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Effect of Supply Chain Management on Export comparative Advantages of Russia and Post-Soviet Countries

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***Abstract*— The purpose of this paper is a comparative analysis of supply chain management in Russian and post-soviet countries export. The index of revealed comparative advantage (RCA) calculated for ten countries in seven aggregated product categories for the period 2012–2018. Additionally, the dynamics of trade complementarity index (TCI) between Russia and other chosen countries were analyzed. The RCA index analysis outcome of the main export categories of goods in supply chain allows us to conclude about Russian significant comparative advantage in fuel and metals export comparatively with post-Soviet countries. Dynamics of the RCA index show insignificant structural changes for the export profile of supply chain management. In turn, analyzed dynamics of TCI allow conclude increasing of trade complementarity between Russian and trading partners. Higher TCI index values for not a member of the Eurasian Economic Union countries suggest that, under certain conditions, trade flows between Russia and these post-Soviet countries may significantly increase by using supply chain system. The obtained results contribute to the informational and analytical base for further researches on effectiveness of the supply chain management in export mechanism development of post-Soviet countries and increasing their competitiveness in the global market.**

***Keywords*—** *export, international competitiveness, international trade, supply chain management*

1. Introduction

Foreign trade holds one of the key factors of sustainable socio-economic development of any country. Therefore, the study of supply chain management (SCM) of national exports is of particular relevance in conditions of the globalizing trade of goods and services. For the last ten years all post-Soviet countries have experienced the number of global and national crises. Moreover, political and socio-economic reforms have been conducted by these states, which of course affected their foreign trade. According to the World Trade Organization database, total post-Soviet countries export decreased by almost 30% in monetary terms, from 2012 to 2017. On one hand, the current situation is a consequence of the occasions that occurred in the global and national economies. On the other hand, a more profound analysis of the post-Soviet countries export requires to identify the emerging problems, as well as to determine the best practices, which can be adapted and applied in the most crisis-affected economies.

This view gets particular relevance in a global pandemic of coronavirus COVID-19 and increasing the possibility of a new global economic crisis. That's why the purpose of this paper is a comparative analysis of Russian and post-Soviet countries' export in supply chain management system, as well as finding out possible directions and ways of international trade development. It is quite obvious that similar geographical, historical, political, and cultural conditions take place along with significant differences in the structure and state of the analyzing countries economy. Therefore, in the course of the study, there was used an approach that allows us to digitize and compare the dynamics of export changes of different countries among themselves. This study identified export financing resources and export supply-chain management skills as significant contributors to both low-cost and high-differentiation export competitive advantages

2. Literature Review

In recent years, there are several studies on various aspects of the foreign trade of post-Soviet countries were conducted. They focus, first, on the study of trade relations between the SCM of the Eurasian Economic Union (EAEU), e.g. trade flows analysis [1-4], analysis opportunities to reduce non-tariff barriers and trade facilitation in the EAEU [5, 6]; secondly, on the analysis of the major categories of

goods value, for example, analysis of prices for goods in post-Soviet countries from the perspective of currency crises [7], the impact of natural resources prices on post-Soviet countries GDP [8] etc.; thirdly, on the study of possible trade and economic cooperation developments, including EAEU and China potentials analysis for trade cooperation [9, 10], revealing barriers to the successful integration of the EAEU [11] and the identification of the future comparative advantages of the EEU countries [12]. These studies use methods of regression analysis, theoretical explanations, descriptive analysis of statistical data and various international ratings, Granger causality test, and several others. Thereby, the analysis of international trade in the post-Soviet area in recent years has been considered in sufficient detail in the international trade context of the EAEU participants. However, insufficient attention is paid to the possibility analysis of developing international trade with countries that are not members of this international organization. The present situation is one of the barriers to the development of economic relations between post-Soviet countries. There are various methodological approaches are used in scientific researches for comparative analysis of different countries' export. At the same time, approaches based on the analysis of various trade indices, including the HH Market Concentration Index, Index of Export Market Penetration, Trade Intensity Index, Export Diversification Index, Export specification Index, International Trade Specialization Index [13], Trade Complementarity Index (TCI), [14], Revealed Comparative Advantage Index (RCA) [15] and others are widely used.

One of the broadly used analyzing approaches related to the comparative advantage of industries and product categories. It was proposed by Balassa as the result of the industrialized countries patterns analysis [16]. Subsequently, the proposed approach was used for comparative analysis of particular countries industries and international comparison, including comparisons of developed and developing countries ([17, 18] ASEAN countries [19, 20], Muslim countries [21], BRICS countries [22, 23]. Also, this approach reveals important information for further studies of national economies. For example, revealing comparative advantages were used to deeply analyze the impact of high-tech exports on the country's economic growth [24], on estimation it's interconnection with productivity [25, 26], to survey the international fragmentation of production processes impact on export comparative advantages [27], analyze dependence on vertical production specialization [28], etc. In other words, the analysis of the export comparative advantages forms an important analytical base for future international trade researches.

3. Method

The study sample includes the effect of supply chain in export market of ten post-Soviet states that joined World Trade Organization over the past fifteen years, including Armenia, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, and Ukraine. During the research, export volumes dynamics for this period were analyzed according to the World Trade Organization (WTO) database (Note 1). Moreover, information from International Trade Center (ITC) database [29], World Integrated Trade Solutions (WITS) database [30], Eurasian Economic Union (EAEU) database were used. For each country seven aggregated product categories considered by Standard International Trade Classification (SITC Revision 3), including food, fuel, iron and steel, chemicals, machinery and transport, equipment, textiles, and clothing. The revealed comparative advantage index or RCA index of each category of goods for the period 2012 – 2018 was calculated. In this case, the calculation was carried out in two ways.

In the first way the classic formula for RCA index calculating used, which permits to calculate RCA for a specific category of selected country goods with the export of all countries in the world. It can be represented as follows:

$$RCA_1 = \frac{E_{Cj} \cdot E_W}{E_C \cdot E_{Wj}} \quad (1)$$

Ecj – export volume of the selected country of the "j" category of goods; Ew – world total export volume; Ec – export volume of the chosen country; Ewj – world export volume of "j" category goods.

It should be noted that in practice there several RCA indexes calculating approaches [31]. Besides export, their import as well as balanced data of export and import can be used [32]. At the same time, the change in the market share, based on which the index calculated, reflects the change in the internal comparative advantage of exporting countries in the global market for goods and services. To analyze the change in the internal

comparative advantage of exporting countries in the post-Soviet area, the second index calculation formula was used. In the second way of RCA index calculation the total post-Soviet countries export indicators are used:

$$RCA_2 = \frac{E_{Cj} \cdot E_{PC}}{E_C \cdot E_{PCj}} \quad (2)$$

Ecj – export volume of the selected country of the "j" category of goods; Ew – post-Soviet countries total export volume; Ec – export volume of the chosen country; Ewj – world export volume of "j" category goods.

Index values can vary from 0 to 1 in the absence of specialization in the analyzed sector of the economy and from 1 to infinite number if there is a competitive advantage in it. In other words, if the index is more than one that means that the product or industry has a comparative advantage if the indicator is less than one, then the product or industry has a comparative limitedness. The two chosen calculating ways of the RCA index allow us to conduct a comparative analysis of the selected countries export with the post-Soviet countries and the world economy. Using this method gives us a chance to exhibit the comparative advantage of the country main export directions, identify the prime and secondary export categories of goods, to evaluate the comparative advantages of the selected categories both between countries and on the world market of goods and services, as well as to identify potentially interesting product categories from the export organization standpoint (Table 1).

Table 1. Criteria of need for a profound analysis of export by product categories

Product export category	RCA_1 indicator of product category	RCA_2 indicator of product category	Conclusions on the need for complementary analysis
Product category N	>1	<1	The country has a comparative advantage among post-Soviet countries but does not have it in the international market. Additional analysis is not advisable.
Product category N	>1	>1	The country has a comparative advantage among the post-Soviet countries and in the international market. This product category is potentially interesting for the export. Additional analysis is needed.
Product category N	<1	<1	The country does not have comparative advantages. Additional analysis is not advisable.
Product category N	<1	>1	The country has a comparative advantage in the international market but does not among the post-Soviet countries. Additional analysis is not advisable.

The trade complementarity index (TCI) between Russia and each chosen country is also calculated, which allows us to evaluate the retrospectives and prospects of trade partnership. TCI indicates how well the country export and import structure correspond to each other and were calculated according to the following formula:

$$TCI_{kj} = 100 * (1 - \sum \frac{|m_{ik} - x_{ij}|}{2}) \quad (3)$$

mik – the share of the "i" category of goods in sum imports of the country "k"; xij – the share of the "i" category of goods in the world export of country "j".

A zero index indicates the absence of exports or imports between partners. The 100 value index indicates match trade profiles, which means that export and import shares coincide for the

considered product categories. The analysis of trade complementarity index dynamics gives a chance to determine the increase of similarity or differences of countries trade profiles. Results permit us to do particular conclusions about further trade relations and to determine the need to stimulate and expand trade partnership.

4. Results

This paper aims to develop an empirical model of the supply chain management SCM of export. Throughout the reviewed literature, a SCM construct with different six indicators has been developed, including information sharing, long-term relationship, cooperation, quality, flexibility, and delivery. In this study, the influence of the SCM components on export was identified through the use of empirical data that were collected from different countries. The selected countries have significant economical differences in their quantitative characteristics. Thus, the Russian economy in absolute terms of export volume is the largest in the post-Soviet area – its export volume in the considered period ranges from 68% to 71% of the post-Soviet countries' total export volume. The other countries are comparable in terms of export volumes. Moreover, all post-Soviet countries have generally similar gross domestic product (GDP) structure (Fig. 1). Most of their GDP occupied by the "services" including the state activity sector, communications, transport, finance, and all other areas of economics that do not produce tangible goods. The second largest part of the GDP structure is the industry sector, which includes an extraction of natural resources, production industries, energy, and construction sectors. Third place is taken by agriculture, including the agricultural sector, fisheries, and forestry [1]. It should be noted that the largest dispersion of analyzed countries revealed by the "services" and "agriculture" sectors.

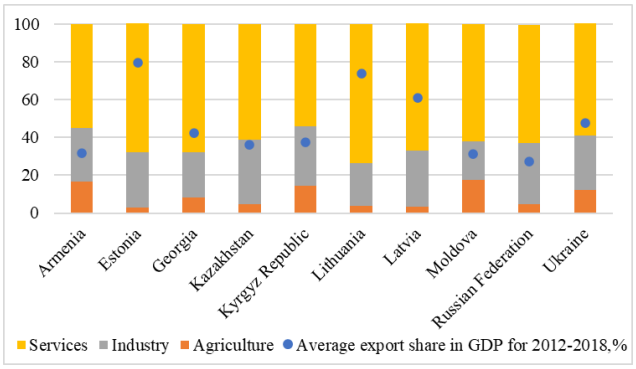

Figure 1. GDP structure in 2017 and average export shares in GDP of the post-Soviet countries for 2012-2018, %

From a detailed analysis conducted, despite the comparable GDP structure, post-Soviet countries have significant differences in the share of exports in GDP. Latvia, Lithuania, and Estonia are the leaders of this indicator with ranges of export share in GDP from 61% to 73% for 2012-2018. Other countries have a modest share of export in GDP, and Russian value near 27% the lowest one. In the context of the above we can affirm that the chosen countries can be considered from the effective export organization standpoint and from this point of view they have great potential for international trade development.

The figures below reflect the results of calculating the RCA for each of the 7 aggregated product categories considered in 10 countries. These graphs demonstrate the country export advantages in particular categories concerning the export of other states and to the gross world export. In the following part of the paper, the RCA of «Fuels» category was conducted.

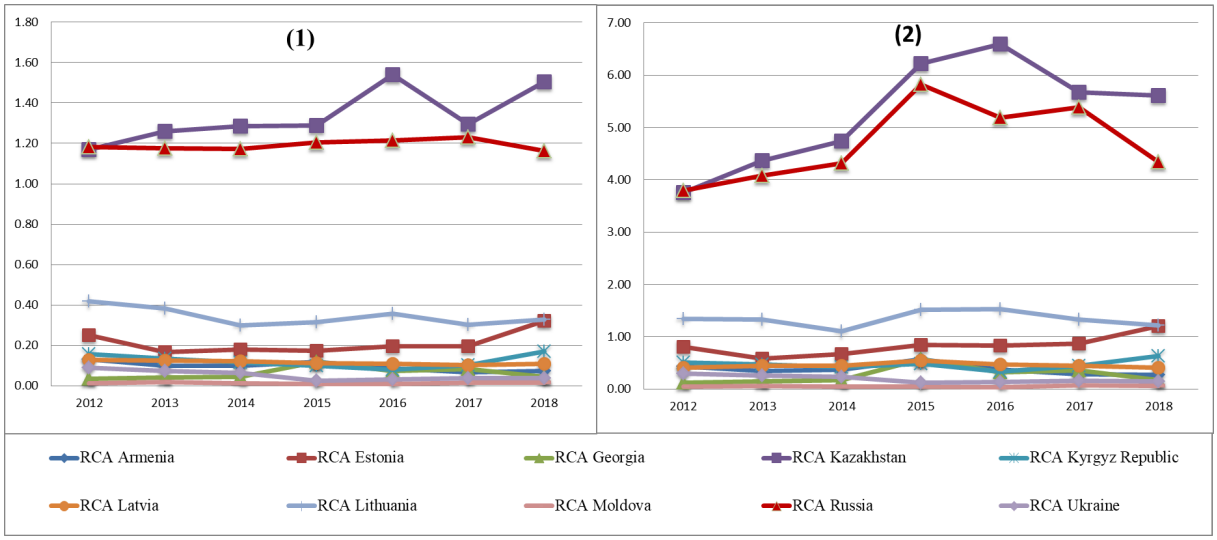

Figure 2. (1) RCA1 index of «Fuels» category calculated by the first method on the base of post-Soviet countries export, (2) RCA2 index of «Fuels» category calculated by the second method on the base world export data

The leading countries of «Fuels» category in terms of revealed comparative advantages are Kazakhstan and Russia. The significant gap of RCA indicators of Kazakhstan and Russia, compared with post-Soviet countries for each calculation method, explained primarily by rich natural resources and the existing structure of the economy. According to statistics of the Accounts Committee of Kazakhstan, an increase in the share of the oil and gas sector in the country's GDP to 21.3% in 2018 was revealed. (Note 5) Analysis of the Federal State Statistics Service of Russia information showed the share of mining in GDP around 11.5% in 2018. At the same time, according to the second version of the calculation, the dynamics of RCA indicators in these countries are negative, which can be illustrated as decreasing their position in the global energy market in recent years.

According to the calculated index of RCA for the «Iron and Steel» (Figure 3) product category we can draw the following conclusions.

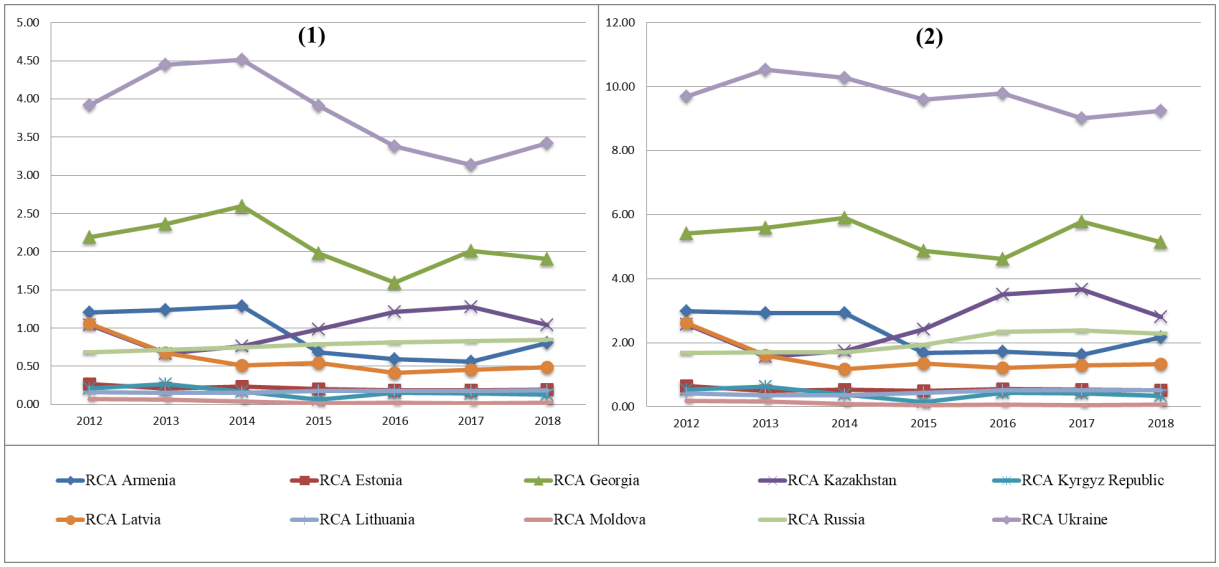

Figure 3. (1) RCA1 index of «Iron and Steel» category calculated by the first method on the base of post-Soviet countries export, (2) RCA2 index of «Iron and Steel» category calculated by the second method on the base world export data

According to conducted analysis, RCA indicators for the «Iron and Steel» product category show that Ukraine has the largest revealed comparative advantage. This fact connected with historically

strong material and technical base of mining and steel industry, also with the significant reserves of ore and other mineral resources (Amosha, 2001). The decrease of the RCA index in recent years is associated with economic and political events in Ukraine. An analysis of statistical data allows us to conclude the fact of steel and iron production decreased by more than 20% in last years. (Note 7) The next higher values of the RCA index have Georgia, Armenia, Kazakhstan, and Russia. Kazakhstan surpassed Armenia and Russia in 2015 due to increased export activities in this sector. Such great expansion realized on the base of explored 8.7 billion tons reserves of iron ore in Kazakhstan, 73.3% of which are can be easily mined and this gives to Kazakh export significant advantage in the global market.

According to the calculated index of RCA for the «Foods» (Figure 4) product category we can draw the following conclusions.

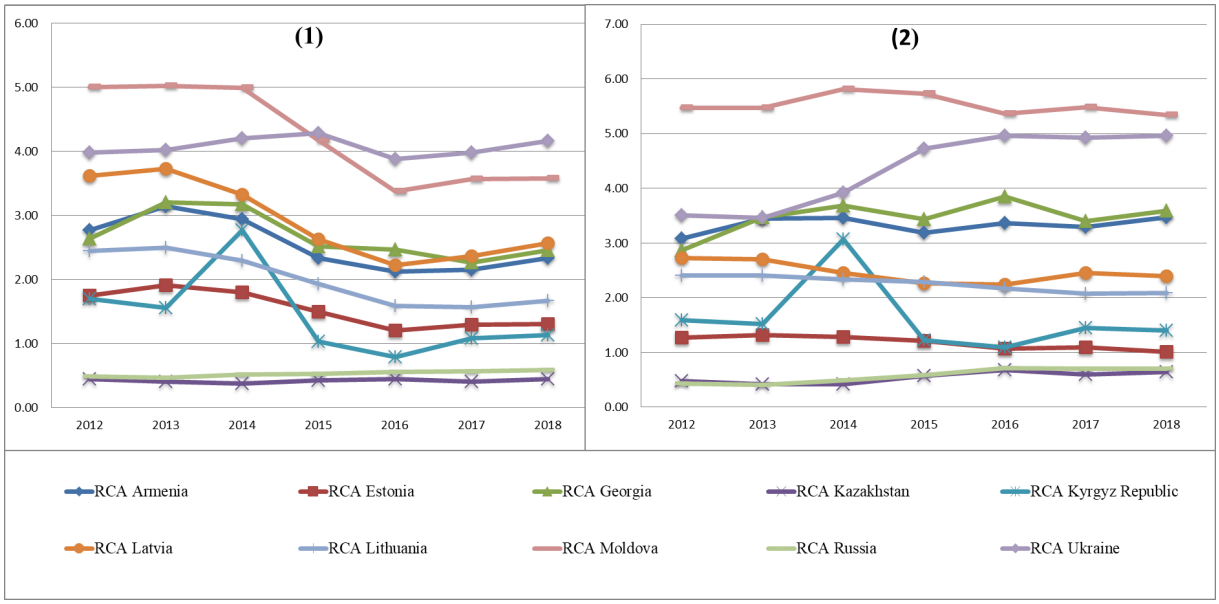

Figure 4. (1) RCA_1 index of «Foods» category calculated by the first method on the base of post-Soviet countries export, (2) RCA_2 index of «Foods» category calculated by the second method on the base of world export data

Figure 4. (1) RCA1 index of «Foods» category calculated by the first method on the base of post-Soviet countries export, (2) RCA2 index of «Foods» category calculated by the second method on the base of world export data

RCA indicators of most post-Soviet countries in «Foods» category are close to each other, exceed minimum figures, and characterize export orientation to agricultural and food products. Figure 4 indicates the highest revealed comparative advantage of Moldova, Ukraine, Armenia, Latvia, and Georgia. The efficient use and modernization of existing technologies, investments to agriculture, which accounts for 12-13% of the country's GDP, allowed Moldova to take a stable leading position in the surveyed industry. At the same, there is an RCA decrease in several post-Soviet countries in 2014. This fall connected with the economic crisis of 2014-2015 in Russia, one of the main partners and importers [33, 34]. It should be noted that the RCA indices of Russia and Kazakhstan show a relatively limited export of this category, which reflects the economic priorities of these countries.

According to the calculated index of RCA for the «Chemicals» (Figure 5) product category we can draw the following conclusions.

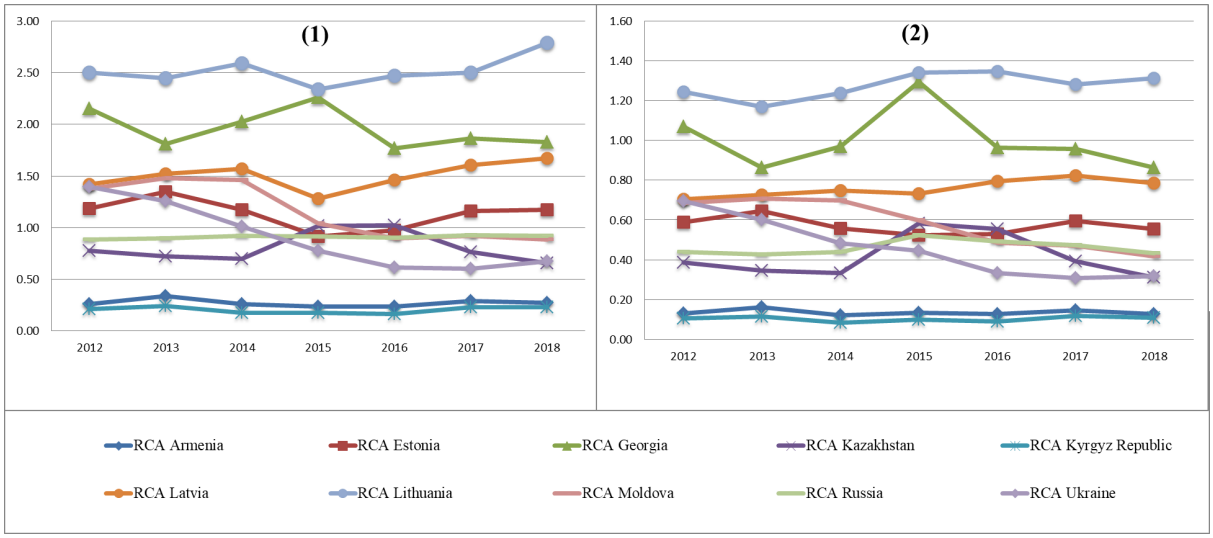

Figure 5. (1) RCA1 index of «Chemicals» category calculated by the first method on the base of post-Soviet countries export, (2) RCA2 index of «Chemicals» category calculated by the second method on the base of world export data

Figure 5. (1) RCA1 index of «Chemicals» category calculated by the first method on the base of post-Soviet countries export, (2) RCA2 index of «Chemicals» category calculated by the second method on the base of world export data

Figure 5 demonstrates the leadership of Lithuania and Georgia in «Chemicals» category. Lithuania's RCA1 indices in the first calculation method are 2.34-2.79. The leader of economic growth among the Baltic countries, Lithuania is actively investing in chemical industry development with its export orientation. More than 80% of finished chemical products are exported, which is 12.5% of the country's total exports. The second high RCA index is Georgia, with the chemical industry occupied more than 6% of the country's total production.

According to the calculated index of RCA for the «Machinery & Transport equipment» (Figure 6) product category we can draw the following conclusions.

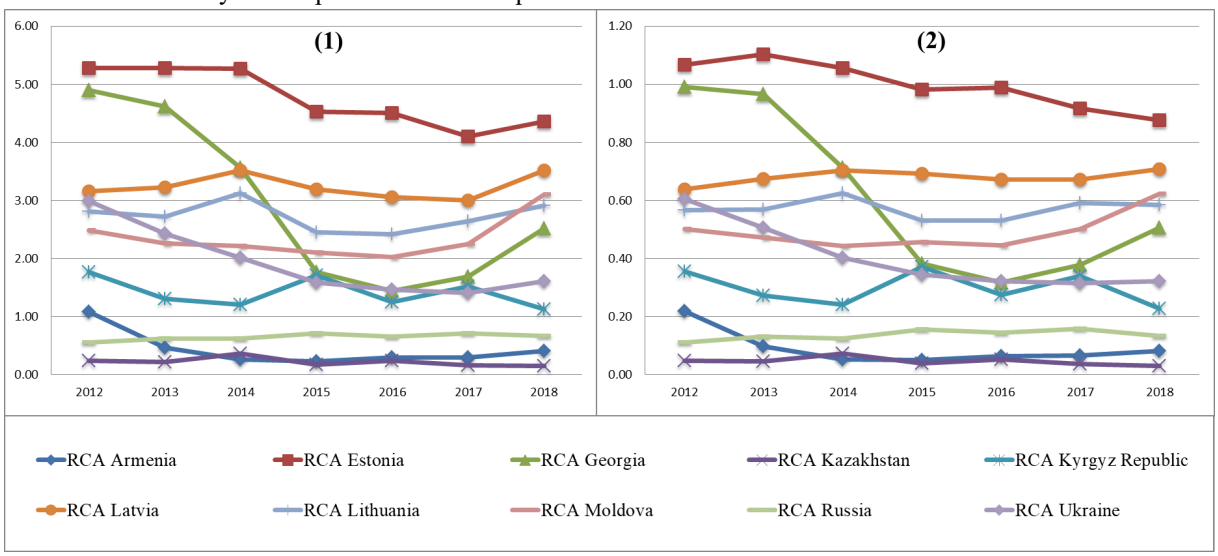

Figure 6. (1) RCA1 index of «Machinery & Transport equipment» category calculated by the first method on the base of post-Soviet countries export, (2) RCA2 index of «Machinery & Transport equipment» category calculated by the second method on the base of world export data

From the figure above we can note that RCA indices of Estonia and Latvia are the highest in «Machinery & Transport equipment» category. Engineering is one of the main and basic industries

of Estonia with the 20% value of all production of the country. So, for this reason in 2014 Estonia had revealed comparative advantage in the post-Soviet area (figure 6(1)) and the global market (figure 6(2)). From 2015 RCA Estonia and post-Soviet partners RCA are below one (2) and reflect the comparatively limited export is considered category.

According to the calculated index of RCA for the «Textiles» (Figure 7) product category we can draw the following conclusions.

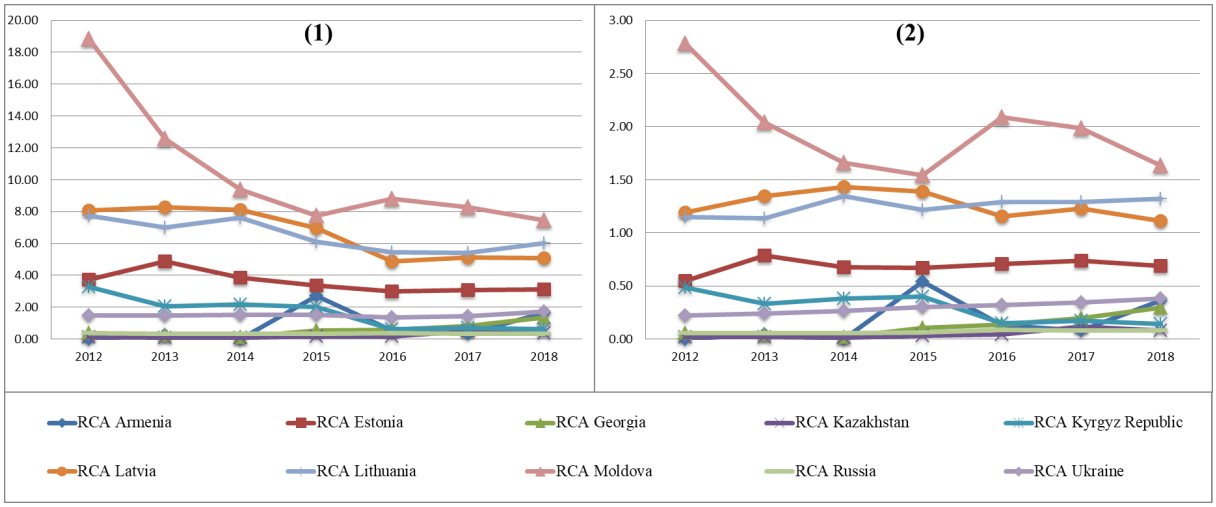

Figure 7. (1) RCA1 index of «Textiles» category calculated by the first method on the base of post-Soviet countries export in SCM, (2) RCA2 index of «Textiles» category calculated by the second method on the base of world export data

Further analysis showed the high revealed comparative advantage of Moldova, Latvia, and Lithuania. RCA indices of Moldova in 2012 are near 18.83 (1) and 2.79 (2), with a further decrease of more than 2 and 1.5 times in the first and second calculation ways. The reason for such significant negative dynamics could be both the economic crisis, which substantially affected foreign trade and the internal market situation.

According to the calculated index of RCA for the «Clothing» (Figure 8) product category we can draw the following conclusions.

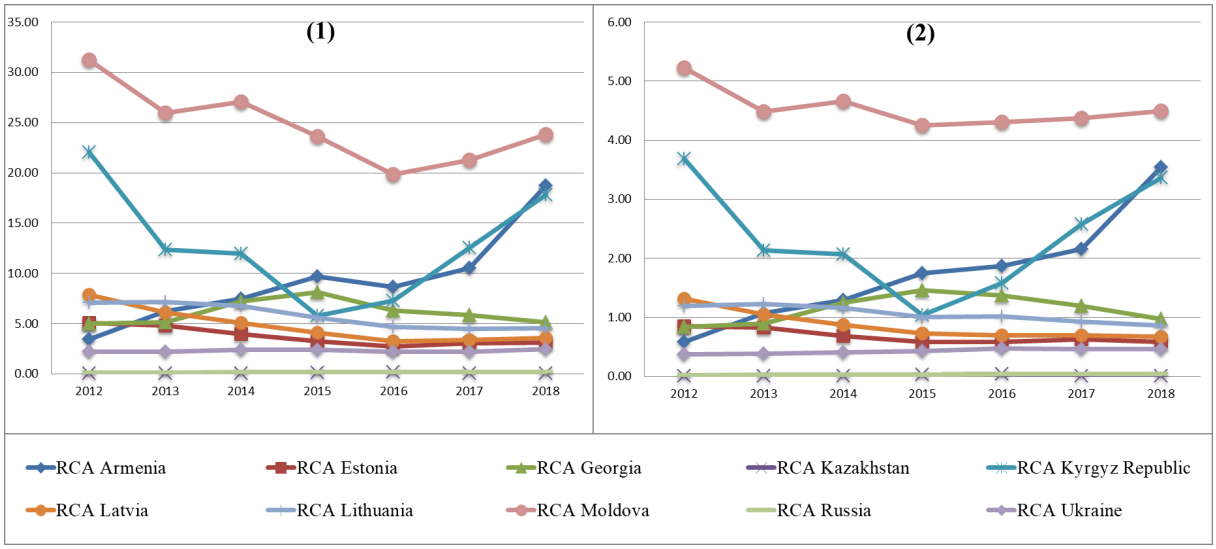

Figure 8. (1) RCA1 index of «Clothes» category calculated by the first method on the base of post-Soviet countries export, (2) RCA2 index of «Clothes» category calculated by the second method on the base of world export data

According to conducted analysis the most competitive countries in «Clothes» category are Moldova, Kyrgyz Republic, and Armenia. Moreover, Kyrgyz Republic – the leader in the fall

and growth of the RCA index. Although the dynamics of Moldova's RCA is negative, but not such a sharp fall as in the «Textiles» category. Armenia's RCA values are characterized by stably positive dynamics throughout the entire period. The share of «Clothes» in the export structure of Armenia is 4-5% and one of the fast-growing sectors of the economy.

The country's export profiles with a comparative advantage for each calculation option are presented below in Table 2. Results of the RCA index analysis allows to conclude following points: Estonia's experience and success in «Machinery & Transport equipment» category is interesting for further in-depth analysis; Lithuania and Georgia have great experience in «Chemicals», moreover all post-Soviet countries have an interesting experience in organizing exports of low and medium-tech products, including «Foods», «Textiles» and «Clothing».

Table 2. The results of the analysis of RCA indices for two calculation options

Country	**Categories of products $RCA_1>1$**	**Categories of products $RCA_2>1$**	**Conclusions on the need for additional analysis**
Armenia	«Foods», «Iron and Steel», «Textile», «Clothes»	«Foods», «Iron and Steel», «Clothes»	Additional analysis is necessary for categories «Food», «Clothes», «Iron and Steel»
Estonia	«Chemicals», «Machinery & Transport equipment», «Textile», «Clothes»	«Machinery & Transport equipment», «Food», «Fuels»	Additional analysis is necessary for category «Machinery & Transport equipment»
Georgia	«Foods», «Iron and Steel», «Chemicals», «Machinery & Transport equipment», «Textile», «Clothes»	«Chemicals», «Food», «Iron and Steel»	Additional analysis is necessary for categories «Chemicals», «Food», «Iron and Steel»
Kazakhstan	«Fuels»	«Fuels», «Iron and Steel»	Additional analysis is necessary for category «Fuels»
Kyrgyzstan	«Food», «Machinery & Transport equipment», «Textile», «Clothes»	«Food», «Clothes»	Additional analysis is necessary for categories «Food», «Clothes»
Latvia	«Food», «Chemicals», «Machinery & Transport equipment», «Textiles» «Clothes»	«Food», «Iron and Steel», «Textile»	Additional analysis is necessary for categories «Food», «Textile»
Lithuania	«Food», «Chemicals», «Machinery & Transport equipment», «Textiles», «Clothes»	«Food», «Fuel», «Chemicals», «Textile»	Additional analysis is necessary for categories «Food», «Chemicals», «Textile»
Moldova	«Food», «Machinery & Transport equipment», «Textile», «Clothes»	«Food», «Textile», «Clothes»	Additional analysis is necessary for categories «Food», «Textile», «Clothes»
Russia	«Fuels»	«Fuels», «Iron and Steel»	Additional analysis is necessary for categories «Fuels»
Ukraine	«Food», «Iron and Steel», «Machinery & Transport equipment» «Textile» «Clothes»	«Food», «Iron and Steel»	Additional analysis is necessary for categories «Food», «Iron and Steel»

Afterward, the revealed comparative advantage of Russian export was calculated. As a result of comparing the values of the RCA index for 7 aggregated export categories, the following results were obtained (Figure 9).

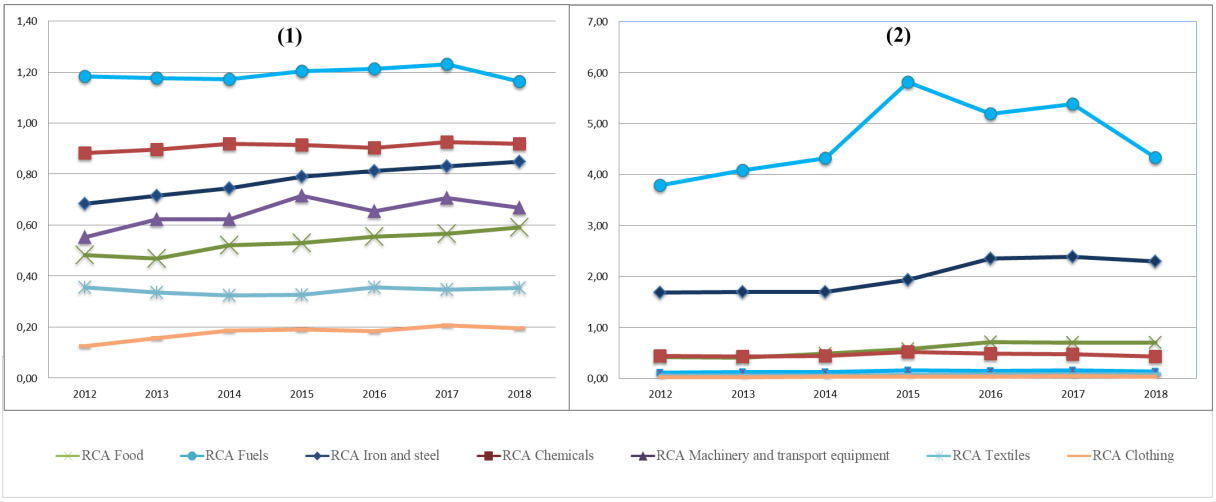

Figure 9. (1) RCA1 index of Russian export calculated by the first method on the base of post-Soviet countries export data, (2) RCA2 index of Russian export calculated by the second method on the base of world export data

According to an analysis of Russian export data a significant prevalence of 2 categories over the remaining 5 can be seen. In the first method the «Fuel» category with RCA1 index value over 1.2 has a comparative advantage. At the same time, according to the second way of calculation the commodity category «Iron and Steel» is added to it. Also, on the assumption of figure 9 decrease in comparative advantages of almost all product categories is evident. The RCA2 of «Fuel» in 2012 calculated 3.79 with a subsequent increase to 5.82 in 2015 and a decline to 4.34 by 2018. The revealed comparative advantage index of «Iron and Steel» in 2012 was about 1.69 with a maximum value of 2.35 in 2016 and a slight drop 2.29 by 2018. Such dynamics of the revealed comparative advantage of Russian main export categories caused by the number of political and economic factors. One of the main reasons is the economic crisis in Russia in 2014-2015 [35]. The sharp devaluation of Ruble is one of the reasons, also caused by the rapid decline of oil prices as a result of oil demand slowdown, US shale oil and gas production increase, as well as OPEC's refusal to reduce oil production. Another catalyst was the economic sanctions.

Research of revealed comparative advantages were supplemented by trade complementarity index calculations between Russia and other partners. The obtained results presented below in Figure 10.

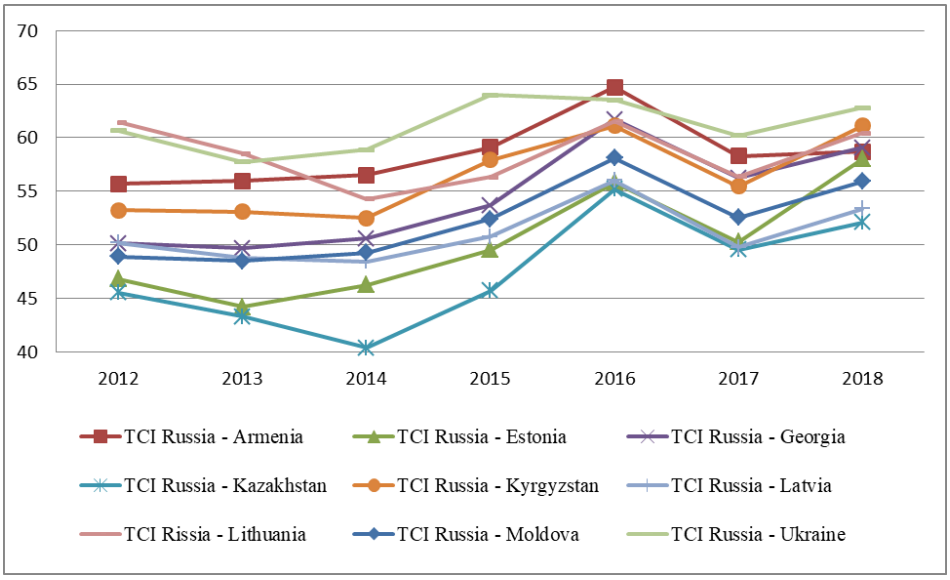

Figure 10. Post-Soviet countries TCI dynamics

Analysis of TCI dynamics illustrate the following facts. Firstly, the degree of trade complementarity between Russia and all post-Soviet partners has developed from 2012 to 2018. Secondly, TCI of Russia, Kazakhstan, and Kyrgyzstan significantly improved and it characterizes the importance of interstate integration within the Eurasian Economic Union. Thirdly, the degree of trade complementarity between Russian and Estonia, Georgia, and Moldova highly increased, which creates additional opportunities for expanding trade partnership. In this regard, considering various components of supply chain management and understanding their role in the successful performance of different firms in different business activities, like export in SCM, have become a necessity in order to improve their competitive place in today's worldwide environment and to increase profitably

5. Discussion

As a result of the post-Soviet countries' analysis, which was based on the RCA index value, we can conclude that their export profiles focused on raw materials, food, and clothing, which are low- or medium-tech categories. It can be efficient with high profit with global supply chain process from raw materials directly to costumers. This is due to the fact that the analysis was carried out only for the aggregated product categories of SITC, but for individual products the situation can radically differ. Almost all countries develop technological and investment opportunities, support the qualification improvement of workers in high-tech export-oriented sectors. Therefore, practically in each country examined, high-tech competitive products already have been created. However, despite the achievements in innovation creation and development, the export in SCM structure of post-Soviet countries still has a large share of the agricultural and raw materials sector.

This study has gone some way towards enhancing our understanding of post-Soviet countries international trade. Detailed qualitative analysis of post-Soviet countries RCA indices allow us to articulate SCM influencing export changes and divide them into three main groups. The first group is associated with a historically established structure of the national economy, which is reflected in the volume of the corresponding industry in the country's GDP. In this case, export tends to recover even after serious world crises to their previous values. The second group of factors is related to government support of the particular sector of the economy. Export activity in this kind industry has positive development dynamics, and its growth rate is related to industry specifics and complexity of efforts undertaken by the government. The third group of factors is associated with the changes in the competitive advantage of the product categories. It can change either under influence of external macroeconomic conditions, for example, a change in the currency exchange rate, the country's entry into various international trade agreements or organizations, increased international competition, or under influence of internal industrial and economic conditions, including favorable ecosystem for implementation of innovation. We are confident that our results may improve knowledge about post-Soviet countries international trade. The obtained data allow us to make an important contribution to the analytical base for further research on the export development mechanism of post-Soviet countries to solve the problems of their competitiveness in the world market. Detailed factor analysis of export, evaluation of export contribution to economic growth, and identifying unused opportunities have to be done in the process of further surveys.

Results of conducted revealed comparative advantage calculations of the main Russian product categories compared with exports of post-Soviet countries permit to conclude that Russia has significant comparative advantages in the export of fuel and metals. All other aggregated product categories RCA level is below the average level both in the world and among the countries of the former Soviet Union. Moreover, an analysis of RCA dynamics changes from 2012 to 2018 show us slight structural changes of the Russian export profile. The high-tech category «Machinery and Transport equipment» have extremely low comparative advantage in the world and among former Soviet Union countries. TCI dynamics changes for the period of 2012-2018 indicates trade complementarity increase between post-Soviet partners. Higher values of the TCI index for not members of the Eurasian Economic Union suggest that under certain conditions trade flows between the countries can significantly enhance.

This work has highlighted the following conclusions. Firstly, from the detailed analysis and theoretical interpretation of RCA Russia should

hold positions on the world markets and up the export share of the products with the highest revealed comparative advantage. Secondly, the policy of SCM and innovative development adopted at the level of the country's leadership still slightly affects its export profile and has not allowed the economy to increase its competitive position in the high-tech goods and services international markets. Thirdly, deeper analysis directions of post-Soviet partners product categories are identified. Fourth, the potential of international trade development between post-Soviet countries revealed.

6. Conclusion

Our research possibly supports decision-makers for deep estimation of economic integration processes in the modern economy inside of post-Soviet countries and partnership connections within them and their foreign trade partners in supply chain system. A reduction of post-Soviet countries' contribution to regional and global supply chain growth will require coordinated anti recessionary measures, taking into account the current world political situation and the growing danger of the global economic crisis.

Future work will concentrate on the following ways. Firstly, to study the possibilities of international relations transforming in the post-Soviet area, including primarily issues of international trade partnerships, changing tariff policies, trade procedures simplification, and reducing other non-tariff barriers. Secondly, to develop and adjust export in SCM improvement mechanisms in post-Soviet economies, first of all the Russian one. This will contribute to solving the problem of increasing the competitiveness of the manufactured products and changing the position of their economies in the global competitive marketplace. Since the importance of supply chain and logistics management has played a good role, it is suggested that research be done in the field of information technology and the impact it can have.

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References

[1] (TWF), The World Factbook 2020. Washington, DC: Central Intelligence Agency, 2020.

[2] Amador, J., Cabral, S., & Maria, J. R. (2007). Relative export structures and vertical specialization: A simple cross-country index. Banco de Portugal, Working Paper, 1.

[3] Amosha, A.I. (2001). Strategy for improving the economic mechanism in the industry of Ukraine. The economic science of modern Russia, (Express Edition 2 (7)).

[4] Balassa, B. (1977). 'Revealed'comparative advantage revisited: An analysis of relative export shares of the industrial countries, 1953–1971. The Manchester School, 45(4), 327-344.

[5] Baldone, S., Sdogati, F., & Tajoli, L. (2007). On some effects of international fragmentation of production on comparative advantages, trade flows and the income of countries. World Economy, 30(11), 1726-1769.

[6] Benešová, I., & Smutka, L. (2016). The post-soviet countries–development and structure of economy: Is there any potential for future regional integration. Procedia-Social and Behavioral Sciences, 220, 30-39.

[7] Costinot, A., Donaldson, D., & Komunjer, I. (2012). What goods do countries trade? A quantitative exploration of Ricardo's ideas. The Review of economic studies, 79(2), 581-608.

[8] Dabrowski, M. (2016). Currency crises in post-Soviet economies—a never ending story? Russian Journal of Economics, 2(3), 302-326.

[9] Fojtikova, L., & Vahalik, B. (2015). Trade specialisation and diversification: the case of the European Union and BRICS. Actual problems of the economy, (5), 74-85.

[10] Giucci, R., & Mdinaradze, A. (2017). The Eurasian Economic Union. Analysis from a trade policy perspective. Vienna Institute for International Economic Studies, April, 11.

[11] Hausmann, R., Hwang, J., & Rodrik, D. (2007). What you export matters. Journal of economic growth, 12(1), 1-25.

[12] Hiley, M. (1999). The dynamics of changing comparative advantage in the Asia-Pacific region. Journal of the Asia Pacific Economy, 4(3), 446-467.

[13] Huber, S., & Nguyen Thanh, B. (2017). Vertical specialization in the EU and the causality of trade. Applied Economics Letters, 24(5), 329-333.

[14] Kharitonova, N.I. (2014). Potential Consequences of the European Union –

Moldova Association Agreement. Public administration. Electronic Herrlad, (43).

[15] Kharlamova, G. (2015). The European union and the Eastern Partnership: convergence of economies. Procedia Economics and Finance, 27, 29-41.

[16] Lafay, G. (1992). comparative advantages. International trade modelling, 209.

[17] Laosutsan, P., Shivakoti, G. P., & Soni, P. (2016). Comparative advantage and export potential of Thai vegetable products following the integration into the ASEAN Economic Community. International Food and Agribusiness Management Review, 20(1030-2017-2169), 575-590.

[18] Laursen, K. (1998). Revealed comparative advantage and the alternatives as measures of international specification (DRUID Working Paper No. 98–30). Retrieved from Danish Research Unit for Industrial Dynamics website http://www3. druid. dk/wp/19980030. pdf.

[19] Lee, J. (2011). Export specialization and economic growth around the world. Economic systems, 35(1), 45-63.

[20] Liu, X., Mattoo, A., Wang, Z., & Wei, S. J. (2018). Services development and comparative advantage in manufacturing. The World Bank.

[21] Makarov, I., & Sokolova, A. (2016). Coordination of the Eurasian economic Union and the Silk road economic Belt: Opportunities for Russia. International Organizations Research Journal, 11(2), 29-42.

[22] Maryam, J., & Mittal, A. (2019). An empirical analysis of India's trade in goods with BRICS. International Review of Economics, 66(4), 399-421.

[23] Michaely, M. (1999). Trade preferential agreements in Latin America: an ex-ante assessment. The World Bank.

[24] Mostafa, G., & Mahmood, M. (2018). Eurasian Economic Union: Evolution, challenges and possible future directions. Journal of Eurasian studies, 9(2), 163-172.

[25] Mousavi, S. Z., Rasekhi, S., Golestani, M., & Imani, A. (2018). Studying international competitiveness in pharmaceutical sector in selected developed countries. Asian J Pharm Clin Res, 11(3), 451-460.

[26] Proudman, J., & Redding, S. (2000). Evolving patterns of international trade. Review of international economics, 8(3), 373-396.

[27] Saadc, N. M. (2011). Are There Prospects for Future Economic Integration Among Muslim Countries? Evidence from Selected OIC Countries. INTERNATIONAL JOURNAL of ECONOMICS and MANAGEMENT Volume 5 No. 2 Dec 2011, 179.

[28] Tarr, D. G. (2016). The Eurasian Economic Union of Russia, Belarus, Kazakhstan, Armenia, and the Kyrgyz Republic: Can It Succeed Where Its Predecessor Failed? Eastern European Economics, 54(1), 1-22.

[29] Vinokurov, E. (2017). Eurasian Economic Union: Current state and preliminary results. Russian Journal of Economics, 3(1), 54-70.

[30] Vinokurov, E., & Libman, A. (2014). Do economic crises impede or advance regional economic integration in the post-Soviet space? Post-Communist Economies, 26(3), 341-358.

[31] Volchkova, N., Kuznetsova, P., & Turdyeva, N. (2016). Economic integration and new export opportunities for the Eurasian Economic Union. International Organizations Research Journal, 11(4), 55-70.

[32] Vollrath, T. L. (1991). A theoretical evaluation of alternative trade intensity measures of revealed comparative advantage. Weltwirtschaftliches Archiv, 127(2), 265-280.

[33] Yesdauletova, A., & Yesdauletov, A. (2014). THE EURASIAN UNION: DYNAMICS AND DIFFICULTIES OF THE POST-SOVIET INTEGRATION. TRAMES: A Journal of The Humanities & Social Sciences, 18(1).

[34] Yin, W. (2014). Agricultural trading among BRICS countries. Fudan Journal of the Humanities and Social Sciences, 7(3), 421-431.

[35] Zhanakova, N. N., & Shulenbaeva, F. A. (2016). Modern trends in trade and economic relations between the Eurasian Economic Union members and China. Journal of Advanced Research in Law and Economics, 7(2 (16)), 442.