Opportunities and challenges for Vietnam's trade in CPTPP
Thi Anh Tuyet LE[1]

[1]First Author and Corresponding Author. Professor, International Economic Faculty, Banking University of Ho Chi Minh City, Vietnam [Postal Address: 56 Hoang Dieu 2 Street, Linh Chieu Ward, Thu Duc District, Ho Chi Minh City, 700000, Vietnam] Email: tuyetlta@buh.edu.vn

Abstract:

The study aims to generalize the current situation of trade and analyze Vietnam's imports and exports in the CPTPP by commodity category using the trade indicator method. Research data is conducted from 2001 to 2018 on the official website of UNComtrade. The article has proven that Vietnam will have to compete with Malaysia, Mexico, Chile, Peru, and Singapore, and have many opportunities to boost exports with Australia, Canada and Japan in the CPTPP. Regarding product groups, the CPTPP will be a great opportunity for Vietnam to boost exports of textile products, leather shoes and wooden products; but it will bring many challenges to the group of vegetables, fruits, seafood and electronics. Based on these findings, the article suggests a number of policies to promote trade between Vietnam and CPTPP countries in the future.

Keywords: *CPTPP, trade index, Vietnam, Comparative Advantage index (RCA), Export similarity index (ESI), Export specialization index (ES) and Trade Complementarity index (TC).*

1. **Introduction**

Trans-Pacific strategic Economic Partnership Agreement (TPP) is a free trade agreement negotiated from March 2010, consisting of 12 member countries. These are the United States, Canada, Mexico, Peru, Chile, New Zealand, Australia, Japan, Singapore, Brunei, Malaysia and Vietnam. The TPP was officially signed on February 4, 2016 and was expected to take effect from 2018. However, in January 2017, the United States announced its withdrawal from the TPP. That makes the TPP unable to meet the conditions of effect as originally expected. In November 2017, 11 TPP members issued a joint declaration to rename TPP into the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). The CPTPP was officially signed in March 2018 by the remaining 11 member states of TPP (excluding the United States). The CPTPP has been ratified by 7 member countries, including Australia, Canada, Japan, Mexico, Singapore, New Zealand, and Vietnam and officially came into force on December 30, 2018. The CPTPP takes effect in Vietnam from January 14, 2019. The CPTPP maintains almost all of the TPP commitments except (i) the US or US commitments; (ii) 22 points of suspension (with a detailed list) and (iii) some amendments in bilateral Letters among the Parties to the CPTPP.

CPTPP commits to completely eliminate from 97% to 100% of import tariff lines for goods originating from countries in the group, depending on commitments of each country. The reduction of import tax helps Vietnamese businesses have new opportunities to expand the supply of products to the markets of CPTPP member countries. Reducing import tax on products

exported to Vietnam will also help Vietnamese businesses have more input sources for production and business activities. Since then, Vietnamese businesses can participate more effectively in the global supply chain. Besides the advantages, the CPTPP also poses many challenges for Vietnam because many terms are more beneficial for industrialized countries than for developing countries like Vietnam.

In fact, both in Vietnam and in the world there are many studies on trade of a particular CPTPP member country. Typical examples include the studies of Lu (2018, January), Maliszewska, Olekseyuk & Osorio-Rodarte (2018), Cooper & Manyin (2013), Armstrong (2011), Trung (2017), Nguyen (2019), Nguyen (2015), Hoi (2015), Hoi (2014), Bui Thi Kim (2017), Le Hong Hiep (2015), Thinh (2019), Phuong (2016), Thuy (2015), Thu (2016), Ngan (2014), Dung (2016). However, these studies only focus on analyzing the opportunities and challenges of the CPTPP to the economies of member countries, or a specific industry in a certain country. But none of them could show out the trade trends and specify the advantageous and disadvantageous industries of Vietnam when implementing the CPTPP based on quantitative analysis. Therefore, the analysis of Vietnam's trade in the CPTPP to indicate trends of Vietnam's trade structure in the CPTPP is of great significance to Vietnam. This research paper contributes to clarify the general context of Vietnam's trade in the CPTPP, identifies Vietnam's advantageous and disadvantageous industries. On that basis, the article partly predicts the import-export trend of Vietnam with the CPTPP member countries.

2. Literature review and research methods

According to the studies of Kehoe and Kehoe (1994), Mikic (2005), Karingi et al (2005), Cassing et al (2010), Plummer et al (2010), Philip et al (2011), the following methods can be used to assess the potential impact of an FTA: (i) trade indicator; (ii) Partial equilibrium models (PE); (iii) General equilibrium model (CGE), (iv) econometric model through gravity model. Partial equilibrium analysis is a method of analyzing relationships within a subsystem of an economy, such as a particular market. The Partial equilibrium analysis is conducted on the basis of the assumption that events in the study module did not have a significant effect on other regions. Because the feedback effects from other industries are also negligible or non-existent. General equilibrium analysis is a method of analyzing the relationship between sectors of the economy. General equilibrium analysis is conducted on the assumption that events occurring in one industry can affect others and vice versa. Gravity model is an econometric model to explain the volume and direction of bilateral trade between countries.Each method can be used to evaluate the various specific impact aspects of an FTA and has its own advantages and disadvantages. In order to select the appropriate research method, it is necessary to base on the objectives and research questions as well as the existing data sources. With the aim of identifying industries with the potential to benefit and industries with the potential to be negatively affected, rather than quantifying the impact of the CPTPP on changes in trade flows in each industry, this study uses trade index methodology.

The advantage of the trade indicator method is that the detailed import-export data between the two parties by industry used to calculate trade indexes can be collected quite easily. At the same time, the statements about opportunities and challenges for bilateral trade based on these indicators are also quite accurate. The downside of this approach, however, is that it does not give exact figures on the impact of FTAs on trade and social welfare for member states. The

trade indices used in the article include: turnover, import-export ratio, trade structure, Revealed Comparative Advantage index (RCA), Export similarity index (ESI), Export specialization index (ES) and Trade Complementarity index (TC). These indicators are used not only to describe and compare but also to assess the current situation and trade trends between Vietnam and CPTPP countries.

According to Amjadi, Schuler, Kuwahara, & Quadros (2011), the trade indicators between Vietnam and the countries in the CPTPP will be calculated using the following formula:

Measures of revealed comparative advantage (RCA) have been used to help assess a country's export potential. The RCA indicates whether a country is in the process of extending the products in which it has a trade potential, as opposed to situations in which the number of products that can be competitively exported is static. It can also provide useful information about potential trade prospects with new partners. Countries with similar RCA profiles are unlikely to have high bilateral trade intensities unless intra-industry trade is involved. RCA measures, if estimated at high levels of product disaggregation, can focus attention on other nontraditional products that might be successfully exported. The RCA index of country i for product j is often measured by the product's share in the country's exports in relation to its share in world trade:

$$RCA_{ij} = (x_{ij}/X_{it}) / (x_{wj}/X_{wt})$$

Where x_{ij} and x_{wj} are the values of country i's exports of product j and world exports of product j and where X_{it} and X_{wt} refer to the country's total exports and world total exports. A value of less than unity implies that the country has a revealed comparative disadvantage in the product. Similarly, if the index exceeds unity, the country is said to have a revealed comparative advantage in the product.

Export similarity index (ESI), developed by Finger and Kreinin (1979), is intended to measure the similarity between exports of any two countries to a third market. The index is based on the share of each product in each country's total exports and is calculated as the sum of the minimum value for each product. Formally,

$$ESI(ab,c) = 100 \times \sum_k \min(X_k(ac), X_k(bc))$$

Where ESI(ab,c) refers the export similarity index of countries a and b in the common market (c), $X_k(ac)$ and $X_k(bc)$ are the share of product k in country a's exports and the share of product k in country b's exports to the market c. An index value very close to unity can be interpreted to suggest that the two countries in question (a and b) are perfect competitors in the common market (c). An index value very close to zero can be interpreted to suggest that there is no competition at all between the two countries. ESI is sensitive to the chosen level of data such that its value increases with the higher level of aggregation vice versa. By keeping this in mind in interpreting the results, we make our calculations at the disaggregated level in order to see the heterogeneities across/within industries. ESI is also not affected by the relative sizes of the exports. Finger and Kreinin (1979) stresses this issue in their original article that "Since the index is intended to compare only patterns of exports across product categories, it should not be influenced by the relative sizes or scales of total exports. To remove the scale effect, the exports of, say a must be rescaled so that they are equal in total to those of b."

The export specialization (ES) index is a slightly modified RCA index, in which the denominator is usually measured by specific markets or partners. It provides product information on revealed specialization in the export sector of a country and is calculated as the ratio of the share of a product in a country's total exports to the share of this product in imports to specific markets or partners rather than its share in world exports:

$$ES = (x_{ij}/X_{it}) / (m_{kj}/M_{kt})$$

Where xij and Xit are export values of country i in product j, respectively, and where mkj and Mkt are the import values of product j in market k and total imports in market k. The ES is similar to the RCA in that the value of the index less than unity indicates a comparative disadvantage and a value above unity represents specialization in this market.

The trade complementarity (TC) index can provide useful information on prospects for intraregional trade in that it shows how well the structures of a country's imports and exports match. It also has the attraction that its values for countries considering the formation of a regional trade agreement can be compared with others that have formed or tried to form similar arrangements. The TC between countries k and j is defined as:

TCij = 100(1 – sum(|mik – xij| / 2))

Where xij is the share of good i in global exports of country j and mik is the share of good i in all imports of country k. The index is zero when no goods are exported by one country or imported by the other and 100 when the export and import shares exactly match.

The trade complementarity index ranges from 0 to 100. When the trade complementarity index is zero, a country exports products that the partner country does not import. In other words, the trade structure between the two countries is not completely complementary. When this index is equal to 100, a country has the same export structure as the export structure of partner country. The higher the trade complementarity index, the greater the degree of compatibility between the trade structure of the exporting and importing countries, and thus the greater the prospect of expanding trade.

The article classify goods according to the Harmonized System (HS). The HS System is an international nomenclature for the classification of products. It allows participating countries to classify traded goods on a common basis for customs purposes. At the international level, the HS System for classifying goods is a six-digit code system.The HS comprises approximately 5,300 product descriptions that appear as headings and subheadings, arranged in 99 chapters, grouped in 21 sections. The six digits can be broken down into three parts. The first two digits (HS-2) identify the chapter the goods are classified in, e.g. 09 = Coffee, Tea, Maté and Spices. The next two digits (HS-4) identify groupings within that chapter, e.g. 09.02 = Tea, whether or not flavoured. The next two digits (HS-6) are even more specific, e.g. 09.02.10 Green tea (not fermented)... Up to the HS-6 digit level, all countries classify products in the same way (a few exceptions exist where some countries apply old versions of the HS). The article uses classification of goods according to the HS -2 of the HS system.

3. Overview of trade between Vietnam and CPTPP

Figure 1. Export turnover of Vietnam to CPTPP countries in the period 2001 - 2018
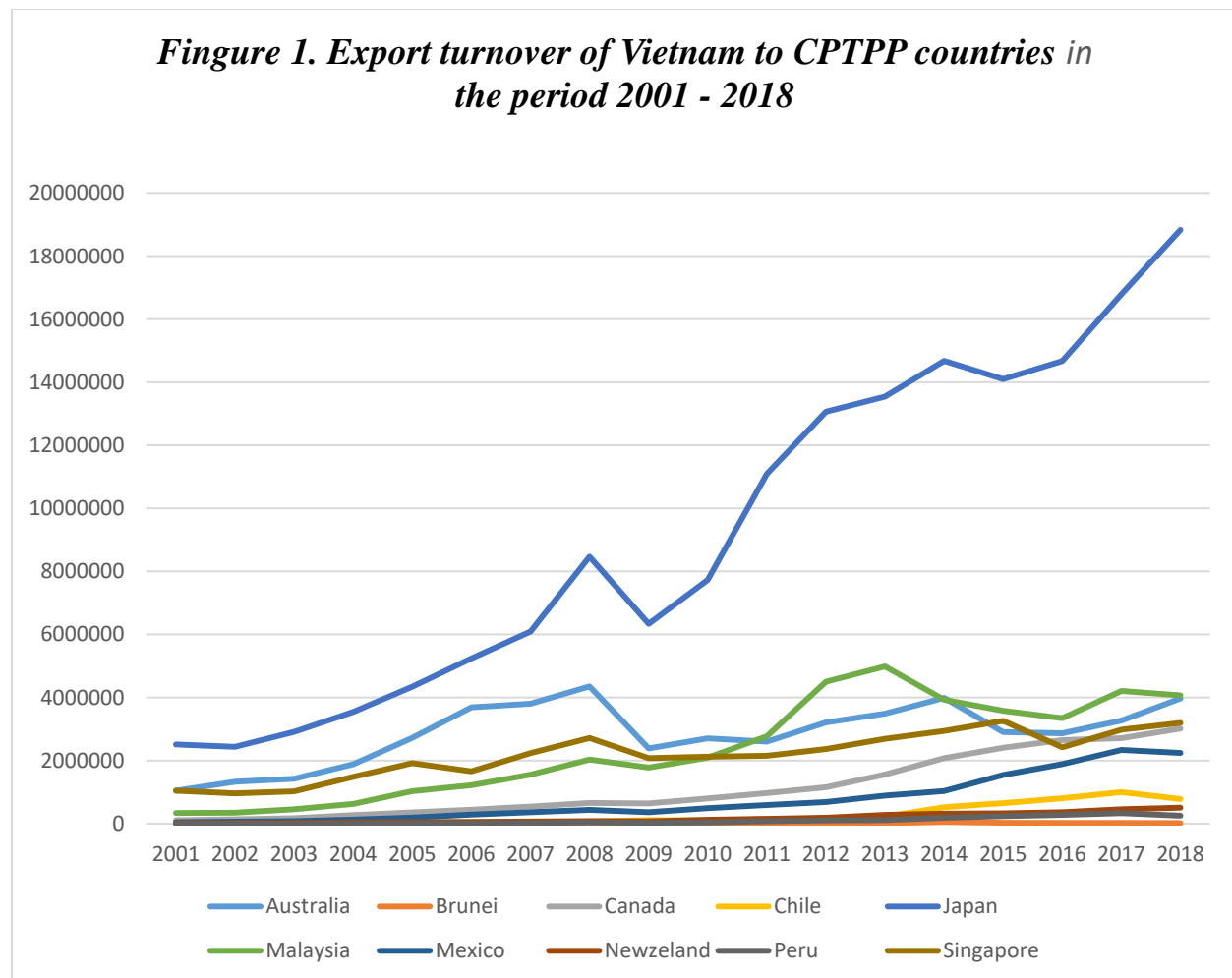
Source: Calculated by the author based on UNComtrade data

Vietnam's export turnover to the member countries of CPTPP tends to increase steadily in the period of 2001 - 2018. However, in the period 2008 - 2010 due to the impact of the economic crisis, Vietnam's export turnover to the member countries of the CPTPP decreased slightly. After that, from 2010, it quickly recovered and maintained the momentum until 2018. In particular, Vietnam's export turnover to Japan always leads, followed by Australia, Singapore, Malaysia, Canada and Mexico. In particular, Vietnam's export turnover to Japan is always leading, followed by Australia, Singapore, Malaysia, Canada and Mexico - countries with relatively developed economies in the group of CPTPP countries.

Fingure 2. Import turnover of Vietnam from CPTPP countries in the period 2001 - 2018
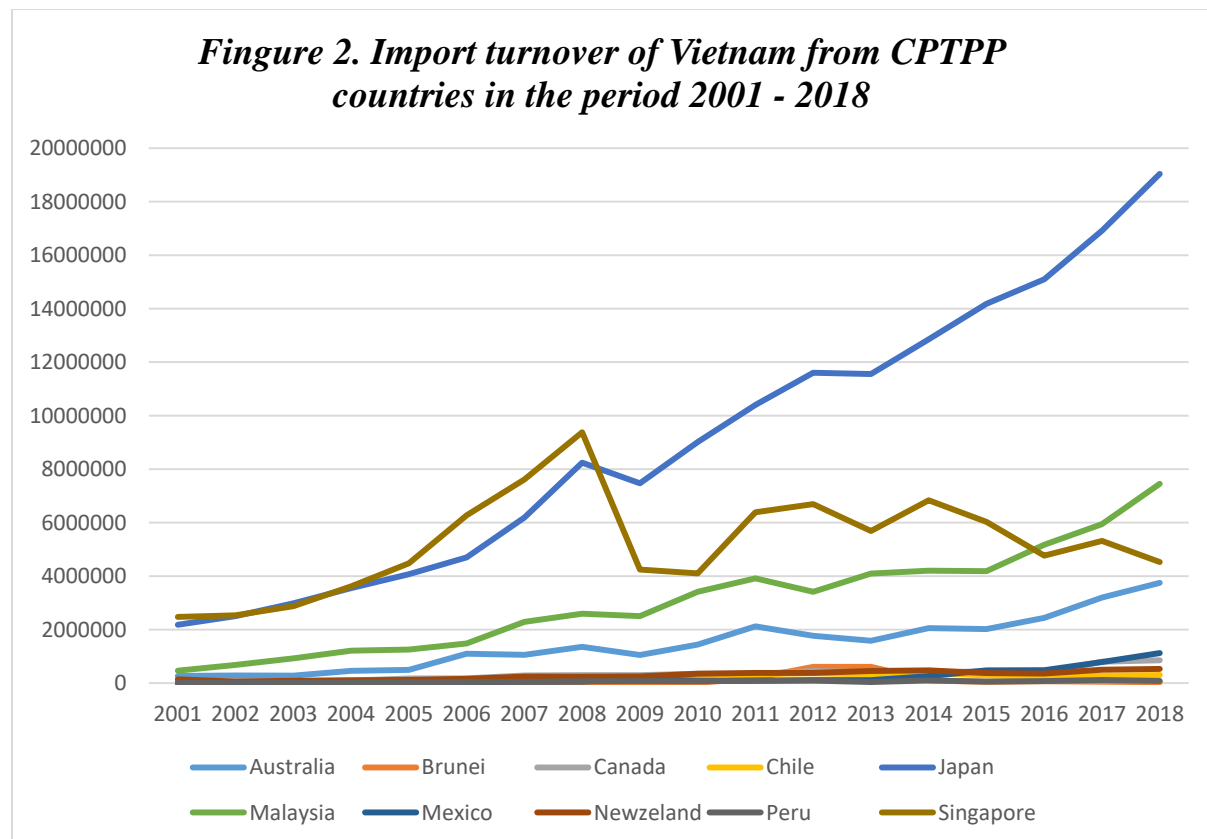
Source: Calculated by the author based on UNComtrade data

Like exports, Vietnam's imports from CPTPP member countries also tend to increase gradually in the period 2001 - 2018. In which, Vietnam also imports the most from Japan, followed by Singapore and Malaysia and Australia. However, Vietnam's import turnover from Singapore has tended to decrease from 2008 to present. This decline may be due to the structure of Vietnam's imports from Singapore quite similar to other countries in ASEAN. Meanwhile, the prices of exports from these countries such as Thailand, Indonesia and Malaysia are much lower than those of Singapore.

Fingure 3. Total import-export turnover between Vietnam and CPTPP in the period 2001 - 2018
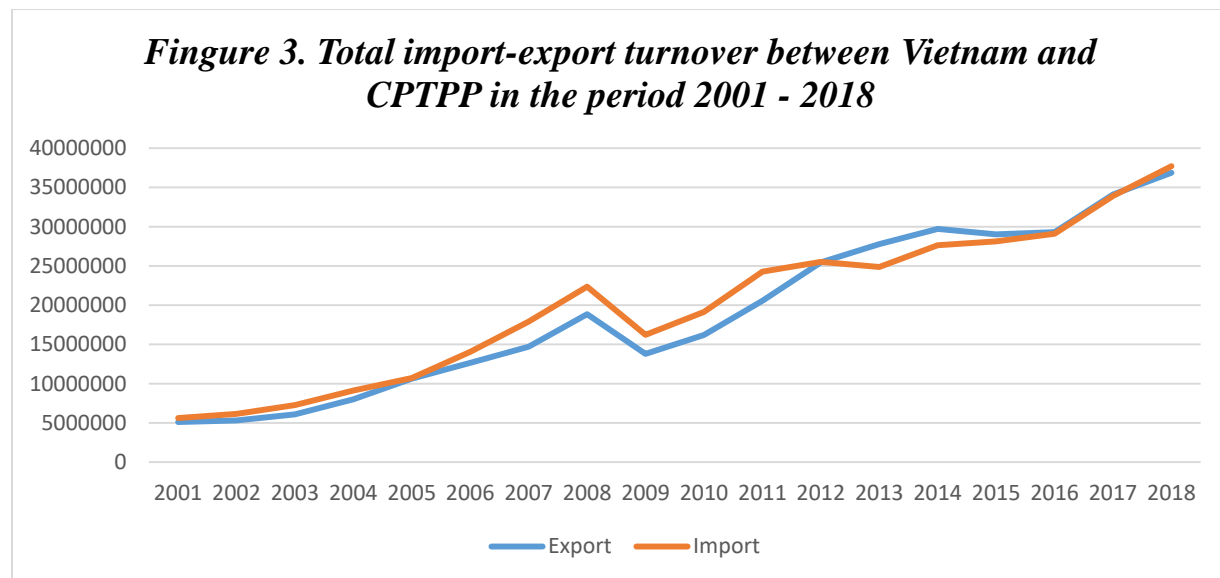
Source: Calculated by the author based on UNComtrade data

Thus, the total export turnover and import turnover of Vietnam with the CPTPP member countries also increased sharply in the period 2001 - 2018. In addition, Chart 3 shows that Vietnam always has a trade deficit in the CPTPP. . However, the level of this deficit is not significant and tends to get smaller, so it can be considered as the trade deficit within controllable limits.

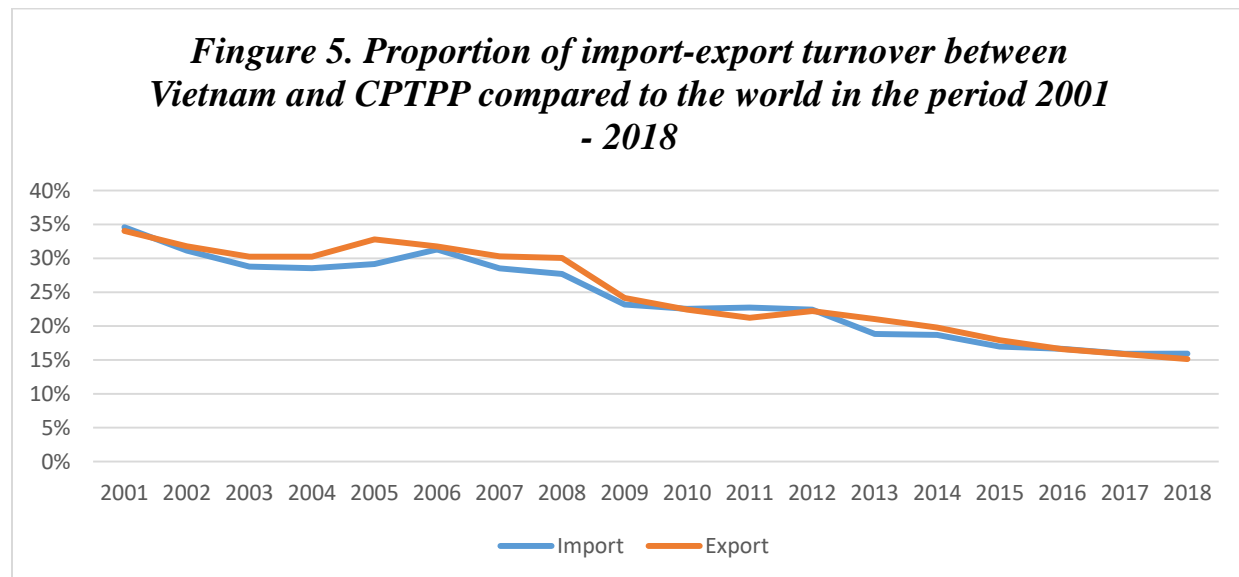*Fingure 4. Trade balance between Vietnam and CPTPP countries in the period 2001 - 2018*
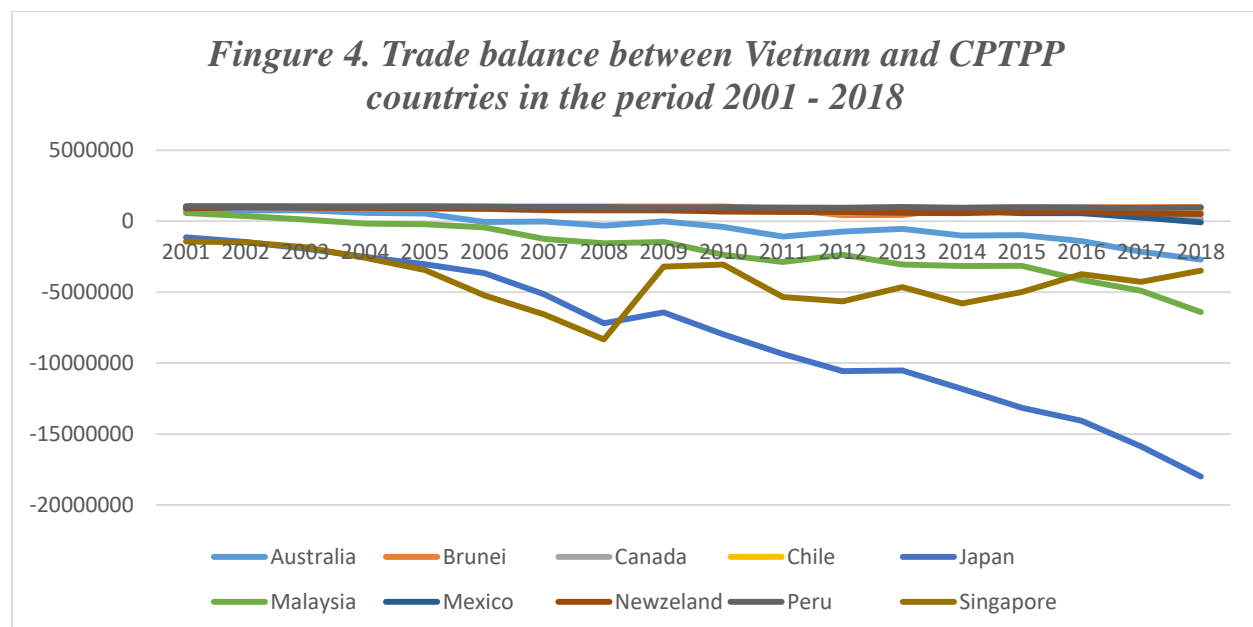
Source: Calculated by the author based on UNComtrade data

Vietnam's trade balance with each CPTPP member country is also largely deficient. In particular, Vietnam has a large trade deficit with Japan, Singapore, Malaysia and Australia, which are also countries with large trade volumes with Vietnam in the CPTPP. Vietnam's trade volume with the

rest of the countries including Mexico, Brunei, Chile, New Zealand and Peru is quite small, but always has a trade surplus during the period 2001-2018.

Fingure 5. Proportion of import-export turnover between Vietnam and CPTPP compared to the world in the period 2001 - 2018

Source: Calculated by the author based on UNComtrade data

However, the proportion of Vietnam's total import-export turnover in the CPTPP compared to the total import-export turnover of Vietnam to the world has tended to decrease sharply in the recent period from 2001 to 2018 from 35% to 15%. This data shows that Vietnam has not focused on trade promotion with CPTPP countries in recent years. Therefore, the effective CPTPP will be a great opportunity for Vietnam to strengthen more trade relations with developed countries such as Mexico, Japan, Singapore, New Zealand, and Canada and Australia.

4. Analysis by Vietnam's import-export commodity in the CPTPP: Approach by trade indicators

4.1. Commercial structure

Table 1 partly shows that Vietnam is a country with the advantage of abundant natural resources and human resources with low cost. The 10 main groups of export goods that account for 70% - 80% of the total export turnover of Vietnam to the CPTPP are all labor-intensive, agricultural, forestry and aquatic products. Specifically, electronic components and equipment (HS-2 code is 85) is the largest export commodity group and has a very fast growth rate in the CPTPP from 8% in 2001 to 26% in 2018. Followed by the textile and apparel industries (HS-2 code is 61, 62), mechanical equipment (HS-2 code is 84) and footwear (HS-2 code is 64) are all maintained at 6% - 7% of Vietnam's total export value to CPTPP countries during the period 2001 - 2018. Ranked third are seafood (HS-2 code is 03) and furniture (HS-2 code is 94) accounting for about 4% of the total export turnover of Vietnam to the CPTPP market. Finally, fuel products (HS-2 is 27), medical equipment (HS-2 code is 90) and plastic products (HS-2 is 39) have amount a market share of about 3% in the CPTPP market.

Table 1. Share of Vietnam's exports to CPTPP countries by product code in the HS-2 system for the period 2001 - 2018

No	HS-2 code	Description of goods	2001	2005	2010	2015	2016	2017	2018
1	'85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...	8%	9%	14%	23%	29%	29%	26%
2	'62	Articles of apparel and clothing accessories, not knitted or crocheted	11%	5%	5%	7%	7%	6%	7%
3	'61	Articles of apparel and clothing accessories, knitted or crocheted	2%	2%	3%	6%	6%	6%	6%
4	'84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	3%	3%	5%	6%	6%	6%	6%
5	'64	Footwear, gaiters and the like; parts of such articles	3%	3%	4%	5%	6%	6%	6%
6	'03	Fish and crustaceans, molluscs and other aquatic invertebrates	11%	9%	7%	4%	4%	4%	4%
7	'94	Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; ...	2%	2%	4%	3%	4%	3%	4%
8	'27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	43%	49%	24%	9%	3%	4%	3%
9	'90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical ...	1%	1%	2%	1%	2%	4%	3%
10	'39	Plastics and articles thereof	1%	2%	3%	2%	3%	2%	3%
		The rest of the products	17%	16%	30%	33%	31%	30%	32%

Source: Calculated by the author based on UNComtrade data

Table 2. Share of Vietnam's imports to CPTPP countries by product code in the HS-2 system for the period 2001 - 2018

No	HS-2 code	Description of goods	2001	2005	2010	2015	2016	2017	2018
1	'85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...	12%	12%	11%	22%	23%	22%	23%
2	'27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral	24%	23%	16%	11%	11%	12%	12%

		...							
3	'84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	13%	14%	14%	15%	13%	10%	10%
4	'72	Iron and steel	4%	7%	9%	6%	6%	6%	6%
5	'39	Plastics and articles thereof	4%	6%	7%	6%	6%	6%	6%
6	'04	Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere ...	2%	1%	1%	1%	2%	3%	3%
7	'90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical ...	2%	2%	2%	2%	2%	3%	3%
8	'76	Aluminum and articles thereof	1%	1%	1%	1%	1%	2%	3%
9	'87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	4%	3%	2%	4%	3%	2%	2%
10	'73	Articles of iron or steel	2%	2%	3%	2%	2%	2%	2%
		The rest of the products	31%	30%	33%	30%	31%	32%	31%

Source: Calculated by the author based on UNComtrade data

Table 2 on the import structure shows that the largest importer group is electronics (HS-2 code is 85) with the proportion in CPTPP increasing from 12% in 2001 to 23% in 2018. Next is the group of fuel products (HS-2 code is 27) and mechanical equipment (HS-2 code is 84). This group maintains about 10% of Vietnam's total imports from CPTPP countries in the period from 2001 to 2018. Next is the group of iron and steel products (HS-2 code is 72) and plastic products. (HS-2 code is 39). This group has an import turnover that maintains about 6% of the total import turnover of Vietnam from CPTPP countries in the time 18 years from 2001 to 2018. Dairy produce product groups (HS-2 code is 04), Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical ... (HS-2 code is 90), Aluminum and articles thereof (HS-2 code is 76), Vehicles other than railway or tramway rolling stock, and parts and accessories thereof (HS-2 code is 87) and Articles of iron or steel (HS-2 code is 73) accounts for about 2% -3% of Vietnam's total imports from CPTPP countries in the period from 2001 to 2018. Total turnover import turnover of these 10 commodity groups also maintained at 70% in the whole period of 2001 - 2018.

Comparing import-export structure between Vietnam and CPTPP shows that Vietnam's competitiveness within the CPTPP is quite high. Because of the considerable overlap in Vietnam's import and export structure with the CPTPP. Groups of goods such as electronics (HS-2 code is 85), fuel (HS-2 code is 27), mechanical equipment (HS-2 code is 84), plastic products (HS-2 code is 39) and medical devices (HS-2 code is 90) are both major export commodity groups and also the main import commodity groups of Vietnam in trade relations with CPTPP countries. In these duplicated sectors, Vietnam only has a trade surplus in relation to CPTPP in electronics (HS-2 code 85), the rest of Vietnam has a trade deficit. This shows the high level of competition of Vietnam with CPTPP countries in these industries. However, the export structure partly shows Vietnam's opportunities in the CPTPP. Vietnam has a trade surplus with CPTPP in textile, footwear, seafood and furniture. These are items that Vietnam is strong on due to the advantage of cheap labor, favorable natural conditions. However, the export structure partly shows Vietnam's opportunities in the CPTPP. Vietnam exports surplus to the CPTPP market in textile, garment, footwear, seafood and furniture industries. These are the items that Vietnam has strengths due to the advantages of cheap labor, favorable natural conditions and no overlap in the import structure.

4.2. Revealed Comparative Advantage index (RCA)

Table 3. RCA and the RCA similarity between Vietnam and the CPTPP member countries

No	HS-2 code	Australia	Brunei Darussalam	Canada	Chile	Japan	Malaysia	Mexico	New Zealand	Peru	Singapore	Viet Nam
1	3	0,5834	0,0783	1,7577	12,6774	0,3301	0,4133	0,3504	4,8157	4,0177	0,0917	2,7950
2	8	1,0398	0,0086	0,2313	12,5439	0,0486	0,1372	2,3648	8,8318	11,0199	0,0413	1,9217
3	9	0,0737	0,0086	0,5655	0,0419	0,0982	0,2070	0,3631	0,0465	6,6870	0,1477	4,2576
4	11	2,6474	0,0000	2,0299	1,7265	0,1189	0,4155	0,4842	0,5559	0,6290	0,1636	1,4088
5	14	0,0273	0,0000	0,1072	8,2461	0,0488	6,0666	2,0608	0,9130	13,8369	0,3594	1,0124
6	16	0,1855	0,0146	0,7470	2,0526	0,3271	0,5081	0,1589	2,1286	2,9050	0,0696	2,5610
7	25	1,8984	0,0008	1,4071	1,0216	0,4058	0,8168	0,7591	0,4132	3,0055	0,0572	2,5324
8	40	0,0933	0,0025	0,7442	0,4628	1,4799	3,0129	0,7675	0,0924	0,1665	0,4880	1,3483
9	42	0,0695	0,0017	0,1022	1,0863	0,0245	0,0615	0,2037	0,0365	0,0546	0,9418	3,1292
10	44	0,8582	0,0475	3,6058	4,6178	0,0619	1,7368	0,1846	11,9703	0,3574	0,0310	1,6972
11	46	0,0127	0,0000	0,6805	0,0027	0,0285	0,0373	0,2213	0,0493	0,0487	0,0205	6,3552
12	50	0,0347	0,0000	0,0098	0,0017	0,6399	0,0227	0,0248	0,0043	0,1180	0,0875	3,5018
13	52	1,4309	0,0000	0,0178	0,0048	0,2128	0,4931	0,3797	0,0140	0,2244	0,0253	3,4007
14	54	0,0284	0,0001	0,2730	0,0328	1,1049	0,6232	0,2505	0,0362	0,0527	0,2011	1,1003
15	59	0,0585	0,0003	0,7296	0,0159	0,9968	0,2711	0,5979	0,3092	0,0109	0,1795	1,5582
16	61	0,0231	0,1112	0,0859	0,0092	0,0274	0,3289	0,2920	0,0314	1,4921	0,1261	4,0148
17	62	0,0345	0,0102	0,1667	0,0203	0,0311	0,1165	0,3764	0,0253	0,1070	0,1261	4,3246

18	63	0,1149	0,0024	0,2868	0,0414	0,1066	0,2128	0,7020	0,3022	0,1704	0,0790	1,5527
19	64	0,0370	0,0016	0,0652	0,0085	0,0111	0,0816	0,1601	0,0250	0,0534	0,1767	9,6623
20	65	0,0705	0,0040	0,3030	0,0182	0,4064	0,4226	0,6547	0,3916	0,1923	0,1279	3,1485
21	85	0,0880	0,0116	0,2065	0,0231	0,9958	2,3475	1,1692	0,0928	0,0146	2,1088	2,8448
22	94	0,0631	0,0066	0,9440	0,0229	0,1110	0,9255	1,5456	0,1491	0,0291	0,0545	2,8735
23	95	0,1870	0,0003	0,3027	0,0080	0,7088	0,2878	0,5299	0,0960	0,0590	0,2165	1,4178
Number of products with overlap in RCA according to HS-2		4	0	5	9	3	5	5	5	7	2	
Number of products with overlap in RCA according to HS-6		364	0	834	907	296	1235	1026	732	832	823	

Source: Calculated by the author based on UNComtrade data

Table 3 shows that Vietnam has 23 product codes in the HS-2 system with comparative advantage. Products that Vietnam has advantages due to natural conditions include agricultural products, fuels and minerals. Products that Vietnam has the advantage of having abundant labor force at low cost include textiles and footwear, wooden furniture, furniture, and electrical equipment. Classified under the HS-2 system, Vietnam's comparative advantage structure has little overlap with that of other countries in the CPTPP. Specifically, The number of HS-2 codes with the comparative advantage overlaps with Vietnam's comparative advantage product as follows: Chile has 9 HS-2 codes; Peru has 7 HS-2 codes; Canada, Malaysia, Mexico and New Zealand have 5 HS-2 codes; Japan has 3 HS-2 codes; Singapore has 2 HS-2 codes and Brunei have 0 HS-2 codes. However, in detail according to the HS-6 system, Vietnam's comparative advantage structure has high overlap with other middle-income countries in the CPTPP (except for Brunei). At the HS-6 system, Brunei also does not have any duplicate products in comparative advantage with Vietnam; Australia and Japan have 200-300 products that have overlap in comparative advantage with Vietnam; Canada, Chile, Newzeland, Peru and Singapore have 700 - 800 products with overlap in comparative advantage with Vietnam; Malaysia and Mexico have 1000 - 1200 products with the overlap of comparative advantage with Vietnam. This result shows that Vietnam will have to compete more with middle-income countries in the CPTPP such as Malaysia, Mexico, Chile, Peru, Singapore, and will have many opportunities to boost exports with Australia, Canada, and Japan. Brunei does not have any replicate items in comparative advantage with Vietnam. The economy of Brunei with small market characteristics, economy over the years still faces many difficulties, the administrative bureaucracy stagnates. The private sector in Brunei is also small, weak and passive. Brunei imports most of the domestic consumer goods, so Brunei has established reliable supply networks from traditional customers. Vietnam is almost very difficult in exporting goods to Brunei. In time, Vietnam mainly exports rice and seafood to Brunei but the turnover continuously decreases. Meanwhile, Vietnam imports a lot of crude oil, natural gas and chemicals from Brunei, so Vietnam always has a trade deficit with Brunei. Therefore, CPTPP can create opportunities for Vietnam to establish close trade relations with Brunei, thereby changing Brunei's views on Vietnamese products.

In terms of product groups, vegetables, fruits, seafood, and electronic products (HS-2 codes are 03, 08, 14, 44) are the products with the greatest overlap in comparative advantage between Vietnam and CPTPP countries. Meanwhile, textile products, footwear, materials for garment - footwear, coffee and furniture (HS-2 codes are 94, 61, 54, 42, 09) are the products without any overlap in comparative advantage between Vietnam and CPTPP countries. This result predicts that CPTPP will be a great opportunity for Vietnam in promoting exports of textile products, leather shoes, coffee and furniture. However, Vietnam must have specific strategies for industries that are strengths stemming from Vietnam's natural conditions of vegetables, fruits and seafood. Vietnam needs to have a specific plan to improve the quality of these products, meeting the standards of developed countries' markets to be able to compete with other countries in the CPTPP. In addition, Vietnam also faces competition from Malaysia, Mexico and Singapore in exporting electronic products. The Government needs to have specific action plans to improve the technology content of Vietnam's electronic products, to enhance the competitiveness of this product in the CPTPP.

4.3. Export specialization index (ES)

Table 4. ES and the ES similarity between Vietnam and the CPTPP member countries

No	HS-2 code	Australia	Brunei Darussalam	Canada	Chile	Japan	Malaysia	Mexico	New Zealand	Peru	Singapore	Vietnam
1	3	1,0061	0,1032	2,2572	77,7096	0,1360	0,5790	1,5943	12,2494	6,7823	0,2622	2,4562
2	8	1,9600	0,0124	0,1454	23,4693	0,0673	0,2386	4,3128	7,8027	26,6875	0,1464	1,0708
3	9	0,0625	0,0143	0,4070	0,0536	0,1013	0,1723	1,2017	0,0421	18,5135	0,5683	5,9366
4	11	4,1487	0,0000	3,0921	0,9341	0,1652	0,1877	0,3271	0,4134	0,3037	0,3415	1,3481
5	14	0,0274	0,0000	0,1593	54,1158	0,0115	16,2499	3,8984	2,0257	4,5814	0,3850	3,6874
6	16	0,1573	0,0084	0,6390	1,7351	0,0990	2,0718	0,4256	2,1088	2,4280	0,1503	13,1926
7	20	0,1134	0,0027	0,8308	2,1581	0,0378	0,3545	1,9361	1,0578	5,8360	0,2891	1,4921
8	25	2,3805	0,0004	1,4294	0,5668	0,4296	0,7804	1,2965	0,2560	1,9038	0,0819	6,4736
9	40	0,0624	0,0028	0,5306	0,2792	2,2693	1,6976	0,5186	0,0825	0,0904	1,4304	1,8481
10	42	0,0492	0,0045	0,1248	1,3113	0,0134	0,1135	0,4614	0,0326	0,0720	0,7585	7,0085
11	44	0,8437	0,1598	4,0584	8,7979	0,0304	3,3612	0,3766	13,1353	0,3864	0,2127	2,0934
12	46	0,0104	0,0000	1,0911	0,0062	0,0140	0,2268	1,7223	0,0484	0,2695	0,2229	3,5290
13	85	0,1125	0,0329	0,3107	0,0365	1,0655	1,2630	0,8451	0,1622	0,0221	1,1311	1,4116
14	89	0,3658	0,0005	0,1954	0,5284	20,3273	1,2030	12,2045	0,2053	0,0250	2,7790	4,1028
15	94	0,0418	0,0070	0,6576	0,0273	0,1351	2,4583	2,3407	0,1016	0,0425	0,2153	4,5191
16	95	0,1117	0,0004	0,2193	0,0065	0,5570	0,7756	0,6850	0,0629	0,0451	0,7029	2,5772
17	99	1,1758	0,1540	2,3124	16,7385	3,8662	0,6673	0,4873	2,7848	0,5280	4,7024	3,9510
Number of products with overlap in ES according to HS-6		589	0	717	866	1084	1431	890	830	786	1084	

Source: Calculated by the author based on UNComtrade data

The table shows that Vietnam has the ability to specialize in exporting 17 commodity groups according to HS-2 code system in 2019. In particular, the group of products with high ES index includes frozen fish meat products, textiles, footwear, furniture and products from coffee, tea ... The group with relatively high ES includes vegetables. , fruit, electronics. At the same time, this result also shows that Vietnam has a very high ES overlap with Japan, Malaysia and Singapore (Asian countries in the CPTPP). This result reflects the fact that Vietnam and these countries are in the same continent so they often have the same natural conditions and traditional advantages. However, Vietnam has a relatively low national competitiveness compared to Japan and Singapore, so this is considered a fairly big challenge of Vietnam in the CPTPP. Similar to the RCA results, Vietnam has a very low ES similarity index with Australia and Canada. Therefore, participating in CPTPP will create great opportunities for Vietnam to boost exports to two major markets Australia and Canada.

4.4. Trade Complementarity index (TC)

Fingure 6. Trade Complementarity index between Vietnam and CPTPP countries in the period of 2001 - 2019
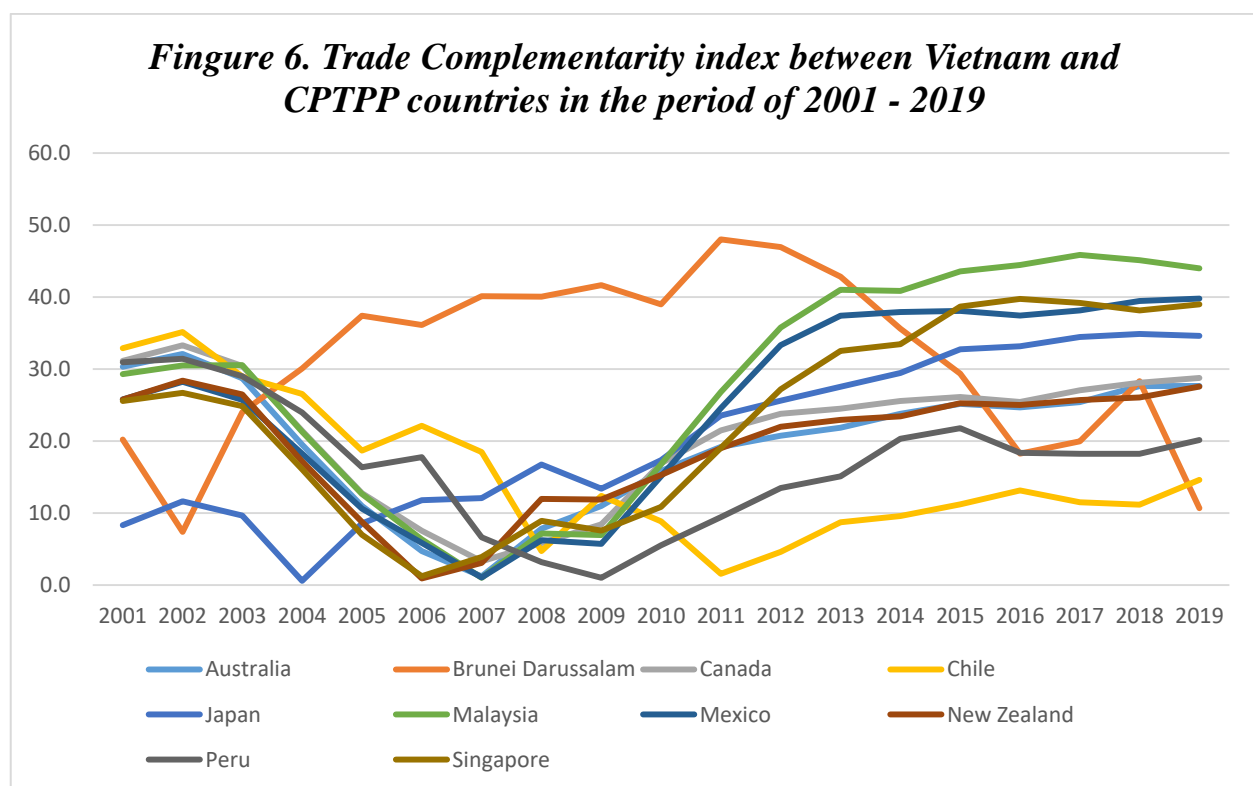
Source: Calculated by the author based on UNComtrade data

The trade complementarity index of Vietnam and CPTPP countries in the period of 2001-2019 is also calculated based on the HS-2 system. The author includes the additional export index and additional import index between Vietnam and CPTPP partner countries. The additional export index shows the suitability of Vietnam's exports to those of trading partners. Meanwhile, the import supplement index shows the suitability level between Vietnam's imports and partner countries' exports. The diagram shows that the level of trade complementarity between Vietnam and other countries in the CPTPP dropped sharply in the period of 2001-2008, but increased rapidly from 2009-2019 from an average of less than 10 to higher than 30. It shows that great prospects of Vietnam in trade relations with countries in the CPTPP. Specifically, Vietnam has a relatively high trade supplement index with Malaysia, Singapore, Japan, Mexico, Canada and

Australia. This result is also true for the fact that these are countries with large trade volumes with Vietnam over the past time.

5. Conclusion

The trade volume between Vietnam and CPTPP member countries has steadily increased and accounted for a high proportion of about 20% of Vietnam's trade in goods with the world for nearly 20 years from 2001 to 2018. For CPTPP members, Vietnam has had major and increasing trade with Japan, Australia, Singapore, Malaysia and Canada but Vietnam has always had a trade deficit with most of the countries except Canada. Vietnam's trade with the rest of the group of countries including Mexico, Brunei, Chile, New Zealand and Peru is relatively small but always has a trade surplus during 2001 - 2018.

The import-export structure of Vietnam with the CPTPP has overlap in categories of electronics, fuel, mechanical equipment, plastic products and medical devices. In this group of products, Vietnam only has a trade surplus in relation to CPTPP in electronics. This shows the high level of competition of Vietnam with CPTPP countries in these sectors. However, the export structure has shown that we export surplus to the CPTPP market in the groups of textiles, footwear, seafood and furniture. These are items that Vietnam is strong on due to the advantage of cheap labor, favorable natural conditions.

The RCA results show that Vietnam will have to compete in export with Malaysia, Mexico, Chile, Peru, Singapore, and there will be many opportunities to boost exports with Australia, Canada and Japan. In terms of product groups, the CPTPP will be a great opportunity for Vietnam to boost exports of textile products, leather shoes and furniture; but there will be many challenges with the fruit, vegetable and seafood product groups. In particular, Vietnam has to face with competition with Malaysia, Mexico and Singapore in exporting electronic equipment products.

ES results also show that Vietnam's ES overlap with those of Japan, Malaysia and Singapore. This is considered a fairly big challenge for Vietnam in the CPTPP because Vietnam has limited competitiveness when compared to Japan and Singapore. However, participating in CPTPP will create great opportunities for Vietnam to boost exports to two major markets Australia and Canada. Because, Vietnam has very low ES similarity with Australia and Canada. The TC index of Vietnam and the CPTPP countries in the period 2001-2019 increased rapidly, on average, from less than 10 to higher than 30. This reinforces the conclusions from the RCA, ES indicators and shows joining the CPTPP will be an opportunity for Vietnam to promote trade relations with major markets such as Singapore, Japan, Mexico, Canada and Australia.

In summary, the deep participation in the CPTPP Agreement will help Vietnam increase opportunities to export textiles, footwear, and furniture to major markets such as Australia, Canada and Japan. However, in the opposite direction, Vietnam faces many challenges, especially competition in the group of agricultural, forestry and fishery products and may face the risk of narrowing down production of these products. Vietnamese businesses need to proactively seek information about tariff incentives under the CPTPP Agreement for goods that Vietnam has strengths or with export capabilities such as textiles, footwear, and furniture products. At the same time, the Vietnamese government also needs to have specific action

programs to improve the competitiveness of agricultural, forestry and aquatic products in the CPTPP market to avoid losses when Vietnam is a member of the CPTPP. Doing this well will help Vietnam be more proactive in taking full advantage of opportunities, as well as overcoming the challenges that the CPTPP brings.

References

Amjadi, A., Schuler, P., Kuwahara, H., & Quadros, S. (2011). WITS: user's manual. UNCTAD, UNSD, WTO, WB, Washington.

Armstrong, S. P. (2011). Australia and the future of the Trans-Pacific Partnership Agreement.

Bui Thi Kim, P. (2017). Legal solutions to enforce Vietnam's commitments to trade in goods when joining the Trans-Pacific Partnership Agreement (TPP) (Doctoral dissertation, Tra Vinh University).

Cassing, J., Trewin, R., Vanzetti, D., Truong, D. T., Nguyen, A. D., Le, Q. L., & Le, T. D. (2010). Impact assessment of free trade agreement on Vietnam's economy. *Hanoi, Vietnam: MUTRAP*.

Cooper, W. H., & Manyin, M. E. (2013). Japan Joins the Trans-Pacific Partnership: What Are the Implications.

Dung, T. V. (2016). Assess the impact of the TPP on the food production and processing industry in Vietnam.

Finger, J. M., & Kreinin, M. E. (1979). A Measure ofExport Similarity'and Its Possible Uses. *The Economic Journal*, *89*(356), 905-912.

Hoi, H. V. (2014). Study and compare the effects of joining the ASEAN economic community (AEC) and the agreement of the Trans-Pacific Partnership Agreement (TPP) on Vietnam's international trade.

Hoi, H. V. (2015). Participation in TPP - Opportunities and challenges for Vietnam's rice exports. VNU Journal of Science: Economics and Business, 31 (1).

Karingi, S., Lang, R., Oulmane, N., Perez, R., Jallab, M. S., & Hammouda, H. B. (2005). Economic and welfare impacts of the EU-Africa Economic Partnership Agreements.

Kehoe, P. J., & Kehoe, T. J. (1994). A primer on static applied general equilibrium models. *Federal Reserve Bank of Minneapolis Quarterly Review*, *18*(1), 2-16.

Le Hong Hiep. (2015). *the TPP's Impact on Vietnam: A Preliminary Assessment*. Institute of Southeast Asian Studies.

Lu, S. (2018, January). Evaluation of the Potential Impact of CPTPP and EVFTA on Vietnam's Apparel Exports: Are We Over-optimistic about Vietnam's Export Potential?. In *International Textile and Apparel Association Annual Conference Proceedings* (Vol. 75, No. 1). Iowa State University Digital Press.

Maliszewska, M., Olekseyuk, Z., & Osorio-Rodarte, I. (2018). *Economic and distributional impacts of comprehensive and progressive agreement for trans-pacific partnership: the case of Vietnam* (No. 124022, pp. 1-92). The World Bank.

Mikic, M. (2005, March). Commonly used trade indicators: a note. In *ARTNeT Capacity Building Workshop on Trade Research, UNESCAP* (pp. 1-22).

Ngan, N. T. K. (2014). Factors affecting trade flows of Vietnam and the countries participating in the TPP agreement negotiation.

Nguyen, A. T. (2015). Trans-Pacific Partnership Agreement (TPP) and its impacts on Vietnam (Reference book). National Political Publishing House

Nguyen, T. O. (2019). Vietnam joins the CPTPP Agreement: Opportunities and challenges for Vietnam's exports.

Philip, M. J., Laurenza, E., Pasini, F. L., Dinh, V. A., Nguyen, H. S., Pham, A. T., & Minh, N. L. (2011). The free trade agreement between Vietnam and the European Union: quantitative and qualitative impact analysis. *Hanoi: MUTRAP III*.

Phuong, B. T. H. (2016). Compare partner countries' markets in TPP and RCEP - Export opportunities for Vietnam. Journal of International Economics and Management, 88 (88).

Plummer, M. G., Cheong, D., & Hamanaka, S. (2011). *Methodology for impact assessment of free trade agreements*. Asian Development Bank.

Thinh, D. Q. (2019). The Trans-Pacific Partnership (TPP) and its effects on the development of the Vietnamese economy.

Thu, P. T. (2016). The impact of the Trans-Pacific Partnership Agreement on Vietnam's auto industry.

Thuy, N. T. T. (2015). Technical barriers in countries participating in the Trans-Pacific Partnership Agreement (TPP); and the effects on Vietnam's exports.

Trung, N. X. (2017). Vietnam Joins Trans-pacific Partnership Agreement (TPP): Opportunities and Challenges. *Seaps*, 40.