Integration Strategies of the Post-Soviet Countries: Analysis Using the Social Graph Approach[1]

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Abstract

In connection with the current trends restructuring the global world order, the task of creating regional zones of trust, including in the format of integration trade associations between states, is coming to the fore. These trends play an important role in the foreign policy of states, including Russia. In this regard, this article analyzes the strategies of the states of the post-Soviet space in relation to regional economic integration.

The article uses the method of constructing a social graph. Data on the concluded regional trade agreements between the states of the post-Soviet bloc with trading partners was analyzed. The model was also tested and compared against data on value chains and investment flows. Based on this analysis, a model for the distribution of countries' strategies for regional economic integration was created along two parameters: active/passive and centrifugal/ centripetal. Four variants of strategies were identified: active centrifugal, active centripetal, passive centrifugal, and passive centripetal. The article presents the results of checking the obtained model and draws conclusions regarding the prospects for the development of regional economic integration in the post-Soviet space.

Keywords: post-Soviet space; FTA; economic integration; social graph; foreign economic strategy

Introduction

In the current geopolitical context, we are witnessing a radical restructuring of the system of international relations that is establishing the foundation for economic integration in the Eurasian space. Since 2020, there has been a general decline in international economic activity (a decrease in the dynamics of world gross domestic product (GDP), a decrease in the intensity of foreign direct investment, and an increase in trade and economic protectionism and trade

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wars) [Kravchenko, Spartak, 2021, p. 7]. The coronavirus pandemic was also a serious challenge to the development of Eurasian integration [Knobel', Pyzhikov, Kutovaja, 2020]. This was followed by the development of the crisis in Ukraine and the threat of the North Atlantic Treaty Organization's (NATO) expansion to the East. At the same time, the scientific community views the potential of Eurasian integration as far from fully exhausted [Grinberg, Pylin, 2020]. Given the current sanctions pressure from the West, the prospects for the development of economic integration within the region are becoming increasingly relevant [Makhmutova, 2019]. However, Eurasian integration is not the only option for implementing the foreign economic strategy of the countries of the region. New leaders, including from China, Turkey and Iran, are emerging who claim influence in the post-Soviet space, and there is active intervention in the region from the European Union (EU) and the U.S. [Bezrukov, Ivanov, Chimiris, 2021]. There is competition among integration associations in the post-Soviet space, which further intensifies the struggle between major regional players for countries that are not yet sufficiently involved in regional integration processes [Osadchej, 2021, p. 5]. There is a trend toward diversity in foreign policy strategies and approaches to the implementation of foreign policy goals and objectives, which reduces the efficiency and speed of integration processes within the region [Vinokurov, Libman, 2012, p. 6]. Until the 2000s, one of the topical issues in the development of the post-Soviet space was the process of integration within the framework of the Commonwealth of Independent States (CIS) [Zijadullaev, 2002]. Integration within the framework of the Customs Union and subsequently the Eurasian Economic Union (EAEU) then came to the fore.

Regional economic integration is a trend that remains relevant in the post-Soviet space as a scientific study [Kuzmina, 2017; Osadchej, 2018] and as an element of public discourse [Putin, 2011]. The ability to predict the readiness of certain countries for the development of economic integration would be an important tool that could not only influence the global economic agenda, but also provoke a conflict situation in the political sphere. As the case of Ukraine-Russia conflicts in 2014 showed, the economic agreement on integration with the EU (and its contradictions with the contractual legal framework of CIS) was one of the key reasons for the deployment of a large-scale political confrontation, which continues to this day.

The ability to evaluate and predict the integration strategies of the countries of the post-Soviet space would offer an advantage in strategic planning. In this regard, we have set a ***goal*** to develop a model for analyzing and predicting the strategies of the states of the post-Soviet space. To what extent are the states focused on cooperation within the region? To what extent is it important for them to develop cooperation outside the region? What indicators can give us a comprehensive picture?

To address these questions, we systematized data from agreements on the free trade zones (FTZs) of the countries of the post-Soviet space (except for the Baltic countries). In this regard, it was important to find an analytical tool that, at least in some approximation, could help predict the formation of the configuration of integration projects. In this study, we applied the social network analysis method, or the analysis of social graphs, to typify the strategies of the countries of the post-Soviet space in relation to regional economic integration.

The ***hypothesis*** with which we approached the analysis of the data was that the strategy of the states of the post-Soviet space, expressed as the desire to conclude a free trade agreement (FTA), is mainly political in nature. At the same time, data on investments and value chains form a picture that differs from the current foreign economic strategies of the states of the region.

Previous Investigations

Researchers have often raised the question of reducing Russia's influence in the post-Soviet space. In this regard, the intensification of efforts to develop economic integration in the region can become an alternative to declining political and strategic influence [Petrovich-Belkin, Yeremin, Bokeriya, 2019]. Trade agreements of the countries in the region, as well as other agreements, form such a complex, multidimensional structure that it has been called a "spaghetti bowl" [Schüle, Kleisinger, 2016]. This metaphor describes the situation of multi-term, complex intersections of various free trade agreements between two or more players in the region [Baldwin, 2018].

We concluded that it is necessary to select a tool that will allow us to systematize the available information and build an analytical model. The method of constructing and analyzing a social graph for the study of international economic relations is already proven. An attempt to use network metrics was made in relation to the trade of countries in Latin America and Asia [Zaclicever, 2019]. A successful application of a combination of qualitative and quantitative methods to analyze the foreign policy strategies of the CIS countries was accomplished by Russian scientists [Kurylev et al., 2018]. The authors of this study took, as a basis, data on the membership of CIS countries in international organizations and their voting in the United Nations (UN). Studies of integration processes in the post-Soviet space using quantitative methods and modelling based on a social graph have not yet been carried out. Thus, we offer our study for consideration.

The model was built using data on the agreements on trade and economic cooperation of the countries of the post-Soviet space, as well as on data on value chains and investment flows. There are two approaches to comprehensive analysis of economic integration: first, an economic approach that considers FTAs and customs unions, and second, an international political economy approach that draws attention to interstate organizations, even with a rudimentary institutional structure.

Within the framework of the economic approach, the World Trade Organization (WTO) database of regional trade agreements serves as a source of data on economic integration [RTA Tracker, n.d]. It includes agreements about which the organization has been informed. Types of agreements include customs unions, free trade areas, partial scope agreements, and free trade agreements (liberalization of trade in services). However, this database has some limitations. It does not contain treaties of countries that are not members of the WTO, and the accuracy of the data depends on the accuracy of the information provided by the states themselves. "Often integration projects are associated not so much with agreements that determine the mode of trade in goods and services, but, for example, with the creation of a joint infrastructure, financing of common projects, protection of investors' rights, or with "soft" forms of harmonization of standards and rules. All these organizations are absent in the WTO database" [EDB, 2014, p. 10]. One important characteristic of this framework is that "regional" treaties are all those that are not global in nature. The database of regional trade agreements of the WTO, unfortunately, does not give a complete picture of the existing agreements. Therefore, for this study, we refined the data from additional sources [VAVT, 2019]. If the countries were repeated in several treaties, we left only one link. We designate the EU as a single actor since this integration association has a high degree of both economic and political integration.

Data on value chains are presented in a systematic way in the UN Industrial Development Organization (UNIDO) database [IAP, n.d.]. We have identified for each country of the post-Soviet space TOP-5 partners in incoming and outgoing value chains. Investment data was taken from the websites of the central banks of the post-Soviet countries, as well as the European Economic Community (EEC) [EEC, n.d.].

Methodology

The method of analyzing social networks in the form of social graphs opens new opportunities for a systematic analysis of trade and economic relations between countries. As part of this study, we applied the social network analysis (SNA) method to model and analyze relations within the post-Soviet space. We tested various criteria for constructing a social graph. Among these criteria, we highlight:

1) the existence of an agreement on free trade zones,
2) indicators of the development of industrial cooperation between countries (in this case we take data on value chains, because they primarily determine the need and prospects for economic integration between countries), and
3) indicators on foreign direct investment flows.

We propose several models based on social graphs, both in a static and dynamic context. Data on the formation of value chains allow us to show the dynamics of development. We also face the task of identifying the main strategies of countries regarding integration in the period after the collapse of the USSR based on an analysis of the structure of the created model. We paid attention to two indicators—the activity in concluding an FTA and the direction of integration: inside the region or outside. The current cross-section of the concluded FTAs in the region allows us to get closer to identifying the patterns of countries' integration strategies at the present stage.

The network approach to the analysis of FTAs allows a different approach to the analysis of the structure, in contrast to the tabular presentation of information. It allows the calculation of quantitative indicators—which country has more trade agreements—and also reveals the structure of these relationships. Thus, we analyzed the relations between countries in the field of FTA not by looking at pairs of countries, but by considering the complex structure. Graph analysis opens similar opportunities when building models based on value chain data and investment flows. We can see not only the dynamics of bilateral contacts, but also to identify the general structure of existing chains in the region.

Creation of Model and Analysis

Degree Centrality: The Degree of Integration Into the Networks of the Region's Free Trade Area

The relations of countries within the framework of an FTA are displayed on the model in the form of a non-directional unweighted relationship. The sample of countries includes 12 states of the post-Soviet space (as well as several countries external to the region with which FTAs have been concluded).

The degree of centrality of the vertex tells us about the activity of the state in the process of forming trade agreements. The degree of network clustering shows us the potential for the formation of new integration associations in the region. Betweenness centrality shows whether a country is a potential "broker" in relations between other countries. The degree centrality for each vertex shows the extent to which the country is involved in the network of FTAs within the region. In this model, we get a connected graph (Fig. 1). Note that countries are indicated by numbers on the model. Explanation is given in the notes.[2] It is worth paying attention to the high degree of trade integration within the CIS space and, so far, their less developed relations

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[2] 1—Azerbaijan, 2—Armenia, 3—Belarus, 4—Georgia, 5—Moldova, 6—Kazakhstan, 7—Kyrgyzstan, 8—Russia, 9—Tajikistan, 10—Turkmenistan, 11—Uzbekistan, 12—Ukraine.

with external players. In addition to the well-known EAEU agreements with Vietnam and Iran, as well as a new FTA with Serbia, some CIS countries also have agreements with the European Free Trade Association (Georgia and Ukraine), Turkey (Georgia and Moldova), China and Hong Kong (Georgia). Contractual relations with the Balkan region are developing rather densely. Russia (as part of the EAEU) has an FTA with Serbia, Ukraine, Montenegro, and North Macedonia. Also due to close ties and a large diaspora, Ukraine has a free trade agreement with Canada.
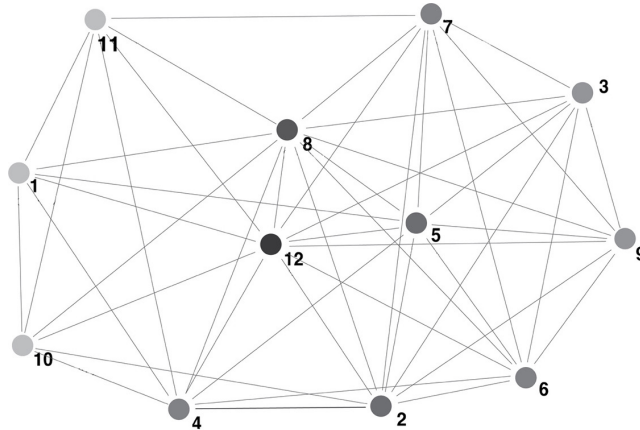

Fig. 1. The Network of Free Trade Zones Within the Region of the Post-Soviet Space
(Degree Centrality)

Source: [WTO, n.d.].

In terms of degree centrality, the model distinguishes six classes: Ukraine has the highest index—11, followed by Russia—10, Armenia and Moldova have a centrality of 9 (see Table 1). The next most important class includes Georgia, Kazakhstan, and Kyrgyzstan (centrality—8). Belarus and Tajikistan are in the same class with centrality of 7. The last class with centrality of 6 includes Azerbaijan, Turkmenistan, and Uzbekistan. These models show that Ukraine, until recently, formed the largest number of agreements on free trade zones in the post-Soviet space. Russia, Moldova, and Armenia also developed contacts rather intensively.

Table 1. Centrality Indicators for the Countries of the Post-Soviet Region

Node	Label	DC
12	Ukraine	11.000000
8	Russia	10.000000
2	Armenia	9.000000
5	Moldova	9.000000
4	Georgia	8.000000
6	Kazakhstan	8.000000
7	Kyrgyzstan	8.000000
3	Belarus	7.000000
9	Tajikistan	7.000000

Node	Label	DC
1	Azerbaijan	6.000000
10	Turkmenistan	6.000000
11	Uzbekistan	6.000000

Source: Compiled by the authors.

An analysis of the structure of the graph (Table 1) containing data on free trade zones within the region shows the degree of involvement of a particular country in the free trade zone network in the post-Soviet space. We can use the analysis of these data to determine the degree of activity of the country in the region, but we cannot determine whether the integration strategy is directed inside the region or outside. In this regard, we need to expand the model by adding data on FTAs of the countries of the region with external players.

Degree Centrality: FTA of the Region Together With External FTAs

At the second stage of the analysis, we supplemented the matrix with data on FTZs outside the region and looked at the change in centrality. Let us make the reservation that in this model we do not consider the free trade zones that exist in countries external to the post-Soviet region. We are only interested in their relations with the countries of the post-Soviet space, which give us additional parameters for assessing the position of countries within the model (Fig. 2).
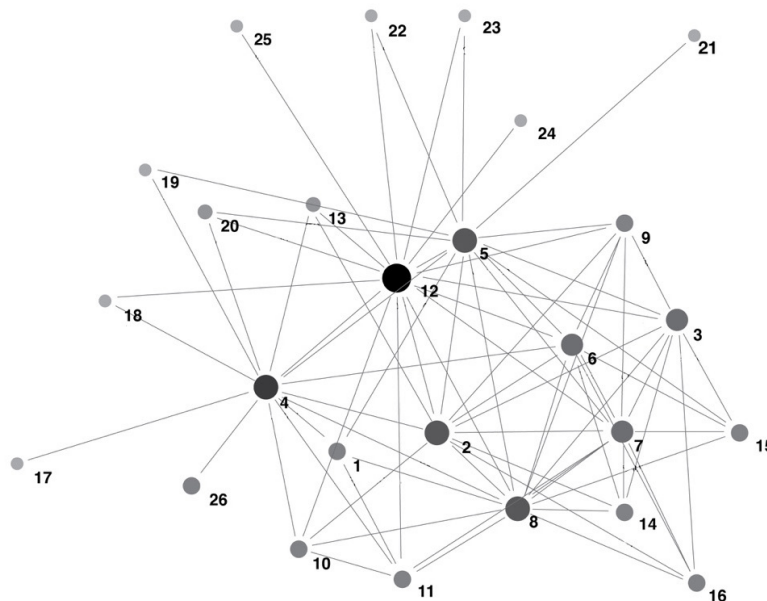

Fig. 2. Model of the FTA Network in the Post-Soviet Region and External Partners (Degree Centrality)[3]

Source: [WTO, n.d.].

[3] Nodes: 1—Azerbaijan, 2—Armenia, 3—Belarus, 4—Georgia, 5—Moldova, 6—Kazakhstan, 7—Kyrgyzstan, 8—Russia, 9—Tajikistan, 10—Turkmenistan, 11—Uzbekistan, 12—Ukraine , 13—EU, 14—Iran, 15—Serbia, 16—Vietnam, 17—China, 18—EFTA, 19—Turkey, 20—Great Britain, 21—CEFTA, 22—Montenegro, 23—North Macedonia, 24—Canada, 25—Israel, 26—Hong Kong.

The indicators of the centrality of the countries of the region have changed, and within the framework of this model, we have identified 12 classes (Table 2). Ukraine has the highest indicator of centrality, which means that it not only has active intra-regional, but also extra-regional contacts. The second class is formed by Russia, Moldova and Armenia. The fourth is Georgia. Fifth is Kazakhstan, Kyrgyzstan, and Belarus. Turkmenistan, Azerbaijan, and Uzbekistan are sixth class. The rest of the classes include external ones for the region of the country and for this analytical task they are of secondary importance.

Table 2. Indicators of the Centrality of the Countries of the Region and External Players
(Breakdown by Class)

Node	Label	DC
12	Ukraine	18.000000
4	Georgia	14.000000
2	Armenia	13.000000
5	Moldova	13.000000
8	Russia	13.000000
6	Kazakhstan	11.000000
7	Kyrgyzstan	11.000000
3	Belarus	10.000000
9	Tajikistan	7.000000
1	Azerbaijan	6.000000
10	Turkmenistan	6.000000
11	Uzbekistan	6.000000
15	Serbia	6.000000
14	Iran	5.000000
16	Vietnam	5.000000
13	EU	4.000000
20	Great Britain	3.000000
18	EFTA[4]	2.000000
19	Turkey	2.000000
22	Montenegro	2.000000
23	North Makedonia	2.000000
17	China	1.000000
21	CEFTA[5]	1.000000
24	Canada	1.000000
25	Israel	1.000000
26	Hong Kong	1.000000

Source: Compiled by the authors.

As one of the results of the study, we propose a variant of the typology of the integration strategies of the countries of the post-Soviet region. For a typology creation we need to com-

[4] EFTA—European Free Trade Agreement.
[5] CEFTA—Central European Free Trade Agreement.

pare several obtained parameters—the degree centrality of the country within the social graph (the complete graph, considering all free trade zones) and the number of free trade zones in the country, both inside and outside the region.

Table 3. Comparison of External and Internal FTAs for the Countries of the Region (Quantitative Indicators)

Country	Degree Centrality	FTA Inside the Region	FTA Outside the Region
Ukraine	18	11	7
Georgia	14	8	6
Moldova	13	9	4
Armenia	13	9	4
Russia	13	10	3
Kazakhstan	11	8	3
Kyrgyzstan	11	8	3
Belarus	10	7	3
Tajikistan	7	7	0
Azerbaijan	6	6	0
Turkmenistan	6	6	0
Uzbekistan	6	6	0

Source: Compiled by the authors.

Based on this comparison (Table 3), we can present the model on two scales— activity/passivity and centrifugal/centripetal (Fig. 3). The line between active and passive actors runs along line 10, above 10 represents an active position, below 10 is passive. In this situation, Belarus finds itself on the verge of an active and passive foreign policy position regarding the formation of an FTA. Regarding centripetalism, Armenia is in a borderline state. In this model, we still attribute it more to centripetal actors since the country is a member of the EAEU (Fig. 3). However, any agreement with external players may tip the scales toward centrifugal tendencies.
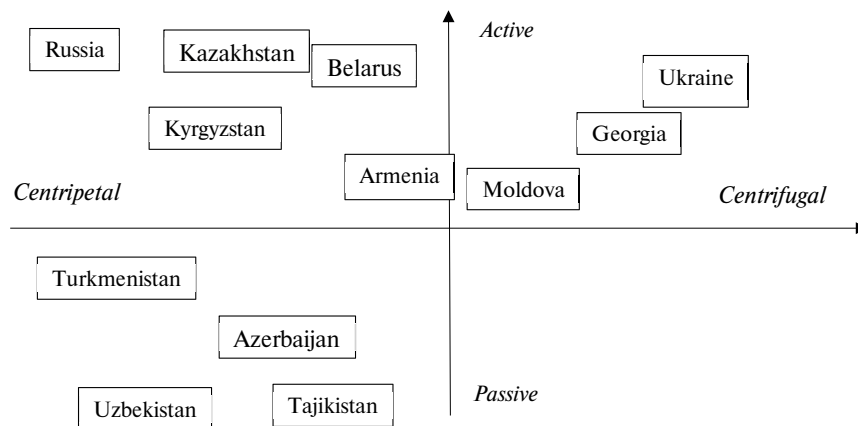

Fig. 3. Model of the Strategies of the States of the Post-Soviet Space in Relation to Economic Integration

Source: Compiled by the authors.

Integration strategies of states:

1. Active and centrifugal (Ukraine, Georgia, and Moldova)
2. Active and centripetal (Russia, Kazakhstan, Belarus, Kyrgyzstan, and Armenia)
3. Passive and centripetal (Azerbaijan, Uzbekistan, Tajikistan, and Turkmenistan)
4. Passive and centrifugal (-)

The type of passive centrifugal states in this model turned out to be empty. In other words, the states of the region have not sought to develop trade integration outside the region before they have been able to develop cooperation within. This thesis also confirms the fact that countries with an active external position have many agreements within the region. Ukraine was quite active within the region (before the crisis), but recently it has become more active in the direction of cooperation with external players. A similar situation occurs with Armenia and Georgia.

The FTA model describes the situation after the collapse of the Soviet Union. The overwhelming majority of the analyzed FTAs are, in one way or another, bilateral free trade agreements between the republics of the former USSR, concluded at the initial stage of the creation of CIS. Even though, on 15 April 1994, the presidents of Azerbaijan, Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Uzbekistan, and Ukraine signed an agreement on a free trade zone aimed at the abolition of tariff and non-tariff restrictions in mutual trade, a multilateral free trade regime was never formed. The regime fixed in bilateral agreements continued to operate between the CIS partners. According to the CIS Executive Committee [n.d.], in total, about 110 agreements on mutual trade between the CIS countries were concluded, which prevented full integration due to the different volume of agreements and obligations.

On 18 October 2011, the heads of government of eight CIS member states (Armenia, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, and Ukraine) signed a free trade agreement. On 31 May 2013, Uzbekistan acceded to the treaty by signing the Protocol on the Application of the Treaty on the CIS Free Trade Area dated 18 October 2011. Consultations on Azerbaijan's and Turkmenistan's accession to the treaty are ongoing, and a network of bilateral agreements is being applied pending their decision. To form closer integration, from 2001 to 2014 there was the Eurasian Economic Community, based on which, in accordance with the treaty of 29 May 2014, the Eurasian Economic Union was formed.

However, since the early 2000s, some CIS states have shown a tendency to conclude non-bloc free trade agreements. Thus, Georgia, having left CIS in 2009 but retaining the operation of bilateral free trade agreements with some CIS member states, by now has the largest network of free trade and integration agreements with such blocs and countries as the EU, EFTA, Turkey, China, Hong Kong, and acted, along with Ukraine and Uzbekistan, as one of the founders of the GUAM regional bloc. Since the early 2000s, Ukraine has also had a rich trade liberalization agenda with countries outside CIS: agreements on free trade in goods have been signed with Montenegro, north Macedonia, Israel, the EU, EFTA, Canada, and Turkey, and consultations are underway on trade liberalization with Serbia and Singapore. Moldova is negotiating a free trade area with China and has already signed free trade agreements with the EAEU countries, Turkey, and the UK. At the same time, Moldova is interested in economic integration and harmonization of its norms and rules with EU legislation, in connection with which, in 2014, it signed an agreement on economic integration with this bloc. Armenia has a similar agreement with the EU, signed before joining the EAEU in 2015.

At the same time, a number of CIS/EAEU states are actively cooperating with new regional associations, for example, with the Organization of Turkic States and the China-Central Asia Forum, and continue to interact within the framework of the Eastern Partnership with the EU, which is not based on a free trade regime, but on infrastructural and economic projects being

implemented on their sites, which may eventually lead to the formation of new regional zones. This is especially true for those countries that, for some reason, have not yet joined the Eurasian Economic Union, because one of its key rules is a coordinated foreign trade policy with third countries. Thus, the described model does not consider the rapidly changing situation and requires verification using additional data. To clarify the conclusions based on the FTA, we used value chains (TOP-5 partners of the post-Soviet countries in different periods—1995, 2013, and 2020), as well as investment data.

Centrality Indicators for the Countries of the Region Based on Value Chains

To build models based on value chains, we took data for three control years—1995, 2013, and 2020—and built models based on these data according to a single principle, comparing the dynamics of centrality indicators for the states of the post-Soviet space. Note that in this case we have built a weighted graph, that is, connections between vertices (countries) have different intensities, which affects the centrality indicators. The connection weight parameters are set as a percentage indicator of what share in the total flow of value chains is occupied by a particular country. Also, the graph is directed—we considered the factor of movement of goods from one country to another. Accordingly, if a two-way relationship is formed between countries (value chains go both ways), we classified the relationship as strong and analyzed it further.
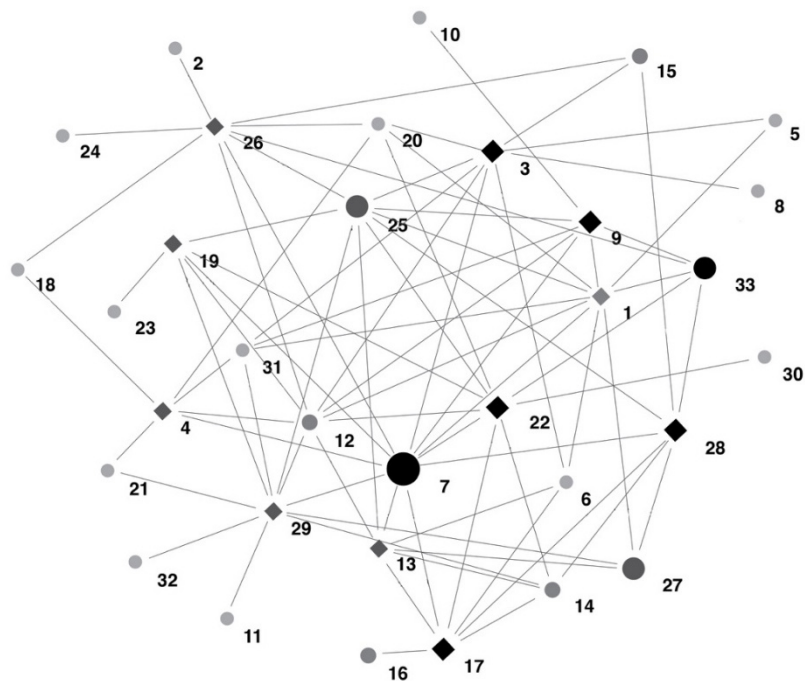

Fig. 4. Model of Links in the Region of the Post-Soviet Space Based on Value Chains (1995)[6]

Source: [IAP, n.d.].

[6] 1—Azerbaijan, 2—Algeria, 3—Armenia, 4—Belarus, 5—Belgium, 6—Great Britain, 7—Germany, 8—Greece, 9—Georgia, 10—Israel, 11—India, 12—Italy, 13—Kazakhstan, 14—China, 15—Korea, 16—Cuba, 17—Kyrgyzstan, 18—Lithuania, 19—Moldova, 20—Netherlands, 21—Poland, 22—Russia, 23—Romania, 24—Slovakia, 25—U.S., 26—Tajikistan, 27—Turkey, 28—Uzbekistan, 29—Ukraine, 30—Finland, 31—France, 32—Czech Republic, 33—Japan.

In 1995, the most powerful role in building value chains with the countries of the post-Soviet region was held by Germany. Russia and China occupied a much less significant place. The United States also had a high centrality indicator within this model. In terms of centrality, Russia was outperformed by such countries as Armenia, Georgia, and Uzbekistan (Table 4).

Table 4. Indicators of Centrality in the Social Graph: Models of Value Chains of the States of the Post-Soviet Space (1995)

Node	Label	DC
7	Germany	171.000000
25	U.S.	99.000000
28	Uzbekistan	97.000000
3	Armenia	96.000000
9	Georgia	87.000000
22	Russia	87.000000
17	Kyrgyzstan	83.000000
27	Turkey	75.000000
29	Ukraine	66.000000
13	Kazakhstan	64.000000
26	Tajikistan	64.000000
19	Moldova	62.000000
4	Belarus	60.000000
1	Azerbaijan	45.000000
12	Italy	45.000000

Source: Compiled by the authors.

At the beginning of the section, we noted that it is also important to pay attention to the configuration of strong (two-way ties), so we looked at the configuration of such ties in 1995 (Fig. 5).

In 1995, the region did not form a single network based on strong (mutual) ties. Azerbaijan and Armenia dropped out of the connected network, while Germany, Turkey, Italy, and the United States became significant links. Russia had strong bilateral ties in 1995 with Moldova and Kyrgyzstan.

In 2013, Russia began to play a more significant role in value chains in the region (Fig. 6).

China also occupied an important place, while Germany faded into the background. Of the countries in the region, high indicators of centrality (that is, a large number of partners in value chains) were shown by Ukraine, Kazakhstan, and Tajikistan (Table 5).
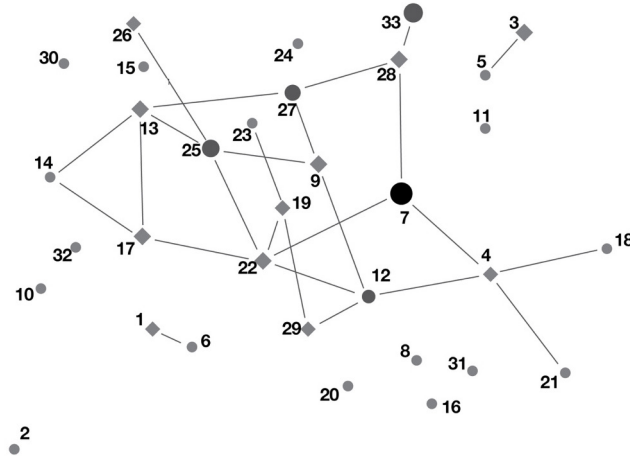
Fig. 5. Model of Links in the Region of the Post-Soviet Space Based on Value Chains (1995): Strong Bilateral Ties[7]
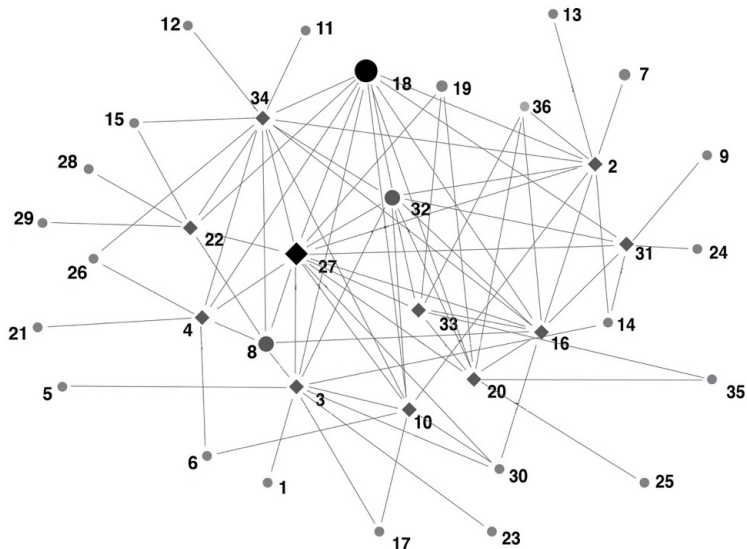
Source: [IAP, n.d.].

Fig. 6. Model of Links in the Region of the Post-Soviet Space Based on Value Chains (2013)[8]

Source: [IAP, n.d.].

[7] 1—Azerbaijan, 2—Algeria, 3—Armenia, 4—Belarus, 5—Belgium, 6—Great Britain, 7—Germany, 8—Greece, 9—Georgia, 10—Israel, 11—India, 12—Italy, 13—Kazakhstan, 14—China, 15—Korea, 16—Cuba, 17—Kyrgyzstan, 18—Lithuania, 19—Moldova, 20—Netherlands, 21—Poland, 22—Russia, 23—Romania, 24—Slovakia, 25—U.S., 26—Tajikistan, 27—Turkey, 28—Uzbekistan, 29—Ukraine, 30—Finland, 31—France, 32—Czech Republic, 33—Japan.

[8] 1—Austria, 2—Azerbaijan, 3—Armenia, 4—Belarus, 5—Belgium, 6—Brazil, 7—Great Britain, 8—Germany, 9—Greece, 10—Georgia, 11—Egypt, 12—India, 13—Iraq, 14—Iran, 15—Italy, 16—Kazakhstan, 17—Canada, 18—China, 19—Korea, 20—Kyrgyzstan, 21—Lithuania, 22—Moldova, 23—Netherlands, 24—Norway, 25—UAE , 26—Poland, 27—Russia, 28—Romania, 29—Serbia, 30—U.S., 31—Tajikistan, 32—Turkey, 33—Uzbekistan, 34—Ukraine, 35 – France, 36 – Switzerland.

Table 5. Indicators of Centrality in the Social Graph: Models of Value Chains of the States
of the Post-Soviet Space (2013)

Node	Label	DC
27	Russia	233.000000
18	China	208.000000
34	Ukraine	98.000000
16	Kazakhstan	92.000000
31	Tajikistan	91.000000
20	Kyrgyzstan	84.000000
33	Uzbekistan	79.000000
22	Moldova	76.000000
3	Armenia	75.000000
2	Azerbaijan	74.000000
32	Turkey	72.000000
4	Belarus	70.000000
10	Georgia	59.000000
8	Germany	49.000000
19	Korea	28.000000
26	Poland	17.000000
7	Great Britain	16.000000
14	Iran	16.000000
28	Romania	13.000000
1	Austria	8.000000
6	Brasilia	6.000000
30	U.S.	3.000000

Source: Compiled by the authors.

If we consider the 2013 model with only strong ties (Fig. 7), we see that the picture changed compared to 1995.

From the point of view of strong ties, the post-Soviet space became more connected, only Armenia fell out. Russia became an important source and centre of attraction for trade chains. China also began to play a significant role, Turkey retained its position, and Germany and Italy No longer formed strong bilateral ties with the countries of the region.
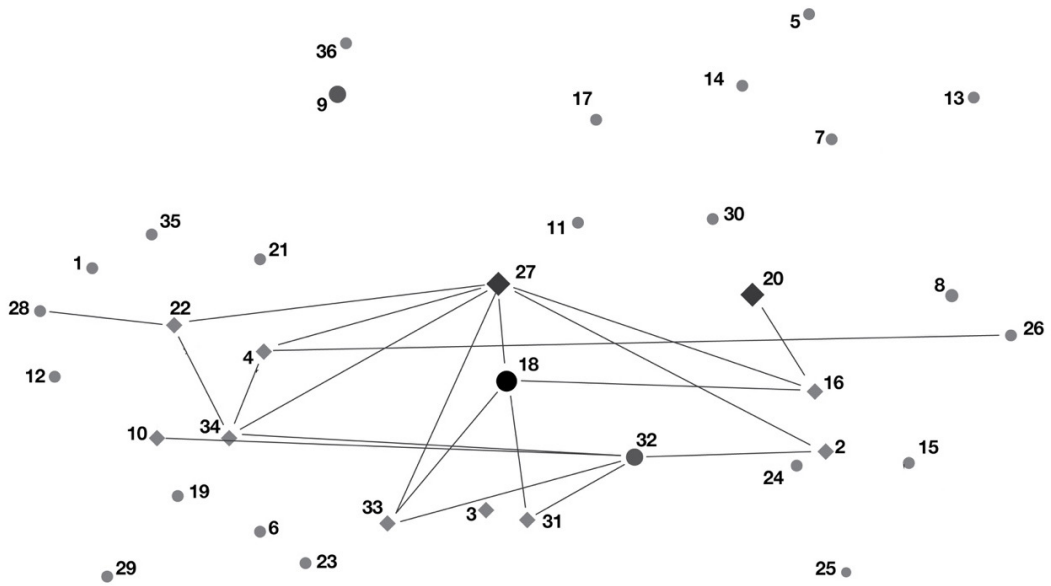
Fig. 7. Linkage Model in the Post-Soviet Region Based on Value Chains (2013): Strong Bilateral Ties[9]

Source: [IAP, n.d.].

By 2020, we see how Russia and China firmly occupied their central positions within the model of value chains in the post-Soviet space. European countries and the U.S. still retained their positions, but they were not as significant as in 1995 (Table 6).

Table 6. Indicators of Centrality in the Social Graph: Models of Value Chains of the States of the Post-Soviet Space (2020)

Node	Label	DC
20	Russia	280.000000
13	China	199.000000
12	Kazakhstan	107.000000
25	Uzbekistan	105.000000
14	Kyrgyzstan	97.000000
23	Tajikistan	89.000000
1	Azerbaijan	77.000000
2	Armenia	77.000000
4	Belarus	73.000000
24	Turkey	69.000000

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[9] 1—Austria, 2—Azerbaijan, 3—Armenia, 4—Belarus, 5—Belgium, 6—Brazil, 7—Great Britain, 8—Germany, 9—Greece, 10—Georgia, 11—Egypt, 12—India, 13—Iraq, 14—Iran, 15—Italy, 16—Kazakhstan, 17—Canada, 18—China, 19—Korea, 20—Kyrgyzstan, 21—Lithuania, 22—Moldova, 23—Netherlands, 24—Norway, 25—UAE, 26—Poland, 27—Russia, 28—Romania, 29—Serbia, 30—U.S., 31—Tajikistan, 32—Turkey, 33—Uzbekistan, 34—Ukraine, 35 – France, 36 – Switzerland.

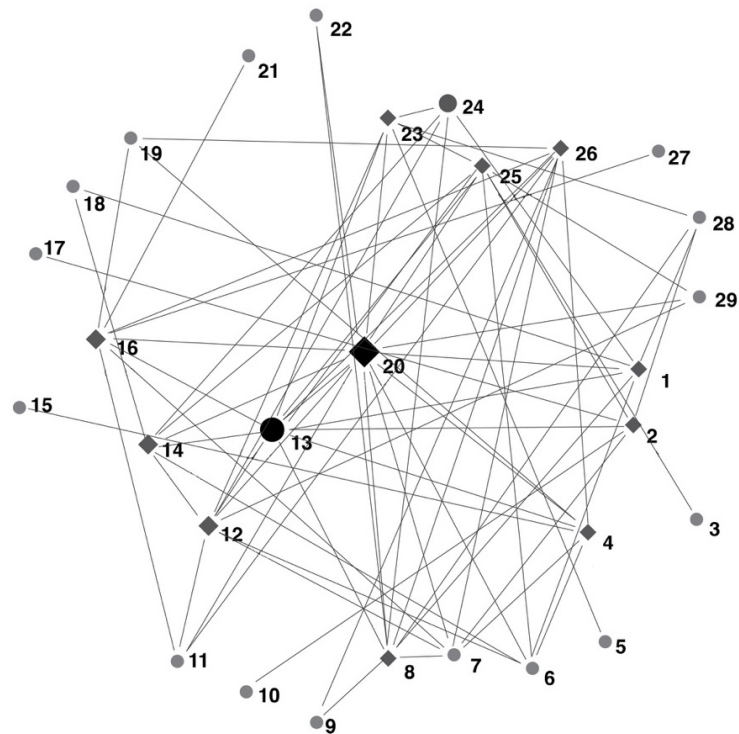| Node	Label	DC
16	Moldova	65.000000
26	Ukraine	57.000000
8	Georgia	56.000000
7	Germany	50.000000
29	Korea	20.000000
19	Poland	18.000000
21	Romania	17.000000
6	Great Britain	16.000000
10	Iran	9.000000
11	Italy	5.000000
18	UAE	4.000000

Source: Compiled by the authors.

Fig. 8. Model of Connections in the Region of the Post-Soviet Space Based on Value Chains (2020)[10]

Source: [IAP, n.d.].

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[10] 1—Azerbaijan, 2—Armenia, 3—Afghanistan, 4—Belarus, 5—Belgium, 6—Great Britain, 7—Germany, 8—Georgia, 9—India, 10—Iran, 11—Italy, 12—Kazakhstan, 13—China, 14—Kyrgyzstan, 15—Lithuania, 16—Moldova, 17—Netherlands, 18—UAE, 19—Poland, 20—Russia, 21—Romania, 22—U.S., 23—Tajikistan, 24—Turkey, 25—Uzbekistan, 26—Ukraine, 27—Czech Republic, 28—Switzerland, 29—Korea.

The model of strong bilateral ties in 2020 shows that the region is finally becoming connected—all countries in the region are directly or through intermediaries connected by strong bilateral ties. And here China, Turkey, and Germany play an important role.
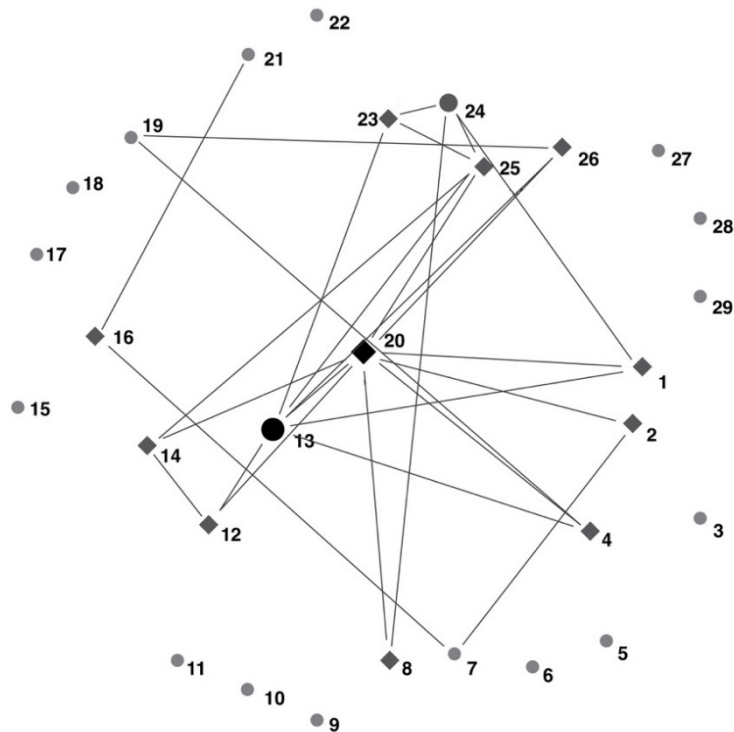

Fig. 9. Model of Links in the Post-Soviet Region Based on Value Chains (2020): Strong Bilateral Ties[11]

Source: [IAP, n.d.].

Thus, three time slices—1995, 2013, and 2020—show us the evolution of economic relations between the countries of the region, inside and outside. In 1995, the region was quite fragmented in terms of the formation of value chains. Relations with Germany and Italy played the main role in the region. The role of Russia and China was insignificant. Starting in 2013, the situation began to change; Russia and China gradually increased their positions and were able to maintain centrality until 2020.

Centrality Indicators for Countries in the Region Based on Foreign Direct Investment Data

Investment chains also give us the opportunity to test the model for its correlation with real economic contacts that are being built in the post-Soviet space.

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[11] 1—Azerbaijan, 2—Armenia, 3—Afghanistan, 4—Belarus, 5—Belgium, 6—Great Britain, 7—Germany, 8—Georgia, 9—India, 10—Iran, 11—Italy, 12—Kazakhstan, 13—China, 14—Kyrgyzstan, 15—Lithuania, 16—Moldova, 17—Netherlands, 18—UAE, 19—Poland, 20—Russia, 21—Romania, 22—U.S., 23—Tajikistan, 24—Turkey, 25—Uzbekistan, 26—Ukraine, 27—Czech Republic, 28—Switzerland, 29—Korea.
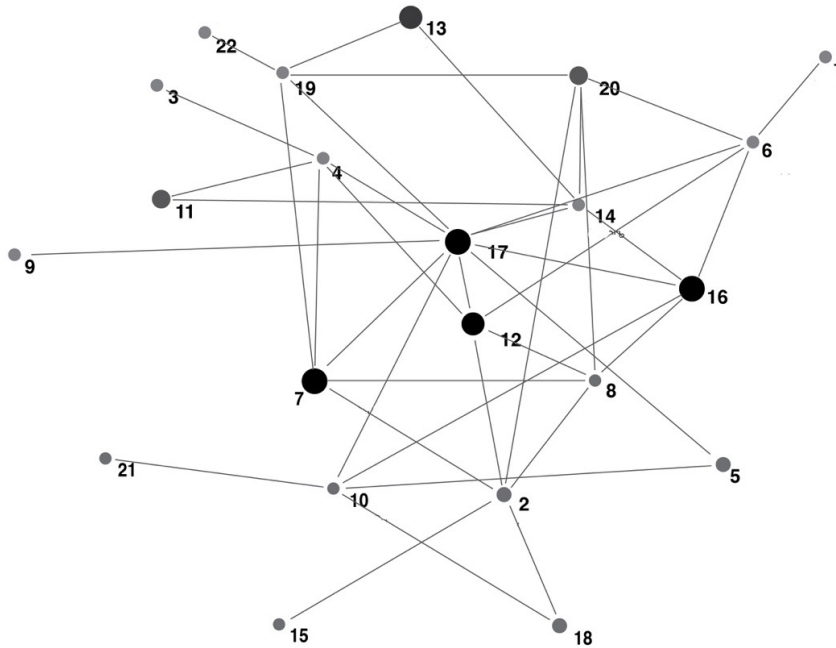
Fig. 10. Model of Connections in the Post-Soviet Region Based on Data on Investment Flows (2021)[12]

Source: [EEC, n.d.].

Russia was both an active donor of investments (Fig. 10), mainly to the countries of the post-Soviet space and accepted investments from third countries (Great Britain, the Netherlands, Cyprus, and Bermuda). In terms of centrality indicators, Russia was the leader in terms of investment in the region in 2021 (Table 7).

Table 7. Indicators of Centrality in the Social Graph: Models of Investment Flows
of the States of the Post-Soviet Space (2021)

Node	Label	DC
17	Russian	89.000000
12	Cyprus	75.000000
7	Great Britain	73.000000
13	China	70.000000
16	Netherland	63.000000
11	Canada	43.000000
20	Turkey	41.000000
18	U.S.	33.000000
2	Azerbaijan	20.000000

[12] 1—Austria, 2—Azerbaijan, 3—Argentina, 4—Armenia, 5 — Bermuda, 6—Belarus, 7 — Great Britain, 8—Georgia, 9—Ireland, 10—Kazakhstan, 11—Canada, 12—Cyprus, 13—China, 14—Kyrgyzstan, 15—Moldova, 16—Netherlands, 17—Russia, 18—U.S., 19—Tajikistan, 20—Turkey, 21—France, 22—Switzerland.

Node	Label	DC
5	Bermuda	16.000000
15	Malaysia	9.000000
21	France	8.000000
9	Ireland	6.000000
3	Argentina	5.000000
1	Austria	4.000000
22	Switzerland	4.000000

Source: Compiled by the authors.

It is significant that Cyprus and the UK also acted as significant sources of investment for the countries of the post-Soviet space, which is likely due to the way Russian large capital is distributed (however, this case is not the subject of our consideration in this article).

Conclusion

In this article, we described the static model for the distribution of strategies of the states of the post-Soviet space regarding regional economic integration. The model was built on the analysis of interrelations within the system of agreements on free trade zones. It was further tested against data on value chains and foreign direct investment. The distribution of strategies is as follows: active and centrifugal (Ukraine, Georgia, and Moldova); active and centripetal (Russia, Kazakhstan, Belarus, Kyrgyzstan, and Armenia); passive and centripetal (Azerbaijan, Uzbekistan, Tajikistan, and Turkmenistan); passive and centrifugal.

Several results are observed in identifying the four basic trends. First, the strategy of building up international economic contacts for the countries of the post-Soviet space is focused on Eurasia. At the same time, it is impossible to state a clear division of countries into western and eastern orientations.

The countries with an active strategy include Ukraine and Russia. However, if Russia is focused on closer intra-bloc integration, then Ukraine is oriented toward non-bloc integration with a decrease in the importance of intra-bloc economic ties. An active and centripetal position is typical for Armenia and Kazakhstan, Kyrgyzstan, and Belarus (EAEU states). Azerbaijan, Tajikistan, Turkmenistan, and Uzbekistan are of the greatest prospective interest in the field of regional integration. The international economic strategy of these countries is at the stage of formation and now it is important to develop the closest possible cooperation with these countries.

Second, the most active external centres interested in integration with the countries of the post-Soviet region include the EU, China, and Turkey. At the same time, the EU, along with the "regulated" free trade regime, promotes economic integration by implementing such countries with their own rules and state regulations. China aims to promote its infrastructure projects and create a favourable trade regime for their development. The role of Turkey in the liberalization of the terms of trade with the countries of the post-Soviet space has not yet been fully revealed: this country is very reservedly involved in both industrial cooperation and investment development in the countries of the former USSR. It is possible that the implementation of the free trade agreements concluded by Turkey with Georgia and Ukraine in the early 2020s will contribute to changing this situation.

And, finally, since 2013, Russia and China have become the main players in the field of value chains and investments in the development of the economies of countries. Russia remains a key partner in industrial cooperation and a centre of investment for the countries of the post-Soviet region. This indicates that most free trade agreements with countries outside CIS have not had the effect of deepening cooperation chains with countries outside the post-Soviet space. This leads to the conclusion that foreign economic integration strategies are mainly political in nature and do not correlate with the economic realities reflected in investment flows and value chains.

To evaluate some distant time perspective and make a forecast up to 2025−30, we can assume that the most active competition will unfold for the attention of states that show a passive centripetal strategy (Azerbaijan, Turkmenistan, Tajikistan, and Uzbekistan). In particular, Azerbaijan, Turkmenistan, and Uzbekistan are attractive to Turkey, especially since the latter is actively involved in value chains and investment flows in the post-Soviet space. China is also active in the Central Asian region, so it has a chance to increase its influence through chains and investments.

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