Regional Economic Integration in the Innovation Sector in the Former Soviet Union and Russia's Role in Its Revitalization

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Abstract--**The modernization of the Russian economy on an innovative basis depends on external factors to a certain extent, including the full integration into the various regional economic groupings. Due to the very limited possibilities of scientific and technological breakthrough in all priority areas, our country vitally needs mutual (but not enslaving) cooperation and integration with other countries. It is obvious that the industrialized western countries are not interested in the technological revival of Russia. Therefore, despite the official political "divorce", the former Soviet republics, including the Russian Federation, economically cannot do without each other. The development of industries based on high technology can be more or less costly and long, depending on how well will the resources and competitive advantages of each country in the Commonwealth be combined,. Let us analyse the state of regional economic integration in the post-Soviet space, as well as major challenges to effective technical and scientific cooperation between Russia and the former fraternal republics.**

I. INTRODUCTION

The nature of globalization, including in the sphere of innovations in modern conditions is manifested through regional economic integration. Activation of economic activity in this area is a very urgent problem for Russia, because our country, like other developing countries, can compete on the world market only on the basis of mutually beneficial cooperation in the various integration groupings. Russia's participation in various integration formations, including those on a cooperative basis, is essential to its rapid transition to an innovative path of development, in particular as a complement to the model of overtaking development with a model of advanced development.

In addition, the motion vector of the Russian economy is very important from the standpoint of reducing the negative processes and generally overcome the deep contradictions of globalization, when they are adjusted in the interests of the most powerful economic players in the world of innovative processes, on the one hand, and when Russia play only a supplier of natural resources, on the other hand. This problem is disclosed in a number of studies [1, 2, 3]. The second aspect is an objective basis, as the economy of our raw regions still did not change significantly in the direction of diversification on the basis of innovation, although certain resource prerequisites exist. For example, Siberia is a major donor to the federal budget. Siberian Federal District (SFD) is rich with proven reserves of minerals. Commodity exports of SFD provide more than 2/3 of nationwide foreign exchange earnings [4, p.11]. The region is part of the global space, its raw materials, mainly hydrocarbons, are included in technological chains of the world economy. On the basis of the Siberian raw materials two of the four globally-oriented Russian regions have been formed that are significant in relation to the world, namely the macro-region of the North-West ("The Baltic area") and "Eastern direction."

For example, a macro-region of the North-West is focused on the northern part of the leading states of the EU. The main reference points of the "front line" - the ports of St. Petersburg and Leningrad region, as well as the Murmansk and Arkhangelsk. The border runs along the rear zone of Western Siberia, Tyumen region, Kuzbass region and this region is focused on the supply of hydrocarbons, and to a lesser extent of timber, metal, fertilizers and coal.

Macro-region "Eastern direction" ensures the supply of energy, timber, metals, and crude ore materials in the Asia-Pacific region. Rear zone again passes through the Tyumen region, Kuzbass, Krasnoyarsk and the Irkutsk Region. "Front-line" is formed with the ports of Primorye, Khabarovsk territories and Sakhalin Oblast.

II. RESEARCH FRAMEWORK

The impact of globalization on the intensification of regional innovation processes significantly increased. In modern conditions it is proven, firstly, to strengthen the existing bonds of regional integration through increased innovation processes and the formation of a common innovation space. In this case, we are talking about regional economic integration, its innovative component in the framework of the Commonwealth of Independent States (CIS), the Eurasian Economic Community (EurAsEC), Customs Union (CU), the Eurasian Economic Union (EAEU), the EU, APEC.

Secondly, improvement is shown through the development of mild forms of economic integration between the two or a group of countries, for example, in the framework of the BRICS, as well as through bilateral strategic partnership (China and Russian Federation; Russian Federation and India).

The fastest involvement of Russia in the global innovation space is also possible through the processes of regionalization in some way connected with the strengthening of existing regional structures, as well as the formation of new

international, interstate economic regions and the deployment of cooperation on bilateral and multilateral basis.

The competitiveness of countries in the context of globalization depends on how effectively they create innovative environment, including the national innovation system. Connecting Russian Federation to a global innovation space seems possible in two ways at the same time, namely on the basis of overtaking development, including the use of simulative and adaptive integration strategy, and breakthrough development through the formation of a common scientific, technological and innovation space by increasing spending on science, education and through active growth of own scientific and technical potential. Until now the simulation scenario of the overtaking development is being implemented, which is based on borrowing foreign technologies, which, as a rule, are not new. However, in the context of globalization, new patterns of the overtaking model of development appear that must be considered. As a result of the technological revolution, many favourable opportunities to execute overtaking development scenario, that brought the previously visible "economic benefits", have disappeared and the country is forced to seek a new path of development. Instead of the closed linear model comes nonlinear model, which is based on work in the public network, [5, p. 12] in particular, the modular system of formation of the final process of the product based on the fragmentation of chains of added value in a number of high-tech industries (in particular, the separation of product innovation from production, splitting the product into pieces), which creates opportunity for developing countries not to follow the exhausted technological trajectory, but to implement the advantages of overtaking development, using the latest technological advances [5, p. 15].

In modern conditions the trend is that the dominant importance is gained by the second version of innovative development. Meanwhile, in Russia its full implementation to a certain degree depends on external factors, and is only possible on the basis of mutually beneficial regional cooperation. Due to the very limited possibilities of scientific and technological breakthrough in all priority areas, the country vitally needs mutual (but not enslaving) cooperation and integration with other countries. It is important to take into account the fact that in terms of anti-Russian sanctions effective implementation of the development strategy of import substitution is also impossible without intergovernmental collaboration. In this connection multiple areas of cooperation are seen: the post-Soviet; Western (EU); Eastern (APEC) and the multi-vector.

Presumably, the first post-Soviet version of regional cooperation is the best to connect Russia to the global innovation space. One of the evidences of this – is the situation in the real sector of economy in friendly countries. After the collapse of the USSR, Ukraine offered Germany cooperation in the joint production of a military transport plane, a model that was competitive in the world market. After more than a year of negotiations the proposal was rejected. The experience of countries in Central and Eastern Europe - new EU member states - also said that no country has been able to establish an equal cooperation of the own enterprises with foreign firms. And it would be naive to believe that the Western governments and the private companies with their “own hands” will create competition for themselves in the post-Soviet area.

It is obvious that the industrialized Western countries are not interested in the technological revival of Russia, especially in terms of anti-Russian sanctions. Therefore, despite the official political "divorce", the former Soviet republics, including our country, are not economically stable without each other. This full-fledged participation of Russia in the global innovation process involves working in the maximum amount of regional integration, especially in the centres of interaction of the former Soviet Union as the CIS Customs Union, the Eurasian Economic Community, the EAEC and the EU, APEC.

At first glance, after the collapse of the USSR, the greatest chance for a speedy connection of the Russian Federation to the global innovation space was an increased interaction of the former Soviet Union in the framework of the CIS due to the historical community and reciprocity of their strategic interests. At the bilateral Ukrainian-Russian relations remain a number of strategically important areas of cooperation in which the Russian economy is critically dependent on the Ukrainian enterprises and infrastructure facilities. Thus, on JSC "Russian Helicopters" nearly all the engines for modern helicopters of the Russian Federation are developed and produced by Ukrainian company [6, p. 36-37; 7, p. 28-29]. In Soviet times, development and production of airliners was focused mainly at the enterprises of Russia and Ukraine. And now, it would be extremely short-sighted and wasteful not to use mutually beneficial opportunities and potential of the two countries within once established mechanism of this scientific-industrial complex.

However, despite this, the integration processes were sluggish and difficult enough. Ukraine initially could not decide and led a dual policy aimed at rapprochement with the EU and not with Russia, the CU and the CES within the EurAsEC, though, the EU did not have the economic incentive for investments in Ukraine, due to its low investment rating, high external debt, low levels of solvency (the average wage in Ukraine is 2.2 times lower than in the CIS countries), low volume market and lack of energy needed by the economy of the EU [6, p. 35]. Currently, the situation in Ukraine is even more aggravated. In contrast to the position of the EU, Russia consistently pursued a line on ever closer rapprochement with Ukraine, trying to integrate it into the Customs Union.

For the Russia, objectively, it was very important to establish long-term cooperation with Ukraine to implement the scientific and technological potential of the two states, primarily in manufacturing industries [6, 7]. The fact is that in the former Soviet Union number of countries with considerable potential for innovation, and, consequently, the

prerequisites for mutually beneficial cooperation in this field include the Republic of Belarus and Ukraine. Increased integration among the three countries would contribute to the innovation process in a systematic way and the early formation of a common innovation space - an interstate innovation system of the CIS countries, especially since the long-term partnership in the field of high technologies linked these countries, such as the Central Institute of Aviation Motors (CIAM) named after P.I. Baranov with JSC "Motor Sich" [8, p. 22]. According to the Director General of the National Space Agency of Ukraine Yuri Alekseev, 75-80% of export space production is oriented on Russia [9, p. 33]. Moreover, in the recent past, we identified new approaches to deepening cooperation between Russia and Ukraine, aimed at increasing the volume of joint production of modern aircraft, both for the domestic market, and with the prospect of taking it to the world market. Consolidation was assumed, combination of the the aviation industry of Russia and Ukraine, by integrating State Aircraft Corporation "Antonov" into the United Aircraft Corporation (UAC). The sides signed intergovernmental agreements on cooperation in the development, production, supply and maintenance of aircraft, the Association "Union of Aviation Engine" was created that combined engine-builders of Russia and Ukraine and several other countries, as well as Interstate (Russia - Ukraine) Coordination Council on cooperation in the field of aircraft engine and it was finally decided on the formation of the management company on a parity basis, the share capital of which is 25 million rubles (12.5 million rubles from each side).

Meanwhile, the intensification of actions of Ukraine in the direction of rapprochement with the EU has led to Russian-Belarusian integration within the Union State to be actually realized, given that both countries are members of the Customs Union, participating in the construction of the Common Economic Space. Robust, truly effective integration of the economy of the Union State, as well, and the CIS is possible on neo-industrial foundation and Russian Federation serves as an integrator here. Moreover, its economic integration that began as a national along with its establishment and strengthening develops into a transnational. Along with the transformation of the national economy from disintegrated into an internally integrated economy of a TNC, a powerful foundation for the reproduction of a single economic space is actually created [10, p. 61-62].

International scientific and technical cooperation between Russia and Belarus is based on the following institutional preconditions:

- developing integration processes in the post-Soviet space (varying-speed multi-vector integration). Union State of Russia and Belarus, Customs Union, EurAsEC, CIS;
- the similarity of the models of organization of science;
- subject proximity of the priorities of scientific and technical/innovative activity ;
- cooperation in the framework of basic research funds joint tenders;
- formation of the Interstate program of innovation cooperation of CIS, Unified CIS innovation space;
- standard fastening priorities in science, technology and innovation sphere of Russia and Belarus: Priority directions of development of science, technology and engineering in the Russian Federation - Presidential Decree of July 7, 2011 № 899; A list of research priorities of Belarus for 2011 - 2015 years - the Decision of the Council of Ministers on 19.04.2010, № 585; Priority directions of scientific and technological activities in the Republic of Belarus for 2011-2015 - Presidential Decree of July 22, 2010 № 378.

Deep cooperation links existed between Russia and Belarus in the electronics industry. Even in Soviet times 50% of the capacity of the Ministry of radio manufacturing was laocated in Belarus, where 40 to 60% of all Soviet computers were produced [11, p. 16]. After the collapse of the Soviet Union cooperation between the two countries is gradually recovering, since a qualitative leap in the economic development of Russia and Belarus and provision of significant business opportunities in the global market can be achieved only through joint efforts.

The evolution of cooperation between the two countries in this field, since 2000, is reflected in particular in the implementation of targeted programs, including in the sphere of high technologies.

Major cooperative projects developed in the 2000s in the electronics industry - the program "Union TV", "Union TV - 2", as well as an innovative project, developed in the framework of the Union State program production of supercomputers, "Design and development of mass production with a parallel architecture (supercomputers) and the creation of applications software and hardware systems based on them" ("SKIF"). The value of these programs lies in the fact that is was the recovery of lost programs of cooperation of the fraternal countries. Implementation of "SKIF" took 5 years and in spite of all obstacles, was successfully ended with the creation of supercomputers (supercomputer MVS-1000M entered the first hundred machines of Top500 in June 2002, taking 64th place) [11, p. 16]. Another joint project was designed - Program "SKIF-GRID" for 2007 - 2010 years, with more than doubled budget (681 million rub.) than the "SKIF" and the broader scope of work [12, p. 9].

Other corporate projects in the field of high technologies of the Russian Federation and Belarus were: "The functional microwave electronics - 2" and "Trajectory". The "functional microwave electronics - 2" was aimed at the development and creation of a new generation of functional elements and products of microwave electronics, optoelectronics and microelectronics with the deadlines of 2006-2009 and funding from the Russian part of 442 million rubles.

In addition, in 2009-2012 programs such as “The base” (design and development of a series of integrated circuits and semiconductor devices on the basis of existing technology); "The videomodule" (the development of modern means of information display and a special dual-use); "Priborostroenie" (development and the creation of modern radio equipment and metrology equipment) and others were implemented. The total amount of Russian part financing - 5 billion rubles. Another joint project – is "Electronmash" program (design and creation of technological equipment for production of ECB and radioelectronics) with execution in 2009-2013 and funding from the Russian part of more than 5 billion rub., as well as "Pramen" (creation of nanoheterostructures and products of quantum electronics and microwave technology based on them with funding from the Russian part of about 500 million rubles) [13, p. 20].

Since 1999, successfully developing cooperation in the aerospace sector has already given three joint programs [7, p. 29]. In 2009, in the framework of the Union State the program "Nanotechnology-SG" has been developed and launched.

Currently, cooperation between Russia and Belarus is carried out in the framework of programs of international cooperation in the innovation sphere. An important place is given to the joint work cooperation in high technologies in microelectronics and computer technology, precision manufacturing, and biotechnology.

A key area of traditional consolidation of cooperation between Russia and Belarus in the sphere of high-tech is the military-technical cooperation, which is of high importance in the modern world. 99 Belarusian companies now supply 1880 kinds of products for the 255 defence enterprises of Russia. 940 Russian companies have major customers - 67 enterprises of Belarus receive from them about 4000 types of products [14]. In 2012, a program of cooperation of defence systems of Belarus and Russia until 2015 was approved in Minsk, which will help to strengthen cooperation ties between the two countries. Russian military-industrial complex is the main buyer of microelectronics of "Integral" that is located in Minsk (70% of its production) [15].

The most important area of military-technical cooperation between Russia and Belarus is a joint development and production of civil and military equipment. Many types of domestic export of arms and military equipment are created using Belarusian components. More than 400 Russian enterprises are now the partners of the Belarusian defence industry, which today have scientific, technical and industrial cooperation with almost all research institutes, design bureaus and enterprises of the defence industry of Belarus in terms of almost 1,600 items of military products for industrial purposes. [16] About 90% of annual exports of "Minsk Wheel Tractor Plant" (JSC "MWTP") accounts for Russian customers. In our turn, more than 200 Russian enterprises supply "MWTP" with raw materials and components. JSC "Minsk Wheel Tractor Plant" has developed and mastered almost unique production of special wheeled chassis – a transport base for terrestrial mobile weapons and military equipment, among them - the tactical, operational and strategic and tactical missile systems "Iskander", "Topol-M", "Yars". Within the framework of the Union State of Belarus and the Russian defence industry a number of joint research programs has also successfully been implemented, in particular, in 2011 "Trajectory" has been completed, during which a new generation of tools trajectory measurements was developed. In addition, the scientific and technical programs of the Union State "Cosmos" series were realized.

Thus, the need to increase bilateral integration processes within the framework of the Union State for a speedy recovery of a single economic space in order to maximize the concentration of resources on the creation of a "breakthrough products" is needed, especially when the practice of the last decade shows that a trend in production and manufacturing high-tech products and their assembly (automotive, electronics, aviation industry) is defined. In this regard, we consider it is appropriate to designate promising niches in the world market in the electronic sector, clearly targeted at the creation of competitive product innovations in this area, as well as to create a regulatory framework - Interstate (Russia - Belarus) Coordinating Council for cooperation in this field in order to ensure favourable conditions for scientific, technical and production cooperation of enterprises and organizations of electronic industry of the Russian Federation and Belarus. Creation of effective institutions that ensure regulation of bilateral cooperation is a key task, aimed at strengthening the mutually beneficial cooperation between the two countries.

Some steps in this direction are taken at the regional level. In 2014, the Committee on Science and Higher Education of St. Petersburg held a meeting of the working group on the development of industrial cooperation and the promotion of joint innovation projects in St. Petersburg and the Republic of Belarus and the seventh meeting of the working group of the Council of Business Cooperation of St. Petersburg and the Republic of Belarus. As a result of these international, partnership agreements on educational and scientific organizations of the parties events were signed, as well as the agreement on the implementation of bilateral projects in the field of higher education, vocational training, science and innovation [17, p. 8].

The implementation of cooperation in the sphere of innovation in the post-Soviet space in addition to the State of the Union is carried out within the framework of the integration of different groups: the CIS, EurAsEC and the Customs Union. Let us study the evolution of integration processes in the sphere of innovation in the post-Soviet space, including these regional associations.

In the decay of the Soviet Union poorly integrated CIS interstate association was formed (agreement on creation of the CIS 1991-1994.), which affected the formation of a unified economic and innovative space of its member states not in the best way. For various reasons, the innovation processes in the former Soviet Union took the sluggish nature, which was not adequate to the threats and challenges

that have become apparent in the face of increasing competition between countries.

So, today the share of CIS countries in world trade of high technology accounts for only 2.5%, but the largest volume of exports are commodities, but countries such as Russia, Belarus, Ukraine have traditionally had a high scientific and technical potential. Over the past 15 years in developed countries, the share of R & D costs amounted to 2.5-3% of GDP, while in the CIS countries - 0.4-0.5% of GDP.

As shown by the realities, neither the Russian Federation, nor other CIS countries can alone compete in the global market. They only stand a chance when a single information space, a common innovation strategy is created and joint efforts are given in this direction by all the CIS countries. Otherwise - they will continue their role as raw material appendages and decay is inevitable [18, p. 72-73].

III. FINDINGS

The most important way to ensure high competitiveness is the formation and development of the innovative environment. In turn, the innovation environment is unthinkable without the development of mechanical engineering, which provides the basis for accelerated development of the national economy. Let us reveal the situation in mechanical engineering of the CIS countries at the moment, as well as analyse its dynamics in the post-Soviet space. In order to identify trends in the role of engineering in the innovative development of the CIS, first of all, you must determine the time horizon of the study, and then the key parameters, with which such an analysis can be carried out. It is advisable to choose a sufficiently long period, as a full production cycle in engineering may take up to ten years or more. Study parameters of the state of engineering in the CIS countries can be as follows:

- the share of engineering products in the exports;
- the share of engineering products in the import of the CIS countries;
- the share of imports and exports in GDP.

First of all, we analyze the machinery exports of CIS countries (Table 1).

As we can be seen from the data above, the leading positions belong to Moldova, Ukraine and Belarus. Drawing attention to the situation in countries during 2004 - 2012 years, we must note mixed trends: Belarus demonstrates the decline in the share of exports of machinery and equipment. In turn, Moldova significantly increases the rate and dynamics and in Ukraine it is stable throughout the period under review. Pay attention to the trends observed in Belarus. An export of machinery and equipment to CIS countries is becoming less significant and engineering contribution becomes insignificant, as far as relations with other countries. However, the share of machinery in the structure of exports to the CIS is more than 5 times greater than in the structure of exports to other countries. Allocated feature is characteristic for almost all countries in the former Soviet space: the share of exports of engineering products within the Union is several times higher than the contribution of the export structure of each state outside the CIS. Regarding domestic exports of machinery and equipment, we note that, firstly, as in 2012, Russia occupied the sixth place on the contribution of engineering in total exports. Our country was ahead except the above-mentioned leaders, Armenia and Kyrgyzstan. Next, let us track the dynamics of the machine-building component in the total exports of Russia between 2004 and 2012. There is a reduction tendency in the share of exports of machinery and equipment in the total amount due to a decrease in the share of machinery exports to the CIS countries. Thus, a steady decline of Russia's role in the future economic development of the CIS countries on the basis of innovation is seen, which generally weakens the position of the regional integration grouping in the global market, and thus reinforces its peripheral position with all its consequences. Since the CIS seems as a prior regional economic cooperation, it is necessary to increase the volume of supplies of own high-tech products to the market of the CIS countries.

Next, let us assess the situation, reflecting the structure of imports of the CIS countries (Table 2).

TABLE 1. THE SHARE OF ENGINEERING PRODUCTS IN THE EXPORTS OF THE CIS COUNTRIES (%)

State	to CIS countries					to other countries					Export as a whole				
	2004	2005	2008	2010	2012	2004	2005	2008	2010	2012	2004	2005	2008	2010	2012
Azerbaijan	1,5	1,5	2,3	1,1	2,3	0,4	0,5	0,0	0,1	0,1	0,7	0,7	0,1	0,2	0,2
Armenia	13,4	6,9	8,0	9,9	4,8	1,4	2,1	4,4	2,1	4,3	4,0	3,4	5,5	3,6	4,4
Belarus	19,5	18,8	17,9	15,3	13,0	2,3	1,9	1,9	3,3	1,6	11,9	9,9	9,0	9,8	7,5
Georgia	2,9	2,0				4,1	6,0				3,7	4,2			
Kazakhstan	3,9	4,5	3,1	2,7	6,4	0,3	0,3	0,2	0,2	0,2	1,1	1,0	0,7	0,6	1,0
Kyrgyzstan	11,7	9,3	5,1	4,7	5,0	1,0	1,2	0,6	1,5	2,5	5,2	4,9	3,1	2,9	3,9
Moldova	6,7	5,6	8,8	8,4	9,6	2,4	3,7	14,6	14,4	18,1	4,8	5,0	12,3	12,0	14,4
Russia	13,0	11,0	10,2	8,7	8,1	2,1	1,7	1,6	1,8	1,6	4,2	3,2	2,9	2,8	2,6
Tajikistan					2,5					1,5	0,7	0,7	0,8	1,2	1,0
Turkmenistan															
Uzbekistan															
Ukraine			18,1	17,6	17,9			5,3	8,0	6,4	11,1	8,7	9,8	11,5	10,6

Source: The world bank. Access: http://data.worldbank.org/indicator#topic-14

TABLE 2. THE SHARE OF ENGINEERING PRODUCTS IN THE IMPORT OF THE CIS COUNTRIES (%)

State	from CIS countires					Import as a whole				
	2004	2005	2008	2010	2012	2004	2005	2008	2010	2012
Azerbaijan	11,8	11,1	14,6	13,9	8,5	32,9	35,1	34,0	31,5	30,8
Armenia	5,8	7,0	8,4	9,2	7,3	12,2	14,6	15,9	19,2	15,6
Belarus	13,3	9,4	8,5	7,8	7,7	19,0	17,1	17,5	18,0	16,7
Georgia	4,6	6,4				19,1	19,1			
Kazakhstan	14,8	5,4	14,5	13,3	13,8	28,9	30,3	28,7	27,7	25,7
Kyrgyzstan	5,5	6,7	3,6	3,9	3,7	13,0	16,2	11,8	13,8	12,3
Moldova	6,6	6,6	6,0	6,2	5,4	14,7	14,8	17,2	16,4	16,6
Russia	14,8	14,3	15,8	15,5	25,0	28,1	29,5	31,7	31,2	33,1
Tajikistan					3,8	11,7	14,7	15,1	11,8	11,4
Turkmenistan										
Uzbekistan										
Ukraine			7,3	7,1	7,0	18,3	18,9	17,1	14,9	17,0

Source: The world bank. Access: http://data.worldbank.org/indicator#topic-14

The data in Table 2 shows that the largest share of imports of machinery products is typical for Russia, whose economy is in comparison with other CIS countries is becoming increasingly dependent on imported machinery and equipment, and its structure is, therefore, getting more primitive. As a result, domestic manufacturers of a variety of industries are heavily dependent on supplies from abroad. A similar pattern is typical for Azerbaijan and Kazakhstan. In terms of the dynamics, Russia is stepping up imports of machinery as a whole over the entire volume of imported products and imports from the CIS countries. In addition, there is a recent trend towards convergence of identified indicators. Azerbaijan also shows a reverse trend: both indicators are reduced in recent years. At the same time, it should be noted that the gap between them is increasing and this is evidence of customers switching to countries outside CIS.

Next, we will dig into the share of imports and exports in GDP (Table 3). These indicators are useful for comparing the volume of foreign trade between different countries.

Let us refer to the relative values of exports and compare presented figures for 2005 and 2012. In 2005 the first place occupied the Republic of Belarus, the second position was for Ukraine. By 2012, Moldova is already ahead of Belarus, year after year, throughout the period under review, increasing the sales of engineering products to foreign markets. On the contrary, Russia has twice reduced the relative value of exports of machinery and equipment by 2012 and its position was better only in comparison with Kazakhstan. It once again draws attention to the weakening of the domestic engineering industry in the global economic space.

We estimated the change in the share of imports in GDP in the CIS countries. Regarding the picture in 2005, we note that for Azerbaijan, Georgia and Moldova highest values of machinery and equipment imports in GDP were typical. The lowest value was demonstrated by Russia. By 2012, the situation has changed. The most significant drop of the analysed index was in Azerbaijan. Kyrgyzstan, by contrast, increased its value by more than 70% and became the leader together with Moldova. Russia's position has remained virtually unchanged.

In general, with respect to this indicator, there is great uniformity among the CIS countries than in the case of exports. When considering the volume of export of machinery and equipment in recent years, increasing segregation can be noticed.

Thus, we note that among the CIS countries, Moldova shows the most opened situation on the machine-building sector. It increases the volume of exports and imports relative to GDP values. In addition, Moldova is increasing the share of mechanical engineering in the structure of exports, which distinguishes it from the rest of the CIS countries. This situation is explained by public policy to attract transnational capital in the economy, in particular in the sector of information and telecommunication technologies.

TABLE 3. THE RATIO OF EXPORTS AND IMPORTS OF MACHINERY PRODUCTS TO THE GDP (%)

State	Exports pf machinery / GDP					Imports of machinery / GDP				
	2004	2005	2008	2010	2012	2004	2005	2008	2010	2012
Azerbaijan	0,3	0,5	0,1	0,1	0,1	15,2	21,5	3,4	5,3	6,7
Armenia	1,1	0,9	0,8	0,7	1,1	6,0	7,0	10,0	14,4	12,1
Belarus	8,2	5,9	5,5	5,3	6,1	15,7	10,6	12,9	13,5	13,8
Georgia	1,2	1,5	0,0			17,4	19,6	0,0		
Kazakhstan	0,6	0,5	0,4	0,2	0,5	9,6	10,4	8,8	6,3	6,6
Kyrgyzstan	2,2	1,9	3,6	1,5	2,0	7,2	10,4	30,1	13,1	17,6
Moldova	2,5	2,6	5,0	4,7	6,3	13,6	16,5	21,5	16,0	17,5
Russia	1,5	1,1	0,9	0,8	0,8	4,1	4,3	5,6	5,4	5,8
Tajikistan	0,4		0,3	0,3		9,4		11,5	7,0	
Turkmenistan										
Uzbekistan										
Ukraine	6,8	4,7	4,6	5,8	5,4	9,9	10,7	10,2	9,0	10,6

Source: The world bank. Access: http://data.worldbank.org/indicator#topic-14

As for Russia, the picture is not rosy. In the total volume of domestic exports engineering products still loses their not very leading positions. A significant reduction in supply observed towards Commonwealth countries, that means openness to CIS partners is reduced. In addition, Russia increases the import of equipment. Marked trends signal the difficult situation in mechanical engineering, its impossibility to withstand the competition. These peculiarities are confirmed by the dynamics of the relative values of exports and imports to the value of GDP too.

Thus, the potential of trade integration in the field of mechanical engineering in the former Soviet Union area is not implemented fully, with Russia, initially acting as the integrator of the CIS countries, not involved enough in regional turnover. Meanwhile, developing countries, as opposed to developed, consider regional integration not so much as the elimination of barriers to trade and movement of factors of production, but as a tool for economic development and industrialization of the economy. In this context, the fundamental importance has the deployment of not so traditional and linear, but 'non-linear' model of integration, since it creates favourable conditions for deepening integration of production [19, p. 137].

The most important indicator reflecting the deepening of regional integration in the former Soviet Union area and Russia's role in this process are the FDI (foreign direct investments). Key Russian investment companies operate in traditional industries of foreign economic specialization of the country, which demonstrates the structure of FDI in the CIS countries. 18% of them fall on the production of crude oil and natural gas, another 13.6% - for the transportation and sale of gas and only 2.2% in the machine-building complex; telecommunications weigh 3.7% [20, p. 61]. It should be noted that over the past five years, a significant increase in Russian FDI in the CIS countries was observed in various sectors, especially in the transportation and sale of gas, banking, production of crude oil and natural gas, electric power, but significantly reduced the volume of FDI in telecommunications (by 0.8 billion dollars.).

Russian investors are attracted primarily by raw materials and supply markets. Two major groups of motives of FDI - lowering costs and access to technology have almost no independent significance for the Russian TNCs [20, p. 63]. In this context, it does not create the preconditions for enhancing industrial cooperation in the post-Soviet space. Thus, FDI as a tool for revitalization of industrial cooperation between the countries of the CIS, including engineering, has been neglected, which did not contribute to strengthening the competitiveness of the domestic economy and the CIS as a whole.

Meanwhile, the innovative vector of regional integration in the CIS was identified in the early 90s. In 1992, an agreement on scientific and technical cooperation between the CIS member states was signed, as well as in 1995 - an agreement on the establishment of common scientific and technological space. As a top priority in them the development of integration in the field of science and technology was determined. Then another two fundamental documents were signed: "The concept of interstate innovation policy of the CIS countries for the period up to 2005" and "Comprehensive Plan for its implementation." In the current period the following official documents, stimulating innovation processes in the post-Soviet space are realized: "Interstate program of innovation cooperation of CIS member states for the period up to 2015", aimed at the creation of an interstate innovative space and innovative systems like the European one; "The main directions of long-term cooperation of CIS countries in the sphere of innovations", signed in 2009 and focused on the identification of priority areas of cooperation in science and technology and innovation, as well as the formation of interstate innovative space; "Interstate program of innovation cooperation of CIS countries in the period up to 2020", promoting active innovative development of the CIS countries.

Within the framework of the CIS operates the Interstate Council on the protection of intellectual property, and in November 2010 an agreement on cooperation in this field was signed. In 2012, the Agreement has been prepared on the establishment of a common information infrastructure of innovation activity of the CIS states in the form of a common distributive information system and the "Information for innovation CIS member-states" portal.

The main instrument of cooperation between CIS countries, aimed at enhancing the innovation process, was a target-oriented one. Initially, prior directions of program-oriented cooperation, were implemented by the interstate innovative programs: "Interstate program of standardization of light industry products in the 1999 - 2002", "The program of the development and application of interstate standards of composition and properties of substances and materials in the 1999 - 2000" and the "Program for the development of standards in the field of health and safety at mutually delivered products in the 2000 - 2005".

In the next step, launched by the "Concept of interstate innovation policy of the CIS states - participants for the period till 2005" some directions were designated, such as software cooperation as Interstate innovative program "New Materials" and "Program of development of CALS-technologies". And in the "Interstate program of innovation cooperation of states - participants of the CIS for the period till 2015" following innovative projects were indicated: to develop new technologies and techniques that reduce the impact on the environment; on the use of the pipeline transport of Ukraine for transit of oil and oil products of CIS member states to Eastern Europe; to establish a center of non-tariff regulation of the market of the CIS states; also "Small city of the CIS states - participants." Another project - Framework for Cooperation of the CIS member states in the field of peaceful use of nuclear energy for the period up to 2020 "Cooperation “Atom - CIS “. The basis for it is the deployment of the Russian nuclear industry, machine-

building orders of which over the past five years have increased by 25 times [21].

As you can see, there are not so much joint high-tech projects in the framework of the CIS, aimed at the creation of new technologies and the newer products, which indicates a lack of strategic vision in the field of interstate programming, and, certainly, not in the best way affects the positions of the CIS in the global innovation space. The list of given programs allows to conclude that the implementation of the main objective of innovation cooperation - the creation of new products and technologies that can be used to make a qualitative leap forward in ensuring the competitiveness of the CIS countries in the foreign market – is still an issue.

Meanwhile, international experience shows that major high-tech projects are based on international cooperation, the quality of which becomes key to the success of development and production of competitive products.

In this regard, goals, enshrined in the next official document, aimed at enhancing regional innovation cooperation within the CIS, proved to be unattainable. This is a "CIS Development Concept", on the basis of which implements the three-step "strategy of CIS economic development" (without Uzbekistan, and Azerbaijan, Moldova and Ukraine have made their edits for its implementation). The first stage - until 2011 - envisages the creation of a free trade area of the CIS. In the second stage - up to 2012 - it is planned to form the CIS innovation space. In the third stage (until 2015), it is expected to create a regional market of nano-industry and high-tech industries.

Among the reasons is that Russia's participation in strengthening the innovation component of the economy of the CIS countries was based on the use of borrowed technologies from the EU, and more recently from China, which certainly prevents the full regional economic cooperation aimed at enhancing innovation processes in the post-Soviet space. For example, the main share of payments for import of technologies is accounted for OECD countries (93.4%), while in the CIS countries it is accounted for only 5.2% of payments [22, p. 82].

The close functional relationships within the CIS can only be achieved through the production and technological cooperation, the introduction of common technical standards, conducting common scientific and technological policy and formation of joint ownership (through the exchange of assets of enterprises, establishment of corporations, etc.) [23, p. 126]. In addition, international technology transfer and commercialization is a crucial thing. [24]

However, in the CIS countries and, above all, Belarus, Russia, Armenia's open model of innovation processes, as mentioned above, is carried out mainly outside the Commonwealth and is implemented through links with large companies abroad. Designated place here is taken by outsourcing of research, but the maximum benefit in the form of obtaining the rights to intellectual property is, again, obtained by third countries, increasing their intangible assets and increasing the competitiveness of their economies.

For Russia now the prior goal for innovation policy must not only be focusing on supporting sectors of the "old economy" (energy, machine building, aviation, etc.), but also taking the direction of the deployment of large-scale innovative projects in the field of nanotechnology, IT, biotechnology and so on. Co-operation within the CIS, CU should be concentrated in the area of the breakthrough, new and emerging technologies, as conventional technologies can be drawn from Asia-Pacific countries, mainly from China. Some steps in this direction have already been taken. On the basis of the Joint Institute for Nuclear Research in Dubna, together with the Kurchatov Institute, the International Association of Academies of Sciences with the support of the Interstate Fund for Humanitarian Cooperation of CIS countries the International Innovative Nanotechnology Centre of the CIS was created, with appearing of which the formation of a competitive high-tech market nano-industry CIS, the creation of new tools of scientific and innovative cooperation for joint access to world markets is associated.

In this regard, a necessary adjustment of priorities of innovation policy of the CIS countries in the long term in the field of high technologies is needed. It involves the development of a unified list of at least medium-term innovation programs, aimed at the development and creation of product and process innovation, marketable in post-Soviet space and in the world market, which doesn't exist by now. Therefore, it is necessary to change the priorities in the field of innovative programming in the direction of release of the goods sold in the global market in order to reach and retain in its certain niches.

Despite the relentless attention of the authorities of the countries for the deployment of innovative cooperation, the situation in this area has not changed significantly and sustained improvement in the efficiency of their economies on the basis of innovation is needed (Table 4).

TABLE 4. THRESHOLDS OF INDICATORS MEASURING THE EFFECTIVENESS OF THE PROGRAM OF INNOVATION COOPERATION OF CIS MEMBER STATES AND THEIR VALUES FOR 2020

№	Index	Threshold for 2020г.
1	The share of high technology products in the GDP	15%
2	Public expenditure on R & D (% of GDP)	15%
3	Business spending on R & D (% of GDP)	1.5%
4	Export of high-tech products (% of manufactured exports)	15-20%
5	The number of employed in knowledge-intensive sectors (per 1 million people.)	Increase of 1,5 times

Source: Compiled by: The concept of long-term socio-economic development of Russia until 2020 Website of the Ministry of Economic Development / http: www.economy.gov.ru

A new stage of regional integration processes, including in the sphere of innovation in the post-Soviet area, was designated in 2001 that is since the signing of the Agreement on the Establishment of the Eurasian Economic Community, and the signing the Agreement on the establishment of a single customs territory and formation of the Customs Union (2007).

To change the current state of affairs for the better and to activate innovative processes, following events have been designed.

Firstly, Eurasian Development Bank (EDB) was created, carrying out financial support for innovation, aimed at deepening the integration processes in the Eurasian space. For this purposes the EDB Technical Assistance Fund was opened, and the Bank's priorities are the projects in the manufacturing sector, including the project of creating a new type of passenger aircraft "Sukhoi Superjet 100". Secondly, in 2009 in order to enhance the process of innovation in the EurAsEC, Center for High Technology was opened, working in the form of an international venture capital fund and focuses on promoting the development and implementation of a coherent innovation policy of the Centre states - participants; coordination of work on the formation of the Eurasian innovation system and infrastructure development of scientific and technical and innovative activity of the Centre states - participants; the promotion of innovative financing mechanisms for programs and projects and the creation of conditions for attracting investments into innovative sphere [25, p. 24].

In terms of the development of innovations in priority fields of science and economy in 2010 as part of the Center of High Technologies EurAsEC Interstate program "Innovative Biotechnology" was adopted, designed for 5 years - from 2011 to 2015 for the development and implementation of new biotechnology, biologics and others. The program involved state agencies, research institutions, enterprises, organizations and business structures of Russia, Kyrgyzstan, Kazakhstan, Belarus, Tajikistan. For this purpose within 5 years 926 600 000 rubles is expected to send, including from Belarus - 30%, Kazakhstan - 30%, Russia-30%, Kyrgyzstan - 5%, Tajikistan - 5% [18, p. 139].

As we can see, there is a trend towards the integration on the former Soviet Union area, based on the activation of innovation processes in new industries. The evolution of integration processes in the former Soviet Union, since 2007, developed within the framework of the Customs Union (Russia, Belarus, Kazakhstan), and on 29th of May of 2014 an agreement on creation on its base of the Eurasian Economic Union was signed, which will come into force on 1 January 2015. Participating countries: Russia, Belarus, Kazakhstan, Armenia. The association aims to strengthen the economies of its member countries, and their convergence with each other for modernization and competitiveness in the global market.

EAEC on the former Soviet Union area should become the core of regional economic integration, an incubator of new technologies and only in this case its creation will strengthen the position of the union in the global space, including its innovative segment.

IV. CONCLUSION AND FUTURE STUDY

1) Break of the once strong and clear production, scientific, supply and other ties between the former Soviet republics had a negative impact on all national economies. The negative consequences of this gap are not only overcome so far, but in many strategically important areas for the young states are disastrous and even close to irreversible. One of these areas is a scientific-technical and innovation in general.

2) Due to the complex reasons, cooperation between Russia and the former Soviet republics is currently fragmented, short-term natured. It does not bring the countries the benefits that could be obtained with optimal division of labor and cooperation, taking into account absolute and relative competitive advantages preserved since Soviet times. Scattered attempts of the CIS countries to modernize their national economy with the help of Western countries, have not reached any notable success. This means one thing - the problem of increasing the competitiveness of national producers needs to be addressed primarily through their own efforts - especially in high-tech industries. If this is not done now, then in the next 10 years, according to the rate of reduction of volumes and assortment of high-tech products, the problem will disappear by itself. Due to the complete disappearance of high-tech manufacturing industries.

3) Close cooperation with CIS countries in the sphere of innovation will allow Russia to restore the pre-reform cost-effective volume production of many kinds of relatively high technology products and services, and with the competent and consistent policy - in the coming years to become a major supplier of, for example, aircraft in the local and regional markets.

The logical result of increased cooperation between Russia and Belarus, Kazakhstan will be the improvement of the basic macroeconomic indicators, especially non-financial. In this context, the most important from the standpoint of strengthening national security and long-term implementation of the strategic objectives of Russia, set out in the 2020 Strategy, the transition from raw to neoindustrial vector of development may become a reality. It will not be a full-scale transition to capture all the high-tech industry in the nearest 10 years, but if we can revive the cooperative ties in only one or two industries, but compulsory in an aerospace, then a breakthrough in the Russian manufacturing sector may affect many sectors of the national economy. Structure of Russian export would be appropriate to the one of an industrialized state.

The real, large-scale scientific and technical cooperation of the CIS countries will finally allow aligning material production and professionals. Moreover, it is not just about preparing the engineering and technical personnel, but also

humanitarian professionals as well. The notorious "overproduction" of lawyers and economists, for example, can be "tied" to the needs of the real economy, where countries will expand cooperation. By the way, the activities of planning departments in the companies working at the forefront of scientific and technological progress, is not identical to that of the raw material and / or routine processing firms. Calculation of the cost of a new concept or a single product – is a creative process. Lawyers in joint ventures will never suffer from a lack of work. Regarding guaranteed practice for students, targeted preparing to the needs of specific high-tech industries, the specifics of preparation of economists for certain sectors and even the long-term and medium-term programs.

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