

## ANALYSIS OF MOTOR CAR INDUSTRY IN RUSSIAN FEDERATION

*Sushko A.V., Lizunkov V.G.**Yurginsky Technological Institute (Branch), Tomsk Polytechnic University, Yurga***Keywords:** industry, motor car, innovation, development strategy, production, investment.

**Abstract.** The paper gives consideration to the situation in motor car industry in Russia. Motor car industries of economically developed countries are compared and analyzed. The growth rate of motor car industry is found out to correlate with innovations and R&D costs. Competitive ability of motor cars is calculated according to Delphi procedure. Finally, measures are suggested to achieve the main purpose – respond to the demand on the domestic motor car market.

Mechanical engineering is a big branch of Russian national economy. In recent years the branch of mechanical engineering has been subject to essential market fluctuations. The tendency of “permanent non-stability” makes core enterprises intensify innovations in order to increase efficiency of operating processes and optimize costs. Resource-intensive character complicates development of the branch, as the consequence, predetermines low competitive ability of final products. Moreover, motor car industry needs technological modernization [6].

In economically developed countries approximately 30-50% of manufacturing output falls to the share of mechanical engineering (Germany – 53.6%, Japan – 51.5%, Great Britain – 39.6%, Italy – 36.4%, China – 35.2%). The profit provided by mechanical engineering supports complete technical retooling of the industry in whole each 8-10 years. And herewith the share of mechanical engineering products in gross domestic product of EU-countries amounts to 36-45%, in the USA – 10%. The share of mechanical engineering in GDP of Russian Federation was about 6-13% (1998-2013); in the USSR it approximated to 40% in 1990 [1].

Mechanical engineering consists of more than 20 segments of industry. As regards the structurally viewed volume of output, motor car industry and defense-industrial sector are main segments of Russian mechanical engineering (Fig.1).

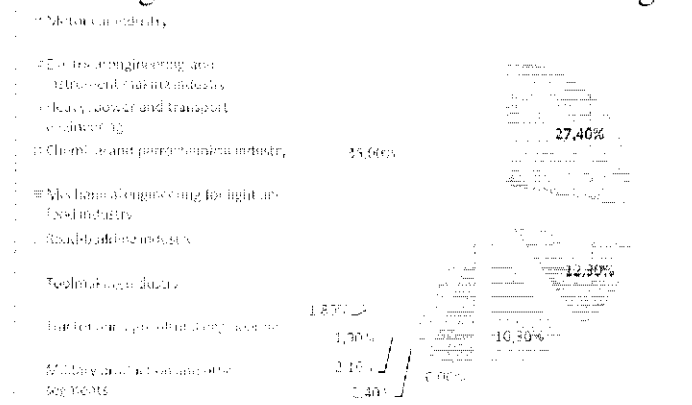


Fig.1. The structure of total output volume [2]

Figure 2 demonstrates the correlation of motor car production in leading world countries in 2013 as physical output indicators. As we can see, China has the top

position on the market of motor car production, more than a half of products on the world market is manufactured in China (22116 thousand cars). As many products (1970 thousand cars, see Fig. 3) as in the 1980-s are currently produced in Russia.

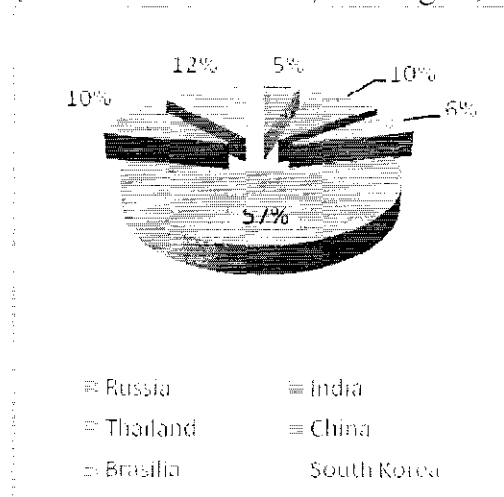


Fig. 2. Motor car production in world countries in 2013

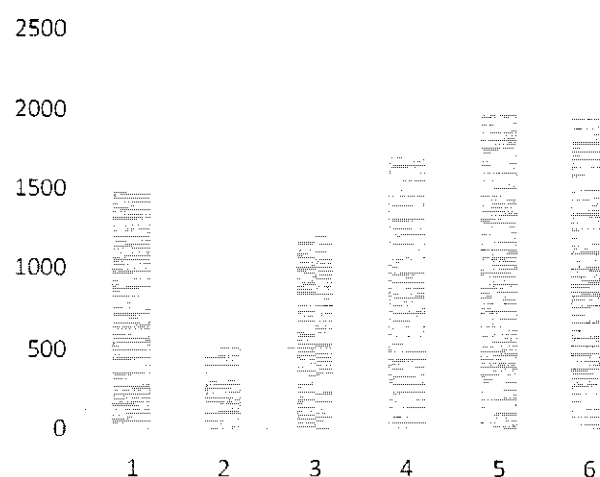


Fig. 3. Motor car production leading in Russia (2008-2013)

In 1980 the USSR had a well-developed motor car industry. In terms of volume of output (1900 thousand cars) the USSR had the fifth position in the world; in the same year in South Korea 123 thousand cars were produced, in China – 222 thousand, in India – 114 thousand, in Mexico – 490 thousand, in Iran – 161 thousand, in Thailand – 73 thousand. Nevertheless, there was no own motor car industry in the mentioned above countries. However, over the period, when domestic motor car industry stagnated, China became the top-giant of motor car production (22116 thousand cars in 2013, although in 2008 the volume of output was only 8010 thousand cars), India, Mexico and Brasilia passed ahead of Russia, and Iran and Thailand practically approached the level of Russia. In 2010 the volume of car output in Russia was down by 25% as compared with it in 1980, that is, in the soviet period of Russian history more cars were produced than in 2013.

The country was worse than all developing countries because the growth rate of motor car production reduced: over the period 1980–2013 the volume of motor car output increased threefold in Brasilia, in Mexico – fivefold, in Iran – tenfold, in Thailand – twentyfold, in India – thirty fivefold, in South Korea – thirty eightfold, in China – eighty threefold, whereas in Russia by 1.1 times only. As the result Russia came down from the fifth position to the 12<sup>th</sup> one, and it isn't obviously a breaking point.

Technical standards of recently produced Russian motor cars in generally meet international requirements, but with significant time delay (up to 4-7 years). There is also a lag in reliability level, useful life, fuel efficiency, comfort, as well as one according to application of advanced technical ideas and technologies in serial production.

Since 2005 and up to now the output volume of domestic motor cars has decreased by more 40%, whereas overseas manufacturers have increased their output

sixtyfold: in 2005 approximately 14 thousand overseas motor cars were produced in Russia, now their output exceeds 1 million per year. Despite such evident technical growth of car output in Russia, it was quite irrelevant for national budget. The number of workers employed in the industry reduced by 2-2.5 times [3]. Therefore, the leading positions on the domestic market belong to motor cars assembled at overseas enterprises, located in Russia, but increasing budgets of their states.

Experts say that minimum 60% of localized components are to be provided in assembled products for successful activities of mechanical engineering enterprises. For instance, the Brazilian government has set 80% localization degree of component units for shipbuilding industry. As a comparison, in 2013 Russian motor car industry had \$ 69.7 - 3.8 billion import-export correlation of motor cars, component and reserve units. If this trend continues, future domestic motor car industry and mechanical engineering in whole will hardly succeed, because in current conditions motor car industry can be replaced by industrial assembly.

Russian motor car industry and sale have to meet about 70% of domestic demand. The share of own elements of the entire cycle is to be minimum 40-60% in cost of mechanical engineering production. We provide only 30-35% of domestic demand using our own resources, and the share of own elements is 25-30%.

Investments made by Russian companies into development of the industry in proportion to the volume of sales were 4-5 times smaller than those of their overseas competitors. It is the consequence of insufficient efficiency of credit attraction. It is currently quite impossible to attract credits with credit periods comparable both with payback periods of motor car industry (6-7 years) and with average crediting rates (8-10% annual interests). Overseas top car manufacturers attract long-term credits with 5-6% interest rates.

The growth rate of motor car industry falls mainly because the state doesn't have an integrated strategy of conversion and rapid development of domestic mechanical engineering, which is substantiated and grounded on achievements of science and engineering.

In our opinion, there are all necessary resources available for rapid development of mechanical engineering in Russia. First of all, they include own sources of energy and raw materials, developed communication net, scientific, intellectual, human resources and production potential. Moreover, the government of the country clearly realizes the situation and wants to change it for better.

Innovative activity is one of basic conditions needed for modernization of contemporary economy, a guarantee of transition to a new, post-industrial stage of social progress. R&D costs of Russian car manufactures don't exceed 1% of annual revenue, but they are minimum 4-5% in overseas top companies. As the consequence, the cycle of new model development in Russia is far longer and cars product range is renewed slower. If an averaged index of R&D costs made by global manufacturers is considered as a standard - 4%, for this purpose Russia has to invest at least 44-53 billion rubles annually.

Preliminary made evaluation has stated that development and purchase of new technologies, conversion of manufacturing capacities in domestic car industry needs approximately \$ 100-150 billion.

It is known from experience that 70% of enterprises of nearly all industries prefer to buy machinery and equipment to other kinds of innovations. Only 8% of enterprises are interested in purchasing licenses and patents. These enterprises and companies need to be supported, given corresponding preferences in the first place.

Generally speaking, motor car industry in Russia has a positive dynamics of its development. The main purpose of this industry is to modernize equipment and meet domestic demand. Motor car industry has to solve some problems to achieve this purpose.

First, own products have low competitive ability. Customers are hard-to-please. Products made currently could meet the demand of customers 7 years ago. For the last 5 years domestic cars have not been attractive for Russian customers. It is necessary to increase the technical level of reliability, comfort, fuel efficiency in order to make products more competitive.

Second, R&D costs are to be increased two-threefold as against their current level to make own cars more competitive and to carry out retooling of the industry.

Third, car industry suffers from outflow of R&D experts and shortage of skilled personal. Hard working conditions, low salary, absence of demand from authorities have a negative effect on growth rates of motor car industry and economy of the country in whole.

Aforementioned problems are to be solved with the help of state sector. Opportunities of business in motor car industry and its potential depend on coordinated state economic policy.

### Reference

1. Analytical bulletin, Mechanical engineering: analysis and prognoses, J. 13 (2013).
2. Information on [http://www.perspectivy.info/rus/ekob/globalnyj\\_rynok\\_mashinostrojenija\\_2013-10-24.htm](http://www.perspectivy.info/rus/ekob/globalnyj_rynok_mashinostrojenija_2013-10-24.htm)
3. Zulkarnaev I.U., L.R. Il'yasova, Method of calculation of integral competitiveness of industrial, mercantile and financial businesses, J. Marketing in Russia and abroad. 4 (2001).
4. Lisachev A.N., Local economic policy: principal stages of development, basic types, tools and strategies, J. Applied Mechanics and Materials. 379 (2013) 224-228.
5. Fedotov D.M., Innovative issues and processes of development in Russian metallurgical industry, J. Russian business. 11 (2013) 85-90.
6. Sushko A.V, Lizunkov V.G, Lisachev A.N, Analysis of the production of passenger cars industry of Russia: Proceedings of the International scientific-practical conference / Yurga Institute of Technology actual problems of modern engineering. Publ: Tomsk, 2014. S. 469-473.