gross regional product) in the Republic of Tatarstan (Table 2).

TABLE 2: Structure of gross regional product of the Republic of Tatarstan on income in 2009-2012. (at current prices as a percentage of the total) [3, p.29].

	2009	2010	2011	2012
Gross regional product in the basic prices including:	100	100	100	100
labor payment (excluding hidden wages)	36,6	37,6	35,9	37,4
other net taxes on production	8,7	10,0	10,6	10,8
gross profit and gross mixed incomes	55,3	52,4	53,5	51,8

In accordance with table 2 the structure of gross value added in the country in 2009 and 2012 years was as follows:

$$2009: 36,6v + 8,7n' + 55,3m = 100,0vvp.$$

$$2010: 37,6v + 10,0n' + 52,4m = 100,0vvp.$$

$$2011: 35,9v + 10,6n' + 53,5m = 100,0vvp.$$

$$2012: 37,4v + 10,8n' + 51,8m = 100,0vvp,$$

where:  $n'$  – net taxes on products,  $m$  – gross operating surplus and gross mixed income.

## 2. Research of the innovation activity in the oil-gas-chemical industry of the Republic Tatarstan

In the Republic Tatarstan of 10841 industrial enterprises of oil and gas and chemical organizations and the production and distribution of electricity, gas and water in 2013 amounted to 2964 units or 27.3% [4, p.25]. The number of large and medium-sized enterprises by economic activity at the end of 2013 was as follows: manufacturing - 73.1%, production and distribution of electricity, gas and water - 14.6%, mining - 12.3% [4, p.29].

Organization of oil and gas and chemical sector of the Republic Tatarstan in 2013 provided an export revenue from product sales in the amount of 19535,5million US dollars, accounting for 87.32% of the total foreign exchange earnings industry. The main recipients of foreign exchange earnings have been organizing for the extraction of energy and mineral resources for the production of coke and petroleum products (77.38% of foreign exchange earnings industry).

At the enterprises of oil and gas chemical sector of the Republic Tatarstan in 2013 was centered about 79% of fixed assets and 37.76% of the average number of industrial workers. In the structure of fixed assets in the oil

and gas producing activities was higher than the proportion of plants, and in oil and gas-processing activities (chemical industry), on the contrary, a higher proportion of machinery and equipment. With an average degree of depreciation of fixed assets in the industry of 43.2% in these types of economic activities depreciation of fixed assets amounted to 19.7% in the production of coke and petroleum products to 49.1% in the chemical industry and 59.6% in the extraction of fuel energy minerals.

However, investment in fixed assets in the oil and gas industry of the republic chemical sector amounted to 72.5% of the total investment in fixed assets for the whole industry. In this sector of the regional economy remained high electric armed labor - from 1.6 times to 2.5 times higher, than the average for the industry, with the exception of the production of rubber and plastic products (74% of the average industrial level). The average monthly wage of workers in the oil and gas and chemical sector in 2013 was higher (32937.2 rubles in the production and distribution of electricity, gas and water up to 41919.7 rubles in the production of fuel and energy minerals), than the average for the industry (28619,8 rubles), except for the production of rubber and plastic products (26896,6 rubles).

Oil and gas and chemical industry sector of the regional economy in 2013 produced 79.4% of the total value added of industry of the republic and about 31% of value added of all economic activities of the Republic Tatarstan. However, the value of gross output of oil and gas and chemical sectors of the regional economy a high proportion of material costs or the share of intermediate consumption in the production of products and services: in the production of coke and petroleum products - 79.3%; in the manufacture of rubber and plastic products - 78.2%; in the chemical industry - 74.6%; in the production and distribution of electricity, gas and water - 59.4%; in the production of fuel-energy minerals - 36.1% (in the industry of the republic - 62.2%). If we consider the structure of the production costs of oil and gas and chemical industry sector of the Republic Tatarstan in 2013, it was as follows (table 3).

**Table 3: Structure of the production costs of economic activity in the oil and gas and chemical sector of the regional economy of the Republic Tatarstan (in percent).**

	Total 1	Including economic activities				
		2	3	4	5	6
1	2	3	4	5	6	7
Total	100	100	100	100	100	100
Material expenditures	66,7	41,9	87,2	79,4	77,6	72,6
Compensation	7,9	4,4	2,0	7,6	8,8	10,7
Insurance premiums	2,2	1,3	0,6	2,2	2,7	2,9
Amortization	5,2	7,2	8,0	4,7	4,9	5,7
others	17,9	45,3	2,2	6,1	6,0	8,1
The cost of 1 ruble products	87,3	75,2	89,4	90,4	95,3	89,3

Note: 1. Industry total; 2. Fuel and energy minerals; 3. Manufacture of coke and refined petroleum; 4. Chemical production; 5. Manufacture of rubber and plastic products; 6. Production and distribution of electricity, gas and water.

As can be seen from the data in table 3 in the value of the goods of the above sectors of the regional economy share of material costs is higher than the industry average (66.7%), except for the production of fuel and energy minerals. Negative index in the cost structure is the low share of value added, including a low share of depreciation and salaries of employees. However, the structure of the cost of production there is a reasonable share of the profits, with the exception of the activity for the production of rubber and plastic products (4.7%).

The most important factors influencing the composition of the cost of production enterprises of oil and gas and chemical sectors of the regional economy of the republic and determining the structure of the value of the products are innovative and financial condition of enterprises. Innovation in production improves the financial situation of enterprises and, on the contrary, positive financial condition of the organization creates the prerequisites for further innovation. This interrelated processes.

The number and proportion of enterprises engaged in innovative activities in 2013 amounted to: industry - 122 of 10481 (1.12%), production of fuel and energy minerals - 18 of 197 (9.14%), manufacture of coke and

petroleum products - from 2 47 (4.25%), the chemical industry - 14 of 442 (3.17%), manufacture of rubber and plastic products - 9 of 781 (1.15%), production and distribution of electricity, gas and water - 7 of 575 units (1.22%), oil and gas and chemical industry sector 50 units (2.45%). Thus, the share of innovative enterprises in the total number of organizations in the industry, including the oil- gas-chemical industry sector, for the present time is negligible.

The most important areas of costs of financial and material resources in the industry and above the industrial sector of the republic in 2013, respectively, were (as a percentage of the total number of enterprises): research and development of new products, services and methods of production (1.02% and 2.1%); acquisition of new technologies (0.48% and 1.22%); production planning (0.17% and 0.54%); acquisition software (0.24% and 0.64%); product for the production of new products and services (0.18% and 0.15%); education and training (0.18% and 0.34%); Other types of preparation (0.27% and 0.4%); marketing research (0.1% and 0.24%); purchase of machinery and equipment (0.71% and 1.22%).

A distinctive feature of the functioning of enterprises of oil, gas and chemical industry sector is the emission of harmful substances. Hence it is particularly important to capture and disposal of hazardous substances and ongoing operating costs for environmental protection. In the above sector in 2013 was spent 7869,6 million rubles or 84.76% of the total cost in the industry.

Financial condition of the organization makes possible the introduction of innovations in the production process and the creation of innovative products. The main sources of financing the costs of innovation in enterprises of oil, gas and chemical sectors of the economy of the republic are: own funds - 49.99%; other investors - 36.69%; the republican and local budgets - 13.14% and the federal budget - 0.18%. The same sources of financing innovation in the industry in 2013 were as follows: own funds - 50.0%; other investors - 28.74%; the republican and local budgets - 20.06% and the federal budget - 1.2%.

The total amount of financing of innovative activity above the industrial sector in 2013 amounted to – 87383,4 million rubles [4 p.134-145], or 72.62% of total expenditure on innovation in the industry of the Republic Tatarstan. The largest amount of money sources for innovation accounted for the enterprise: the chemical industry - 63.44%; production of coke and



petroleum products - 23.39%; production of fuel and energy minerals - 9.9%. The main type of innovation costs in 2013 is a technological product and process (industrial plants, respectively - 32.12% and 67.88%). Financial costs of process and product innovation in enterprises of oil, gas and chemical industry sector amounted to 53.21% and 19.22% of the total cost in the industry (72.62%).

The total amount of expenses of innovative enterprises of oil, gas and chemical industry sector in the amount of 43,696,3 million rubles was distributed mainly in the following areas: innovation processes in enterprises of chemical industry and production of fuel and energy resources, respectively - 59.98% and 9.72%; product innovation in enterprises production of coke and petroleum products - 21.98% (of 91.68%).

As a result, the financing of innovation in enterprises of oil, gas and chemical sectors of the economy in 2013 to produce innovative marketable products worth 247,292,9 million rubles, representing 78.79% of the total shipped innovative products of industrial enterprises. Share of innovation products at enterprises of oil-and-gas-chemical sector was in 2013 by economic activity: production of energy minerals - 62.44%; chemical production - 4.19%; production of coke and petroleum products - 24.42%; manufacture of rubber and plastic products - 8.69%; production and distribution of electricity, gas and water - 0.26%. In addition, the proportion of shipped products related to nanotechnology, in the above-mentioned types of production was equal: in the manufacture of rubber and plastic products - 56.4%; in the chemical industry - 10.0% and the production of fuel-energy minerals - 0.4%.

Consideration of the economic performance of enterprises of oil and gas and chemical sector can draw some conclusions about the financial performance of organizations. First, these businesses have a high overall balanced result - 88.98% of the total net financial result in the industry of the republic. Furthermore, these activities and the profitability of production assets were close to the average margin in the industry (respectively 13.0% and 9.0%). At the enterprises of production of fuel and energy minerals production and profitability of assets was higher than the industry average (respectively 32.7% and 17.2%), and was also a high proportion of net financial result in the industry - 65.44%.

However, enterprises of oil and gas and chemical sectors are heterogeneous in financial terms, as this sector has a high proportion of loss-

making organizations. If the industry as a whole share of unprofitable enterprises in 2013 was 27.3%, the share of non-profitable organizations amounted to: production and distribution of electricity, gas and water - 40.3%; production of coke and petroleum products - 33.3%; chemical production - 28.9%; production of rubber and plastic products - 26.8% and production of fuel and energy minerals - 11.8%. The high share of unprofitable enterprises in this sector of the industry to some extent be explained by a significant receivables, low coefficient of availability of internal funds: enterprises of chemical production (respectively figures – 4868,7 million rubles and - 102.8%) and enterprises for the production of rubber and plastic products (respectively figures – 1378,6 million rubles and - 47.1%). However, the above-mentioned company had in 2013 a good indicator of liquidity respectively: 134.9 and 90.3.

The worst financial state was formed in 2013 from enterprises for the production of coke and petroleum products: accounts payable – 22036,8 million rubles; coefficient of availability of internal funds - (-) 235.9 and the current ratio - 31.4. And, on the contrary, had the best financial performance of the enterprise for the production of fuel and energy resources and the organization of production and distribution of electricity, gas and water: respectively receivables – 65260,5 million rubles and payables – 5540,9 million rubles; coefficient of availability of internal funds – 56.3 and 14.9; current ratio - 353.4 and 133.0. As a result, enterprises of oil and gas and chemical industry sector at a rate of autonomy are distributed in decreasing order as follows: extraction of fuel and energy minerals - 76.4; production and distribution of electricity, gas and water - 69.8; chemical production - 43.8; manufacture of rubber and plastic products - 33.8; production of coke and petroleum products - 17.6.

### **3. Conclusion**

Meso study of the economy of Republic Tatarstan allows to note, that in the regional economy unsatisfactory level of innovation component, which is expressed as follows. In the structure of gross regional product of Republic Tatarstan has: a low proportion of manufacturing and, on the contrary, a significant proportion of the extractive economic activities and industries; a high proportion of material inputs or intermediate consumption and correspondingly low share of gross value added, depreciation and wages; a

significant proportion of profits, direct and indirect taxes extractive economic activities.

As an example for the analysis of innovation was considered meso economy leading subject of the Russian Federation - the oil-gas-chemical industry sector of the regional economy of the Republic of Tatarstan. The structure of the gross regional product of the Republic Tatarstan is also characterized by: a high share of extractive industries in the gross value added, the high proportion of material costs, the low share of gross value added, depreciation and salaries in the gross output of products and services, etc.

The main segment of mining and processing industry of the Republic Tatarstan is oil and gas and chemical sectors of the regional economy: 79.0% of fixed assets, 72.5% of investments in fixed assets, 37.76% average number of employees, 79.4% of value added, 87,32% of export earnings, 72.62% of the sources of funds for innovation, 88.98% net financial result of the entire industry of the republic. However, all these results and financial results were achieved in 2013, a small number of large companies from the oil and gas sector of the chemical industry of the republic. In this sector of the industry remains high: depreciation of fixed assets, the share of loss-making and non-profitable organizations, the rate of accounts payable and receivable. In addition, the transition the few companies on innovation accompanied due to high financial costs - one enterprise engaged in innovative activities, spending an average of 873.9 million rubles.

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