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# FORECASTING OF PROGRESS TRENDS IN THE WORLD DIAMOND MARKET

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## ABSTRACT

*The paper considers the structure of the world diamond market. The current situation of the countries with a dominant position in the production of diamonds is surveyed. The analysis of the dynamics of production by countries is carried out, the factors of development of the industry and resource capabilities of individual states are identified. The factors of supply and demand in the markets of brilliants and diamonds are assessed. Forecasts of technology development and trade are given in conjunction with the expansion of the presence of large diamond mining companies in developing countries. The impact of synthetic diamonds on the industry is assessed, and their future market share change is forecast. A comprehensive analysis of the structure of rough diamonds export is carried out, and supplies in natural units and in terms of value to various countries are determined. The conclusions about the threats, constraints and opportunities of development of the Russian diamond industry are drawn. The risks of fall in demand for rough diamonds over the next five years are analyzed. The conclusions concerning the possibility of expansion of diamond production in Russia, as well as the development of a diamond processing cluster in the Far East have been obtained. The set of external and internal factors of development of the world's largest manufacturers of diamonds and brilliants is assessed in a consistent manner. The relationship between the current margin level of the diamond business and the prospects for its long-term development is evaluated. A forecast and assessment of the investment attractiveness of the Russian diamond industry is given on the basis of a combination of factors that have a multidirectional effect.*

**Keywords:** diamond market, gems, jewelry, De Beers, Alrosa, international trade, mineral resource industry, diamond market structure, investment appraisal, sectoral forecasts.

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## 1. INTRODUCTION

As of 2020, about 70% of global rough diamond production is controlled by three industry-forming companies: Alrosa – 26%, De Beers – 25% and Rio Tinto – 13%. The industry is in stagnation and the resumption of positive forecasts becomes possible only at the end of 2020.

Cultured and other substitute gems (moissanite, zircon) are having now a significant impact on the dynamics of sales of natural diamonds. Synthetic technical diamonds are mainly used in industrial production. An interesting trend in recent years has been a successful entry into the market of jewelry production from synthetic diamonds. These circumstances determine the urgency of the problem of exact prediction of the trends in the global diamond market. The research object is the market for the production and sale of diamond products.

Thus, the aim of the paper is to determine the current state and trends of development of the global diamond market. Achieving this aim is related to reviewing the current explored world reserves of diamonds and their distribution by countries, determination of the factors of supply and demand in diamond and brilliant diamond market, analysis of the external and internal environment of functioning of diamond-mining companies, comparison of ALROSA's finance indicators with other representatives of the industry. The analysis of the situation of diamond-mining companies is associated with the identification of threats and opportunities for the company development. The findings may attract a wide audience.

## 2. LITERATURE SURVEY AND RESEARCH METHODS

Many publications deal with the study of the global diamond market, since in modern conditions the mining industry runs up against a great number of complex macroeconomic problems.

The study of the structure of market for rough diamonds and faceted diamonds, as well as the development of this industry, are dealt with in detail in the works by T. I. Pototskaya (2006), E. Z. Galiyeva (2012), S. Y. Aivazov and V.G. Minashkin (2012), S.V. Bashirov and L.V. Zhilkina (2013), A.A. Anisimova (2014), S. Y. Chernikov (2014), E. A. Barinov and I.V. Lukashenko (2018) and others. The authors point out to the leading position of Russia in the market of diamond recovery. The diamond market has come a long way, resulted in market consolidation. Offers are more influenced not only by non-price competition between producers, but also by the dynamics of solvent demand. The investment aspects of the diamond market, as well as the influence of various factors on stocks of companies are considered in the works by D. S. Ulin (2008), A. N. Sukharev (2013), D. M. Karaush (2016), V.I. Nepsh (2004) and others. The company stock dynamics depends both on the performance indicators of the organization, and on external factors that determine investor sentiment in the stock market. Investing in company stocks is more profitable and liquid.

Thus, the regulatory framework of the Russian Federation, scientific publications and economic literature, the work of scientists and experts in the field of studying the features of the functioning of the mining industry, as well as the websites of specialized financial organizations, served as a methodological basis for analyzing trends in the global diamond market.

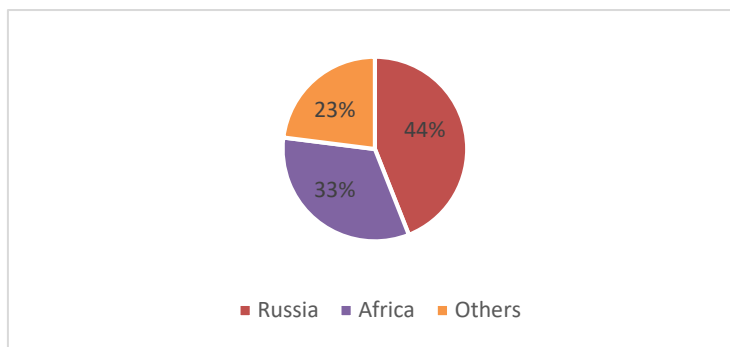
The methodological framework of the study was a systematic approach, as well as the methods such as comparison, classification and analysis, which allowed for a multilateral study

of the global diamond market trends. The methods used enabled to determine the features of the development of the global diamond market, as well as the factors that impede the prediction and evaluation of this industry.

### 3. RESULTS

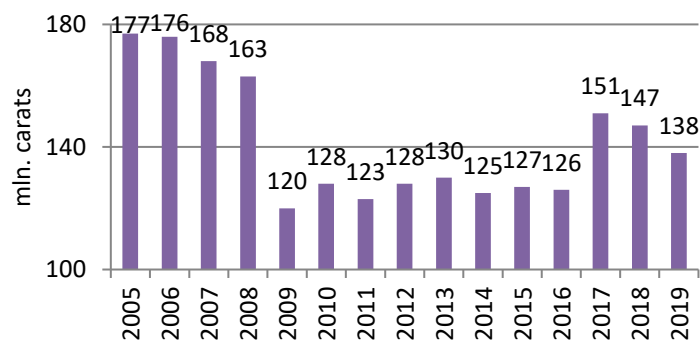
With the development of technology and trade, the diamond industry has developed by expanding the presence of large companies in third world countries. The overwhelming majority of companies has switched to underground mining, which is characterized by higher costs and expenses that justify the high cost of the extracted raw materials (Bazhenova et al., 2000; Simamora, et al, 2019). Nevertheless, there are territories, for example, Zimbabwe and Congo, where mining is still carried out by the prospectors in placer deposits.

Russia’s leading position in the global diamond market is largely determined by the reserves of 12 deposits, the single-user of which is the PJSC Alrosa (Galiyeva, 2012). Figure 1 shows the countries with the largest diamond reserves for 2018. Russia’s reserves are estimated at 650 million carats, Congo’s at 120 million carats, Australia’s at 120 million carats, Botswana’s at 90 million carats, and South Africa’s at 70 million carats. Global reserves are unevenly distributed, about 95% of rough diamonds are located in only 10 countries of the world. In total, 44% of world reserves are concentrated in Russia, and 33% in Africa’s deposits.



**Figure 1** The Structure of the World Explored Diamond Reserves as of 2020

It should be noted that world production of rough diamonds decreased after the economic recession of 2008, but in the post-crisis period, production could not reach the previous maximum (Figure 2). In many ways, the artificial limitation of supply is a response to the weakly recovering purchasing power of the population. The multidirectional dynamics of production and sales volumes is associated with weak price flexibility on the part of large companies



**Figure 2** The Dynamics of Rough Diamond Mining by Major Countries Within the Period from 2013 to 2019

In dynamics, the largest deposits are tailing off. The role of Alrosa in the market as a player with the largest reserves will have been growing. The continued trend leads to the formation of a structural deficit in the market, which may appear as early as 2021.

The potential of development of the domestic manufacturer is restrained by the feasibility of cutting and producing jewelry, as well as consumer behavior. Most of the diamonds mined in the world go to India, which imports about 90% of the total volume and produces 75% of brilliants (Seysebayev, 2015; Lobão, & Pereira, 2016). Significant are the companies from China, the USA, Belgium, etc. Such specialization is a consequence of the rate of remuneration and qualifications of workers in these countries, as well as the simplicity of mechanisms for attracting financing. The geography of export deliveries in carats from Russia is relatively stable and is presented in the following proportions as of 2018 in Table 1. The differences in the specific weight in carats and in monetary terms are related to the weight and quality of the supplied gems.

**Table 1** The Structure of Export Supplies of Rough Diamonds in Russia as of 2020 in %

Country	Specific weight in carats	Specific weigh in money means (in US\$)
Armenia	0,26	0,19
Belarus	0,16	0,59
Belgium	68,25	57,86
Botswana	0,02	0,29
Great Britain	3,99	0,02
Hong Kong (China)	0,90	3,26
Israel	2,86	10,95
India	10,57	13,63
The UAE	12,87	12,31
The USA	0,01	0,75
Switzerland	0,11	0,16
EC	72,24	57,87
China	0,90	3,26

On the one hand, the existing specialization in the market has contributed to the development of the industry, and on the other hand, any failure in the processes of interaction between companies creates risks for the entire industry. For example, in the first half of 2019, the introduction of new rules for importing diamonds into India provoked a deterioration in demand from local companies (Koren et al., 2019). Until this moment, all supplied gems were imported as all in one piece. New requirements force companies to provide customs services with information about the country of origin, color, size, weight, type, etc., which allows for a more accurate estimate of the cost of imported raw materials. There is a risk of increased fiscal burden and similar events point to an increase in the cost of gems if such requirements are valid.

It should be noted that the decline in prices in 2019, connected with excess stocks of cheaper gems and a slowdown in global jewelry sales, was the reason for the decrease in ALROSA's market capitalization. One should also pay attention to the fact that there has been an improvement in the market after demonetization and introduction of a tax on goods and services (GST) (Bauer & Chertkov, 2010). Procurement volumes will be significantly affected by sales volumes during the Chinese New Year and Christmas holidays.

The demand for diamond products can be supported by easing of monetary policy of the US Federal Reserve, as well as protectionist measures that will spur to US GDP growth. US GDP (Indexed US GDP) is an important indicator, for its dynamics and the dynamics of

diamond jewelry sales are related, for almost half of world sales accounts for the USA (Koren & Pustovarov, 2018; Hojati, et al, 2014). Nevertheless, based on the data for the first half of 2019, low jewelry retail sales in Asia and a slowdown in inventory turnover at the largest retailers indicate the likelihood of continued pressure on the diamond market from the retail side as a whole.

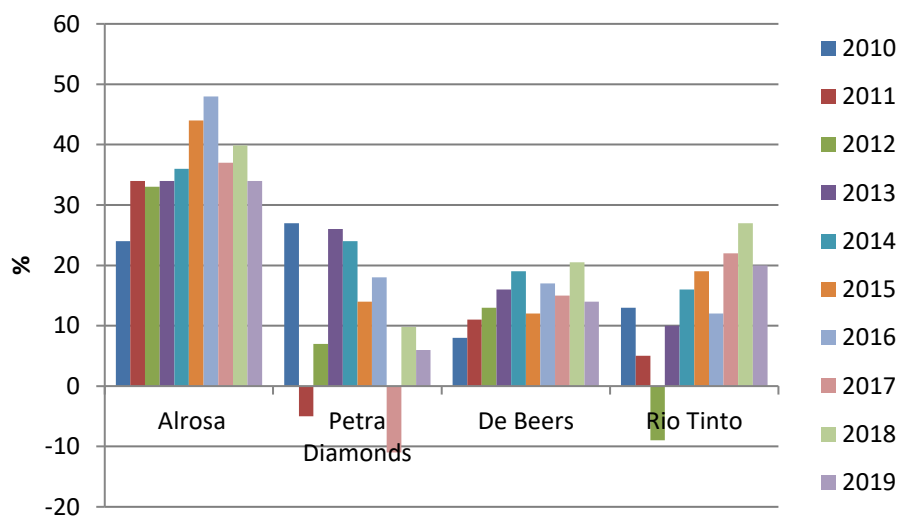
In 2018, the share of the market of synthetic stones reached 20%. The competitive advantage is due not only to a price discount of 20-40% from natural analogues, but also to high jewelry qualities, which in some respects exceed diamond products.

At the same time, the introduction of new digital technologies based on the blockchain since 2017 allowed customers to individually authenticate the origin of a particular gem by tracking the entire production chain. An innovation of recent years has been the large-scale distribution in retail of equipment for identifying diamonds when selling for authenticity in connection with the work to level the influence of rumors about the sale of synthetic under the guise of natural ones.

In the context of changing the structure of demand in terms of perception by new generations, it is important to increase the role of the company's brand, which determines high pricing policy. Generation Z (up to 20 years of age), as the most economically active part of the population, already has an impact on the industry and rely in consumption on modern technologies and the degree of social responsibility of companies.

One of the risks of a short-term deterioration in the performance of a Russian company is the transformation of the business structure (Osipov & Krasova, 2017; Shaslo et al., 2018). In all areas of the economic bloc, a transition from a three-level to a two-level management system is planned on the horizon of 7-12 months. A General Service Center will be created. It will handle all unified operations (accounting, personnel management, etc.) of the company and all subsidiaries, as well as the Unified Settlement Center, where all banking operations, planning, analysis, etc. will be centralized. An important circumstance is transferring part of the functionality to a new platform in the Far East. In the medium term, the optimization of the company's business processes can become one of the drivers of its development (Titova et al., 2017)

Diamond mining as a separate sector of mining industry is a high-margin business, which is owing to the fact that the processed product can be referred to Giffen good (see Figure 3).



**Figure 3** Operating Margin of Diamond-Mining Companies Within the Period from 2010 to 2019

Diamonds are a non-standard product, and, in general, there is no single pricing method in the market (Chertkov, 2010). For the most part, diamond industry profits come from the sale of gem-quality stones. In the structure of ALROSA's revenues, only 2 to 4% of the proceeds accounts for the sale of industrial diamonds. Diamond cutting is a less attractive segment, as the business margin is 1-3% on average. In general, competition in the cutter market is high and the market has consolidated in difficult economic conditions.

#### 4. DISCUSSION

The results obtained are fully consistent with the hypothesis of the study. Since stone mining is the highest-margin business, the Russian company *Alrosa* is the industry leader in terms of EBITDA margin. The investment attractiveness of the company is also due to the fact that since 2018, Alrosa has changed its dividend policy by increasing the frequency of payments. The greater predictability of dividend money is making investing in a company on the part of systemic stock market players more attractive in terms of payment stability (monetary base is free cash flow, the minimum level of dividends on profits under IFRS is 50%, the percentage of cash flow allocated for dividends depends on the ratio of net debt to EBITDA).

A short-term negative impact on the dynamics of securities of diamond mining companies may lead to a change in the management structure and the transfer of administrative headquarters of the organization, problems with the sale of rough diamonds to India (10% of exports from Russia), as well as a general decrease in diamond consumption amid a slowdown in the global economy and key countries for which the main consumption accounts. Possible monetary stimulation in the United States and other Western countries, fiscal stimulation of economic development as a manifestation of protectionism can support consumption in the short and medium term.

The problem of expanding Alrosa's capabilities of diamond cutting and promoting products on the market by creating additional capacities in Russia and developing existing clusters can have a significant positive impact in the medium and long term.

The results can be widely used in further forecasting prices for diamond products, as well as to optimize the management of stocks of gems. It is logical to associate the direction of future research with a more complete assessment of the impact of the synthetic diamond industry, as well as the predictions of changes in the global trend in demand for jewelry.

#### 5. CONCLUSION

Changes in the consumption structure associated with the arrival of new generations in the market, as well as the promotion of synthetic diamonds and substitute gems in the jewelry market will have a long-term fundamental impact on the industry. Jewelry with natural stones as an attribute of prestige will continue to be in demand on the market due to aggressive marketing: promoting certification and emphasizing uniqueness, associating prestige with a brand, and an inertial tendency to invest money in jewelry and gems as eternal values.

The investment attractiveness of the largest diamond producers is due to the strategic supply of diamonds, short-term external factors, as well as the frequency of payments and dividend ratios. After the optimization of management, the industry's leading high-margin business of a Russian company will be able to become even more efficient by saving on remuneration of labor and automating a number of processes. The possible development of low-margin cutting and marketing segments in Russia will make it possible to lower the degree of dependence on other market players, to maintain the level of diamond prices in the event of tightening import conditions in the organizing countries and consumer countries. Ultimately, the development of the company's business will contribute to the development of the economy of the Russian regions, increase the welfare of the population, the development of international relations of the

regions and the increase tourist flows. At the same time, other companies are highly likely to face a number of problems based on lower selling prices and a significant drop in business margins.

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