DETERMINATION OF THE SEAFOOD EXPORT COMPETITIVENESS: THE COMPARATIVE ANALYSIS OF TOP TEN COUNTRIES HAVING LION SHARE FROM SEAFOOD EXPORT

Kazim Saricoban[1], Elif Kaya[2]

[1]Kilis 7 Aralik University. Department of Foreign Trade, Kilis, Turkey. kazimsaricoban@hotmail.com
[2]Kilis 7 Aralik University. Department of Economics, Kilis, Turkey. elifk.7@hotmail.com

ABSTRACT

Purpose- The main aim of this paper is to examine the countries' sectoral competitiveness on seafood export. By this study, it is tried to find out whether the countries having great share of seafood export also have got competitiveness in export or not.
Methodology- Therefore, top ten countries that have the biggest share in the seafood export worldwide are chosen and the Standard International Trade Classification (SITC) Revision 3 product groups are used to analyse by Revealed Comparative Advantage (RCA) method.
Findings- The findings of the analysis have surprisingly showed that Vietnam, Denmark and Chile which have lower-shares of global seafood export also have specialization and comparative advantage on seafood export while the USA with higher-share has competitiveness disadvantage with no specialization.
Conclusion- The countries with high-export numbers have not as competitive as it was expected in the seafood trade.

Keywords: Competitiveness, revealed comparative advantage (RCA), seafood, export-import ratio, the net export index
JEL Codes: F10, F14, F68

1. INTRODUCTION

With the globalisation of world economy, competitiveness has become a significant term. Economic might and comparative advantage of a country compare to other countries by macroeconomic indicators such as gross domestic products (GDP), GDP per capita and exports. As a result of this, micro dimensions have been ignored while comparing countries' economic performance. When we have a look at competitiveness in global level, however, it has been mostly worked by micro level that is based on indicators obtained from firms or industries than macro variables. Accordingly, if a country wants to be one of the leading countries in international export, that country should benefit from product-based and sector based comparative analysis and need to choose the right policy in right time. From their analysis of 27 countries, Sener and Saridogan (2011:825) find that countries "science-technology-innovation based economic policies and strategies have great superiority and sustainable competitive advantage in not only global competitiveness but also economic growth and development leading to wealth and welfare of the country." Thus, in this paper, top ten countries[1] with the biggest share in the world-seafood-export have been chosen to demonstrate their competitiveness for 20 years, from 1995 to 2014. In this context, "03- Fishes and Other Sea Products" classification including three digits (034, 035, 036, 037) is used in accordance

---

[1]Those countries' export data can be found in Appendix 1

with Standard International Trade Classification (SITC).[2] The data we used for the analyses are drawn from the United Nations Commodity Trade Statistics (UN COMTRADE Database). In the article, the following indicators are calculated by: (1) The export index of revealed comparative advantage (Balassa's RCA); (2) The Net Export Index (NX=NEI); (3) The Export-Import Ratio; (4) The index of trade openness index (ITO).

2. DATA AND METHODOLOGY

Among many other indexes that measure structural competitiveness between countries, Revealed Comparative Advantages (RCA) index, which is developed by Balassa in 1965, has been the most prominent one. Balassa's index tries to reveal whether a country has comparative advantage in certain goods or not. In this context, the index can be defined as to divide the exports of a good within the country's total exports to the same goods' share in the total exports of the world. In other words, it compares the country's domestic specialization in a specific good with the world's specialization (Beningo and Sloboda, 2006:6). For instance, in the famous book written by Michael Porter in 1990, The Competitive Advantage of Nations, he used the Balassa Index to find a country's powerful sector; exceeding 1 means strong in the sector and exceeding 2 is stronger (Hinloopen and Marrewijk, 2001:1).

The RCA index it is "compares the export share of a given sector in a country with the export share of that sector in the world market as follows":

$$RCA^{j}_{kt} = \frac{X^{j}_{kt} / X^{j}_{t}}{X^{w}_{kt} / X^{w}_{t}}$$

The numerator represents the percentage share of a given sector in national exports, where the exports of sector k from country j; are the total exports of country j at time t. The denominator represents the percentage share of a given sector in the total world exports where are the world exports of sector k, and are the total world exports at time t. Therefore, if the RCA index results equal to 1 for a certain sector in a given country, it means the sector's export share is alike with the world's average. To say the country has relative comparative advantage in the sector, RCA must be above 1 (1<RCA<∞); if RCA is below 1 (0<RCA<1), it means the country has a relative weakness in the sector (Mykhnenko, 2005:27).

Balassa's RCA index can be detailed in four classifications to illustrate how strong a country in terms of having comparative advantage in a sector as follows (Hinloopen and Marrewijk, 2001:13 - Erkan and Saricoban, 2014:121):

Classification 1 → 0 < RCA ≤ 1; There is no comparative advantage.

Classification 2→ 1 < RCA ≤ 2; There is a weak comparative advantage.

Classification 3→ 2 < RCA ≤ 4; There is moderate comparative advantage.

Classification 4→ 4 < RCA; There is a strong comparative advantage.

lnRCAjkt = ln

If logarithms are applied to the RCA index, there are two results come out; lnRCA > 0 means there is a comparative advantages and lnRCA < 0 means there is a comparative disadvantage (Faustino, 2008:7).

2.1. The Net Export Index (NX=NEI)

The Net Export Index, also named as Normalized Trade Balance (NTB), is used to demonstrate comparative advantage in production by given difference between exports and imports (Xinhua, 2008:35). The Net Export Index considers intra-industry trade and import. The index that is also known as an alternative Relative Comparative Advantage Index is only calculated in order to evaluate a country's own performance.

When net exports divided by the total amount of exports and imports of a certain industry, the result gives net export index (Balassa and Noland, 1989b:175).

$$NX^{j}_{kt} = \frac{X^{j}_{kt} - M^{j}_{kt}}{X^{j}_{kt} + M^{j}_{kt}}$$

---

[2] This classification of product groups can be found in the Appendix 2.

Where while the product export is showed by X and commodity imports is showed by M, subscript k represents industry at the time t and superscript j refers to country. Moreover, NX value is ranged from -1 to +1; when NTB equals to -1, the country has no competitiveness and solely imports the commodity and if NX is near +1, it means the country has high international competitiveness in the product (Xinhua, 2008: 35). To sum up, negative value of NTB means imports are more significant for the country while positive value of it demonstrate exports' importance.

2.2. The Export-Import Ratio

In some studies, it is criticized that the indexes which aimed to determine competitiveness is including only export data in their works. However, competitiveness is not only merely about countries' exports but also about their imports, thus, while someone measuring competitiveness of a country should use an approach which takes both export and import into account (Bowen, 1983: 464-472). The export-import ratio can be calculated by dividing a country's export-import ration of a certain sector to/by the world's. The export-import ratio which is also experimented with a simple by Balassa in 1965 can be calculated as follows:

$$RCA^j_k = \frac{X^j_{kt} / X^j_t}{M^j_{kt} / M^j_t}$$

"Where and refer respectively to exports and imports of industry k and country j; and refer respectively to world exports and world imports of industry j." The index developed by Balassa (1977) explains a country's economic performance on a given good (sector) and its competitiveness. When RCAjkt < 1, it means the country has comparative disadvantage of the good "k"; if RCAjkt > 1, the country has comparative advantage of it (Balassa, 1977: 327-344).

The same index can be explained with logarithm as follows:

$$\ln RCA^j_{kt} = \ln \frac{X^j_{kt} / X^j_t}{M^j_{kt} / M^j_t}$$

In this case, positive index gives comparative advantage while negative refers to comparative disadvantage. To sum up with a chart:

$\ln RCA^j_{kt} > 0,50$	→	Competitiveness is strong.
$\ln RCA^j_{kt} < -0,50$	→	Competitiveness is weak.
$0.50 > \ln RCA^j_{kt} > -0,50$	→	Competitiveness is marginal.

2.3. The Index of Trade Openness (ITO)

The trade openness index, which can be stated as the trade-to-GDP ratio, is generally compared the significance of international transactions to domestic transactions. Therefore, the index is defined as the simple average of every country's total trade, i.e. the average mean of total amount of exports and imports of goods and services, relative to GDP. This indicator is also known as trade openness, even though "openness" may not be accurate term to use to name the situation since a country could have a low ratio, but it may be result of factors such as the economy size or geopolitical state of the country not arise from high barriers to foreign trade such as tariffs or non-tariffs (OECDiLibrary, 2015).

Moreover, the trade openness index is as important as indices of RCA since it is also demonstrated the competitiveness of countries, that can be formulated as follows:

ITO = (X + M / GDP) × 100   → Takes values between 0 and + ∞.

When the sum of exports and imports divided by GDP, the result gives the trade-to-GDP-ratio which shows the openness of a country and its level of integration into the global economy. Additionally, the index exposes the weight of total trade within the country's economy, the domestic productions share and its harmony in the foreign markets in terms of country's exports; and the level of dependence on the domestic demand on the supply of foreign goods and services for its imports. (Department for Business Innovation&Skills, 2013).

To see how integrated a country into the world economy; it is useful to look at the aggregate value of international trade of goods and services. Hence, it is usually seen that small countries are more integrated than big ones as their exports are generally being in a limited number of sectors so they need to import much more goods and services to meet domestic

_____

demand. However, size is not the only criteria to decide how integrated a country is. There are more determinants such as "geography, history, culture, trade policy, structure of the economy (in particular the weight of non-tradable services) and integration in global production chains, where measured trade may include a significant proportion of re-exports and intra-firm trade linked to the presence of multinational firms" (OECDiLibrary, 2015).

3. EMPIRICAL ANALYSIS

3.1. The Index of Trade Openness (ITO)

The Index of Trade Openness illustrates the ratio of the sum of exports and imports of a country's GDP. While bigger ratio means the country is becoming more open to the external world and becomes more dependent to foreign trade, the smaller ratio shows country less open and it's not rely on foreign trade that much. In the table 1, the countries' trade openness index is shown. Once look at the table in detail, countries' ITO has been differed year by year. Having looked at the bigger picture, it can be realized that Netherlands, Thailand and Vietnam are outstanding among others in terms of dependency on foreign trade.

Table 1: The Index of Trade Openness

	1995	1998	2001	2004	2008	2011	2014
USA	18	18	18	19	24	24	23
China	38	32	38	59	56	49	42
Denmark	50	53	58	56	64	61	61
Netherlands	75	75	97	93	111	115	123
Spain	33	40	43	41	43	44	48
Canada	59	66	66	58	56	50	52
Norway	49	51	53	50	57	50	47
Chile	43	40	48	57	71	62	58
Thailand	75	84	105	110	122	123	113
Vietnam	-	77	89	118	145	150	160

Source: It is derived by using COMTRADE & IMF data.

3.2. The Export Index of Revealed Comparative Advantage (RCA, LNRCA)

Balassa's RCA, which is also named as the export index of revealed comparative advantage, is calculated for (selected) countries and four product groups that are classified in Standard International Trade Classification (SITC). Therefore, in the Table 2, it is shown that the RCA and lnRCA results from the calculation which is derived by trimmed mean[3] for the course of 20 years from 1994 to 2014.

Table 2: RCA (Balassa's) Values of Selected Countries

	USA		China		Denmark		Netherlands		Spain	
	1995-2014		1995-2014		1995-2014		1995-2014		1995-2014	
	RCA	lnRCA	RCA	lnRCA	RCA	lnRCA	RCA	lnRCA	RCA	lnRCA
034	0,76	-0,27	1,29	0,26	4,88	1,58	1,09	0,09	2,00	0,69
035	0,19	-1,65	0,80	-0,22	10,14	2,32	0,58	-0,54	1,16	0,15
036	0,46	-0,78	1,10	0,10	2,71	1,00	0,64	-0,45	1,70	0,53
037	0,27	-1,29	2,80	1,03	5,31	1,67	0,84	-0,17	1,92	0,65
	Canada		Norway		Chile		Thailand		Vietnam	
	1995-2014		1995-2014		1995-2014		1995-2014		1997-2014*	
	RCA	lnRCA	RCA	lnRCA	RCA	lnRCA	RCA	lnRCA	RCA	lnRCA
034	1,00	0,00	13,75	2,62	15,10	2,71	1,42	0,35	6,16	1,82

---

[3] Trimmed mean: It is obtained by taking out the smallest and the biggest RCAs from the twenty RCAs that is attained form 20 years' data and then the sum of rest -eighteen RCAs- divided by eighteen to get trimmed mean of RCA for the period of 1994-2013.

035	1,48	0,39	22,95	3,13	4,80	1,57	1,30	0,26	4,63	1,53
036	2,42	0,88	0,36	-1,02	1,89	0,64	7,86	2,06	23,15	3,14
037	0,79	-0,23	1,36	0,31	5,30	1,67	16,80	2,82	5,85	1,77

Source: It is derived by using COMTRADE & IMF data.

*1995-96 foreign trade data of Vietnam were not available.

Table 3: The Evaluation of RCA Values

	USA	China	Denmark	Netherlands	Spain
	1995-2014	1995-2014	1995-2014	1995-2014	1995-2014
	Advantage	Advantage	Advantage	Advantage	Advantage
034	no	weak	strong	weak	weak
035	no	no	strong	no	weak
036	no	weak	moderate	no	weak
037	no	moderate	strong	no	weak

	Canada	Norway	Chile	Thailand	Vietnam
	1995-2014	1995-2014	1995-2014	1995-2014	1997-2014
	Advantage	Advantage	Advantage	Advantage	Advantage
034	no	strong	strong	weak	strong
035	weak	strong	strong	weak	strong
036	moderate	no	weak	strong	strong
037	no	weak	strong	strong	strong

Source: It is derived by using data from Table 2.

We compose the table 3 to summarize the findings of table 2 and to follow the meaning of RCA values easily. In this context, we also can use the chart below to show what RCA values mean to us:

Classification 1 → 0 < RCA ≤ 1;   There is no comparative advantage. (NO)

Classification 2→ 1 < RCA ≤ 2;   There is a weak comparative advantage. (WEAK)

Classification 3→ 2 < RCA ≤ 4;   There is a moderate comparative advantage. (MODERATE)

Classification 4→ 4 < RCA;   There is a strong comparative advantage. (STRONG)

In addition, it can be stated that a positive lnRCA illustrates comparative advantages while a negative lnRCA reflects comparative disadvantages. As it is clearly seen from the table 3, the most striking result is the USA, which is the biggest 4th of the sea-food exporters list (APP 1), has no comparative advantages for any product class of four. Thus, the result shows that although the USA has a big share of the seafood export, it has no comparative advantages as well as specialisation on the production of these goods.

Second salient point is Vietnam's high RCA values. Especially in the group of 036, the country shows high specialisation as much as having comparative advantages. Furthermore, Vietnam has strong comparative advantages for all of four groups since it has bigger RCA than 4 for each good group. This result indicates something important; Vietnam is specialised in seafood exports. Another interesting outcome is while China is holding the biggest share of the seafood exports (shown in APP 1); it has no comparative advantages on these groups. As a matter of fact, it is quite intriguing to see there is a comparative disadvantage on the group of 035 and obviously there is no specialisation on the production of these goods as well. Besides that, there are weak comparative advantages on the groups of 034 and 036 whilst group of 037 has a moderate comparative advantage. For Chile, even though being the 9th on the list, it is seemed that the country has strong comparative advantages on three groups (034, 035, 037) and a weak comparative advantage on the last one (036). In general terms, Chile has comparative advantages and it is specialised on the seafood exports. Moving on to Norway gives us another interesting result. As it can be seen in the APP 1 Norway is the second largest economy exporting seafood internationally and expected to have strong comparative advantages and to specialise on the export of all groups. Norway,

however, has strong comparative advantages on only two, a weak comparative advantage on one of them and disadvantage on the last one, which are 034 and 035, 037 and 036 respectively. It means the country has comparative advantages on the groups of 034, 035 and 037 and specialise on them while it has no advantages on 036-good-group.

Denmark has strong comparative advantages for three groups (034, 035, and 037) and moderate on one (036). It shows Denmark has comparative advantage in general and specialises on the production of these goods. Spain has weak comparative advantages on all and Thailand has weak comparative advantages on 034 and 035 and strong on the other two. For Canada, it is seen that the country has weak comparative advantage on 035, moderate on 036 while has comparative disadvantages on 034 and 037.

The following graphs are composed by using lnRCA values from table 2 to compare countries' competitiveness.

**Graph 1: Comparing lnRCA values of group 034**
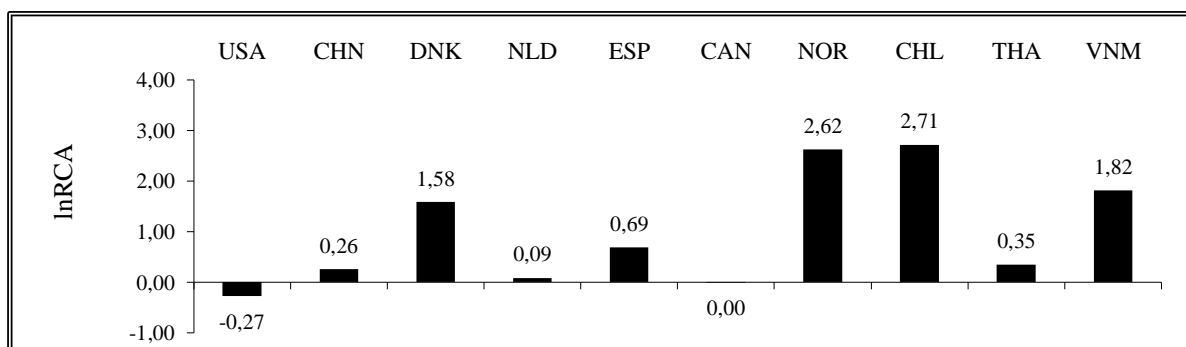
Once the graph 1 examined, it is seen that all countries have comparative advantages in the seafood exports but the USA and Canada. Chile, by 2,71 RCA value, is the most competitive country among chosen countries.

Graph 2: Comparing lnRCA values of group 035
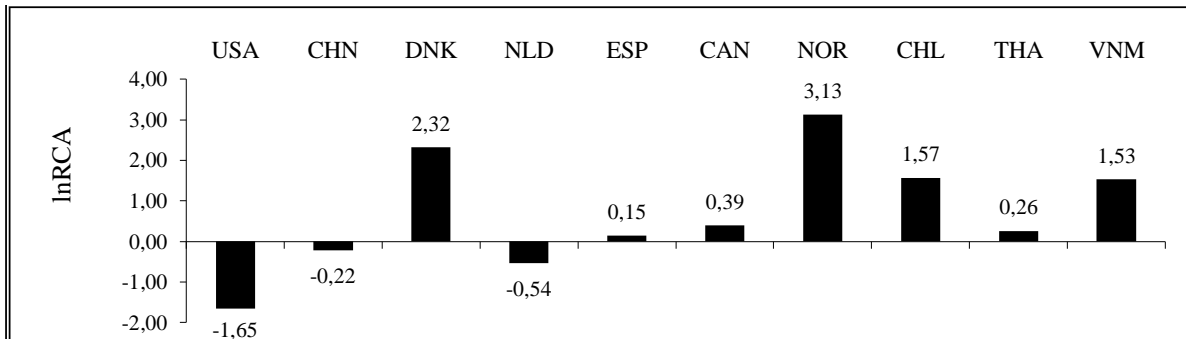
For graph 2, it can be seen that Norway with 3,13 RCA is the most competitive country among all countries shown for group 035 and it is followed by Denmark by 2,32 RCA and Chile by 1,57 RCA. Nonetheless, the USA, China and Netherland have comparative disadvantages.

Graph 3: Comparing lnRCA values of group 036
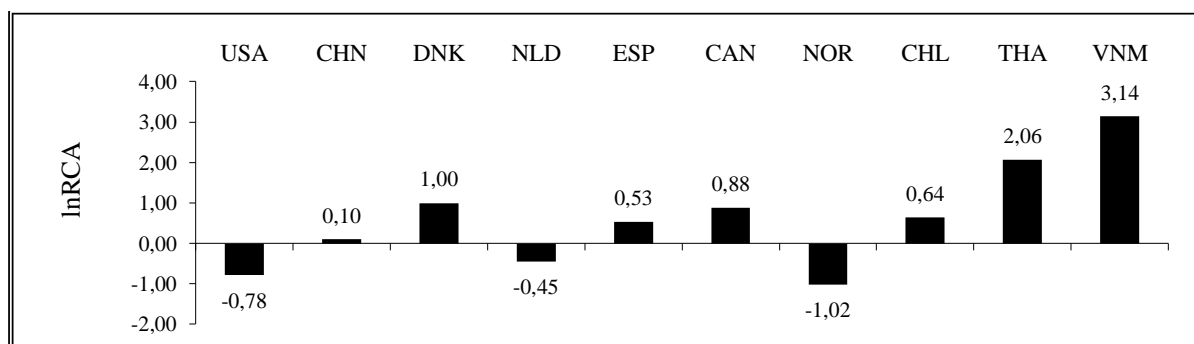
In the graph 3, Vietnam has been the most competitive, the second is Thailand and the third is Denmark by 3,14 RCA, 2,06 RCA and 1,00 RCA respectively. However, the USA, Norway and Netherland have comparative disadvantages.

Graph 4: Comparing lnRCA values of group 037
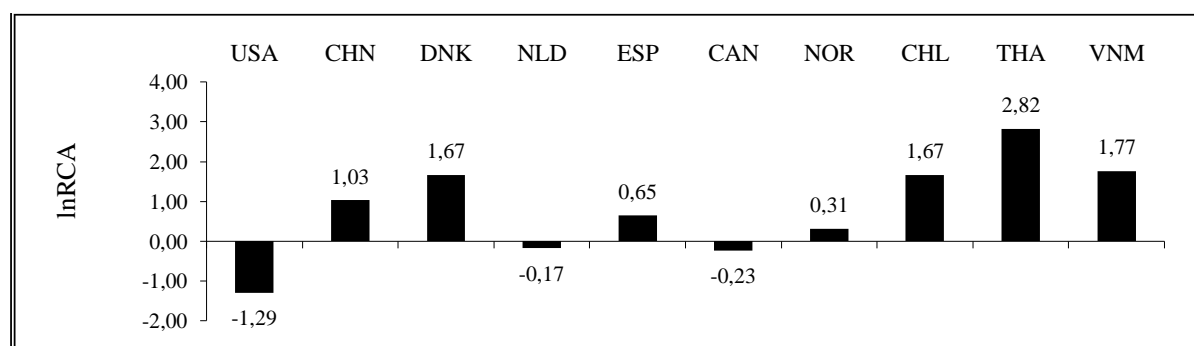
The last group 037 is demonstrated in the graph 4, which shows us the most competitive countries and countries with comparative disadvantages. For the former; not surprisingly Thailand (2,82 RCA) is the most competitive one while Vietnam (1,77) is the second and Chile (1,67) and Denmark (1,67) are the third. For the latter, the USA like in the other three groups has disadvantages, Canada and Netherland as well.

3.3. The Export-Import Ratio Index

Among others, it has also been argued that including imports as well as exports into the measurements would give better results to evaluate a country's competitiveness (Bowen, 1983:464-472). In this context, the export-import index which is developed by Balassa (1965) has been used with the purpose of detecting a country's specialisation on whether export or import.

Being specialised (or having comparative advantage) means revealed comparative advantage (RCA) is bigger than 1 (RCA>1) and lnRCA is positive. Otherwise, it refers that there is no specialisation (or having comparative disadvantages). In the light of export and import data of the countries, their values of specialisation and competitiveness is summarised in the table 4 and 5 below.

If RCA>1, there is specialisation (Advantage).

If RCA<1, there is no specialisation (Disadvantage).

If LnRCA > 0, there is specialisation.

If LnRCA <0, there is no specialisation.

Table 4: The Export-Import Ratio Index

	USA		China		Denmark		Netherlands		Spain	
	1995-2014		1995-2014		1995-2014		1995-2014		1995-2014	
	RCA	lnRCA	RCA	lnRCA	RCA	lnRCA	RCA	lnRCA	RCA	lnRCA
34	0,89	-0,12	1,55	0,44	1,24	0,22	1,30	0,27	0,74	-0,30
35	0,59	-0,52	7,57	2,02	3,93	1,37	0,85	-0,16	0,43	-0,85
36	0,28	-1,27	2,29	0,83	1,44	0,37	1,29	0,25	0,39	-0,94
37	0,26	-1,35	100,34	4,61	1,62	0,48	1,23	0,21	1,59	0,46
	Canada		Norway		Chile		Thailand		Vietnam	
	1995-2014		1995-2014		1995-2014		1995-2014		1997-2014*	
	RCA	lnRCA	RCA	lnRCA	RCA	lnRCA	RCA	lnRCA	RCA	lnRCA
34	1,65	0,50	9,08	2,21	304,56	5,72	0,48	-0,73	22,85	3,13
35	3,06	1,12	47,86	3,87	412,77	6,02	12,28	2,51	44,03	3,78
36	2,43	0,89	0,66	-0,42	14,80	2,69	7,90	2,07	38,43	3,65
37	1,01	0,01	1,44	0,36	6,88	1,93	100,73	4,61	127,64	4,85

Source: It is derived by using COMTRADE data.

*1995-96 foreign trade data of Vietnam is not available.

Table 5: The Export-Import Ratio Index' Interpretation

	USA	China	Denmark	Netherlands	Spain
	1995-2014	1995-2014	1995-2014	1995-2014	1995-2014
	Adv./Disadv.	Adv./Disadv.	Adv./Disadv.	Adv./Disadv.	Adv./Disadv.
34	Disadvantage	Advantage	Advantage	Advantage	Disadvantage
35	Disadvantage	Advantage	Advantage	Disadvantage	Disadvantage
36	Disadvantage	Advantage	Advantage	Advantage	Disadvantage
37	Disadvantage	Advantage	Advantage	Advantage	Advantage
	Canada	Norway	Chile	Thailand	Vietnam
	1995-2014	1995-2014	1995-2014	1995-2014	1997-2014
	Adv./Disadv.	Adv./Disadv.	Adv./Disadv.	Adv./Disadv.	Adv./Disadv.
34	Advantage	Advantage	Advantage	Disadvantage	Advantage
35	Advantage	Advantage	Advantage	Advantage	Advantage
36	Advantage	Disadvantage	Advantage	Advantage	Advantage
37	Advantage	Advantage	Advantage	Advantage	Advantage

In the table 5, it is seen that the results are very parallel to the outcomes of Balassa Index shown in table 3 and 4. For instance, the USA still has disadvantages in four product class according to this index too and there is no specialisation. For Vietnam, the result of this index is again backed up by Balassa index and has advantages and specialised in four product class. However, China seems specialised in all four unlike it is in Balassa Index' result. That means; China has been specialised by exporting more seafood than its imports. Similarly, Denmark, Chile, and Canada have specialised on four product class as well.

3.4. The Net Export Index (NEI)

The Net Export Index takes intra-industry trade and imports into account. Net Export Index, also known as an alternative revealed comparative advantage index, is used in order to calculate only the country's own performance. It can be noted that the value of NEI is between -1 and +1. Different values' meaning could be shown as follows;

If NEI is -1, it means the country only imports the commodity,

If NEI is near +1, it has high international competitiveness in the product,

If RCA>1 There is specialisation (Advantage).

If RCA<1 There is no specialisation (Disadvantage).

Table 6: The Net Export Index (NEI)

	USA	China	Denmark	Netherlands	Spain
	1995-2014	1995-2014	1995-2014	1995-2014	1995-2014
	RCA	RCA	RCA	RCA	RCA
34	-0,29	0,27	0,16	0,18	-0,28
35	-0,47	0,67	0,62	-0,07	-0,51
36	-0,70	0,42	0,23	0,17	-0,54
37	-0,72	0,98	0,28	0,14	0,08

	Canada	Norway	Chile	Thailand	Vietnam
	1995-2014	1995-2014	1995-2014	1995-2014	1997-2014*
	RCA	RCA	RCA	RCA	RCA
34	0,28	0,85	0,99	-0,36	0,84
35	0,52	0,97	0,99	0,84	0,93
36	0,44	0,02	0,87	0,76	0,90
37	0,04	0,25	0,72	0,97	0,98

Source: It is derived by using COMTRADE data.
*1995-96 foreign trade data of Vietnam were not available.

Table 7: The Net Export Index (NEI) Summarize

	USA	China	Denmark	Netherlands	Spain
	1995-2014	1995-2014	1995-2014	1995-2014	1995-2014
	Adv./Disadv.	Adv./Disadv.	Adv./Disadv.	Adv./Disadv.	Adv./Disadv.
34	Disadvantage	Advantage	Advantage	Advantage	Disadvantage
35	Disadvantage	Advantage	Advantage	Disadvantage	Disadvantage
36	Disadvantage	Advantage	Advantage	Advantage	Disadvantage
37	Disadvantage	Advantage	Advantage	Advantage	Advantage
	Canada	**Norway**	**Chile**	**Thailand**	**Vietnam**
	1995-2014	1995-2014	1995-2014	1995-2014	1997-2014
	Adv./Disadv.	Adv./Disadv.	Adv./Disadv.	Adv./Disadv.	Adv./Disadv.
34	Advantage	Advantage	Advantage	Disadvantage	Advantage
35	Advantage	Advantage	Advantage	Advantage	Advantage
36	Advantage	Advantage	Advantage	Advantage	Advantage
37	Advantage	Advantage	Advantage	Advantage	Advantage

According to table 7, in intra-industry trade, China, Denmark, Canada, Norway, Chile, and Vietnam have comparative advantages in all the four products class (034, 035, 036, and 037) and they are specialised in them, and Vietnam especially attracts attention with its high RCA values. Additionally, the table also shows that the Netherland's specialisation on three products class which are 034, 036, and 037 while Spain has no specialisation on any of the classes, namely 034, 035, and 036. Also, USA has disadvantages on all of four according to intra-industry index.

4. CONCLUSION

In this research, it is tried to put forward competitiveness of countries by sector-based. For this purpose, the first ten countries that have the biggest shares in the world export list of seafood export are chosen and collected their exports data for 20 years' course from 1995 to 2014 (APP 1). In this context, the seafood export competitiveness it is measured by using various RCA indexes, namely Balassa Index, Export-Import Ratio Index and Net Export Index.

According to Balassa Index results, the USA has comparative disadvantages in all product class and Netherland has comparative disadvantages in three products but 034. As it can be seen in APP 1, however, these two countries are in the top ten list of the seafood export. On the other hand, specifically Vietnam, Chile and Denmark are having the strong comparative advantages. These findings are quite important in terms of showing what sector should be chosen by a country to invest its resources.

In respect to Export-Import Index, it is detected that China, Denmark, Canada, Chile, and Vietnam have specialised on all the production classes and have comparative advantages. By contrast, the USA and Spain (except 037) have no specialisation as well as there are comparative disadvantages.

By the Net Export Index, which solely measures a country's own performance and determines the country's intra-industry situation, it can be argued from the results that China, Denmark, Canada, Norway, Chile and Vietnam have comparative advantage in all four groups. It means these countries have been specialised in intra-industry exports. Especially, Vietnam's high RCA values seem remarkable. From this point, it can be implied that Vietnam has a strong competitiveness in four product class worldwide and they should make their export and/or investment policies for seafood industry accordingly.

REFERENCES

Ariovich, G., (1979). "The Comparative Advantage of South Africa as Revealed by Export Shares", South African Journal of Economics, vol:47, issue:2, p:123-129, June 1979.

Balassa, Bela, (1965). "Trade Liberalisation and 'Revealed' Comparative Advantage", The Manchester School of Economic and Social Studies, Vol:33, issue:2.

Balassa, Bela, (1977). "Revealed Comparative Advantage Revisited: An Analysis of Relative Export Shares of The Industrial Countries (1953-1971)", The Manchester School of Economic and Social Studies, Vol:45, No:4, December 1977, pp:327-344

Balassa, Bela, (1979). "The Changing Pattern Of Comparative Advantage in Manufactured Goods", Review of Economics and Statics 61, p:259-266

Balassa, Bela & Noland, Marcus, (1989a), "'Revealed' Comparative Advantage in Japan and the United States", Journal of International Economic Integration 4(2), pp:822.

Balassa, Bela & Noland, Marcus, (1989b). "The Changing Comparative Advantage of Japan and the United States", Journal of The Japanese and International Economies 3, 174-188.

Banterle, Alessandro, (2005). "Competitiveness and Agri-Food Trade: An Empirical Analysis in the European Union", 11th Congress of the EAAE: The Future of Rural Europe in the Global Agri-Food System, Copenhagen-Danimark, August 24-27, 2005.

Bender, Siegfried & Li, Kui-Wai, (2002). "The Changing Trade And Revealed Comparative Advantages Of Asian And Latin American Manufacture Exports", Economic Growth Center – Yale University, Center Discussion Paper No:843.

Beningo, Steven & Sloboda, Brian, (2006). "Trade and Transportation between the United States and China and between the United States and India", Conference of the Society of Goverment Economists, Washington D.C., (27th October 2006).

Bowen, Harry P., (1983). "On the Theoretical Interpretation of Indices of Trade Intensity and Revealed Comparative Advantage", Weltwirtschaftliches Archiv 09/1983, 119(3), p:464-472.

Donges, Juergen B. & Riedel, James, (1977). "The Expansion of Manufactured Exports in Developing Countries: An Empirical Assessment of Supply And Demand Issues", Weltwirtschaftliches Archiv, Vol. 113, 1977, p:58-87.

Erkan, Birol & Sarıçoban, Kazım, (2014). "Comparative Analysis of the Competitiveness in the Export of Science-Based Goods Regarding Turkey and the EU+13 Countries", International Journal of Business and Social Science, Vol:5 No:8(1), July 2014

Faustino, Horácio, (2008). "Intra-Industry Trade and Revealed Comparative Advantage: An Inverted-U Relationship", School of Economics and Management, WP 03/2008/DE/SOCIUS

Hinloopen, Jeroen & Marrewijk, Charles van, (2001). "On the Empricial Distribution of the Balassa Index", Review of World Economics/Weltwirtschaftliches Archiv137:1-35.

Lim, Kang-Taeg, (1997). "Analysis of North Korea's Foreign Trade by Revealed Comparative Advantages", Journal of Economic Development, Vol:22, No:2, December 1997.

Ma, Ana Shohibul, (2013). "Revealed Comparative Advantage Measure: ASEAN-China Trade Flows", Journal of Economics and Sustainable Development, Vol:4, No:7.

Mykhnenko, Vlad, (2005). "What Type of Capitalism in Eastern Europe? Instituonal Structures, Revealed Comparative Advantage, and Performance of Poland and Ukraine", Centre for Public Policy for Regions, Discussion Paper No:6, September 2005.

OECDiLibrary (2015), Organisation for Economic Co-operation Development, http://www.oecd-ilibrary.org/sites/sti_scoreboard-2011-en/06/06/index.html?contentType=&itemId=%2 Fcontent%2Fchapter%2Fsti_scoreboard-2011-60-en&mimeType=text%2Fhtml&container ItemId=%2Fcontent%2Fserial%2F20725345&accessItemIds=%2Fcontent%2Fbook%2Fsti_scoreboard-2011-en, (E.T.: 18.03.2015)

Porter, Michael, (1990), "Competitive Advantage of Nations", New York: Free Press, c1990.

Prasad, Raymond N., (2004), "Fiji's Export Competitiveness: A Comparision with Selected Small Island Developing States", Economics Department Reserve Bank of Fiji, Suva, Fiji, 2004/06.

Sener, Sefer & Sarıdogan, Ercan, (2011). "The Effects Of Science-Technology-Innovation on Competitiveness and Economic Growth". The *7th International Strategic Management Conference*, Procedia Social and Behavioral Sciences, 24 (2011) 815–828

UN Comtrade Database, http://comtrade.un.org/, United Nations Statistics Division, http://unstats.un.org/unsd/cr/registry/regcs.asp?Cl= 14&Lg= 1&Co=03 (E.T.: 16.03.2015).

Vixathep, Souksavanh, (2011). "Trade Liberalization and Comparative Advantage Dynamics in Lao PDR", Lao Trade Research Digest, Vol:II, June 2011.

Vollrath, Thomas L., (1991). "A Theoretical Evaluation of Alternative Trade Intensity Measures of Revealed Comparative Advantage" *Weltwirtschaftliches Archiv* Bd. 127, H. 2 (1991), pp. 265-280.

Yeats, Alexander J., (1985). "On the Appropriate Interpretation of the Revealed Comparative Advantage Index: Implications of A Methodology Based On Industry Sector Analysis", Weltwirtschaftliches Archiv 121 (1), p:61-73.

Yeats, Alexander J., (1997). "Does Mercosur's Trade Performance Raise Concerns About the Effects of Regional Trade Arrangements?", The World Bank International Economics Department International Trade Division, Policy Research Working Paper 1729, February 1997.

Yue, Changjun & Hua, Ping, (2001). "Does Comparative Advantage Explain Export Patterns In China?", Centre D'etudes At De Recherches Sur Le Developpement International, CERDI, Etudes et Documents, Ec 2001.08, 32p.

Appendix 1: Top 10 Countries Who Have the Lion Share of Seafood Trade Worldwide (1995-2014)* (US Dollars)

	China	Norway	Thailand	USA	Canada	Vietnam	Spain	Denmark	Chile	Netherlands
1995	2.852.600.808	3.045.420.032	4.447.131.648	3.298.058.240	2.304.568.864	-	1.178.413.056	2.193.243.392	1.021.745.216	1.473.630.080
1996	2.855.305.322	3.321.606.912	4.114.883.977	3.058.563.073	2.284.246.337	-	1.430.057.344	2.122.920.192	1.042.893.440	1.395.760.256
1997	2.935.534.641	3.311.567.872	4.211.043.482	2.739.400.171	2.279.003.152	771.544.000	1.535.130.880	2.093.489.920	1.216.212.224	1.233.346.944
1998	2.651.557.426	3.511.527.424	4.023.908.087	2.271.994.730	2.253.835.333	788.275.968	1.527.018.112	2.103.076.864	1.244.682.112	1.221.620.480
1999	2.957.792.141	3.643.554.816	4.095.722.343	2.857.647.780	2.621.003.982	968.324.992	1.678.603.749	2.065.536.864	1.404.306.157	1.427.659.574
2000	3.651.901.077	3.434.568.448	4.325.671.806	2.955.875.775	2.804.762.391	1.475.163.000	1.640.209.284	1.870.904.566	1.546.246.893	1.343.211.619
2001	3.996.460.907	3.285.374.715	4.034.027.549	3.206.700.411	2.790.814.723	1.803.579.480	1.856.352.405	2.015.738.290	1.629.931.160	1.407.750.077
2002	4.480.132.667	3.441.134.139	3.644.227.770	3.134.511.107	3.073.395.349	2.030.531.437	1.936.173.066	2.066.622.772	1.542.966.665	1.448.854.375
2003	5.236.829.866	3.514.118.218	3.902.784.484	3.283.013.689	3.278.459.352	2.196.018.518	2.267.881.602	2.336.542.910	1.800.342.095	1.808.941.166
2004	6.631.302.206	4.033.383.209	4.017.447.512	3.724.256.487	3.466.139.137	2.400.342.689	2.569.471.491	2.461.355.607	2.158.617.905	2.077.148.291
2005	7.511.297.583	4.833.075.347	4.434.848.183	4.089.340.191	3.583.241.973	2.743.040.446	2.572.423.045	2.687.562.235	2.518.232.913	2.215.459.478
2006	8.949.361.320	5.375.758.143	5.176.244.756	4.267.624.039	3.626.512.707	3.350.422.002	2.812.355.203	2.888.075.688	3.032.361.104	2.370.244.177
2007	9.230.099.673	6.084.729.186	5.595.522.952	4.300.040.123	3.654.873.274	3.756.931.005	3.255.068.467	3.054.752.823	3.120.757.631	2.697.800.244
2008	10.088.078.714	6.717.130.439	6.464.377.730	4.285.949.475	3.669.986.857	4.500.892.974	3.462.115.443	3.224.381.181	3.379.632.634	2.847.162.803
2009	10.222.517.272	6.909.418.849	6.190.130.970	4.007.011.042	3.209.474.199	4.245.242.056	3.100.898.705	2.645.133.306	2.981.199.597	2.616.587.131
2010	13.198.079.977	8.665.804.814	6.981.034.526	4.467.746.594	3.802.904.002	5.015.346.739	3.236.610.836	2.703.718.813	2.820.639.104	2.731.676.438
2011	16.969.048.505	9.257.493.413	8.088.316.962	5.578.715.135	4.131.297.579	6.110.711.725	3.909.905.546	2.997.768.389	3.938.465.995	3.489.526.025
2012	18.122.340.989	8.732.316.208	8.046.017.614	5.507.793.935	4.176.541.244	6.087.840.568	3.766.820.872	2.872.557.642	3.798.006.811	3.370.645.947
2013	19.433.091.016	10.182.109.819	6.927.166.660	5.632.471.692	4.324.757.680	6.665.702.274	3.792.837.949	3.280.925.794	4.446.138.439	3.426.239.048
2014	20.867.103.371	10.603.378.692	6.418.786.837	5.780.256.305	4.478.007.776	6.418.786.837	3.892.922.712	3.366.376.287	5.294.841.092	3.795.058.496
Total	**172.840.435.481**	**111.903.470.695**	**105.139.295.848**	**78.446.969.994**	**65.813.825.911**	**61.328.696.710**	**51.421.269.767**	**51.050.683.535**	**49.938.219.187**	**44.398.322.649**

Source: It derived by using Comtrade data.
*SITC Rev 3, Product Groups in 03- (Fish, crustaceans, molluscs and aquatic invertebrates, and preparations thereof)

Appendix 2: According to SITC Rev: 3, Product Groups in 03- (Fish, crustaceans, molluscs and aquatic invertebrates, and preparations)

034	Fish, fresh (live or dead), chilled or frozen
035	Fish, dried, salted or in brine; smoked fish (whether or not cooked before or during the smoking process); (whether cooked or not before or during the smoking process); flours, meals and pellets of fish, fit for human consumption
036	Crustaceans, molluscs and aquatic invertebrates, whether in shell or not, fresh (live or dead), chilled, frozen, dried, salted or in brine; crustaceans, in shell, cooked by steaming or boiling in water, whether or not chilled, frozen, dried, salted or in brine; flours, meals and pellets of crustaceans or of aquatic invertebrates, fit for human consumption
037	Fish, crustaceans, molluscs and other aquatic invertebrates, prepared or preserved, n.e.s.

Source: United Nations Statistics Division