

## Trade potentials of Iran and CIS

Saeed Rasekhi<sup>a\*</sup>, Roya Saedi<sup>b</sup>, Nafiseh Yadmellat<sup>c</sup>, Seyed Abbas Hoseini<sup>d</sup>

<sup>a</sup>. Professor of Economics, Department of Business Economics, University of Mazandaran, Babolsar, Mazandaran, Iran

<sup>b</sup>. PhD Candidate in Economics, University of Mazandaran, Babolsar, Mazandaran, Iran

<sup>c</sup>. MA in Economics, University of Shiraz, Shiraz, Iran

<sup>d</sup>. Researcher in Economics, Provincial Government of Mazandaran, Mazandaran, Iran

### Abstract

Regarding to the growing importance of foreign trade, especially for Iran, as well as the importance of the Commonwealth of Independent States (CIS), the main purpose of this study is to examine Iran's trade potential with the CIS during the time period 2014-2018. In this regard, by using Allen and Drysdale indices, we have firstly examined Iran's trade similarity with CIS countries. Then, the competitiveness has been evaluated by calculating RCA and Lafay indicators. Finally, based on RCA, Lafay and total trade potential criteria, Iran's trade potential with CIS countries has been measured. According to the results, Iran's trade potential with the CIS region varies between \$ 19 billion and \$ 30 billion during the time period, and Iran has used only less than 10 percent of its existing trade potential with this region. During the period, Iran has a comparative advantage in more than 400 commodity groups, and according to the RCA index, the most important competitive commodity groups are generally primary goods, based on natural resources, agriculture and oil products. Also, according to the Lafay Index for 2018, Iran has about 500 commodity groups with a positive index, and there is a significant balance in favor of this group of commodities. Given some significant capacities and advantages over the CIS, Iran should develop its trade with this region, taking into account national interests.

**Keywords:** Foreign Trade, Comparative Advantage, Allen, Drysdale, Lafay.

### 1. Introduction

Economists believe that trade is the engine of growth and development. In their opinion, international trade makes it possible to take advantage of potential capabilities given the existing and potential comparative advantage and creates clear signals for investing in profitable and competitive economic projects in the global arena. Trade openness, also affects economic growth through having an access to foreign markets, technology, and resources. Therefore, countries are trying to increase their world trade share while enhancing their exports. According to the report of the International Monetary Fund (2018), Iran's share in the world economy, including oil, is about 0.5 percent and by excluding oil, these figures are very low. World Bank data show that Iran's gross domestic product in 2018 was about \$ 454 billion. Considering the total exports of about \$ 100 billion, the share of exports in the country's production is less than 22% and by excluding crude oil exports, it was about 10% in the year. Issues such as readiness for trade liberalization, the need for diversity of non-oil products, and Iran's limitations in areas such as capital, management, and technology, highlight the need for regional cooperation and integration for Iran. Therefore, due to the lack of Iran's membership in the World Trade Organization, the trade

\* Corresponding author.

E-mail address: [srasekhi@umz.ac.ir](mailto:srasekhi@umz.ac.ir) (S. Rasekhi)

Received 16 November 2020; Received in revised form 24 January 2021; Accepted 11 February 2021

© 2021 Faculty of Economics and Administrative Sciences, University of Mazandaran; All rights reserved.



integration through the establishment of regional trade relations is necessary. Also, the special importance of CIS countries makes it necessary to scrutinize trade with these countries and identify their markets.

According to UN international trade center (ITC), the CIS region imported about \$ 425 billion in 2018, which could be a significant capacity for the region's trading partners, especially Iran. Despite this, Iran's contribution in imports of this region is less than 0.5% in the year. Meanwhile, Iran has a very high capacity to act in the markets of this region. As shown in Table (1), according to Islamic Republic of Iran Customs statistics during the period time 1992-2018, Iran's trade with Russia, which is one of the most important trading partners of Iran in the CIS region, has always faced a deficit. During this period, Russia's share of Iran's exports decreased, but accounted for a significant share of Iran's imports. Iran's next partner in the CIS is Azerbaijan. Iran's trade balance and terms of trade with this country has fluctuated slightly in favor of Iran during the studied period. Iran's foreign trade with Kazakhstan shows a win-win situation, because although its 0.5 percent share of foreign trade is not significant, a small trade balance and terms of trade are in favor of both countries. Other member countries of the CIS have a low share in Iran's foreign trade. In total, the CIS countries had a 65% share of Iran's foreign trade in 2018, and at the same time, the terms of trade during these 26 years were in favor of this region and decreased to the detriment of Iran. The trade balance has the similar situation and it was to the detriment of Iran during this period.

As mentioned, Iran's foreign trade with the CIS region is at a low level, while Iran has a significant capacity to trade with this region. The purpose of this study is to examine Iran's trade potential with CIS member countries and answer these questions: In which group of goods does Iran have a comparative advantage? How is the balance of the country's comparative advantage with the CIS member states? And to what extent has Iran used its trade capacity with this region? Obviously, answering these questions and being aware of business opportunities will help to make the right trade arrangements. In this regard, the similarity of Iran's trade structure with the CIS countries, Ukraine and Turkmenistan for the period 2014-2018, has been evaluated by the most important indicators of trade similarity, namely Allen and Drysdale, and then while identifying comparative advantages, trade potentials between Iran and The CIS area has been assessed through indicators based on comparative advantage, Lafay as well as overall trade potential.

**Table 1. The situation of trade of Iran and the CIS countries during the period 1992-2018**

Year	1992				2002				2012				2018			
Country	share of export	Share of import	TOT	BOT	share of export	Share of import	TOT	BOT	share of export	Share of import	TOT	BOT	share of export	Share of import	TOT	BOT
<b>Russia</b>	2.76	1.08	4.85	-235	1.59	3.92	2.11	-801	1.53	3.31	0.93	-1270	0.64	3.14	0.92	-1070
<b>Kyrgyzstan</b>	0	+	-	-0.18	0.49	0.04	9.35	14	0.13	0.01	1.84	37.5	0.08	0.03	0.89	23
<b>Azerbaijan</b>	0.96	0.67	3.72	-167	5.43	0.11	1.72	225	1.55	0.08	0.49	458.4	0.93	0.05	1.25	396
<b>Armenia</b>	0.02	0.01	0.73	-1.5	1.34	0.22	0.60	12.7	0.37	0.06	0.28	89.5	0.36	0.05	0.06	138
<b>Kazakhstan</b>	0.01	0.01	5.29	-3.5	1.1	1.18	6.08	-211.3	0.41	0.36	1.48	-57.6	0.30	0.2	0.97	45
<b>Tajikistan</b>	0.02	+	1.93	0.14	1.32	0.04	1.08	53	0.81	0.07	0.29	228	0.18	0.06	0.46	53
<b>Moldova</b>	0	+	-	-0.24	+	+	0.70	0.07	+	0	-	0.8	+	0	-	1
<b>Belarus</b>	0	0	-	0	0.01	0.02	0.82	-5	0.02	0.21	3.67	-108	0.01	0.05	0.68	-21
<b>Uzbekistan</b>	+	0	-	0.061	1.51	0.26	3.15	12.3	0.28	0.32	1.4	-77.6	0.32	0.11	0.24	97
<b>Ukraine</b>	0.01	+	0.97	0.19	0.6	0.87	0.95	-167	0.2	0.65	3.1	-279	0.07	0.19	2.79	-51
<b>Turkmenista</b>	0.42	0.02	0.47	4	1.92	0.09	0.86	69	2.3	0.21	0.59	634.3	0.91	0.02	1.10	396
<b>n</b>																
<b>Total</b>	4.21	1.8	4.38	-403	15.31	6.75	1.74	-798.5	7.62	5.28	0.71	-343.3	3.79	3.91	0.76	6

*Source: Present Research Calculations*

## **2. Empirical Background**

There are several empirical studies over the formation and development of regional economic integration, but no independent and comprehensive research has been done on Iran's trade potential with the CIS countries. Erokhin et al. (2020) have analyzed the comparative advantages between the 5 Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) and China during the period 2000-2018. By using the competitiveness indicators such as Balassa, Vollrath and Lafay, they have shown that the selected countries had more (less) advantages in consumer (capital) goods. Falkowski (2017), by analyzing the long-term comparative advantage of the Eurasian Union in the four main commodity groups based on technology intensity, has concluded that the member countries of this union (except Belarus), were weak in competitiveness in high and medium technology goods during the period 2000 -2014.

Ainur and Diana (2015) have studied Kazakhstan's competitive advantage during the period 2001-2012 by using the Lafay index. The results of this study indicate an increase in the comparative advantage of raw material exports during the studied period. Using the Balassa, Vollrath and Lafay indices, Ishchukova and Smutka (2013) have examined the situation of Russia's revealed comparative advantage in agriculture and food products during the period 1998-2010. According to the results of this study, Russia has a good comparative advantage over the CIS region and Asian countries. Hosseini et al. (2018) have studied the dimensions of the impact of international macroeconomic components of the Caspian coastal states and Iran on the development of regional cooperation in the evolutionary process of regionalism by a descriptive method. They have emphasized the use of the capacity of these components. Fathi and Vali Beigi (2015) have measured the competitiveness of goods exported from Iran to Russia during the time period 2004-2008. By using the constant market share (CMS) analysis in this study, no general rule was found for explaining the growth of all Iranian commodities exported to the Russian market.

Doulati and Buri urakovich (2013), by employing the trade complementarity and potential indexes during the period 2002-2010, have analyzed Iran's trade potential with central Asian countries (Kazakhstan, Kyrgyzstan, Turkmenistan, Tajikistan and Uzbekistan). The results of this study show that Iran and the mentioned countries have not benefited from trade complementarity and similarity and the bilateral import is very small.

Nasirzad and Hosseini (2012) have examined the bilateral trade of Iran and the Republic of Azerbaijan during the period 2003-2007. By using the Drysdale and Allen indices, they have concluded that the two countries currently have little trade similarity and therefore, there is little capacity for the cooperation. Hasanpour and Saqeb (2004) have used the export-import similarity index (EIS) to examine the presence or absence of trade cooperation between Iran, Azerbaijan, Kazakhstan, Turkmenistan and Russia during the period 1997-2000. According to the results of this study, one of the reasons for the low intra-group trading of the Caspian coastal states is the low similarity between the states.

## **3. Methodology**

In the framework of the international trade literature; among the achievements of comparative advantage-led production can be mentioned the following: specialization, division of labor, economies of scale, introduction of new technologies and entrepreneurship in economic activities, and finally an increase in access to macroeconomic policy goals, such as higher rates of economic growth and full employment. It is also important to pay attention to comparative advantages in order to identify and take advantage of potentials between countries. Many researchers, including Balassa (1965) in their empirical studies using various theories of international trade have introduced indicators and criteria that reveal the trade potentials of countries. In his view, the trade potential of countries is affected by a number of factors, some of which can be measured according to available information and statistical sources, and some of which are non-measurable factors. Accordingly, it is possible to reveal the trade potential of countries by analyzing the trade patterns of countries and at the sectoral and commodity levels.

In order to study the trade potential by emphasizing the supply side factors, it is necessary to identify the capacity and intensity of access to factors of exportable products, so from this aspect the study can be evaluated in the framework of the Hackscher-Ohlin-Samuelson model. But, calculating the trade potential based on the capacity of the production factors is sometimes difficult. This can be due to the lack of up-to-date and reliable information at the commodity level especially in developing countries. As a result, many economists and researchers have tried to estimate the trade potential using indicators based on post-trade data and trade

performance analysis method. In this regard, we can refer to the studies of Drysdale (1988), Linneman (1966), Finger and Kreinin (1988). These studies have led to the presentation of various indicators in measuring similarity, degree of complementary and trade potential.

### 3.1. Trade similarity

Countries involving trade have commons that allow trade to continue and develop. For example, the similarity of export and import may show that these countries can continue and develop their foreign trade according to the current pattern. Of course, it should not be overlooked that trade similarity is a single reason for continuous trade, nor can dissimilarity mean that there is no trade capacity. Also, trade similarity criteria reflect the current state of foreign trade and do not necessarily mean the future and predictable situation of foreign trade. However, these criteria can provide basic information about the possibility of trade continuity and development.

#### a) Allen index

Allen's criterion, first introduced in Allen's Mathematical Economics (1957), is used to measure the similarity of exports and imports. This index is calculated by cosine of the angle between export and import vectors as follows:

3-1(

$$Cos_{ij} = \frac{\sum_{k=1}^n X_{ik} M_{jk}}{\sqrt{\sum_{k=1}^n X_{ik}^2 \sum_{k=1}^n M_{jk}^2}}$$

Where  $X_{ik}$  and  $M_{jk}$  are respectively; the vectors of country  $i$  exports to the world and the imports of country  $j$  from the world, in commodity group  $k$ . This index is between zero and one. The zero indicates that the two trade flows are perpendicular to each other and, accordingly, the possibility of trade between the pairs of countries is low, while with increasing the cosine of the angle, the possibility of trade between the two countries increases. If the angle between two vectors is zero, the cosine will be one and the similarities of trade flows will be complete.

#### b) Drysdale index

If the composition of trade goods in the bilateral trade flows is the same, the Allen index acquires the number one, which indicates the complementary of trade. On the other hand, if two trade vectors are perpendicular to each other, the degree of complementary of trade is zero and the cosine of the angle of the flow vectors will be zero.

Although the Allen criterion shows the similarity or dissimilarity of trade between partner countries, it has two important drawbacks: First, the index remains silent on trade potential, meaning that there may be similarity when no trade has taken place in practice. Second, this index basically shows the intensity of similarity and does not provide information about the existence of trade similarity.

The Drysdale index can be used to further examine the existence of trade similarity. This index is also called the complementary of trade index because it shows how close the structure or pattern of a country's exports is to the structure or pattern of its trading partner's imports. The Drysdale index is calculated as follows:

$$D_{ij} = \sum_k^n \left[ \frac{X_{iw}^k \cdot M_{ww}^t - M_{iw}^t \cdot M_{jw}^k}{X_{iw}^t \cdot M_{ww}^k - M_{iw}^k \cdot M_{jw}^t} \right] \tag{3-2}$$

Where  $D_{ij}$  represents the Drysdale index between two regions or countries  $i$  and  $j$ . Also in this formula,  $X_{iw}^k$  is the value of the country's exports  $i$  in the commodity group  $k$ ,  $X_{iw}^t$  represents total value of the

country's exports  $i$  to the world,  $M_{ww}^t$  is the value of the world's total imports,  $M_{ww}^k$  shows the value of world imports in the commodity group  $k$ ,  $M_{iw}^t$  is the value of the country's imports  $i$  from the world,  $M_{iw}^k$  indicates the value of the country's imports  $i$  in the commodity group  $k$ ,  $M_{jw}^k$  is the value of country imports  $j$  in the commodity groups  $k$  and finally,  $M_{jw}^t$  represents the value of country imports from the world.

The Drysdale index is always greater than zero, and values greater than one indicate that the export pattern of the country under study is similar to that of its trading partner. In contrast, if the Drysdale index is less than one, it indicates that there is no similarity between the trade patterns.

The index shows how much specialization and comparative advantage in the export sector complements the import sector of the trading partner. Thus, this specialization does not necessarily mean international competitiveness, but rather represents trade potentials. The three determinants of this index are comparative advantage, the global share of the commodity group and the import structure of the trading partner.

### 3.2. Comparative advantage and trade potentials

Various methods can be used to calculate the trade potential. One way is; first, to estimate the comparative advantages of the home country and then to estimate its foreign trade capacity based on this competitiveness in the different commodity groups. In this regard, in the first stage, the Balassa-Vollrath RCAX index, i.e. Revealed comparative advantage index in terms of export ( $BW_{ik}^X$ ) can be calculated from the following relation:

$$BW_{ik}^X = \frac{\frac{X_i^k}{X_i^t}}{\frac{X_w^k}{X_w^t}} \tag{3-3}$$

Where  $X_i^k$  and  $X_i^t$  are the exports of the home country in the commodity group  $k$  and all of the commodity groups, respectively, and  $X_w^k$  is the world export of the commodity group  $k$  and  $X_w^t$  is the total world export.

In the next step, the comparative disadvantage index can be calculated based on the Balassa-Vollrath ( $BW_{ik}^M$ ) revealed comparative advantage index (RCAM), in which the variables are defined as before but in terms of imports. The index is calculated as follows:

$$BW_{ik}^M = \frac{\frac{M_i^k}{M_i^t}}{\frac{M_w^k}{M_w^t}} \tag{3-4}$$

Another recent indicator of competitiveness is the index of Lafay (1992), which considers both trade flows and their overlap, and is therefore a more appropriate indicator than the traditional competitiveness indicators. The Lafay index can be calculated as follows:

$$LI_{ik} = (1000 - \frac{X_{ik} - M_{ik}}{Y_i}) - (\frac{X_{ik} + M_{ik}}{\sum_k (X_{ik} + M_{ik})} \cdot \frac{1000 \sum_k (X_{ik} - M_{ik})}{Y_i}) \tag{3-5}$$

$$LI_{ik} = \frac{1000}{Y_i} \cdot \frac{2(X_{ik}M_i - X_iM_{ik})}{X_i + M_i}$$

In these relations,  $LI_{ik}$  indicates Lafay index for the country  $i$  in the commodity group  $k$  and also  $X_{ik}$  and  $M_{ik}$  are export and import of the country  $i$  in the commodity group  $k$ , respectively. Also,  $X_i$ ,  $M_i$  and  $Y_i$  show the total exports, imports and national production of the country, respectively.

If the Lafay index is greater than zero, the country or region under study will have a comparative advantage in the commodity group, and if this index is less than zero, the Lafay index will indicate a lack of comparative advantage in the commodity group. The neutral situation will be when the Lafay index is zero. It should be noted that the algebraic sum of the Lafay index for the group of different goods is zero.

In order to calculate the possibility of developing trade with the CIS member countries, along with Turkmenistan and Ukraine, the indicators of comparative advantage and disadvantage based on RCA and Lafay have been used during the period 2014-2018. Export and import data have been extracted from the international trade center (Intracen) and customs of the Islamic Republic of Iran.

#### 4. Empirical Results

Based on the calculations performed and according to Table (2), the intensity of Iran's trade similarity with the CIS region in 2018 and at the HS 8-digit, is estimated to be about 0.3. Thus, although the intensity of trade similarity between Iran and the CIS countries is greater than zero, it is at a low level. The level of trade similarity between Iran and the CIS countries has been fluctuating trend, which indicates a kind of instability in trade between Iran and the CIS region.

As shown in Table (2), according to the research calculations, the highest Allen index value among the CIS countries is assigned to Belarus, which indicates a significant capacity in Iran's trade with this country. Also, according to the index calculations in the 8-digits HS, after Belarus, Uzbekistan has the highest Allen index value with Iran. In contrast, the lowest Allen index value in 2018 is assigned to Russia, which can be justified given the country's trade performance in relation to Iran's exports. Also, according to the calculations of this study, the median of index distribution is at a low level, which shows a low similarity between the trade flows of Iran and the CIS region. In addition, the coefficient of variation of the index distribution is also at a high level, which indicates a significant difference between the countries in the trade similarity with Iran. Thus, it seems that the countries of the region should be treated differently in trade policies, and in this regard, the countries with significant trade similarities should be considered in trade targeting. Table 2 also shows the calculations of the Drysdale index for the 8-digit HS. Although the value of the Drysdale index is usually greater than zero, but less than one indicates a lack of trade similarity between Iran and the CIS group.

**Table 2. Allen index of Iran with CIS countries (8-digit HS) 2014-2018**

The first three countries	Range of countries	Index	CIS				
			2.18	2017	2016	2015	2014
Belarus (0.89), Uzbekistan (0.3) and Ukraine (0.09)	0.01 - 0.89	Allen	0.302	0.266	0.229	0.319	<b>0.273</b>
Belarus (0.0056), Uzbekistan (0.0003) and Ukraine (0.0002)	0.000004 - 0.0056	Drysdale	0.0005	0.0009	0.0012	0.0015	<b>0.0021</b>

Source: Calculations of the present study

It is worth mentioning that; first, as the Allen index shows, the intensity of trade similarity between Iran and the CIS countries is at a low level, which in a way confirms the results of the Drysdale index. Second, the low intensity of similarity can be considered as a potential for trade because it shows the unused potential in trade between the two partners is significant. Of course, low intensity or low similarity can also be due to an outward-looking and closed economy, which in this regard is expected to experience an increasing trend with the opening of the economy, constructive and active development and win-win of international trade relations.

Table (3) shows the potential based on Iran's comparative advantage against the CIS region during the period 2014-2018. According to this table, the number of commodity groups with comparative advantage in Iran during this period has averaged 431 and it has increased during the period 2014-2018. However, the number of groups

without the advantage of the CIS region has averaged 2238 with an increasing trend during the period. The situation of comparative advantage of Iran and the CIS region indicates a significant potential for the development of Iran's exports.

**Table 3. Trade potential based on Iran's export advantage to the CIS 2014-2018**

	2014	2015	2016	2017	2018
<b>Number of advantageous goods groups in Iran</b>	411	454	422	415	453
<b>Number of groups of goods without advantage in the CIS</b>	2169	2109	2216	2303	2390
<b>Percentage of Iranian exports in total CIS imports</b>	0.527	0.569	0.621	0.481	0.43
<b>Export potential of Iran to CIS (in dollars)</b>	30373575	24076636	19291648	22755158	23192311
<b>Percentage of Iran's use of total available potential</b>	8.39	7.8	10.29	8.25	7.89

Source: Calculations of the present study

According to Table (3), Iran's foreign trade potential with the CIS region varies from about 19 to 30 billion dollars during the period 2014-2018. Furthermore, the potential in 2014 was about \$ 30.3 billion, which in 2018 has decreased to about \$ 23.2 billion. Overall, there is significant potential for foreign trade between Iran and the CIS countries, but unfortunately about 10% or less of this capacity has been used. Even if it is assumed that ten percent of this trade potential will go to Iran, there will still be considerable vacant capacity for foreign trade between Iran and these countries. Clearly, in these circumstances, about 80% of trade potential is used, which is about 20% of the foreign trade capacity of Iran and this region is not utilized. At the same time, Iran's absorption of 30% of its trade potential provides significant unused capacity for Iran. In this situation, about 70% of the country's unused foreign trade potential in relation to this region will be used. It should be noted that the share of CIS imports from Iran during the period has been about 0.5%, which is a very low level considering the comparative advantages of the country.

One of the important information that can be seen from Table (3) is that, during the period 2014-2018, the CIS region does not have a comparative advantage in a significant number of the commodity groups. At the same time, Iran has a comparative advantage in more than 400 commodity groups. Iran has significant potential for developing its export to the CIS region in various commodity goods from agricultural to petrochemical products, which, of course, in an open economy can lead to economic growth and development. Table (4) shows the important trade potential commodity groups of Iran against the CIS region in 2018.

**Table 4. Important trade potential commodity groups of Iran against the CIS region in 2018**

Row	Commodity Group	RCX export potential	RCM Import potential	Row	Commodity Group	RCX export potential	RCM Import potential
1	The body of passenger vehicles	2.73	16.57	11	poly vinyl chloride	1.96	1.59
2	Steel and non-alloy rods	6.25	3.28	12	products-section, of iron or non – alloy steel:	1.25	1.20
3	Tomatoes	5.14	4.20	13	Petroleum bitumen	16.38	1.52
4	Cheese	1.77	2.02	14	Portland Cement	5.15	2.67
5	polyethylene	12.76	1.09	15	Machinery for crushing and grinding	2.26	4.57
6	chocolate	1.16	2.42	16	Detergents for washing	1.96	2.14
7	Apple	6.01	3.96	17	potato	12.31	3.80
8	Plates and films and ... of ethylene polymers	1.67	1.43	18	Cows for breeding	4.11	10.22
9	Sugar not containing cocoa	3.72	1.97	19	Hollow and welded pipes of iron	2.04	1.84
10	Orange	1.14	3.30	20	U-shaped non-alloy iron or steel parts	3.46	3.99

Source: Calculations of the present study



Table 5 lists Iran's trade potential and the percentage of using of this potential by each of the CIS countries in 2018.

**Table 5. Iran's export potential to CIS member countries in 2018**

Country	Percentage of use of existing potential	Export potential of Iran	Country	Percentage of use of existing potential	Export potential of Iran
Russia	2.45	11424326	Armenia	37.91	<b>419375</b>
Tajikistan	13.49	580526	Azerbaijan	5.06	<b>8107184</b>
Turkmenistan	434.0423	92112	Belarus	0.029	<b>9401521</b>
Ukraine	0.71	4378709	Kazakhstan	4.67	<b>2808435</b>
Uzbekistan	10.54	1336189	Kyrgyzstan	4.57	<b>736997</b>
			Moldova	0.11	<b>632539</b>

*Source: Calculations of the present study*

According to Table 5 the trade potential of Iran and Armenia in 2018 is estimated at about \$ 419 million. Although there is significant trade potential between Iran and this country, about 38% of this capacity has been utilized in 2018. It should be noted that Armenia imports only about 3% of its imports from Iran during the period, which is not significant considering the comparative advantages of the country and the proximity of the two countries. Also, according to Table 5 Iran's trade potential with Azerbaijan is about \$ 8 billion. Meanwhile, the share of Azerbaijan's imports from Iran in comparison with the total imports of this country is less than 5%, which shows a good capacity for developing Iran's exports to this country. Even if the 10% of estimated potential is considered as Iran's share, more than half of its trade development capacity with this country is still unused.

In the case of Belarus, and as expected on the basis of the Allen and Drysdale indices, there is considerable trade potential for Iran against with Belarus. According to Table 5 Iran's trade potential with Belarus is estimated at about \$ 10 billion. Meanwhile, the share of Belarusian imports from Iran is generally below 0.1%. Even if 10% of the estimated potential is considered as Iran's share, more than 70% of the trade development capacity with this country in 2018 is still unused. Iran's trade potential with Kazakhstan is about \$ 3 billion, while about 0.5 percent of this country's imports are from Iran, and Iran has practically little trade with Kazakhstan. Even assuming 10% of the potential, more than half of the trade development capacity with this country in 2018 is still unused.

Iran's trade potential with Kyrgyzstan is estimated at about \$ 7 billion. While less than one percent of the country's imports are allocated to Iran and in fact Iran has little trade with this country. In relation to Moldova, Iran's trade potential is estimated at about \$ 600 million, but in practice, a small share of this country's imports is allocated to Iran. Even assuming 10 percent potential, about one percent of this capacity has been used in 2018.

According to Table 5, Iran's trade potential with Russia, as one of the most important countries in the region, is estimated at an average of \$ 1 billion. But Iran's share of Russian imports is small, and even assuming 10 percent of the potential, only about 25 percent of that capacity will be used in 2018. Based on the calculations, the trade potential of Iran and Tajikistan in 2018 was about \$ 500 million, while about 2.5% of Tajikistan's imports are allocated to Iran, and in fact Iran has little trade with this country. Of course, assuming 10% of the potential as the minimum potential for Iran's exports to this country, the total trade capacity with this country in 2018 has been used.

Similarly, the trade potential of Iran and Turkmenistan in 2018 is estimated at about \$ 92 million, and it seems that Iran has been able to use the entire existing capacity to trade with this country.

In contrast, the average trade potential of Iran and Ukraine is about \$ 4 billion, and assuming 10% of the potential, less than 10% of trade capacity with this country in 2018 has been used. Also, the average trade potential of Iran and Uzbekistan is about \$ 1 billion in 2018. While about one percent of the country's imports are allocated to Iran, which indicates a significant capacity to develop trade with this country.

As shown in Table 6, the selected potential commodity groups for Belarus, Kazakhstan, Ukraine, and Uzbekistan are generally the primary goods, although they have less value added than the manufactured

finished goods. Goods for Kyrgyzstan, Moldova, Tajikistan are mostly petrochemicals and raw materials, and the group of goods selected for Russia is generally agricultural products.

**Table 6. Three important trade potential commodity groups of Iran against the CIS countries in 2018**

country	Commodity Group	RCX	RCM	country	Commodity Group	RCX	RCM
Armenia	Petroleum and light products	1.06	1.72	Azerbaijan	Polyethylene	12.76	2.29
	Aluminum	1.08	7.84		Rods of non-alloy iron and steel	6.26	7.86
	chocolate	1.16	8.34		date	34.77	7.88
Belarus	Crude oil and petroleum oils and bitumen	10.71	2.97	Kazakhstan	Lead and concentrate	1.26	25.92
	Gaseous hydrocarbons	37.64	11.96		The body of a passenger motor vehicle	2.73	19.50
	potato	5.14	6.34		High density polyethylene	12.76	2.83
Kyrgyzstan	Light oil and derivatives	1.05	3.45	Moldova	Light oil and derivatives	1.06	1.54
	Fabrics made of synthetic fibers	1.77	852.78		Copper wire	5.66	43.86
	Rods of non-alloy iron and steel	6.26	13.41		Petroleum bitumen	16.38	9.07
Russia	The body of a passenger motor vehicle	2.73	26.01	Tajikistan	Liquid propane	10.31	26.28
	cheese	1.77	3.09		Light oil and derivatives	1.05	2.72
	tomato	5.14	5.52		Rods of iron and alloy steel	6.26	33.09
Turkmenistan	Steam turbine parts	1.27	141.48	Ukraine	Light oil and derivatives	10.31	1.44
	Rods of non-alloy iron and steel	6.26	25.20		Liquid propane	10.31	3.01
	potato	12.31	63.55		Liquid butane	11.24	5.56
Uzbekistan	Portland cement	5.15	26.75				
	wheat flour	1.81	22.31				
	Aluminium	1.08	3.13				

Source: Calculations of the present study

Table 7 shows the status of the Lafay index of Iran and the CIS countries in 2018. According to this table, out of about 5000 commodity groups, there were about 4500 groups of overlapping goods with the CIS region, and according to the Lafay index, Iran had a comparative advantage in about 500 groups of goods in the entire CIS region. Also, there is a significant Lafay balance in favor of the commodity groups, which can be considered as the nominal potential of Iran's trade with this region. In 2018, the balance of the group of advantageous goods is estimated at about \$ 84 billion, which considering the import of about \$ 42 billion in the CIS region, there is a significant potential for Iran. Furthermore, considering the minimum potential of the countries, it can be seen that Iran, except for Turkmenistan, Armenia and Azerbaijan, has used less than 10% of its trade capacity against each of the CIS member countries.

**Table 7. Status of Iran and CIS Lafay index in 2018**

Country	Minimum potential utilization percentage	Minimum potential	Balance-based potential	Balance of Iran's advantageous goods	Number of overlapping goods with positive Lafay	Number of overlapping goods of Iran and trade side
CIS	-	-	82212476	83898300	527	<b>4510</b>
Armenia	10.46	1520162	79226447	79385437	829	<b>3907</b>
Azerbaijan	18.74	2190264	82702456	83112986	763	<b>4025</b>
Belarus	0.06	4841064	83700955	83703717	684	<b>4240</b>
Kazakhstan	2.80	4692658	83216075	83347460	738	<b>4273</b>
Kyrgyzstan	1.82	1858720	79057042	79090781	994	<b>3737</b>
Moldova	0.01	2108734	78947540	78948240	800	<b>3926</b>
Russia	6.32	4437159	86860444	87140954	681	<b>4366</b>
Tajikistan	5.45	1436584	67990460	68068775	788	<b>3446</b>
Turkmenistan	42.85	932967	79961558	80361363	956	<b>3630</b>
Ukraine	0.52	6064715	80381825	80413280	744	<b>4250</b>
Uzbekistan	4.43	3185284	84976506	85117456	874	<b>4028</b>

Source: Calculations of the present study

Table 8 shows the selected commodity groups with the positive and negative Lafay index of Iran against the CIS region. The interesting point in this table is the role of some sectors, especially agriculture in both groups with positive and negative Lafay, which represents intra-industry trade based on competitive advantages.

**Table 8. Selected commodity groups with the positive and negative Lafay of Iran against the CIS region in 2018**

Positive Lafay	020840	020680	010641	010639	010633	010632	010631	010594	010410	010239
Negative Lafay	010599	010512	010511	010420	010391	010290	010229	010221	010190	<b>010129</b>

Source: Calculations of the present study

Table 9 presents the five selected commodity groups with the positive and negative Lafay in 2018 by CIS countries. According to this table, the most valuable commodity groups with the positive Lafay for Iran against the CIS region are crude oil and bituminous minerals, oils from bituminous minerals, polyethylene and natural gas. Of course, in the case of Tajikistan, the order of these cases is different and it can be seen that natural gas (271111), despite the positive Lafay in the other countries, shows a negative Lafay in this country. The results of the Lafay index show the importance of intra-industry trade and policies related to this type of trade in the CIS countries.

**Table 9. Five selected commodity groups with the positive and negative Lafay of Iran against the CIS countries in 2018**

Country	Negative Lafay					Positive Lafay				
CIS	390210	040690	260300	392690	271019	271112	271111	390120	271000	<b>270900</b>
Armenia	252329	170490	721420	271019	271012	271112	271111	390120	271000	<b>270900</b>
Azerbaijan	190590	190531	170490	721420	271019	271112	271111	390120	271000	<b>270900</b>
Belarus	390210	392690	080810	070200	271019	271112	271111	390120	271000	<b>270900</b>
Kazakhstan	190590	760110	260300	392690	271019	271112	271111	390120	271000	<b>270900</b>
Kyrgyzstan	170490	392690	721420	271019	271012	271112	271111	390120	271000	<b>270900</b>
Moldova	070190	392690	721420	271019	271012	271112	271111	390120	271000	<b>270900</b>
Russia	180690	721049	040690	392690	070200	271112	271111	390120	271000	<b>270900</b>
Tajikistan	170490	721420	271019	271012	271112	290511	390110	271111	271000	<b>270900</b>
Turkmenistan	170490	392690	080810	721420	271019	271112	271111	390120	271000	<b>270900</b>
Ukraine	390210	281410	392690	271019	271019	390110	271111	390120	271000	<b>270900</b>
Uzbekistan	390410	390210	760110	252329	271019	271112	271111	390120	271000	<b>270900</b>

Source: Calculations of the present study

Table 10 shows a summary of Iran's trade potential with the CIS region based on various indicators. Based on this table and other calculations, it seems that Iran has a considerable unused capacity against the region.

**Table 10. Total trade potential of Iran and the CIS countries in 2018 (In million dollars)**

		Based on the	Based on the	Based on the index Lafay	
		index RCA	index IPX	Minimum	Balance
<b>Total trade potential of Iran and CIS</b>	Region	23192	34680	3538	82212
	country	92 - 11424	1631- 66780	933 - 6065	67990 - 86680

Source: Calculations of the present study

## 5. Conclusion

The main purpose of this study is to examine Iran's trade capacity with the CIS member countries. In this regard, first, the similarity of Iran's trade structures with the region was compared based on different trade indicators. Based on the calculations and the results of Allen and Drysdale indices, the similarity and its intensity are not significant, which on the one hand indicates the need to pay attention to other trading partners beyond the region and on the other hand indicates vacant capacities for trade development with the region. Subsequently, these trade capacities were examined. According to the calculations, Iran has a comparative advantage in many commodity groups, which based on the RCA index, the most important commodity groups with comparative advantage are generally based on natural resources, agriculture and oil. Second, Iran's trade potential against the CIS region is significant and the balance of Iran's comparative advantage with the CIS region is estimated to be positive in favor of Iran, which, of course, is questionable compared to what has actually happened. Also, based on the Lafay index, there were about 527 commodity groups with the positive Lafay in Iran's trade with this region in 2018, and based on the results of this index, Iran has used less than ten percent of its trade potential in most CIS countries. The results for the positive and negative Lafay commodity groups and the trade flows overlapping indicate the importance of policy sensitivity based on the intra-industry trade and competitive advantage literature.

In general, based on the results, despite the significant potential in foreign trade of Iran and the CIS region, and great advantage in some commodity groups, Iran has not been able to use these benefits properly and has exploited its minimal trade potential against the region. Due to the sanctions imposed on Iran, the introversion of the Iranian economy and inappropriate policies, Iran has not been able to exploit its considerable comparative and competitive advantages. Besides developing its trade openness via trade integrating with the different regions like the CIS one, Iran needs to identify the appropriate markets and replace less developed partners with them based on the competitive advantages and trade potentials. In order to enhance exports and increase trade relations with the CIS region, Iran needs to orient production and investment based on its competitiveness and lack of the region's comparative advantages. In this regard, it is recommended to use the integration capacities, especially the appropriate use of the Eurasian Agreement to expand trade relations, coherent planning to guide investment in the advantageous sectors and the development of advertising in the countries of this region.

## Acknowledgement

*This article is retrieved from a research project entitled Studying the Economic Potentials and Opportunities of CIS Countries and Identifying Barriers and Strategies to Increase Foreign Trade, which is supported by Mazandaran Provincial Government.*

## References

- Ainur, A. & Diana, M. (2015). Assessment of the Competitiveness of Kazakhstan's Exports, *Mediterranean Journal of Social Sciences*, 6(6), 443-447.
- Allen, RG D. (1957). *Mathematical Economics*, Hardcover, London: Macmillan.
- Balassa, B. (1965). Trade Liberalization and Revealed Comparative Advantage, *The Manchester School*, 33(2), 99-123.
- Customs of the Islamic Republic of Iran, Foreign Trade Data, various Years.
- Doulati, B. and Buri Urakovich, S. (2013). A Study on Iran's Opportunities for Trade Integration with Central Asian Countries, *Iranian Journal of Economic Research*, 17 (53), 35-53, (In Persian).
- Drysdale, P. (1988). International Economic Pluralism, Economic Policy in East Asia and the Pacific. *Columbia University Press*, NewYork.
- Erokhin, V., Dio, L. & Du, P. (2020). Sustainability-Related Implications of Competitive Advantages in Agricultural Value Chains: Evidence from Central Asia—China Trade and Investment, *Sustainability*, 12(3), 1117-1136.
- Falkowski, K. (2017). Long-Term Comparative Advantages of the Eurasian Economic Union Member States in International Trade, *International Journal of Management and Economics*, 53(4), 27-49.
- Fathi, H. and Valibigi, H. (2015). Measuring and Analyzing of the Competitiveness of Iran's Export Goods in the Russian Market, *commerce Studies*, 13 (71), 24-27, (In Persian).
- Finger, J. M., & Kreinin, M. E. (1988). A measure of “export similarity” and its possible uses. *The economic Journal*, 89(356), 905-912.
- Hasanpour, Y. and Saqeb, H. (2004). A Study of the Participation Potentials of the Caspian Sea Coast Countries in Commodity Trade, *Commerce Research Journal*, 30, 139-185, (In Persian).
- Hosseini, M. A.; Amir Ahmadian, B., and Nasirzad, M. (2018). The Study of Development Indicators of Caspian Sea Region (CSR) Countries in the Regional Integration Process, *Central Eurasia Studies*, 11 (1), 59-79, (In Persian).
- International Monetary Fund, *Statistical Database*, Various Years.
- Ishchukova, N. & Smutka, L. (2013). Revealed comparative advantage of Russian agricultural exports, *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 61(4): 941-952.
- Lafay G. (1992). The measurement of revealed comparative advantages. In: Dagenais M.G., Plunet P-A. (eds.), *International Trade Modelling*. Chapman & Hall, London, PP. 209-236.
- Linneman, H. (1966). *An Econometric Study of International Trade Flows*. North Holland, Amsterdam.
- Nasirzad, M. and Hosseini, M.A. (2012). Evaluation and Estimation of Bilateral Trade Potential between Iran and Azerbaijan Republic, *Central Eurasia Studies*, 5 (11), 115-134, (In Persian).
- United Nations, International Centre (Intracen), *Statistical Database*, Various Years.
- World Bank, *Statistical Database*, Various Years.