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**НАЦИОНАЛЬНОЙ АКАДЕМИИ НАУК
РЕСПУБЛИКИ КАЗАХСТАН**

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OF THE REPUBLIC OF KAZAKHSTAN**

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2018• 2

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**DIVERSIFICATION AS A FACTOR
IN THE DEVELOPMENT OF INNOVATIVE SECTORS**

Abstract. Rapid changes in the world market and accelerated the process of globalisation poses new competitive requirements for all participants. Our country needs to accept the challenges of global production, in which developed countries and transnational corporations, for purposes of their own enrichment, are struggling for resources to maintain the leading position in the global chain of production. This circumstance has led to the current situation, in which developed countries have advanced technologies, while countries rich in mineral resources are lagging behind. In this regard, there is a question about structural adjustment, change the direction of industrial and investment policy that includes a multi-faceted process of diversification. World practice shows that the diversification of the structure of the economy, national governments have exercised the choice of priority sectors. In Kazakhstan these industries are: construction, machinery, light industry and manufacturing, information and biological technology, as well as petrochemical industry. Kazakhstan in its development reached the stage where it is necessary to diversify production at the expense of the accumulated potential. The acceleration of the growth of extractive industries is a key element in the development of the economy in the long term.

Key words: diversification, industry, global chains of added value, non-primary production, strategies for industrial-innovative development.

In Kazakhstan, formed the major signs of "Dutch disease" that occurs when excessive growth of demand for raw materials, accumulating large amounts of investment.

Disproportions in the structure of the economy, a significant share of the primary industries, while exports are accompanied by relatively high inflation, dependence of the stability of the national currency and the exchange rate on the price of the export commodity sectors. Factor in blocking free capital mobility in the manufacturing industry is a steady demand for the products of primary industries as a consequence of their windfall [1].

Companies-monopolists in the commodity sectors of the economy, are not interested in large-scale development of the manufacturing industry, the exceptions are projects to improve the technological parameters for the extraction of raw materials. In addition, the purchase of necessary equipment, spare parts, chemicals and other foreign partners contributes to the development of domestic small and medium-sized businesses in the industry. To date, the development of SMEs is mainly aimed at the retail consumer sphere [2].

Center for macroeconomic analysis and short-term forecasting, Russia has made a rating of countries with diversified exports based on UN data for 4 thousand product groups, the results of which presented the position of Kazakhstan (figure 1) [1].

Analysis of export diversification has shown that Kazakhstan repeatedly lags behind both developed countries and countries with economies in transition.

Setting the task of accelerated diversification requires more active intervention of the state. Only adequate use of the mechanisms of such intervention in the framework of a market economy is able, without violating the competitive environment, to diversify the economy through the accelerated development of non-oil sectors. It is here that the majority of risks of the policy of active diversification.

The development of non-oil sectors, in turn, is associated with innovation to create new products, or increase product quality through the introduction of new technologies, development of new technology, modernization of production, organizational structure, management practices, training of staff.

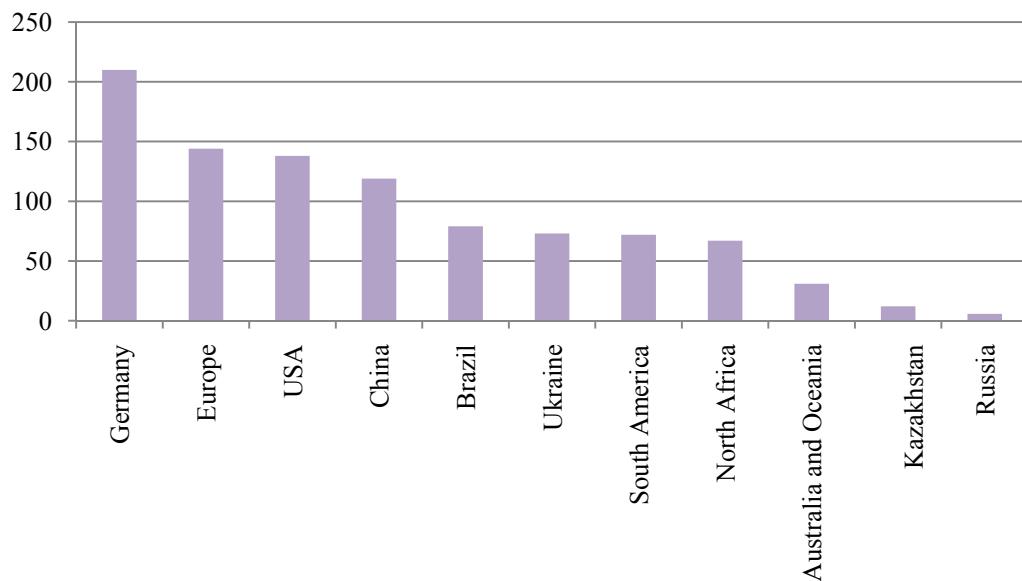


Figure 1 – the level of export diversification

In general, such developing countries as Kazakhstan need to use the opportunities to integrate domestic production into global value chains (GDCCs). An example of successful integration into the WDCC is the countries of South-East Asia (South Korea, Singapore, Taiwan). The presence of large transnational corporations in the domestic sector of the economy facilitates the transfer of technology, the creation of vertically integrated structures that facilitate the involvement of the GDCCs through the mechanisms of outsourcing, procurement of small and medium-sized businesses [3].

As the main mechanisms that are able to have a noticeable stimulating effect on the development of non-primary industries, it is necessary to call the prelude of everything:

- Improvement of tax and customs mechanisms for the withdrawal of natural rent and support for processing industries;
- creation of a system for export sales support;
- development of agricultural production and processing of its products;
- Support for small and medium-sized businesses [4].

Innovative policy in the Republic of Kazakhstan until 2015 was implemented on the basis of the strategy of industrial and innovative development for 2003-2015, the goal of which was to achieve the sustainable development of the country by diversifying the sectors of the economy that contributed to the diversion of raw materials, for the transition in the long term to the service-technological economy.

In the implementation of the Strategy of Industrial and Innovative Development of the Republic of Kazakhstan, three stages were identified [5].

At the first stage, in 2003-2005, the necessary changes were made in the legislation, sectoral development programs, the volume of financing of science, education, training of relevant specialists. Also, development institutions were established through which the state participates in the implementation of the program.

The second phase, which took place in 2006-2010, included the study of private sector initiatives, the search for investors participating in the implementation of selected projects, training of personnel, construction and reconstruction of major and auxiliary facilities.

The third stage, 2011-2015, was the most productive in terms of implementing the Strategy. It was during this period that the development of the introduced capacities in machine building, petrochemistry, information technology and others took place [5].

According to the Law of the Republic of Kazakhstan dated 03.07.2002 N 333-2 "On innovation activity", the goal of the state innovation policy is a balanced production infrastructure that ensures the prevalence in various areas of production and management of a competitive, high- technological products (works, services) [6].

Problems of implementation of innovation policy in Kazakhstan:

- underdevelopment of the infrastructure that ensures interconnection between fundamental research, applied R & D and commercialization of technologies;
- backwardness of cooperation networks "science - education - innovative small and medium business - big business";
- weakness of tools for supporting innovation in the early stages of research (research, experimental and pre-commercial development);
- shortage of qualified personnel in the sphere of innovative entrepreneurship, lack of infrastructure [7].

But, despite all the above problems, this program was implemented.

Thanks to the successful implementation of the State Program for Industrial Innovative Development for 2010-2014, the country has established a stable industry, various sectors of which require further development from the program designed for 2015-2019. The foundations of modern industrial policy were laid, practical tools for supporting industrial development and mechanisms for attracting foreign direct investment were tested in practice.

The industrial development program for 2015-2019 was developed in accordance with the analyzed weak and strong sides, as well as threats and opportunities. The study identified barriers such as insufficient investment activity, lack of qualified professionals, insufficient share of small and medium-sized businesses, and insufficient level of innovation. The program foresees all these barriers by means of such opportunities as improving the quality of production in resource sectors, access to the market of the Customs Union, China, the countries of Central Asia and the Caspian states.

In 2009, amendments and additions were made to the current Law on State Support of Innovative Activity. The law provides for norms that expand the interests of various legal entities, in particular, such development institutions as the JSC "Center for Engineering and Technology Transfer", JSC "Science Foundation" and JSC "KazAgroInnovation", whose main activity is primarily aimed at the development of innovation in various directions.

According to the current Law, the technopark was defined as a legal entity, which was created by any enterprises, associations and organizations in different regions of the country. The draft law stipulates that technoparks will be created only by a decision of the Government on the proposal of an authorized body, coordinated with local executive bodies, since in accordance with the legislation of the Republic of Kazakhstan, the issues of granting land plots are attributed to their competence [8].

The big problem of innovation development is the lack of financial sources: borrowed capital for innovative projects is difficult to attract, since they are inherently high risk, and they do not meet the requirements and conditions of standard lending, enterprises also have difficulty in distinguishing their innovative means.

To repeat the experience of Dubai, Kazakhstan should take all the steps that Dubai went on 20-25 years ago [9].

They are as follows:

- First, in the discovery of eco-nomics, not only for large investors, but also for small investors who are ready to work on niche projects - from oil production (many small deposits are uninteresting for the largest companies) to construction, real estate, finances, telecommunications;
- Secondly, in the opinion of foreign investors, Kazakhstan should reduce taxes in conditions of a global trend towards more low taxes - this measure is more than necessary;
- Thirdly, it is necessary to redistribute the oil revenues to other sectors, but not through the state budget (as in Saudi Arabia), but through the financial system on market, competitive principles (as in Dubai);
- Fourth, attraction of foreign investments is not only in oil, gas and metallurgy, but in other sectors with a higher share of added value;
- Fifthly, for a reasonable use of oil revenues, it is advisable to develop a plan for state investment of a part of petrodollars;
- Sixthly, it is necessary to finance projects on the development of other sectors of the national economy, in particular: infrastructure (road, railroad, pipeline transport), agriculture, science intensive export products, etc.; education and health, corresponding to the world level; improvement of environmental and demographic situations;

- Seventh, in order to reduce social polarization, a policy of openness of expenditure of these funds is necessary.

Diversification can be conducted with the involvement of trans-national companies. We need to establish a system of integration with Western transnational corporations, and the National Fund can be spent on innovative projects in education, healthcare, science and the social sphere.

The functioning of the mechanism of integration with foreign transnational corporations could in the future play a decisive role in creating the mechanism that would ensure the integration of Kazakhstan's economy into the corporate world economy, which would affect the education of the younger generation. Integration into the corporate world economy presupposes, in addition to knowledge of the foundations of Western market eco-nomics, the knowledge of Western law and the study of technological and technical specialties in those sectors that Kazakhstan will develop on the basis of the technology of Western transnational corporations that will be ready to deploy in the territory of Kazakhstan.

In addition, harmonization is required, and in fact, the introduction of new Western technical standards, which will require the renunciation of Soviet standards and the transition to international technical standards. To study all these issues and to prepare future specialists in these fields, an absolutely new national program of secondary and higher education is needed that would meet the requirements for structural reform of the economy of Kazakhstan on the basis of integration of the corporate Kazakhstan sector into the structure of Western transnational corporations.

Also, investments need to be invested in education, since for the development of the manufacturing sector the main condition is the use of high-tech equipment, the development of personnel, the improvement of social aspects.

At present, there are practically no such high-tech and strategically promising industries in Kazakhstan that are able to ensure the competitiveness of Kazakhstan's eco-economy in the long term (20-30 years), such as biotechnology, nanotechnology, the space industry, and robotics. It is to their development that it is advisable to channel super profits from a favorable oil industry.

The main investments and financial accumulations are concentrated, as a rule, in export-oriented industries. The flow of capital into the development of industries that determine the modern (post-industrial) structure of the economy in Kazakhstan is inadequate. On the contrary, the inefficient structure of the economy, oriented towards the production of products with low added value, is becoming increasingly stronger. It is necessary to develop initiatives "from below," supporting them with budget subsidies, financing through development institutions, through the creation of special zones, through the creation of favorable conditions for the provision of resources, and for taxation.

Another important condition for emerging from depression is the search for mechanisms to expand the zone of competitiveness of tradable sectors. The practice of the housing market has shown that "credit warming up" of demand can not be a component of long-term trade policy. Stimulation of demand should be moderate and controlled. Probably, the best way to increase competitiveness can be a balanced investment policy that creates clear ideas of the participants in the investment process about the dimensions of the domestic market of investment resources and the opportunities for replacing imported or less-quality domestic products from individual segments.

Gradual reduction of direct involvement of the state in commercial projects, in traded industries is inevitable in the long-term perspective. At the same time, in the short term, the withdrawal of state-owned organizations from already begun investment and innovation projects can not be carried out without material and moral losses, both for the state and for its partners from the private sector. To effectively exit from the projects of tradable sectors, it is necessary to create conditions and select the appropriate conjuncture that ensures the continuation of the activities of organizations previously supported by the state in competitive conditions [10].

Having produced a sufficient amount of mineral raw materials, Kazakhstan still does not have an integral bloc of industries that are able to provide materially long-term and comprehensive investment policies. In recent years, practically all the technologically complex part of active material - rial capital stock has been imported. Entire groups of production fixed assets in Kazakhstan either were never produced, or their production is lost today (for example, production of heavy metallurgical and mining equipment).

Not having domestic industries that provide technological renewal of tangible fixed capital, Kazakhstan remains deprived of those technological chains that allow making the means of production economically efficient.

It is necessary to deploy industrial technological "spaces" on which a set of works will be developed to overcome the "investment barrier" both on its own and in cooperation with foreign organizations. To do this, we should use SPK and national companies managed by Samruk-Kazyna.

Technoparks are one of the examples of the development of innovative productions. The model of technoparks operating in Kazakhstan in 2005 was not effective enough. The management of techno parks often lacked a clear program of actions to create physical infrastructure of technological parks and their technological filling, poorly documented documentation, and over-spending of financial resources.

In Kazakhstan, since 2009, a new model of the technopark has been adopted. According to this model, technoparks should make a worthy contribution to building an economy based on high technology innovations.

The work of regional techno-parks now includes the following directions:

1. Development of innovation potential of universities. Within the framework of this direction it is planned:

- Organization of internships and practice for students;
- organization of specialized training classes;
- organization of student business incubators.

2. Technological business incubation:

- provision of consulting services and material and technical facilities on preferential terms;
- examination of proposals, the provision of access to the Internet and information bases.

3. Service and financial services:

- acquisition of innovative technologies, engineering, laboratory complex, educational center, financial services;
- other services not represented or insufficiently represented in the region, requiring special qualification and equipment [8].

To create competitive production, it is required to use the potential of secondary resources, which have a low price and allow to have a cost price lower than that of imported products. For example, for own production of carload wheels, the used wheels are used, which the railway collects. Then you can make a cheap wheeled billet and have a payback Kazakhstan wheel production based on Western technology. But for this it will be necessary to stop the export of wheel scrap.

The presence of a developed network of institutions of development - supporting the structure of the economy is a tactical factor. At present, Kazakhstan has the following institutions of innovative infrastructure: JSC National Innovation Fund, JSC Science Foundation, JSC Center for Engineering and Technology Transfer, JSC KazAgroInnovation, JSC Kazakhstan Center for Housing Modernization and Development communal economy".

Center for Engineering and Technology Transfer; National Analytical Center; JSC "Export-Credit Insurance Corporation" KazExportGarant"; Investment portal "Kazinvest"; Union of Chambers of Commerce and Industry; Business Development Fund "Damu".

When forming new principles for the activity of development institutions, it is necessary to take into account mistakes in the policy of supporting Kazakh producers. The role of supporting structures is growing due to the globalization and development of the business environment in Kazakhstan.

With the correct regulation of activities and management, the availability of financial support, development institutions are able to accumulate sufficient potential for promoting Kazakhstani exports, creating the basis for competitive production.

REFERENCES

- [1] Nugerbekov SN Diversification of the economy of Kazakhstan: the development of innovative sectors // Transit Economy, **2009**, №3 / 4, pp. 5-15.
- [2] Sidorenko E.N. Models of economic diversification in the conditions of modern development. Bulletin of KazNU. Economic series. №5(69). **2008**, P.20-22.
- [3] Berry C.H. Corporate Growth and Diversification // Journal of Law and Economics. Vol. 14, No. 2. October, **1971**, pp. 371-383.

- [4] Weston F., Siu A, Johnson B.A. Takeovers, restructuring and corporate governance Prentice Hall **2002**. pp. 171-184.
- [5] Strategy of industrial-innovative development of the Republic of Kazakhstan for 2003-2015. Astana, **2003**
- [6] Andirzhanova G. Industrial-Innovation Policy and Competitive Economy of Kazakhstan // Sayasat-Policy, **2008**, №4, p. 110-110.
- [7] Web-site of the Administration of Economy and Budget Planning of Akimat of Kostanay region. <http://econom.kostanay.kz>.
- [8] Web-site of JSC "Entrepreneurship Development Fund" DAMU ". <http://www.fund-damu.kz>.
- [9] Jacquemin A. P., Berry C.H. Entropy Measure of Diversification and Corporate Growth. // The Journal of Industrial Economics, Vol. 27, No. 4. June **1979**. pp. 359-369.
- [10] Berger, P.G., Ofek, E. Diversification's effect on firm value, Journal of Financial Economics, No. 37, **1995**, pp. 39-65.

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ДИВИДИФИКАЦИЯ ИННОВАЦИЯЛЫҚ СЕКТОРЛАРДЫ ДАМЫТУ ФАКТОРЫ

Аннотация. Әлемдік нарықтың конъюнктурасындағы жылдам өзгерістер және жаһандану үдерісін жеделдету барлық қатысушыларға жаңа бәсекеге қабілетті талаптар қояды. Біздің еліміз жаһандық өндірістің киындықтарын қабылдауы керек, онда дамыған елдер мен трансұлттық корпорациялар өздерінің байыту максаттарын көздей отырып, әлемдік өндіріс тізбесінде көшбасшылық ұстанымын сактап қалу үшін ресурстар үшін күресуде. Бұл жағдай дамыған елдерде озық технологияларға ие қазіргі жағдайға алып келді, ал минералдық ресурстарға бай елдер артта қалып отыр. Осыған байланысты құрылымдық қайта құру, индустріалды және инвестициялық саясат бағыттарын өзгерту туралы мәселе бар, бұл көпжақты диверсификация процесін қамтиды. Әлемдік тәжірибе көрсеткендей, экономиканың құрылымын әртаратандыру арқылы үкімет басым секторларды тандайды. Қазақстанда мұндай салалар құрылыш, машина жасау, женіл және өндірістік, ақпараттық және биологиялық технологиялар, мұнай-химия саласы болып табылады. Қазақстан өзінің дамуында жинақталған әлеует есебінен өндірісті әртаратандыруға қол жеткізу қажет болған кез келді. Шикізаттық емес салалардың өсуін жеделдету - ұзақ мерзімді перспективада елдің экономикасын дамытудағы басты элемент.

Түйін сөздер: әртаратандыру, индустрия, қосылған құнның жаһандық тізбегі, шикізаттық емес өндіріс, индустриалық-инновациялық даму стратегиясы.

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ДИВЕРСИФИКАЦИЯ КАК ФАКТОР В РАЗВИТИИ ИННОВАЦИОННЫХ СЕКТОРОВ ЭКОНОМИКИ

Аннотация: Быстрые изменения в конъюнктуре мирового рынка и ускорившийся процесс глобализации предъявляет новые конкурентные требования для всех участников. Нашей стране необходимо принять вызовы глобального производства, в которых развитые страны и транснациональные корпорации, преследуя цели собственного обогащения, борются за ресурсы, чтобы сохранить ведущее место в мировой цепочке производства. Данное обстоятельство привело к сложившейся ситуации, в которой передовыми технологиями обладают развитые страны, а страны богатые недрами являются отстающими. В связи с этим имеет место вопрос о структурной перестройке, изменении направлений промышленной и инвестиционной политики, всего того, что включает в себя многогранный процесс диверсификации. Мировая практика показывает, что при диверсификации структуры экономики правительства стран осуществляли выбор приоритетных отраслей. В Казахстане такими отраслями являются: строительство, машиностроение, легкая и обрабатывающая промышленность, информационные и биологические технологии, а также нефтехимическая индустрия. Казахстан в своем развитии подошел к рубежу, где необходимо добиться диверсификации производства за счет накопленного потенциала. Ускорение роста недобывающих отраслей является ключевым элементом развития экономики страны в долгосрочной перспективе.

Ключевые слова: диверсификация, промышленность, глобальные цепочки добавленной стоимости, не первичное производство, стратегии индустриально-инновационного развития.

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