

## **THE COMPARATIVE ANALYSIS OF TRANSPORT COSTS OF ARMENIA WITHIN EAEU AND REGIONAL COUNTRIES**

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The development of an effective logistics system is significant in every country's economy because logistics can contribute to the acquisition of competitive advantages. Effective logistics chains are crucial for promoting the competitiveness of the RA economy, which can create an opportunity for Armenia to fully integrate into the world economy, contributing to the improvement of the country's international competitiveness position. In this context, it is essential to carry out a comparative study of the transport costs of the countries of our region and the EAEU member states, which will provide an opportunity to identify the existing transport and logistics problems in these countries to develop ways to solve them. Thus, this article aims to carry out a cost analysis of cargo transportation in Armenia, comparing them with the EAEU and the countries of the region. For the calculation of freight costs, the author used the formula of the ratio of freight costs and production values in each country. As a result of the analysis carried out by the author, Armenia is in a somewhat difficult position in terms of the cost of cargo transportation both in the region and among EAEU countries. On the other hand, among the compared countries, Belarus and Russia are competitive in cargo transportation costs, and in the region, Georgia and Turkey.

**Introduction.** In the modern era of the development of international economic relations, when the competitive struggle dominates the market, states and firms, in the context of planning their strategic and tactical steps, pay great attention to the multifaceted service of consumer demands in the market, moving the competition from the price level to the level of providing quality and additional services.

The development of an effective logistics system is very important in the economy of every country because logistics in the economy can contribute to the achievement of competitive advantages both in production - rational use of existing capacities, reduction of working capital, cooperation, integration, improvement of planning, etc., and in the service sector. through the improvement of commercial services, an advanced strategy of distribution channels, better satisfaction of consumer needs, etc.

The Republic of Armenia due to its geographical position and location in the strategically important South Caucasus region, especially the location and the geopolitical situation cause challenges in terms of transport.

To understand the situation and problems of the transport system, it is important to evaluate the transport costs of Armenia, which are also important benchmarks for promoting the country's international trade circulation and improving its competitive position. It should be noted that high transport costs affect Armenia's export and import. Some estimates document that in the case of imports, high transportation costs have led to a 6-7% increase in the prices of imported goods compared to the world average [Belubekyan, 2011, 14]. At the same time, the high transport costs of imports create protective "barriers" to the promotion of local production, providing favorable conditions for their development. On the other hand, transport restrictions and high costs create obstacles to increasing the international competitiveness of Armenia's economy.

**Methodology.** Each research work has a specific purpose set for the study, the primary basis for its conclusion and further course is the application of a justified and argued methodology. The methodological basis of this article is the use of secondary information collection tools. And for the collection of secondary information, the foundations of economic theories, the works of Armenian and foreign authors, which are related to the study of logistical competitiveness issues, served as a theoretical, informative, and methodological basis. In addition, the reports, publications, and reports of the Central and National Banks of EAEU and RA neighboring countries, the World Bank database, statistical committees, and other state bodies directly or indirectly related to the regulation of the sector served as the main sources of information. Naturally, to carry out a comprehensive and effective analysis, after the collection of secondary information, its qualitative and quantitative analysis was carried out using a certain methodological toolkit with wide applicability.

With the help of the toolkit of quantitative methods, the freight costs were calculated, thanks to which a situational analysis of transport costs was carried out both for EAEU countries and for the region, highlighting their comparisons with Armenia. The cost of freight is calculated by the ratio of freight costs and production values in each country, using the following formula (Polyakov, 2001, p. 11),

$$\text{Freight Cost} = \frac{\text{Freight debit} + \text{credit}}{\text{Merchandize value}} \times 100\%$$

In addition to the above, with the help of qualitative methods, we have given meaningful assessments on the impact of logistics costs on the economy, which can contribute to the development opportunities of the Armenian economy.

**Literature review.** The modern world economy is characterized by a high degree of economic interdependence of countries, as a result of which economic restrictions between countries are gradually disappearing. The international competition mainly involves

competition between countries, becoming the most tangible tool for measuring globalization. An active program of measures can ensure the success of international competition if it is focused on innovations and provides an opportunity to actively influence the factors that promote the development of the country's economy.

The efficiency of logistics processes is vital to trade and economic growth. A country's ability to participate in international trade depends on its merchants' access to global freight and logistics networks. Opportunities to join the global logistics network depend on a country's infrastructure, service market, and trade procedures.

Global logistics is one of the main directions of logistics of the future. The term "global logistics" refers to the strategy and tactics of creating stable macro-logistics systems, which will connect the business structures of different countries of the world on the basis of division of labor, partnership, and cooperation in contracts, agreements, general plans, and other forms, which are encouraged at the interstate level [Grigoryan, 2015, 133]. There are many definitions of logistics in the professional literature. Most experts define logistics as a science, a management system, or as a type of activity [Grigoryan, 2015, 4]. Sometimes they also emphasize the functional or managerial aspect of logistics [Farahani, 2011, 3]. Logistics is derived from the Greek word "logistike", which means "calculate", and "judge" [Nazaryan, 2010, 65].

In the conditions of expansion and deepening of international economic relations, and development of production, there is an increase in expenses in the sphere of circulation. That is why the attention of entrepreneurs has been focused on increasing the efficiency of market activities and reducing costs in this area. In a number of countries, more than 90% of the product movement time (from procurement of raw materials to delivery of the product to the consumer) is accounted for by the movement and storage of the product through various channels. Production of products accounts for only 2-3% of the total time. In the cost structure, storage of raw materials, semi-finished products, and finished products accounts for about 44% of total costs, storage, and delivery - 16%, transportation - 32%, and sales of finished products - 8%. The operations of moving goods within the global market are more costly and complex than in domestic markets. In the first case, the costs make up 25-35% of the cost of goods, and in the second case, only 8-10% [Grigoryan, 2015, 17].

Over time, there was a transition from a seller's market to a buyer's market, which was accompanied by corresponding changes in the strategy of production and commodity movement systems. It had its impact on the development of logistics, that is, the production company, which is a link in the logistics chain, must plan its activities based on market demands and possible changes in the situation. At the same time, increasing the quality of service, shortening the time of order fulfillment, and maintaining the agreed schedule of deliveries become essential. Producers, in their turn, present a similar

demand to their partners who deliver raw materials and materials. It should be noted that in the current conditions, the time factor has become an essential factor for customers to make purchases along with product quality and price. As a result of the mentioned changes, a complex system of connections between business entities has been formed, which requires updating the existing systems and approaches in the field of supply and sale, solving the problems of optimal allocation of warehouses, developing rational ways of goods movement, etc.

**Scientific novelty.** Thus, the comparative analysis of the cargo transportation values of Armenia with the EAEU and the countries of the region proved that there is an agenda issue of logistics system development in Armenia. In this context, effective state policy, increasing the competitiveness of the transport system, and integration into the global transport system can become decisive factors in reducing the costs of Armenia's cargo transportation. In this regard, among the compared countries, Belarus and Russia are in the most advantageous positions, and the region, Georgia and Turkey. This once again emphasizes the importance of opening the Armenian-Turkish border, at the same time, making it important to outline the challenges related to the opening of the border and define effective ways to solve them.

On the other hand, dependence on one or two sea ports carries the risk of becoming a "dependent carrier", in which case the carrier has only one means of transportation. Alternative routes should be maintained to reduce the risk of dependence on the infrastructure of transit countries, fees related to transit and customs charges in transit countries, direct costs and delays, and sensitivity to obstacles in transit countries.

**Analysis.** Armenia's transportation costs are one of the highest in the world, which is mainly due to bad relations with 2 neighboring states (blockade by Turkey and Azerbaijan) and lack of sea access. Lack of access to the sea, a great distance from world markets, and closed borders make foreign trade difficult and continue to seriously limit Armenia's socio-economic development. Armenia's international competitiveness is affected not only by the high cost of transport services but also by the unpredictability of the duration of transportation (frequent breakdowns of the Lars checkpoint). When we look at the trade indicators of RA balance of payments services, it becomes clear that the negative balance of our country only in terms of transport services is greater than all types of services taken together.

The data in Table 1 give grounds for concluding that local transport companies still have a problem with improving competitiveness, which is due to objective and subjective factors. Thus, as an objective reason, it can be pointed out that for a non-resident carrier, cargo transportation through the territory of Georgia is more expensive. The cost of container shipping to Pot is approximately \$1,000 for Georgian-registered companies

and \$1,000 more for Armenian companies shipping in Georgia than for Georgian-registered companies [The World Bank. 2002, 69-75]. As a result, goods transported through local companies become less competitive in terms of price in foreign markets.

**Table 1.** Balances of transport services and general services in the RA balance of payments (million US dollars)

Year	Account of services (million USD)	Account of transport (trucking) services (million USD)
2014	-111.49	-231.26
2015	-95.09	-155.72
2016	71.02	-146.31
2017	161.66	-166.92
2018	10.67	-272.00
2019	-86.88	-339.33
2020	118.05	-164.74
2021	396.91	-174.64

As Table 2 shows, the highest transport costs among EAEU countries were recorded in Kyrgyzstan, Armenia, and then Kazakhstan. Armenia's high transport costs are caused by the lack of a sea outlet, the existence of closed borders, as well as poorly developed transport infrastructures. Only two of the borders with four neighboring countries are open: the border with Georgia in the north and the border with Iran in the south. The closing of the Armenian-Azerbaijani border was also followed in 1993. the closure of the Armenian-Turkish border. This immediately affected trade with Turkey, as well as trade with the rest of the world through Turkey. As a result, RA exports and imports require a circular route through Georgia, increasing transportation costs.

**Table 2.** Freight costs of EAEU countries (%)

	2014	2015	2016	2017	2018	2019	2020	2021
<b>Armenia</b>	9.2	9.3	9.5	8.9	9.6	9.6	8.8	8.6
<b>Russia</b>	1.7	2.1	2.4	2.3	2.2	2.4	3.0	2.8
<b>Belarus</b>	1.5	1.7	1.6	1.7	1.7	1.8	2.0	1.7
<b>Kazakhstan</b>	5.2	7.0	8.1	6.6	6.5	6.8	6.6	5.8
<b>Kyrgyzstan</b>	10.1	11.5	10.2	10.2	9.9	10.4	8.9	9.6

As for Kyrgyzstan, the country's high transport costs are also related to its landlocked nature. It should also be noted here that difficult mountain conditions in Kyrgyzstan also complicate the process of cargo transportation, which in turn leads to additional logistics costs. 2014-2021 Kyrgyzstan's freight rate averaged 10.1%.

Kazakhstan is the country with the third highest transport costs among EAEU member states. According to Mukhambet Sabitov, the head of the National Union of

Forwarders of Kazakhstan, the cost of goods for the final consumer in Kazakhstan is formed by 25 percent due to transportation costs (Taybekuly, 2020). One of the main reasons is also the lack of access to the sea. According to estimates by the International Transport Forum, 70% of the world's cargo is transported by sea, and only 27% by cars and trains. According to the Forum, the share of cargo transportation in the world continues to grow and will reach 75% by 2050 (International Transport Forum, 2016). 2014-2021 The cost of cargo transportation in Kazakhstan averaged 6.5%.

In 2014-2021, among the EAEU countries, the lowest freight rates were recorded in Belarus and Russia. In the mentioned countries in 2014-2021. during the period between 2010 and 2016, freight transportation values averaged 1.7% and 2.3%, respectively. It should be noted that 2 international trans-European transport corridors pass through the territory of Belarus: West-East No. 2 and North-South No. 9, which has a significant impact on freight costs. In the case of the low values recorded by the index in Belarus, railway transport also plays an important role and occupies a dominant place in the proportion of total cargo transportation. According to the 2020 report of the Belarusian rating agency "Analysis of the Transport and logistics services market of the Republic of Belarus" (Belarus rating agency, 2020, p. 13), in 2019, revenues from rail transport amounted to 2,675.7 million rubles, and expenses - 1,807.1 million rubles. The average cost of rail freight was 0.37 rubles per 10 tons/kilometer, and the average revenue was 0.53 rubles per 10 tons/kilometer. However, it should also be noted that due to the Russian-Ukrainian conflict, a number of Western sanctions have been imposed on Belarus, which will surely affect the possibilities of realizing the transport potential of Belarus, affecting both the reduction of transport volumes and the increase of freight costs.

In the case of Russia, the Russian-Ukrainian conflict is also expected to increase freight costs, which are associated with the application of sanctions, the withdrawal of foreign companies from the Russian market, as well as restrictions on the volume of sea and air transportation. Please note that shipping costs may increase due to currency exchange fluctuations. The value of logistics operations carried out in Russian rubles has already increased, but the tariffs on international transportation carried out in foreign currency have not yet undergone significant changes.

It should be noted that according to the estimates of the UN Conference on Trade and Development [UNCTAD, 2022], the current Russian-Ukrainian conflict is "suffocating" the trade and logistics of the Black Sea region, which, in turn, increasing the global demand for ships, which will lead to a continuous increase in freight costs.

We have also calculated the freight costs of countries in our region. As the analysis of the data in Table 3 shows, Armenia recorded the highest value of cargo transportation in the region until 2019, which once again proves that Armenia is a geographically isolated country that suffers the most from regional transport blockades. Starting from

2020, the highest rate in the region was recorded in Azerbaijan, making 10% in 2020, and 11% in 2021. During the observed period, the average value of cargo transportation in Armenia was 9.2%, and in Azerbaijan - 9%.

**Table 3.** Freight costs of Armenia, Georgia, Azerbaijan, and Turkey (%)

	2014	2015	2016	2017	2018	2019	2020	2021
<b>Armenia</b>	9.2	9.3	9.5	8.9	9.6	9.6	8.8	8.6
<b>Georgia</b>	1.3	1.7	1.6	1.4	1.5	2.1	1.8	1.9
<b>Turkey</b>	3.5	3.4	3.7	3.5	3.7	4.0	4.2	4.5
<b>Azerbaijan</b>	8.9	9.0	9.3	8.3	8.6	7.1	10.0	11.0

Studies have shown that these high indicators of Azerbaijan are due to the fact that shipping a container from Bandar Abbas to Baku by road takes 10-12 days and costs 700-800 US dollars. On the other hand, transporting the same container of Buckwheat Pot by road takes only 3-5 days, but the cost is 2200 USD [WB Analysis, 2009, 10]. Of the three routes to the Sea of Azerbaijan, the two shortest ones are through the territory of Georgia and Russia to the Black Sea, which is not dangerous due to political instability, internal and external conflicts, and the third longest route to the south, through the territory of Iran, is the Persian Gulf. It should be noted that longer and more expensive routes to Turkey are due to the presence of the closed Armenian-Azerbaijani border.

The lowest cargo transportation values in the region were recorded in Georgia and Turkey. During the observed period, the average cost of cargo transportation in Turkey was 3.8%. According to the 2022 report "Logistics and Transport Industry in Turkey" published by the Office of the President of the Republic of Turkey for the Implementation of Investment Programs [Office...Turkey, 2022, 9], Turkey plans to attract investments to make the country a regional logistics hub, which and, in turn, can reduce logistics costs. According to the same report [Presidential...Turkey, 2022, 34], low freight costs in Turkey are due to years of investment in the transportation sector. If in 2003 there were 26 airports in Turkey, then in 2021 their number will be 56. In Turkey, cargo transportation by sea is dominant, which is one of the cheapest types of cargo transportation. In 2021, compared to 2003, the volume of cargo transportation carried out by this type of transport increased 1.8 times, making 344.9 million tons. Thus, the relatively low results of the index are due to the fact that Turkey is a landlocked country and the country's government is implementing many investment projects to reduce freight costs.

According to the results of the analysis, Georgia is the country with the lowest freight transportation cost in the region. Georgia's low freight rates are due to the country's geographical location. Being located between the Black and Caspian seas, having access to such large markets as Turkey, Iran, Europe, and Russia, Georgia, compared to the countries of the region, is integrated to the maximum extent into the

processes of the world economy. In addition, Georgia has international railway connections with Armenia, Azerbaijan, and Turkey. The existing railway line between Georgia and the Russian Federation passes through the territory of Abkhazia, the operation of which is frozen due to the Russian-Georgian conflict. Thus, Georgia, being a connecting link between Europe and Asia, has all the opportunities to become a transport and logistics hub in our region.

Iran was left out of our calculations, because the information databases of the Statistical Committee of Iran and the Central Bank are not available for external use, and the required indicators are not available in the database of the World Bank.

Thus, the comparative analysis of the cargo transportation values of Armenia with the EAEU and the countries of the region proved that there is an agenda issue of logistics system development in Armenia. In this context, effective state policy, increasing the competitiveness of the transport system, and integration into the global transport system can become decisive factors in reducing the costs of Armenia's cargo transportation. In this regard, among the compared countries, Belarus and Russia are in the most advantageous positions, and in the region, Georgia and Turkey. This once again emphasizes the importance of opening the Armenian-Turkish border, at the same time, making it important to outline the challenges related to the opening of the border and define effective ways to solve them.

**Conclusion.** The competitiveness of countries is affected not only by the high cost of transport services but also by the unpredictability of the duration of transportation. Although transport costs represent the major part of high logistics costs in landlocked developing countries, supply chain unreliability and vulnerability are more important factors in constraining prospects for trade expansion and thus economic growth. Freight delays, low level of reliability, and predictability of related services increase logistics costs, creating significant barriers to investment. According to OECD Council specialists' calculations, additional costs arising from inefficient customs processes range from 2-15% of the value of transported goods [The World Bank, 2005, 80]. According to the World Bank's estimates, the loss of one day during transportation "hauls" is equal to 0.5% of the taxes imposed on goods being shipped [Nazaryan, Pakhlyan, 2010, 13]. According to D. Hummels, a one-day delay in supplies reduces the possibility of trade between countries by 1%.

Closed borders lead to a difficult situation, such as a significant increase in transportation costs, limitation of international and transit trade opportunities, limited development of domestic cargo transportation, poor prospects of the logistics sector, and reduction of the role of railways. In the context of increasing the efficiency of logistics chains in the region, an important premise can be the creation and operation of an interregional logistics center, the opportunities of which can be used by regional countries,



to develop economic cooperation opportunities with other countries. In the global economy, the experience of similar interregional logistics centers exists in a number of countries and integration associations. The study of that experience shows that appropriate measures for the development and implementation of transport hubs are implemented in these centers, the effective and targeted implementation of which can be a stimulus for improving the efficiency of the logistics system of Armenia. On the other hand, taking into account the security risks and threats of Armenia, due to the hostile policies of Azerbaijan and Turkey, clear mechanisms are needed that can prevent challenges that threaten national security for Armenia, while at the same time promoting its maximum integration into the world economy.

All EAEU member states have relatively poorly developed logistic infrastructures and those that exist have a high level of moral wear and tear. The wear and tear of transport infrastructures, the inadequacy of information bases, as well as the moral wear and tear of production-technological equipment, and inconsistency in the modern conditions of competition, are unprecedented obstacles to the development of the national economy and to withstand competition at the international level.

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