

Assessment of Financial Security in the Chemical industry of the Republic of Crimea

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Abstract

The purpose of the article is to study the financial security assessment of the chemical industry on the example of the Republic of Crimea. In the research were used the following scientific methods: the method of deduction, the method of analysis, the method of synthesis, the method of analytical equalization. The scientific substantiation of the identified problems and development of theory and methodology was carried out on the basis of the system approach principles. Based on the completed analysis, the volume of shipped own produced goods, performed work and services of the chemical industry of the Republic of Crimea in January-November 2015 – 2017 had increased by 5726 million rubles. According to the forecasted production volume of the chemical industry of the Republic of Crimea, the indicator will be 1496.5836 thousand rubles. Following the forecasted number of workers in the chemical industry of the Republic of Crimea, the indicator will make 8093 thousand rubles; 8120 thousand rubles; 8147 thousand rubles. The chemical industry of the Republic of Crimea is a budget-forming one. The chemical industry is one of the most important components of the industry. Analyzing the current situation, it can be noted that since 2014 the chemical industry has been in a very difficult situation, since it has been the most export-oriented of all industrial sectors of the Crimea, so it had more negative effect of sanctions and the severance of partnerships than other industries.

Keywords: financial security, region, chemical industry, chemical industry of the Republic of Crimea, business confidence index, state administration.

INTRODUCTION

The works of many Russian and foreign scientists are devoted to the topic of economic security and its various aspects [1-8]. The experts and scholars in the financial sphere had also investigated the indicators at different levels of financial security more specifically [9-16].

At present, many chemical enterprises lack a theoretical basis, as well as an effectively functioning scientific assessment of financial security, which reduces the effectiveness of their work and development accordingly. Therefore, the problem of protecting the own economic production interests is quite acute. To protect the economic interests of enterprises, it is necessary to develop the fundamentally new subsystem of production organization – the subsystem of ensuring the financial security, the task of which should consist in protecting the economic interests from unlawful attacks on them in order to guarantee the efficiency of production and economic activities. The most acute issue for the functioning of chemical enterprises became the insufficient illustration of the enterprises financial security problem in regulatory and legislative acts.

In order to improve the financial security of the chemical enterprise it is proposed to use the following measures to neutralize the threats:

- to conduct the analysis of the financial and economic activities of the chemical enterprise;
- to monitor systematically the activities of the enterprise, the implementation of plans for the products sale and profit obtaining;
- to identify reserves for increasing the profit amount and profitability.

The purpose of this research is to assess the chemical industry financial security in the Republic of Crimea.

The following objectives were set and met to meet this purpose:

1. To give the indicators of financial security of the chemical industry.

2. To assess the financial security of the chemical industry of the Republic of Crimea.
3. To reveal the role and significance of the chemical industry in the economy of the Republic of Crimea.

MATERIALS AND METHODS

Indicators of the financial security assessment in the chemical industry

The system of indicators typifying the chemical industry will be formed to characterize this sector. Three blocks of indicators will be highlighted: the indicators characterizing the performance of enterprises; the indicators characterizing labor in industry; the indicators of organizations' financial accounting that characterize the success of their operation. Each block contains the set of indicators (Fig. 1).

The methodology for calculating the indicators of the first two groups is detailed in the section "Methodological explanations" of the collection "Industry of Russia".

The number of operating organizations is the indicator characterizing the number of organizations and separate subdivisions that carry out production activities regardless of the organization's main activity. The separate subdivision of the organization is any enterprise that is territorially separated, which has the economic activities carried out in equipped stationary workplaces at its location (http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_113991873023). [17].

The volume of shipped industrial products is the cost measurement of goods in the reporting period produced by a certain legal entity and transferred to customers: other legal entities and individuals.

The volume of investment income in fixed assets means the total amount of money spent on the construction and reconstruction of facilities, the result of which is an increase in their initial cost, as well as the purchase of the machinery, equipment, vehicles, production and household equipment, etc. [17].

Table 1. The volume of shipped own produced goods, performed work and services of the chemical industry of the Republic of Crimea in January-November 2015 – 2017, million rubles.

Name of business line	January-November 2015	January-November 2016	January-November 2017	Absolute changes	
				2016-2015	2017-2016
production of chemical substances and chemical products (chemical industry)	9469,1	14140,2	15195,1	4671,1	1054,9

Source: Composed on the basis of the data.

When calculating the investment in fixed assets, the effect of the value added tax is omitted.

The index of entrepreneurial confidence is a qualitative indicator that allows describing the economic activity of organizations based on the responses of managers about the forecast of output, stocks and demand for it. Using this indicator, it is possible to get information about probable changes in economic indicators. According to methodological explanations, this indicator represents the arithmetic average of the answers “balances” to three questions: about the expected output of products, about actual demand and about current stocks of finished products. The value of “balance” as per the first component is determined by the difference between the shares of respondents who noted an “increase” and “decrease” in output in the future. As per the second and third indicator components the “balance” is calculated as the difference between the shares of respondents who noted the level of “more than sufficient” and “insufficient”. [17]

The index of industrial production is a relative indicator that allows determining the change in the scale of production. The index of industrial production of the chemical industry is an aggregated indicator for this activity type and is calculated on the basis of data obtained from groups, subgroups and OKVED classes.

The second group of factors as well has the calculation methodology described in the collection “Industry of Russia – 2014”. The average annual number of organizations’ employees is calculated as the sum of the average number of employees for all months of the year divided by 12 months.

The number of recruited employees includes persons enrolled in the organization in the reporting period by an employment order. The number of retired employees includes all those who left the work in the reporting period regardless of the grounds, the retirement or transfer of whom is formalized by order (direction). [17].

The average monthly accrued wages of employees are calculated on the basis of information received from organizations: the fund for the accrued employees’ wages for the year is divided by the average annual number of employees and by 12 months [17]. In general, most of the described indicators have a fairly logical and transparent calculation which allows obtaining the most accurate estimates.

The situation with the indicators of the third group characterizing the financial performance of enterprises is more complicated. Information on total assets, total liabilities and fixed assets of enterprises is presented in the balance sheet of the organization where all indicators are calculated in accordance with the Russian Accounting Standards. The sales volume and pretax profit are presented in the profit and loss account.

Financial security assessment of the chemical industry in the Republic of Crimea

The volume of shipped own produced goods, performed work and services of the chemical industry of the Republic of Crimea in January-November 2015 – 2017 is presented in Table 1.

As the table 2.1 shows there is a positive dynamics in the volume of goods shipped in 2015 – 2017. In January-November 2015, the volume amounted to 9,469.1 million rubles, in 2016 there is an increase by 4,671.1 million rubles and by November 2016 the volume equaled to 14,140.2 million rubles. There occurred a rise of 1,054.9 million rubles in 2017 as well and by the analyzed period the volume composed 15,195.1 million rubles.

For assessing the sales volume of chemical products by months in the Republic of Crimea it is necessary to forecast the sales volumes for December 2017. For this purpose the method of analytical alignment will be used. To complete the forecast, the statistical monthly data for 2017 will be applied.

The method of analytical alignment uses the following equation:

$$Y = a_0 + a_1 \times t, \quad (2.1)$$

where:

$$a_0 = \frac{\sum Y}{\text{Number } Y}$$

(2.2.)

$$a_1 = \frac{\sum ty}{t^2} - \text{actual sequence of data;}$$

t – time period.

The calculation table for forecasting the volume of the shipped own produced goods is presented in Table 2.

Table 2. Construction of the calculation table for forecasting the production volume.

	Y	t	t ²	ty	y(aver)
1	1062,3	-5	25	-5311,5	1285,364
2	1288,3	-4	16	-5153,2	1304,565
3	1760,7	-3	9	-5282,1	1323,767
4	1389,3	-2	4	-2778,6	1342,969
5	1168,7	-1	1	-1168,7	1362,171
6	1307,9	0	0	0	1381,373
7	1811,2	1	1	1811,2	1400,575
8	245,0	2	4	490	1419,776
9	2485,2	3	9	7455,6	1438,978
10	1333,0	4	16	5332	1458,180
11	1343,5	5	25	6717,5	1477,382
	15195,1		110	2112,2	15195,100

Source: Calculated by the authors.

$$a_0 = 15195,1/11 = 1381,37 \text{ thousand rubles.}$$

$$a_1 = 2112,2/110 = 19,202 \text{ thousand rubles.}$$

$$Y(t) = a_0 + a_1 \times t$$

The forecast of production volume for one forecast period:

$$Y_{\text{vol_prod1}} = a_0 + a_1 * 6 = 1381,4 + 19,2 * 6 = 1496,6 \text{ thousand rubles.}$$

Monthly volume of shipped own produced goods, performed works and services in the chemical industry of the Republic of Crimea in 2015 – 2017, and the calculations results is presented in Table 3.

Table 3. Monthly volume of shipped own produced goods, performed work and services in the chemical industry of the Republic of Crimea in 2015 – 2017, million rubles.

	2015	2016	2017
January	600,5	884,6	1062,3
February	729,7	1072,3	1288,3
March	1075,3	1335,1	1760,7
April	847,7	1319,7	1389,3
May	855,9	1281,5	1168,7
June	749,3	1516	1307,9
July	1051,6	1519,9	1811,2
August	971,4	1534,8	245
September	889,2	939,5	2485,2
October	784,8	1332,2	1333
November	913,7	1404,6	1343,5
December	939,9	1080,9	1496,6 (forecast)

Source: Calculated on the basis of the data [18].

The table 2.3 presents positive dynamics of shipped goods volume in 2015 – 2017. In 2015 the largest volume of shipped own produced goods was observed in March (1,075.3 million rubles) and in July (1051.6 million rubles), in other months there was the decrease in volume but nevertheless the dynamics remained positive. In 2016 the largest sales volume of own production appeared in July (1,519.9 million rubles) and in November (1,404.6 million rubles), the smallest volume – in January (884.6 million rubles). In 2017 the largest own production volume of chemical industry enterprises was recorded in September (2,485.2 million rubles) and in July (1811.2 million rubles), the smallest sales volume was evidenced in August (245 million rubles). The sales volumes that occurred in August and September 2017 should be highlighted. Apparently, the greatest part of the goods produced by the enterprises of the chemical industry in the Republic of Crimea in August was sold by them in September. Therefore, this jump in sales volumes was recorded in September.

The calculation of absolute changes in the volume of shipped own produced goods, performed work and services in the chemical industry of the Republic of Crimea in 2015 – 2017 will be presented in Table 4.

Table 4. Absolute change in the volume of shipped own produced goods, performed work and services in the chemical industry of the Republic of Crimea in 2015 – 2017, million rubles.

	2015	2016	2017
January	-	-	-
February	129,2	187,7	226
March	345,6	262,8	472,4
April	-227,6	-15,4	-371,4
May	8,2	-38,2	-220,6
June	-106,6	234,5	139,2
July	302,3	3,9	503,3
August	-80,2	14,9	-1566,2
September	-82,2	-595,3	2240,2
October	-104,4	392,7	-1152,2
November	128,9	72,4	10,5
December	26,2	-323,7	153,1(forecast)

Source: Calculated on the basis of the data [19].

As Table 2.4 presents, the 2015 had the greatest increase in the volume of shipped own produced goods by the chemical industry enterprises which was observed in March (by 345.6 million rubles) and in July (by 302.3 million rubles), the greatest decline was recorded in April (by 227.6 million rubles). In 2016, the largest increase occurred in October (by 392.7 million rubles), the largest decrease was noted in September (by 595.3 million rubles) and December (by 323.7 million rubles). In 2017, the greatest jump in the volume of shipped own produced goods by the chemical industry enterprises occurred in September (by 2,240.2 million rubles), and the maximum decrease – in August (by 1,566.2 million rubles). It should be as well noted that the rather large decrease in sales volumes occurred in October 2017 (by 1152.2 million rubles).

Calculation of growth (decrease) rates in the volume of shipped own produced goods, performed work and services in the chemical industry of the Republic of Crimea in 2015 – 2017 is shown in Figure 2.

In 2015, the highest growth rate was evidenced in March (1.4736) and July (1.4034). The largest decrease in sales volumes was recorded in April (-0.7883) and September (-0.9154). In 2016 the highest growth rate of shipped own produced goods, performed work and services in the chemical industry in the Republic of Crimea occurred in October (1.4180), the lowest – in December (0.7695). In 2017 the highest growth rate of the shipped goods volume was recorded in September (10.1437), in July (1.3848) and in March (1.3667), and the slowest growth rate was registered in August (0.1333). It should be highlighted that a tenfold increase in the sales volume of own produced goods by chemical industry enterprises in the Republic of Crimea was due to the fact that the volume of products shipment was very low in August 2017.

The volume of the shipped own produced goods performed works and services in the chemical industry of the Republic of Crimea in 2015 – 2017 accrued total results is presented in Figure 3.

A positive aspect is the fact that the volume of shipped own produced goods, performed work and services of the chemical industry in the Republic of Crimea during 2015 – 2017 is constantly increasing. In 2016 compared to 2015, the volume of own production increased by 4812 million rubles or by 46.230% and amounted to 15221.1 million rubles. In 2017 the shipped products volume of the chemical industry grew as well and estimated 16691.7 million rubles (taking into account the volumes forecast in December 2017), which is by 1,471 million rubles or 9.662% more than in 2016.

The structure of the shipped own produced goods volume performed work and services of the chemical industry in the Republic of Crimea in 2015 – 2017 is shown in Figure 4.

In 2015 the largest own production volume of chemical industry enterprises was sold in July (10.103%), the smallest – in January (5.769%). In 2016 the largest own production volume of chemical industry enterprises was marketed in August (10.083%), the smallest – in January (5.812%). In 2017 the largest own production volume of the chemical industry enterprises was realized in September (14.889%), the smallest – in August (1.468%).

For a complete dynamics analysis of the employees' number at chemical industry enterprises, it is necessary to make a forecast of the employees' number for October-December 2017. The calculation table for forecasting the number of employees will be developed further (Table 5).

Table 5. Development of the calculation table for forecasting the number of employees.

	Y	t	t ²	ty	y(aver)
1	7755	-4	16	-31020	7849,311
2	7709	-3	9	-23127	7876,428
3	8062	-2	4	-16124	7903,544
4	8061	-1	1	-8061	7930,661
5	8057	0	0	0	7957,778
6	8004	1	1	8004	7984,894
7	7961	2	4	15922	8012,011
8	8011	3	9	24033	8039,128
9	8000	4	16	32000	8066,244
	71620		60	1627	71620,000

Source: Calculated by the authors.

$$a_0 = 71620/9 = 7958 \text{ employees}$$

$$a_1 = 1627/60 = 27 \text{ employees}$$

$$Y(t) = a_0 + a_1 \times t$$

Forecast of employees' number for one forecast period:

$$Y_{\text{num_empl1}} = a_0 + a_1 * 6 = 7957,78 + 27,117 * 5 = 8093$$

empl. — October

$$Y_{\text{num_empl2}} = a_0 + a_1 * 6 = 7957,78 + 27,117 * 6 = 8120$$

empl. — November

$$Y_{\text{num_empl3}} = a_0 + a_1 * 6 = 7957,78 + 27,117 * 7 = 8147$$

empl. — December

Let us consider the monthly dynamics of the employees' number at the chemical industry enterprises in the Republic of Crimea in 2015 – 2017 (Table 6).

Table 6. Number of employees (monthly) at the chemical industry in the Republic of Crimea in 2015 – 2017, pers.

	2015	2016	2017
January	7210	7916	7755
February	7546	7615	7709
March	7228	7570	8062
April	7418	7652	8061
May	7436	7678	8057
June	7447	7691	8004
July	7432	7700	7961
August	7432	7697	8011
September	7427	7699	8000
October	7452	7672	8093 (forecast)
November	7472	7655	8120 (forecast)
December	7688	7893	8147 (forecast)

Source: Calculated on the basis of the data [18].

In 2015 the number of employees varied between 7,210 people (January) and 7688 people (December). In 2015 at the enterprises of the chemical industry in the Republic of Crimea there worked 7,432 people on the average.

In 2016 the employees number fluctuated between 7570 people (March) and 7893 people (December). On average in 2016 at the chemical industry enterprises in the Republic of Crimea 7703 people were employed.

In 2017 the number of employees ranged between 7709 people (February) and 8062 people (March). On average in 2017 at the enterprises of the chemical industry in the Republic of Crimea 7,998 people worked, considering the forecast data.

The financial security indicator of the chemical industry in the Republic of Crimea was defined as the ratio of the monthly volume of shipped own produced goods, performed work and the services of the chemical industry to the monthly number of employees at these enterprises.

The calculation of the financial security level of the chemical industry in the Republic of Crimea in 2015 – 2017 is shown in Figure 5.

The positive aspect is the fact that the financial security level of the chemical industry in the Republic of Crimea is constantly increasing. In 2015 the financial security level of the chemical industry averaged 116,711 thousand rubles / person. At the same time the highest level was recorded in March, when 148.769 thousand rubles of shipped own produced goods amounted per one working person in the chemical industry of the Republic of Crimea, and the lowest level – in January, when the integral index of financial security was equal to 83,287 thousand rubles / person.

RESULTS AND DISCUSSION

Role and significance of the chemical industry in the economy of the Republic of Crimea

The chemical industry is one of the most important components of the industry. It plays an important role in the development of the world economy by expanding the raw material base of construction and production. At present, the chemical complex is one of the main polluters of the environment; its essence is based on the creation of technologies capable of neutralizing or using the industrial waste.

The chemical industry is that kind of industry where the processing of raw materials by chemical methods is of key importance. The main materials used in this industry are various mineral raw materials and oil. The role of the chemical industry in the modern world is great. Thanks to it, people can use various plastic products, as well as other products of oil refining. The industry provides explosives, fertilizers for agricultural needs, medicines, etc. as well.

The industrial complex of the Republic of Crimea is the leading sector of the region's economy, which accounts for the largest share in the gross regional product (up to 17%) (<http://rk.gov.ru/rus/info.php?id=622015>) [20]. The industrial production of the Republic concentrates large, medium and small enterprises, including individual entrepreneurs engaged in industrial activities and employees. The chemical industry of Crimea ranks third after mechanical engineering and food industry on the cost of produced goods.

The chemical industry of the Crimea and its scale is the result of the policy of industrialization and chemicalization of the economy with the orientation towards the use of natural raw materials. Salts of Crimean lakes and Sivash have a complex chemical composition, represented by magnesium chloride and sodium chloride, Glauber's salt, bromine, potassium and magnesium sulfate. The Crimea has a lot of limestone that can be used for the production of soda, sodium sulfate, magnesia cement, gypsum. Bentonite clays can be used as fillers for plastics, linoleum and rubber [21].

Lake Sivash was the most powerful raw material base of sodium salts in the European part of the USSR. The enterprises created near the sources of raw materials include the Saki chemical plant and the scientific and industrial association "Iodobrom", based on the use of local lakes brine, as well as two plants in Krasnoperekopsk – the Crimean soda and Perekopsky bromine one that use the raw materials of the Sivash salt lakes [22]. The products of these enterprises are medical bromide preparations, potassium permanganate, and soda. The enterprises are working on the production of household chemicals – synthetic detergents, plastic and perfume products.

The Crimea has the largest chemical enterprises that act as monopolists both in the country and in the CIS countries; they produce goods that are competitive on the world market. The emergence of the chemical industry in the Crimea refers to the early XX century connected with the presence of unique salt deposits.

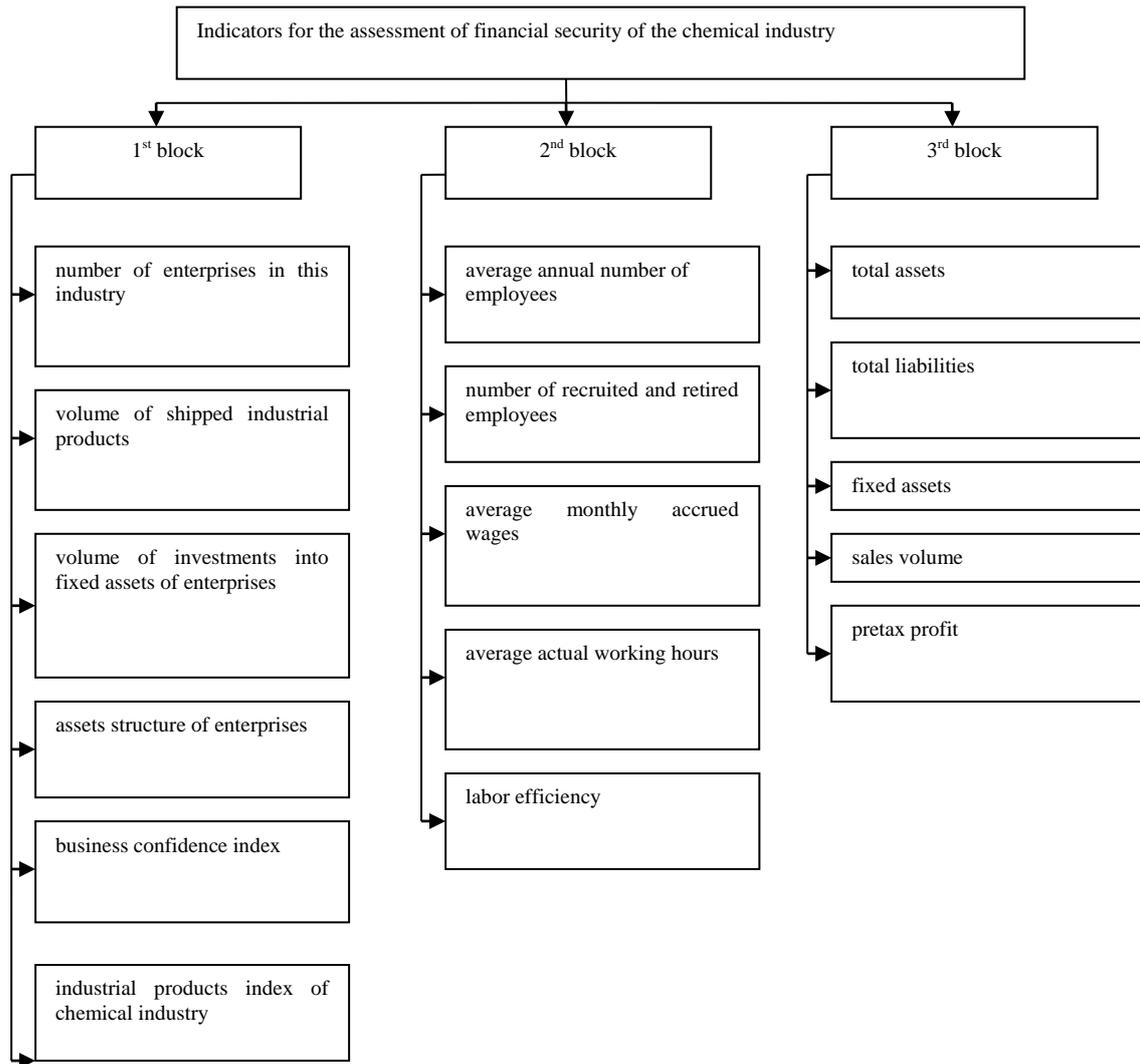


Fig. 1. Indicators for the assessment of financial security of the chemical industry.

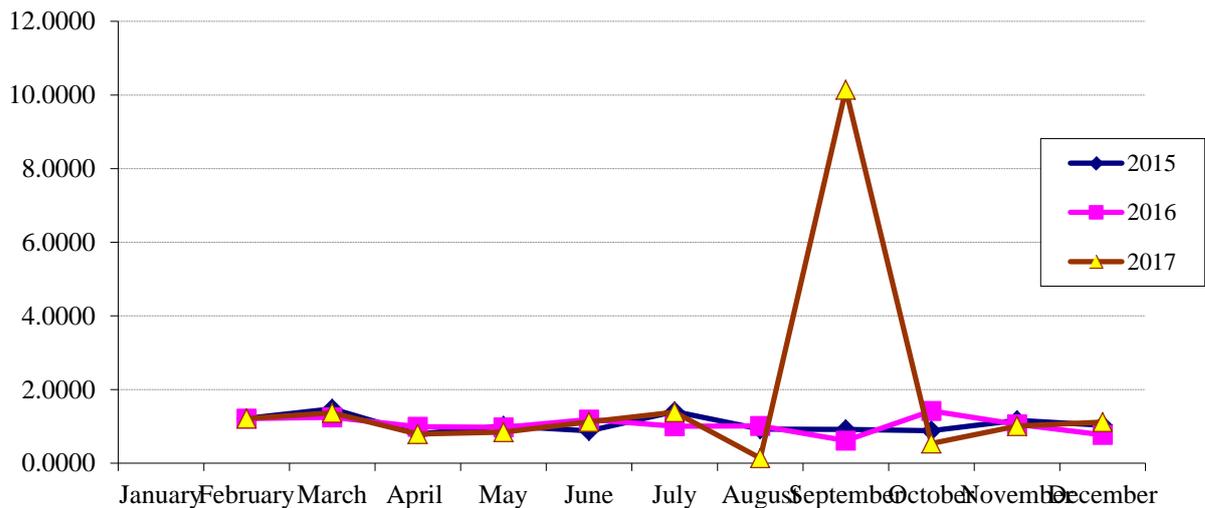


Fig. 2. Graphical representation of the growth (decrease) rate in the volume of shipped own produced goods, performed work and services in the chemical industry of the Republic of Crimea in 2015 – 2017, %.

Source: Calculated on the basis of the data [18].

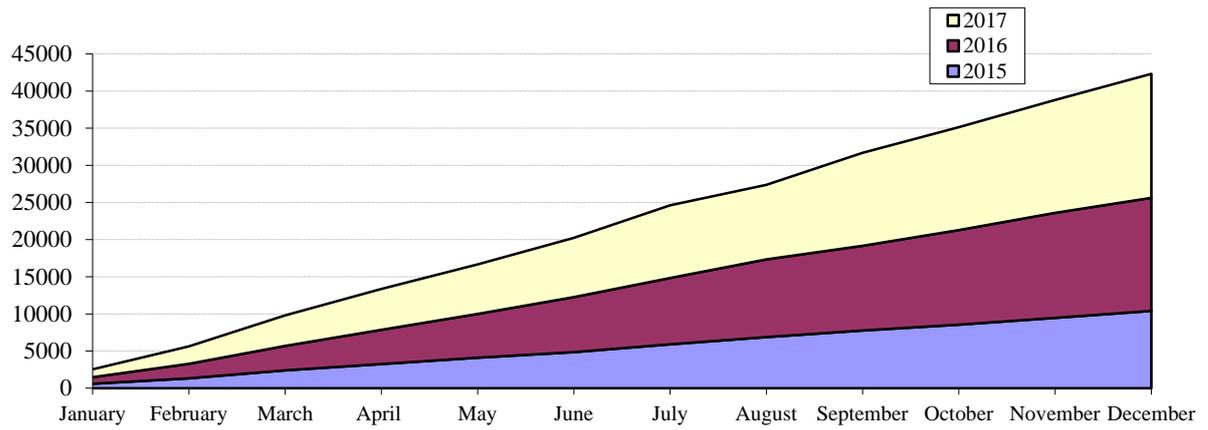


Fig. 3. The volume of shipped own produced goods, performed work and services in the chemical industry of the Republic of Crimea in 2015 – 2017 accrued total results, mln. rub.

Source: Composed on the basis of the data [18].

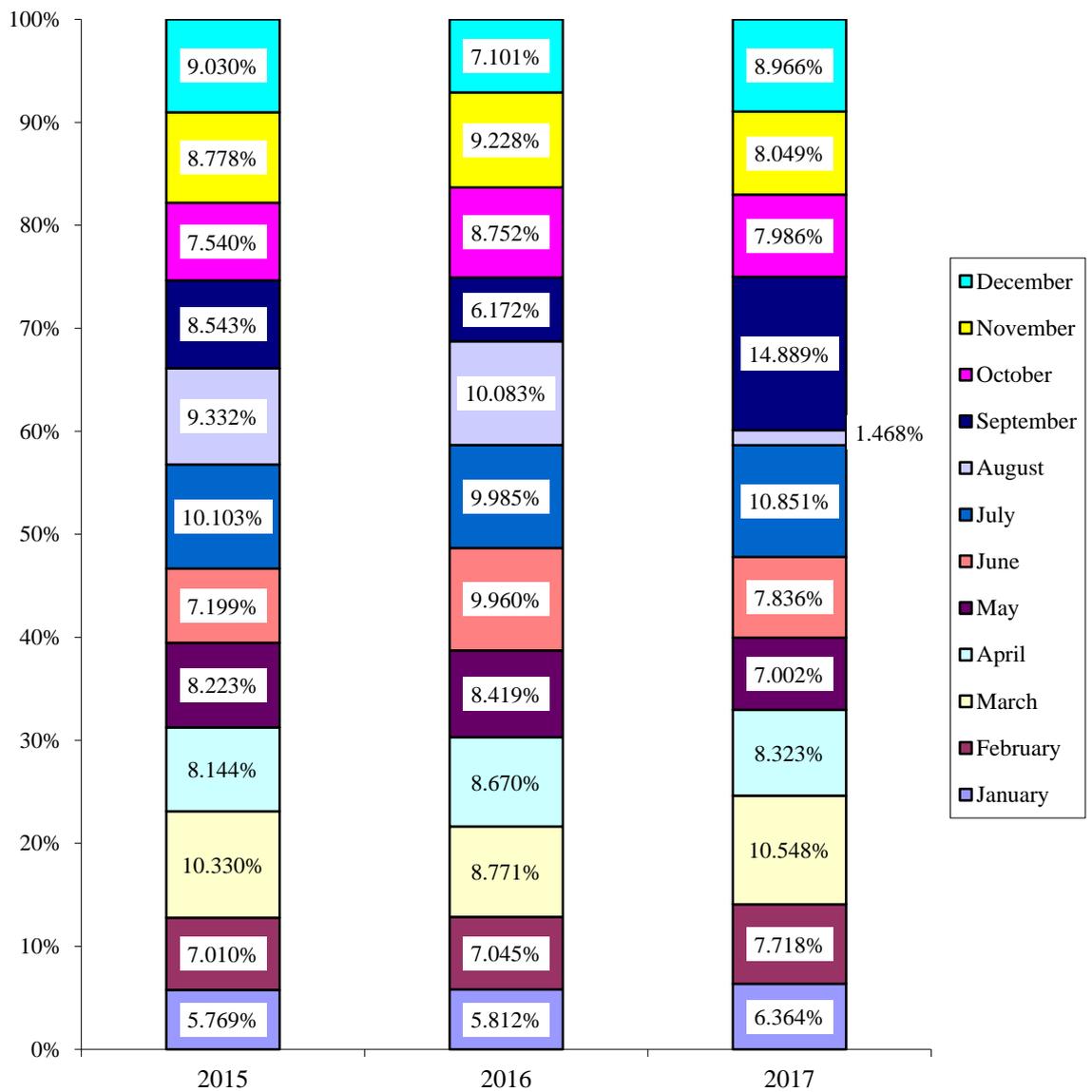


Fig. 4. Structure of shipped own produced goods, performed work and services of the chemical industry in the Republic of Crimea in 2015 – 2017, %.

Source: Calculated on the basis of the data [18].

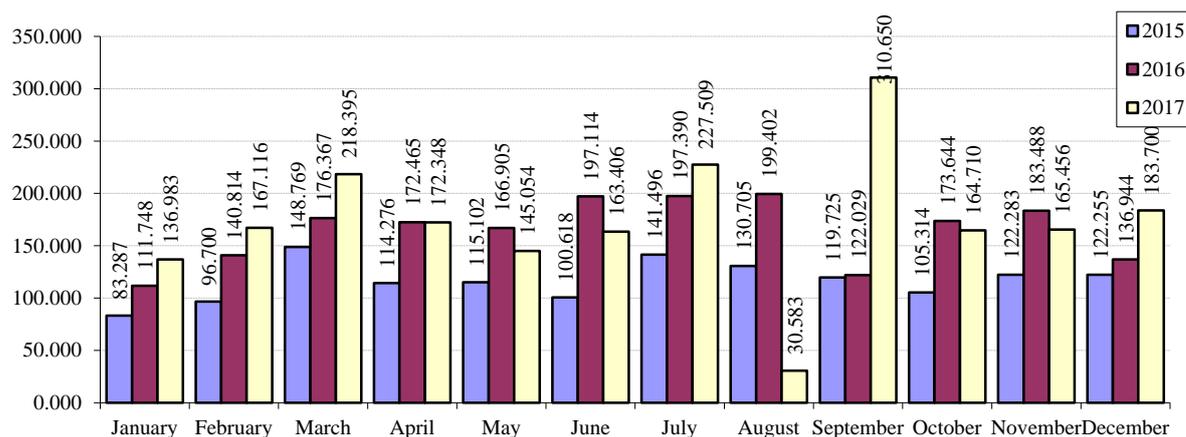


Fig. 5. Financial security level of the chemical industry in the Republic of Crimea in 2015 – 2017.

Source: Calculated on the basis of the data [18].

The history of the Scientific and Production Association “Yodobrom” started at June 1, 1926, when the Salt Scientific Test Station was founded, the first scientific institution in the iodine-bromine industry. Having passed a long way of development and reorganization, on August 3, 1976 the All-Union Scientific Research Institute of Iodine-bromine Industry – the All-Union Scientific Research Institute “Yodobrom” – VNI “Yodobrom” was established.

The creation of chemical enterprises in the north of the Crimea was carried out on the basis of the geological exploration expedition operation in 1931, when it was decided to build a chemical enterprise and lay the city of chemists. The most important lakes of the Perekop group are: Staroe, Krasnoe, Kiyatskoe, Kerleutskoe and other smaller ones. The most important feature of these lakes is the composition of their brine, with no bitter salt (salt of marine origin). The plant was built in September 1932 on the basis of the Staroe and Krasnoe Lakes. The Perekopsky Bromine Plant became the first-born of the chemical industry in the Northern Crimea. [19].

The second stage in the development of chemical production in the Crimea comes in the 1960s and 1970s, and is connected with the need for chemicalization of the national economy – the need for chemical products of agriculture, other industries and the domestic sphere. The Saki Chemical Plant continues to extract dozens of chemical products from the Saki Lake brine needed by the national economy, the needs of which have been increasing year by year. Since 1962 the plant has mastered the production of copper vitriol for processing vineyards and gardens from agricultural pests and diseases. [23]

In the 60s of XX century there appeared the enterprises focused on the consumer factor: the Simferopol plastic plant (to provide engineering with plastic parts and the needs of the population in household goods made of plastic), which produced more than 200 types of various products, the household chemical factory that produces synthetic washing and cleaning products, and the joint Crimean-American enterprise “Sizakor”, which produced from plastic the equipment for drip irrigation, plumbing units and parts, pipes, containers, packing and parts for the car “Tavriya”.

The history of another large chemical enterprise the Crimean Soda Plant, dates back to 1967 when it was built near Lake Sivash. The construction site was chosen because of the presence of a natural source of table salt, energy resources and water resources of the North-Crimean Canal near the production site, as well as convenient transport logistics and the possibility of dumping production wastes into closed salt lakes. In 1973 the

production of disodium phosphate was started and in 1975 the production of soda ash began.

The decision on building the new chemical giant – the Crimean state production association “TITAN” dates back to December 28, 1969.

The third stage of chemical production in the Crimea refers to the 90s and is associated with the emergence of a new direction in the development of the chemical industry in the Crimea – the use of technology for waste disposal. Established in 1991 the “Polyvtore” plant in Krasnoperekopsk for the processing the secondary polymeric raw materials was unique in its environmentally friendly technology, processing of environmentally harmful polymer waste, production of goods necessary for the Crimea – polyethylene tape for agriculture and for hydraulic engineering, parts for electrical engineering, packaging for food and perfume products. The same function was performed by the Simferopol plant “Sizakor” which produces equipment for the drip irrigation of agricultural plants [24].

The Crimean chemical enterprises during the economy crisis of the 90s have worked relatively stable but the shortage of fuel, electricity and the reduction in the supply of certain raw materials types led to the reduction in production and even to temporary plant shutdowns [25].

In the region the largest enterprises are LLC “Titanium Investments – Crimean Titanium”, JSC “Crimean Soda Plant” and OJSC “Brom”. The enterprises exported about 75% of their output. The stable and guaranteed deliveries were carried out to more than 60 world countries, among which Germany, South Korea, Taiwan, Singapore, China, Turkey, Italy, Iran, Brazil, Canada and Mexico were leading.

With all the successful development and weighty significance, the chemical enterprises became the source of significant environmental disturbances. The overcrowded evaporative storage tanks flooded the agricultural lands of adjacent farms, and sulfur dioxide, carbon monoxide, chlorine, bromine salts were emitted into the atmosphere. Total emissions of these substances are increasing annually. Serious damage was caused to the marine environment. Annually 16-18 million m³ of liquid wastes of chemical enterprises were dumped into the Karkinitzky Gulf and Sivash. In the discharges zone the plant and animal life perished and the boundary of hydrogen sulfide contamination in the coastal zone rose.

The solution to the conflict ecological situation was the improvement of the technological processes of chemical enterprises in the direction of waste less production. In 2004 the PJSC “Crimean TITAN” was one of the first to implement the quality management system, ecology and labor protection in accordance with the requirements of international standards ISO

9001: 2004 (quality standard), ISO 14001: 2008 (environmental protection). Ensuring ecological and environmental security in the face of increasing chemical production is an integral part of the chemical enterprise activities. The structure of the enterprise highlights an environmental center, which annually carries out all the necessary work on the implementation of the planned nature protection measures. [24,25].

The capacities of chemical enterprises located in the Crimea and the qualification of their production personnel have made it possible to solve the problem of recycling industrial and agricultural waste on the peninsula. [24,25] The sewage treatment plants were also built at the Saki Chemical Plant producing potassium permanganate and bromide metal. Wastes from these industries were used in the production of cement in Bakhchisarai improving its quality and were directed as well to the production of bricks.

In 2016 the financial security level of the chemical industry in the Republic of Crimea averaged 164,859 thousand rubles / person, which is 48,148 thousand ruble / person more than in 2015. At the same time, the highest level was recorded in August, when 199,402 thousand rubles of shipped own produced goods accounted per one working employee in the chemical industry of the Republic of Crimea, and the lowest level – in January, when the integral index of financial security was equal to 111,748 thousand rubles / person.

In 2017 the annual level of financial security has also increased. It amounted to 173,826 thousand rubles / person, which is 8,967 thousand rubles / person more than in 2016 and by 57,115 thousand rubles / person more than in 2015. At the same time, the highest level was recorded in September, when 310,650 thousand rubles of shipped own produced goods accounted per one working employee in the chemical industry of the Republic of Crimea and the lowest level – in August, when the integral index of financial security was equal to 30,583 thousand rubles / person. It is necessary to highlight the financial security of August, September and October 2017. The following results were formed: 30,583 thousand rubles / person in August, 310,650 thousand rubles / person in September and 164,710 thousand rubles / person in October. The obtained information indicates that the biggest part of the goods produced by the chemical industry enterprises of the Republic of Crimea was shipped in September. This explains the large value of the financial security level in September 2017.

The chemical industry of the Republic of Crimea is a budget-forming one. The Crimea has large chemical enterprises that form the export core of the Republic. An essential factor of successful production activity is the presence of a local raw material base and considerable labor resources on the peninsula. The main enterprises of the chemical industry are the Armenian branch of LLC "Titanium Investments", PJSC "Crimean Soda Plant", JSC "Brom" and LLC "Simferopol Production Association "Krymplast". The development of the chemical industry plays an important role in the implementation of import substitution policies but there is a number of problems in integrating the Crimean chemical industry into the Russian economy: the lack of the necessary technical water used for the production cycle (previously water flowed through the North Crimean Canal); complexity of product transportation; decrease in demand for products of enterprises; breaking ties with foreign buyer plants. [24,25].

CONCLUSIONS

The understanding the factors and threats to the financial security of the region can ensure the settlement of many problems in the region financial security.

The financial security factor of the chemical industry is any event or chain of events occurring in the financial sphere of the chemical industry and which affects its financial security

positively or negatively. The factors affecting the region financial security can be internal and external.

The threat to the financial security of the chemical industry is a possible violation of the necessary financial system state of the chemical industry due to the influence of financial security factors. The threats to the financial security of the region can be internal and external.

The chemical industry of the Republic of Crimea is a budget-forming one. Since chemical factories have always acted as town-forming enterprises, it is necessary to formulate options for supporting them by the state power to ensure social stability and to consider projects for integrating the chemical industry of the Republic of Crimea to the mainland, namely to Russian industry holdings with the goal of integrating the sales system in the Russian market, as well as to the markets where the chemical products are in demand, for example in Central Asia or in Africa.

The prospects of the Crimean chemistry largely depend on the establishment of interregional and foreign economic trade. The enterprises located at sources of local raw materials and with effective structural transformation, could be an important component of the industrial Crimean economy.

Based on the completed analysis, the volume of shipped own produced goods, performed work and services of the chemical industry in the Republic of Crimea in January-November 2015 – 2017 had increased by 5726 million rubles.

The volume of own accrued total production, monthly, growth rate, absolute change, structure of own production in 2015-2017 had a slight decrease in indicators but the dynamics remained positive.

The chemical industry is one of the most important industry components. Analyzing the current situation, it can be noted that the chemical industry in 2014 was in a very difficult situation, since it has been the most export-oriented of all industrial sectors of the Crimea and had more negative effect of sanctions and the severance of partnerships than other industries respectively.

FURTHER RESEARCHES DIRECTIONS

The considered and indicated problems in the chemical industry development of the Republic of Crimea presuppose the strategy development for the organizations of the region's budget-forming industry.

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