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## Investigation of New Index of Comparative Advantage in Trade of Iranian Agricultural products

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### Abstract

The export of non-oil goods plays a crucial role in countries' economy. In industrial societies the export of industrial and processed goods has very importance, while in developing countries such as Iran the agricultural goods are more exported. So, this study sought to examine trade priorities of Iranian agricultural products using the new index of comparative advantage (New RCA). The sample of study is Asian countries and the information is collected from FAO. The countries have been studied in three region of middle Asia, East Asia and West Asia (along with nearby countries). Findings show that Iran in the middle Asia has advantage in chicken, fresh cow milk and greasy wool. In East Asia, it has also a high advantage in eggplant, greasy wool, cucumber and gherkin, fresh cow milk and nuts. In addition, in West Asia and nearby countries, Iran has advantage in greasy wool, fresh cow milk and eggplant has productivity and export advantage. Hence, it is recommended that the export of these agricultural products be developed with long-run trade planning.

**Keywords:** Comparative advantage, Trade, Agricultural products, new index of comparative advantage

### Introduction

Nowadays, one of the most important characteristics of a healthy economy is having a positive current account balance. Current account balance consists of the two parts of goods and services, indicates the difference between output and input of a country's goods and services. From these two parts, the good export is considered as one of the main ways of having a positive current account balance. Given their development level, countries export various goods. The industrial societies take into special attention the export of processed and industrial goods which have high value added. While in developing countries such as Iran the agricultural goods are more exported (Zamaninejad and Abdesahi, 2012). The export is considered as the motor of countries' economic development and has many advantages such as creating currency earnings for providing country's import needs or implementation of economic development

plans, create employment or new job opportunities, improve the quality of produced goods, decrease the production cost to use full production capacity and earn international credibility and prestige due to the strengthening of economic power. Agricultural sector, on one hand, provide food security and health of society and, on the other hand, can bring currency to the country and subsequently leads to development of country. On this basis and in order to achieve sustainable development in agricultural sector the optimization of trade of this sector's products must be taken into attention. This would be possible by optimal allocation of resources in produce and export of agricultural products. The trade based on optimal allocation of resources, in addition to expand comparative ness at universal level makes it possible to develop the export of various products. The strategy of export development in any country is determined based on identifying the relative advantage and investment on expanding the production of

products with relative advantage. Comparative advantages improve the allocation of resources and provide the context for understanding the possibilities and potentials for making revenue for the country (Beck, 2003).

Given that Iran has important advantages and characteristics such as climate variability, land variability, labor so on, the agricultural sector is less dependent on sophisticated technology and expand production facilities. Reliance on agricultural sector and development and expansion of exports of this sector's products would increase Iran's share in global markets and make benefits to country's economy from its advantages (Hosseini and Parmeh, 2002).

Since the current world is the world of economic competition and every country seeks to increase the possibility of its presence in international markets, one can use the comparative advantages as one of the important economic criteria to production and export planning. Basically, identification of products with high comparative ness will increase the export volume of Iran (Mirzaei et al., 2012).

Nowadays, we see that the advanced countries such as North American countries have performed a comprehensive planning in production and export of agricultural products. Undoubtedly, Iran having specific climate and geographic characteristics needs a perfect and long-term plan in this field. Iran's strategic position in the region which is a neighbor to the north by the cold Russia and other countries of the former Soviet and to the south by Saudi Arabia, Iraq, and the Arabic-arid countries, has led Iran to has a large potential market for agricultural products in its around. Successful presence of Iran in the international and universal markets should be taken into consideration as an important base of agricultural planning. During the last years Iran not only has not increase its target markets, but due to its quality decrease, many countries have didn't imported the agricultural products from Iran. Given Iranian economic development during the last years, specially the exchange

rate developments, it is highly needed to study Iranian export advantages (Bakhshinejad and Hassanzadeh, 2012). The aim of this study is to investigate of Iranian trade of agricultural products using the new index of comparative advantage (New RCA). The following presents some previous studies conducted in this field.

Ishchukova and Smutka (2013) studied the export of Russian agricultural products using the classic indices of Balasa, Walrus and Lafli during the period 1998-2010. Their investigation showed that during 1998-2001 Russia had advantage in Wheat bran and sunflower. While during 2001-2010 the advantage was seen in wheat, barley, milk and sunflower seeds. Riaz and Jansen used the revealed relative advantage to evaluate the export advantage of agricultural products of Pakistan. Their results show that Pakistan has advantage in the production and export of rice (Basmati rice) and horticultural crops but it does not have any advantage in livestock products.

In a study in department of agriculture, forestry and fisheries (2011) the comparative advantage of agricultural products South Africa compared to Europe Union has been investigated. The mentioned study has been conducted for the period 2001-2009 and using revealed comparative advantage (RCA) and relative export performance methods. Its results show that compared to world average, South Africa has advantage in some products such as fishes and aquatics, vegetables, fruit and drinks. While, there is no advantage in grains, sugar and tobacco.

In their study, Serin and Civan (2008) investigated the export comparative advantage of three products (tomato, fruit juices, and olive oil) in Turkey and considered the change of advantage of these products during 1995-2005 in European market. Their results showed that Turkey has a high comparative advantage in export of olive oil and fruit juices but in tomato does not.

In order to calculate the revealed comparative advantage of industrial export, Li

& Bender (2002) checked the situation of seven world' regions. Their results imply the absence of comparative advantage in European and East Asian countries against the high comparative advantage of South Asian and Latin American countries.

Helleiner (1990) used the Revealed Comparative Advantage (RCA) index as a criterion for measuring trade strategy of export of some products and stated that if RCA exhibit the comparative advantage and fluctuations and comparative power of exported goods, one can evaluate the set of country's trade policies affecting the RCA fluctuations.

The trade meaning the flow of goods and financial resources among countries has significant role in economic development. The classical and neoclassical economists have given a particular importance to foreign trade and have considered it as an engine of economic growth. Whereas, radical economists such as Perbisch & Myrdal & Singer believe that historically the foreign trade has led to strengthening international inequalities such that the rich countries have become richer and the poor countries have become poorer. The experience of Hong Kong, Taiwan, South Korea, Mexico and Singapore are counterexample to this theory (Caliendo and Parro, 2009). According to first group's theory, the trade brings static and dynamic gains for its founders. The resulted gains for producer and consumer, technology transfer, increase in competition power focusing on comparative advantages, obtain returns to scale and a higher income level may be known as important outcomes of trade. Since the trade has two components of export and import, it is continuously tried to decrease the gap between this two in order to improve the balance of payments. This is performed through increase export or decrease import. In order to achieve this, economists have believed use of various trade policies and based on the two approaches of import substitution policies and export encourage and development policy. Due to the superiority in terms of optimal allocation of

production resources, increase efficiency and improve the quality of product, implementation of export development policy is preferred to import substitution policy and leads to encourage competition and increase the competitive power of products. The strategy of implementation of this policy is based on identify and evaluate actual and potential export markets. In other words, this strategy checks the export situation of different products in target markets and prioritizes them. Therefore, determination of good priorities within each market and then among different markets in level of every region requires use of a set of information. The requisite to achieve this information is identifying comparative advantages and compare with the advantages of competitor exporting countries (Davis et al., 2001).

The comparative advantage is an important concept in economy theory and means the low competitive cost of a good in a country compared to other countries in the absence of trade. Paul Samuelsson was achieved an economically meaningful concept in the framework of comparative advantage law. Then, with the expression of unlimited trade, David Ricardo presented comparative advantage theory. In continuing evolution of comparative advantage, the findings of these two economists have been base of next advantage theories. The importance of comparative advantage law may be in its interpretation as the core of international trade theory (Proudman, 2000).

Although in the modern views of trade the type of commodity and services have own importance, but how to produce determines the priority of comparative ness of country's export. But in any case, two key factors must be taken into consideration to improve the position of competition in global trade: first, expansion of capacity of skill and creativity at the national level and second, taking advantage of world technology progress.

The new wave of international trade theories was entered into economic literature

since the late 1980s with the aim of filling the vacuum of current view. The main role and contribution of new trade theories from the 1990s onwards has been mainly in detecting the issue that, economies of scale (and related market structures) and differences in use of technological abilities, can be one of the important issues. Globalization of production has led the raw material, machinery, and many related services are widely accessible at the international level and even the transfer of labor and capital has decrease the problem of their shortage in some countries. As such, what is important is how to use these factors and is not merely the possibility of access to them. Even though the production and consumption pattern of all countries is same, as far as the resources and factor proportions are different the context of initial and profitable trade will exist. Although, this difference in factors comparative inventory is sufficient condition for existence of price-cost difference, but other differences such as technology, the quality of production factors specially labor, the economies of scale, consumption pattern and market size, difference in structure of national economy, culture, values, institutions, and countries' history strengthening the motivations and grounds of creating sustainable comparative advantage and ultimately the national economy. Hence, creation of comparative advantage requires systemic approach and classifying different factors such as economic and non-economic factors at different levels created in the framework of comparative advantage in a systemic process (Hosseini, 2004). This concept was firstly proposed by Porter in 1990s which is considered nowadays as a modern view in explanation of reasons for international trade. The most innovative theory which was not satisfied with only minor reforms and attempted to provide a different basis for comprehensive explanation of processes of global trade is known as Porter theory of comparative advantage. As the founder of this theory, Michael Porter in 1990 has left the most important effect with publication of the book of

nations' comparative advantage.

Totally, it is seen that the new theories of international trade have taken attention to some facts like imperfect competition, the scale of economic activities and innovative technologies in real space of trade and competition and ultimately, taking into account the political, social and institutional factors has emerged in the form of comparative advantage. Of course, the mentioned topics have emphasized on cases which are mainly related to developed countries. For instance, issues related to intra-industry trade, the strategic behavior of large oligopolies and such issues which the countries of north are innovator and south ones are follower. But some parts of new theories of trade address the issues of foreign trade of developing countries. These parts are related to the concepts including understand of the process of decrease in technology gap between developed and developing countries, and the role of state policies in increase of competition power in economy (Hamalainen, 2003).

In brief, about development of this field of economy science one can say that: the theory of international trade in recent decades has seen dramatic changes. Change from the assumption of perfect markets and same technology across countries and lack of transfer of factors and inputs of production across borders. The recent literature has focused on the following cases (Porter, 1998):

- The role of production inputs trade
- Differentiation in international trade and investment flow due to the costs of Geography, institutions, transportation and informational costs
- Transfer of knowledge and information among countries
- technology differences among countries
- Monopolistic competition in heterogeneous products with increasing returns to scale

The new models and assumptions in the

theory of trade does not mean that conventional models are wrong and have no application, but they can be a complement to previous theoretical framework to provide a richer explanation framework. Indeed, correlation trends in today's global economy have led to change the limitation of conventional methods of trade and competition. Basically, in order for a country to be successful in global trade, one cannot satisfy just with revealed relative advantages, but the economies must create the innovation through understanding their situation and structure and making capacity and allow for economic agents to reach new areas in the international trade by providing the contexts of global excellence and comparative efficiency conditions. In this view, the role of production factors inventory in its traditional sense is decreasing. Also opportunities the globalization space puts at the disposal of firms and governments breaks down the previous limitations. What is important in view of Porter is the same giving middleleity to reforms at the level of economic agents and relative institutes (Beck, 2003).

### Materials and methods

According to the theoretical framework of Costinot et al. (2012) we can control the factors causing trade disruption between two countries (such as trade barriers among countries, geographical distance, colonial ties and use common language) as well as unilateral trade disruption factors (such as changes in political barriers, demand shocks and changes in consumers' tastes) using a new index of comparative advantage based on an econometric model. In fact, this theoretical framework is Ricardian model with a production factor (labor) and  $k$  industries operating in perfect competition condition. The main assumption is that the essential productivity of country  $i$  in an industry  $k$  is represented by  $Z_{ik}$ . Using this model, Eaton and Kortum presented the trade flow as follows:

$$\ln(x_{i,j,k}) = \delta_{i,j} + \delta_{j,k} + \theta \ln(z_{i,k}) + \varepsilon_{i,j,k} \quad (1)$$

Where,  $i$ ,  $j$ , and  $k$  stand for exporter, importer and industry, respectively.  $\delta_{i,j}$  is fixed characteristics of the two countries,  $\delta_{j,k}$  is fixed characteristics of the importing country and  $z_{i,k}$  is the level of essential productivity of country  $i$  in sector  $k$  (the technical coefficient in Ricardian model). The assumption is that the technological differences for exporting country depend on the two parameters: the essential productivity  $z_{i,k}$  for exporting country and the measure of dispersion and distribution of productivity  $\theta$  (the value which is considered as fixed for a country and among industries).  $z_{i,k}$  is a factor essential for determining Ricardian comparative advantage index and involves factors affecting productivity. These factors include climate, infrastructures and institutes which influence producers of a specific industry in a country. All of the mentioned factors are deterministic factors of productivity in a specific industry. Suppose that due to a specific and suitable climate a country has advantage in production of banana rather than other countries and can produce a product with a proper price and better quality. Indeed, this country has a higher productivity in production of banana in the world. As it mentioned before  $\theta$  represent the distribution of productivity and reflects the lack of uniformity of intra-industry productivity. In the study of Costinot et al. (2012)  $\theta$  has been considered as fixed and same for all countries and industries. Including the fixed characteristics of exporting country in the relation (1) we may write the trade flow as follows:

$$\ln(x_{i,j,k}) = \delta_{i,j} + \delta_{j,k} + \delta_{i,k} + \varepsilon_{i,j,k} \quad (2)$$

The above linear relationship represents the trade flow as the linear regression of independent variables. Using the OLS estimate of the relation (3) one can calculate the measure

of technological differences through the fixed characteristics of exporter,  $\delta_{i,k}$ . In order to value  $\theta$  we use the results of study of Costinot et al. (2012) which have considered a value equal to 6.53 for this parameter. Therefore, we can calculate the relation (3) as follows:

$$Z_{i,k} = e^{\delta_{i,k}/\theta} \quad (3)$$

The use of the criteria of essential productivity,  $Z_{i,k}$  (the productivity of producing agricultural products which may be estimated using different indexes including TFP or producer price index) is a proper method and path for estimating the comparative advantage of exporting country. Because this index can influence the process of trade and in fact indicates the substantive productivity level of country  $i$  in the industry  $k$ . Also, in order to calculate  $Z_{i,k}$  for the country  $i$  there is no need to other determinants like the fixed characteristics of two countries,  $\delta_{ij}$  and the fixed characteristics of importing country,  $\delta_{j,k}$  and we can estimate the essential productivity just via the fixed characteristics of exporting country,  $\delta_{i,k}$ . Having the estimated parameters and indexes we can estimate the new index of comparative advantage. The new weighted index is computed from the following relationship:

$$RCA_{i,k} = \frac{z_{ik} z_{..}}{z_{i.} z_{.k}} \quad (4)$$

Where,  $z_{..}$  is the mean of  $z_{ik}$  for all industries and countries,  $z_{i.}$  is the mean of  $z_{ik}$  for all of sectors and industries in country  $i$ .  $z_{.k}$  is the mean of  $z_{ik}$  in industry (product)  $k$  for all of this product's exporters. Based on the relation (4) the country  $i$  has comparative advantage in the industry and sector  $k$  if  $RCA_{ik}$  is greater than unit. When the  $RCA_{ik}$  index is greater than 1 means that the average global productivity level  $z_{..}$  at the productivity level of country  $i$  in the

industry  $k$  is greater than the expected value of  $z_{i.} z_{.k}$ . It is required to just two data type for this index: trade flows (export and import) and the productivity of studied agricultural products. The productivity which is included into the NEW RCA index as the main variable is calculated through the inverse of producer price for agricultural products. The information related to the price of agricultural products in studied countries is collected from FAO. In this research the newest data of FAO has been used. Statistical population under study is Asian countries (middle Asia, East Asia and West Asia, as well as neighboring countries) in which there is the possibility of creating mutual relationship.

### Empirical results

As tables show, in this index we can perform a comparison among countries. The coefficient greater than one indicate the existence of advantage in that product in considered country. Given the data limitation in regions under study, only countries were selected for which the information was existed in FAO website.

### Results of NEW RCA index for middle Asia

Table 1 shows the results of NEW RCA index for middle Asia. According to this table, compared to other middle Asian countries, Iran has advantage in peanuts, types of cabbage, chicken, fresh cow's milk, nuts, dried onion, tobacco, vegetables, watermelon and greasy wool. The chicken with value of 1.15, fresh cow's milk with 1.66 and greasy wool with 1.42 have had highest values of index. In other words, in production of these three products, Iran has had highest advantage and productivity than middle Asian countries. The status of NEW RCA for other products is as follows: Kyrgyzstan in the production of apples, nuts and honey, Afghanistan in apricot, Kazakhstan in cucumber and gherkin, Afghanistan in egg

and wheat, Tajikistan in grapes and tomatoes, advantage.  
and Mongolia in dried onion and potatoes have

**Table 1: Results for estimating NEW RCA index for middle Asia**

Products	Iran	Afghanistan	Kazakhstan	Kyrgyzstan	Mongolia	Tajikistan
Almond	1.21	0.42	–	1.6	–	0.78
Apple	0.83	0.43	0.64	1.54	–	1.41
Apricot	0.37	1.15	0.41	1.07	–	1.05
Types of Cabbage	1.33	–	1.48	0.97	1.4	0.59
Cucumber and Gherkin	0.99	–	1.78	0.69	0.96	1.11
Eggs	0.72	1.11	0.96	0.71	1.1	0.82
Grapes	0.8	0.25	0.88	0.27	–	2.5
Natural Honey	0.96	–	0.94	1.5	1.3	0.88
Chicken	1.15	–	–	1.04	1.11	1.1
Fresh cow milk	1.66	–	–	1.12	0.54	1.16
Nuts	1.07	–	–	1.57	1.08	0.76
dried onion	1.36	–	0.99	0.92	1.96	0.56
Potatoes	0.86	0.82	0.88	0.86	1.22	1.06
Tobacco	1.16	–	2.05	1.17	–	0.3
Tomatoes	0.94	–	1.01	0.89	–	1.42
Fresh vegetables	1.26	–	0.92	2.04	–	0.41
Watermelon	1.12	0.6	0.74	1.1	–	1.22
Wheat	0.9	1.78	0.63	0.56	0.43	0.48
Greasy wool	1.42	0.55	1.17	0.9	0.88	1.17

Source: Research findings

### Results of NEW RCA index for East Asia

Table 1 reports the results of NEW RCA index for East Asia. According to this table, compared to other this region's countries, Iran has relatively high advantage in eggplant with value of 4.94, greasy wool with 4.25, cucumber and gherkin with 3.05, fresh cow

milk with 2.84, peas with 3.98, nuts with 2.84, peaches and nectarines with 2.92 and watermelon with 3.57. In green peppers and spice, Iran has no advantage in East Asia. In other studied products this index is greater than one, while is lower than East Asian countries and therefore Iran does not have the ability of competition with these countries.

**Table 2: Results for estimating NEW RCA index for East Asia**

Products	Iran	Indonesia	India	Bhutan	Nepal	Pakistan	Bangladesh	Malaysia	Vietnam	China	Thailand	Sri Lanka	Japan	Philippine	South Korea
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Apple	1.7 5	-	3.3 1	2.2 7	1.3 9	3.1 4	-	-	-	3.7	-	-	2.4 6	-	1.8 3
Apricot	1.0 3	-	-	-	2.5 1	3.1 6	-	-	-	2.3 7	-	-	2.3 5	-	-
Types of Cabbage	1.9	1.8 3	1.6 4	2.1 8	-	-	3.2	2.5 4	1.0 4	2.6 6	2.2 2	2.4 9	2.6 5	1.9 6	4.8 5
Cauliflow er and broccoli	2.2 6	-	2.6 3	1.4	-	-	3.7 3	3.1 7	-	0.7 8	3.8 4	-	2.7 9	2.1 1	1.9 1
Cherries	2.0 1	-	3.5 1	-	-	-	-	-	-	2.7 6	-	-	2.4 6	-	-
Peas	3.9 8	-	2.6 9	-	2.3 3	-	2.2 1	-	-	3.2 3	-	-	-	-	-
Green Pepper	6.6 6	0.0 5	-	0.0 4	0.1 8	-	0.0 4	0.0 7	-	0.0 6	0.0 9	0.0 4	0.0 5	0.0 4	2.6
Cucumber and Gherkin	3.0 5	1.8 9	-	-	-	-	2.8 2	2.6 2	-	1.1	2.4 7	2.9 5	2.6 7	3.3 4	2.3
Eggplant	4.9 4	2.1 1	-	1.9 1	-	-	-	2.4 6	-	2.9 4	2.2 5	2.5 9	2.2 6	2.3	3.6
Eggs	2.6 4	-	-	2.9 3	3.2 3	-	1.0 9	2.6 1	1.1 7	2.4 9	2.8 9	2.6 1	2.4	2.7	2.6 6
Garlic	3.2	3.2 6	-	1.6 4	2.0 2	1.1 3	3.1 9	-	-	2.2 4	2.5 2	-	2.5 7	2.3 9	2.6 9
Grapes	2.4 1	-	2.2	-	-	3.3 4	-	-	-	1.2 5	3.0 4	-	2.2 7	2.4 2	2.3 9
Natural Honey	1.9 1	-	-	-	2.6 9	-	-	-	1.2 6	1.4 8	2.1 8	-	2.9 9	-	2.5 5
Lemon and tart lemon	1.4 8	-	1.8 9	6.3 3	1.3 7	3.1 8	2.8 3	2.1 4	-	2.6 4	2.9 2	2.0 5	-	2.4 9	-
Chicken	2.6 3	2.2 1	-	2.6 7	2.4 4	1.3 4	2.1 1	2.6 6	0.8 8	5.1 6	2.6 7	3.9 9	2.0 1	2.6 7	2.0 9
Melons	1.9 2	-	-	-	-	1.6 2	-	1.8 2	-	-	-	-	1.9 7	2.2 6	3.9 9
Fresh cow milk	2.8 4	2.4 6	-	2.7 8	2.6 4	-	2.1 5	-	-	5.0 4	2.4 1	2.8 4	2.0 5	2.1 3	1.4 2
Nuts	2.8 4	-	-	-	-	-	-	-	-	3.3	2.2 1	-	-	3.5 4	1.4 8
dried onion	2.4 1	2.3 3	0.8 6	1.5 8	2.0 5	2.1 5	3.4 1	-	-	2.6 7	5.8 1	1.5 9	2.4 2	1.7 5	2.9 3
Orange	2.5 1	2.9	1.8	3.2 7	2.6 7	3	-	2.7 2	1.1 7	2.8 9	1.8 5	3.1 6	2.5 2	2.9 8	-
Peaches and Nectarine s	2.9 2	-	-	1.7 5	-	3.3 1	-	-	-	2.2 1	-	-	2.3 6	-	1.8 4



Plums and Green Tomatoes	1.9	-	-	2.8	1.8	2.6	-	-	-	4.1	-	-	2.0	-	1.6
Potatoes	1.8	2.4	1.9	1.9	2.1	3.2	3.2	-	0.9	1.4	2.9	3.1	1.8	2.2	4.2
Spice	0.7	-	4.4	4.0	-	-	-	-	-	3.6	-	2.6	-	-	-
Tangerine	2.9	-	-	-	-	-	-	2.3	-	1.5	1.6	-	1.4	4.3	3.1
Tea	1.3	1.7	1.9	-	1.3	-	-	-	7.1	0.8	0.8	1.1	1.4	-	1.1
Tobacco	2.1	3.6	2.6	2.9	2.5	-	2.4	3.2	1.7	2.5	1.2	2.4	2.2	2.6	2.2
Tomatoes	2.3	2.0	1.7	2.1	2.1	-	2.8	3.0	-	4.0	2.5	3.3	2.3	3.0	2.1
Fresh vegetables	2.3	-	-	1.7	2.5	-	-	-	-	3.2	2.7	2.9	2.8	2.5	1.8
Walnut	3.9	-	4.6	5.0	2.7	1.5	-	-	-	0.9	-	-	-	-	1.4
Watermelon	3.5	3.7	-	-	-	-	-	1.8	1.0	0.7	2.5	-	2.4	2.7	3.1
Wheat	2.6	-	2.0	1.5	2.2	1.5	1.9	-	-	2.0	1.8	-	5.5	-	1.8
Greasy wool	4.2	-	-	2.7	2.5	-	-	-	-	2.7	-	-	-	-	-

Source: Research findings

### Results of NEW RCA index for West Asia and region's countries

In table 3 the results for West Asian and neighboring countries have been reported. The results indicate that Iran has an index higher than one and hence has advantage in cherries, peas and green pepper, cucumber and gherkin, eggplant, eggs, garlic, chicken, cow fresh milk, dry onions, oranges, peaches and nectarines, Tangerine, tea, walnuts, wheat, and greasy wool. Also, greasy wool with 1.72, peaches and nectarines with 1.33, cow fresh milk with

1.33, eggplant with 2.05 and wheat with 1.41 have highest index among region's countries and have higher advantage than other products in terms of export situation. In other products the status is as follows: Azerbaijan in almonds and Nuts, Syria in coriander and fennel, grapes and spice, Cyprus in apple, Lebanon in apricots, cauliflower and broccoli, natural honey, plum and green tomatoes, melons, tomatoes and cabbage varieties, Yemen in dates and fresh vegetables, Turkey in lemon and tart lemon, Armenia in tobacco, and Georgia in watermelon have advantages.

**Table 3: Results for estimating NEW RCA index for West Asia and region's countries**

Products	Iran	Armenia	Azerbaijan	Jordan	Lebanon	Georgia	Turkey	Syria	Russia	Yemen	Cyprus
Almond	0.95	–	1.77	0.82	0.43	0.84	0.78	1.04	–	–	1.38
Coriander and fennel	0.42	–	–	–	0.93	0.72	1.17	1.45	1.27	–	–
Apple	0.78	0.65	1.69	0.69	1.01	0.8	0.98	1.03	1.02	1.08	1.63
Apricot	0.56	0.68	0.59	1.06	2.003	0.68	1.21	0.92	1.12	0.91	0.9
Types of Cabbage	0.93	0.82	1.06	1.08	1.5	0.73	0.76	1.09	0.9	0.69	1.15
Cauliflower and broccoli	0.9	0.72	–	1.12	1.42	–	0.82	1.01	0.88	–	0.83
Cherries	1.05	0.83	0.77	0.62	1.02	1.6	0.99	0.94	1.12	–	0.48
Peas	1.49	–	–	2.4	0.56	–	0.83	0.5	1	0.84	0.98
Green Pepper	1.13	–	–	1.46	0.94	–	0.89	1.06	–	0.77	0.95
Cucumber and Gherkin	1.05	0.71	1.21	1.08	0.99	1.22	0.87	1.02	0.96	0.13	0.98
Dates	0.67	–	–	1.23	–	–	1.18	1.04	–	1.47	–
Eggplant	2.05	–	0.33	1.009	1.44	–	0.98	0.97	–	0.6	1.07
Eggs	1.01	0.85	0.86	1.002	0.59	0.77	1.71	1.04	1.25	1.15	0.89
Garlic	1.62	0.75	1.32	0.56	0.66	–	2.07	0.55	1.17	0.98	1.06
Grapes	0.95	0.97	0.89	0.58	1.03	0.92	1.29	1.41	1.22	1.12	0.61
Natural Honey	0.7	0.99	0.64	1.12	1.32	0.7	0.96	1.1	1.04	0.99	1.07
Lemon and tart lemon	0.54	–	0.69	0.93	1.06	–	1.86	1.18	–	1.07	0.93
Chicken	1.03	0.7	1.3	1.02	0.81	0.98	–	1.1	1.4	0.96	0.85
Melons	0.84	–	1.18	0.88	1.94	–	–	1.13	–	0.78	0.63
Fresh cow milk	1.33	0.7	1.08	1.03	1.1	0.87	–	1.02	0.94	1.03	0.99
Nuts	0.96	–	1.99	–	0.69	0.95	0.9	1.17	0.98	–	–
dried onion	1.09	0.65	1.23	1.19	0.65	0.98	0.86	1.08	1.36	1.26	0.93
Orange	1.01	–	0.57	1.1	1.34	0.78	0.95	1.14	–	1.04	1.03
Peaches and Nectarines	1.33	0.73	0.81	1.09	1.41	1.15	0.99	1.003	1.008	0.65	0.67
Plums and Green Tomatoes	0.78	0.63	0.55	1.05	1.59	0.76	0.78	0.79	0.92	–	1.44
Potatoes	0.85	0.57	1.14	0.8	1.07	0.91	0.95	1.11	1.05	1.66	1.06

Spice	0.33	_	1.07	_	1.05	0.82	1.22	1.45	_	_	_
Tangerine	1.38	_	1.47	0.79	0.77	_	1.14	1.03	_	0.67	1.36
Tea	1.24	_	0.79	_	_	1.27	0.94	_	1.1	_	_
Tobacco	0.41	3.6	0.97	0.45	0.42	0.76	0.48	0.48	0.45	1.1	0.51
Tomatoes	0.98	0.99	0.46	1.09	1.32	0.85	1.03	1.11	1.19	0.72	0.87
Fresh vegetables	0.89	0.43	0.55	0.95	0.71	0.97	0.93	1.05	1.01	1.87	1.59
Walnut	1.24	_	0.87	_	0.54	1.3	0.78	_	0.88	_	1.21
Watermelon	0.94	0.48	1.19	1.006	1.08	2.21	0.79	1.03	0.69	0.6	0.45
Wheat	1.41	0.73	1.05	1.03	0.75	0.91	0.96	0.99	1.12	1.12	1.1
Greasy wool	1.72	0.47	0.94	1.02	0.62	0.85	1.34	0.92	0.89	0.85	1.54

Source: Research findings

### Conclusion and discussion

In this study, we used from the new index of comparative advantage to investigate the status of Iran's trade in Asia. The results of NEW RCA for middle Asia indicate that compared to other countries, Iran have had highest value of index in chicken with 1.15, cow fresh milk with 1.66, and greasy wool with 1.42. In other words, in production of these three products, Iran has had highest advantage and productivity than middle Asian countries. The results of NEW RCA index for East Asia indicate that compared to other this region's countries, Iran has relatively high advantage in eggplant with value of 4.94, greasy wool with 4.25, cucumber and gherkin with 3.05, fresh cow milk with 2.84, peas with 3.98, nuts with 2.84, peaches and nectarines with 2.92 and watermelon with 3.57. Also results for neighboring and West Asian countries indicate that Iran have highest index among region's countries and in terms of export situation in greasy wool with 1.72, peaches and nectarines with 1.33, cow fresh milk with 1.33, eggplant with 2.05 and wheat with 1.41.

Following the results obtained from analysis of the new index of comparative advantage the applicable recommendations are offered: The cow fresh milk has a high value of index indicating that one can provide the requirements for exporting this product to

Asian countries by making suitable infrastructure and develop a suitable production and export plan. Another products is chicken in which, Iran has a high advantage among middle Asian countries. A proper planning in production and trade may open the way of entry to middle Asian export markets in the future. Also, nuts is among processed products which has a high advantage in East Asia. The previous studies indicate that South East Asian countries like Japan and Korea are suitable markets for Iranian dried fruits and nuts. It is recommended that organization of industry, mine and trade along with other organizations such as organization for standardization monitor this issue so that in addition to the price, the quality of this product be maintained in a satisfactory manner to can export it to East Asian countries. Other products which have advantage may be placed in Iran's export plan by business and long-term planning.

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