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ẢNH HƯỞNG TIỀM NĂNG CỦA CPTPP ĐẾN XUẤT KHẨU ĐỒ GỖ CỦA VIỆT NAM SANG CÁC NƯỚC THÀNH VIÊN CPTPP: PHÂN TÍCH MÔ HÌNH SMART

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Tóm tắt

Nghiên cứu đánh giá tác động tiềm năng của Hiệp định Đối tác Toàn diện và Tiến bộ xuyên Thái Bình Dương (CPTPP) đối với xuất khẩu đồ gỗ của Việt Nam sang các nước thành viên. Mô hình SMART bởi WITS được áp dụng để phân tích thay đổi trong xuất khẩu đồ gỗ và cho biết các mặt hàng bị ảnh hưởng nhất nếu hiệp định đi vào hiệu lực. Bài viết xét đến hai kịch bản cắt giảm thuế quan giữa Việt Nam và các nước CPTPP từ năm 2020 đến 2030, đồng thời đưa ra bức tranh toàn cảnh về xuất khẩu đồ gỗ theo bốn dòng sản phẩm. CPTPP được dự báo có tác động tích cực đến xuất khẩu đồ gỗ của Việt Nam, với cơ hội tiếp cận thị trường Mexico và Peru. Các nhà xuất khẩu Việt Nam cũng được dự báo sẽ hưởng lợi nhiều hơn các nước không là thành viên của Hiệp định, tuy nhiên điều này không nhờ vào việc phân bổ nguồn lực. Trên cơ sở kết quả nghiên cứu, nhóm tác giả gợi ý một số đề xuất, khuyến nghị nhằm thúc đẩy năng lực cạnh tranh của ngành chế biến gỗ và đồ gỗ, bao gồm điều chỉnh chính sách của Chính phủ, đổi mới sản phẩm của doanh nghiệp, và sự phối hợp giữa hai bên để duy trì lợi thế cho Việt Nam và khu vực CPTPP.

Từ khóa: CPTPP, SMART, Việt Nam, Nội thất gỗ, Xuất khẩu

THE POTENTIAL IMPACTS OF CPTPP ON VIETNAM'S EXPORTS OF WOODEN FURNITURE TO CPTPP MEMBERS: A SMART MODEL ANALYSIS

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Abstract

The wood processing and furniture industries play an important role in Vietnam's economy as the country is ranked as one of the leading suppliers of wooden products in the world. This research attempts to investigate the potential impacts of tariff elimination under the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) on Vietnam's exports of wooden furniture to the CPTPP members. The SMART model, a simulation tool included in the WITS, is employed to evaluate the changes in Vietnam's wooden furniture exports as well as to distinguish the most affected commodities if the agreement is in full application. The research examines two scenarios of Vietnam's tariff elimination commitments under the CPTPP and presents the overall picture of wooden furniture exports by four product lines, assuming full liberalisation by 2030. It is predicted that the CPTPP has positive effects on Vietnam's wooden furniture exports, affording opportunities for domestic exporters to access the Mexican and Peruvian markets. Seeing that the trade diversion dominates the trade creation effect, Vietnam will gain more from the CPTPP than non-members thanks to tariff eradication. Based on simulation results, several proposals to increase the competitiveness of Vietnam's wood processing and furniture industries are recommended. Since efforts from both sides are equally important, the government should make policy adjustments to encourage product innovation, while enterprises should strive to maintain their competitive advantages in the industry.

Keywords: CPTPP, SMART, Vietnam, Wooden furniture, Export.

1. Introduction

Vietnam’s wooden furniture export turnover accounted for 19.4% of the world’s total amount, making it the third-largest exporter in the world (Nguyen, 2020). The growth rate of this market is expected to rise in the future thanks to the implementation of many free trade agreements (FTAs) that Vietnam has signed with other countries, including the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). The CPTPP provides many domestic industries with tariff reduction and market access that would offer Vietnamese firms a chance to export to the largest importers of wood furniture, such as Japan and Canada. Signed on March 8th, 2018, in Santiago, Chile, CPTPP is an FTA that includes 11 member countries: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, and Vietnam. After the United States abruptly withdrew from the Trans-Pacific Partnership (TPP), the remaining signatories reached an agreement to change TPP into CPTPP.

After the withdrawal of the United States, there were many debates surrounding the impact of the CPTPP about how it would affect the future of the wood furniture industry of Vietnam since the United States is the largest wooden furniture importer worldwide. In general, previous studies have discussed the impact of TPP on the overall Vietnam economy, but since the withdrawal of the United States, the number of studies about this topic seems to be on the decline. In addition, most of these studies focused on the impact on the Vietnam economy in general, not on specific industries of Vietnam. Seeing a lack of literature on CPTPP's impact on the export of Vietnamese wooden furniture, our research aims to measure the impact of the CPTPP on the wood furniture industry of Vietnam, with two main objectives:

(1) Identify the economic impact of CPTPP on the wooden furniture export turnover in Vietnam to the CPTPP members.

(2) Evaluate the overall situation of Vietnamese wooden furniture exports.

This study focuses on the export values of different wooden furniture product lines under the expected changes in the tariff rate. The remaining parts of our studies are as follows. The literature review will elaborate on partial equilibrium models and previous studies of the impact of CPTPP on trade as well as wooden furniture export. Methodology and data are discussed, along with the details of the two simulated scenarios in Section 3. The results are illustrated in Section 4 followed by specific discussions about two scenarios. The last part is the concluding remarks of the study, which present the implications of this study, its limitations, and suggestions for further studies.

2. Literature review

2.1. Impacts of CPTPP on Vietnam's economy and trade

Previous studies have analysed the impact of the CPTPP on Vietnam's economy and its trade performance. Many analyses have concluded that Vietnam would certainly gain rather than lose from participation in the CPTPP. The report by the World Bank (2018) using simulation analyses demonstrates that the CPTPP would yield robust economic gains for Vietnam, albeit lower than the original TPP. It claims that "under CPTPP, exports are projected to grow by 4.2%, and imports by 5.3%; with larger increases of 6.9% and 7.6% respectively assuming productivity gains." Similarly, Ha and Le (2019) claim that participation in the CPTPP would result in average growth in Vietnam's export turnover by 1.9% CAGR from 2018 to 2035, compared to the non-CPTPP scenario. Vietnam's gain from its participation in the bloc is resonated in the study by Li and Whalley (2020), where trade in the CPTPP bloc was analysed under different scenarios using a multi-country and multi-sector GE model. The results highlight that "most CPTPP member countries will gain from the agreement, and most non-member countries will lose when faced with the exclusive effect of regional trade agreements." In every scenario, Vietnam would be among the largest beneficiaries thanks to the elimination of tariffs.

Results from previous simulations have proved to be reliable. From the report by Suominen (2021), in the first year of the CPTPP's implementation, trade in the bloc by Vietnam saw 7% growth mainly thanks to gains in the export of manufactured goods to Japan. Although CPTPP members' intra-bloc export gains from 2017 to 2020 were minute, Vietnam witnessed 4% export growth into CPTPP per annum.

The study by Le (2021) offers an explanation of Vietnam's growth in trade regarding CPTPP. It indicates that tariff cuts and further trade openness lead to an increase in import-export turnover between Vietnam and its partners in the bloc. Citing the results of the study, when the average import tariff decreased by 1%, the trade volume of Vietnam and its export turnover to CPTPP countries increased by 0.0978% and 0.1102%. When the trade openness of CPTPP countries increases by 1%, the trade volume of Vietnam and its exports to such countries increase by 1.3826% and 1.0504%, respectively. Similarly, when Vietnam's trade openness increases by 1%, Vietnam's trade volume and exports to CPTPP countries increase by 3.1272% and 3.2432%. Regarding the export of Vietnamese wooden furniture into CPTPP countries, Nguyen (2020) pointed out factors influencing the performance of the sector using the gravity model under two scenarios of the CPTPP, with and without the United States. Findings from this study suggest that the supply of materials, the import tax of CPTPP members, and the openness of Vietnam's economy would be the most influential on the export of wooden furniture products. The data also

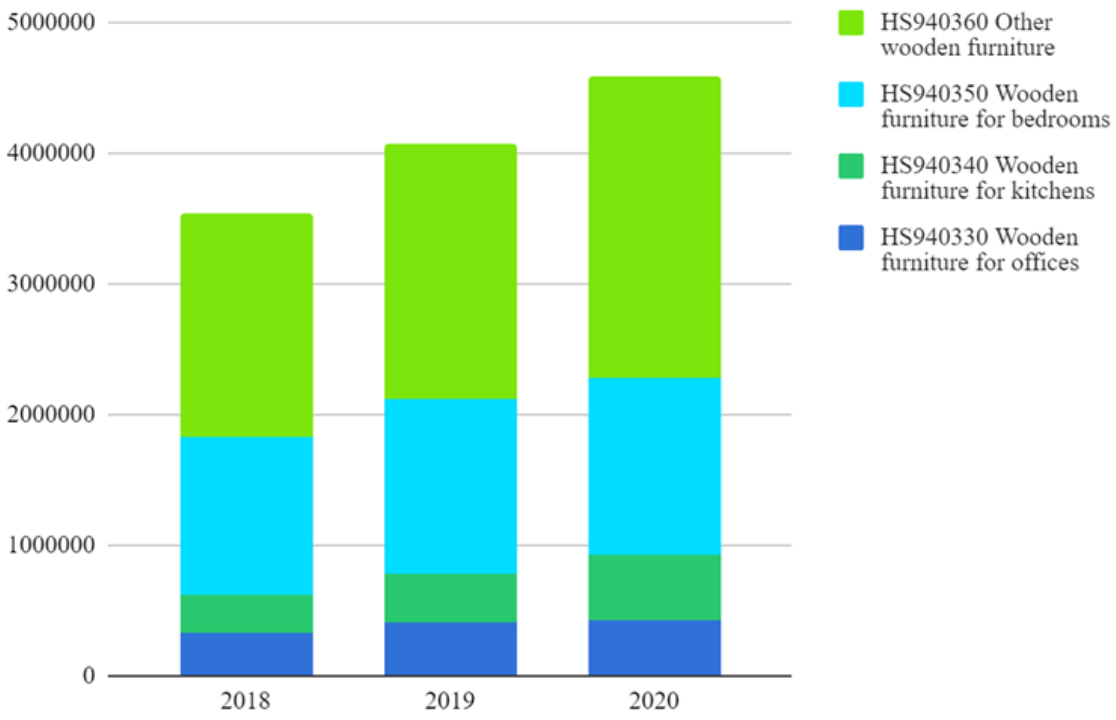
suggests that regardless of the United States' participation, there is still a large potential for Vietnamese wooden furniture to gain access to the United States thanks to increasing demand in this market, which results from population growth and GDP increase.

While most previous studies focused on the impact of CPTPP on Vietnam's economy and trade performance in general, few analysed the impact on particular sectors of the economy. Seeing a lack of literature on CPTPP's impact on the export of Vietnamese wooden furniture, this study sets out to evaluate the overall situation of Vietnam's wood and furniture exports, and empirically analyse the economic impact of the CPTPP on Vietnam's wooden furniture export turnover to the CPTPP region.

2.2. Overview of wooden furniture export

Over the last two decades, Vietnam's wood processing industry has witnessed rapid increases in the number of products exported. Wooden products contributed roughly 10.5 billion dollars to the total number (Nhu, 2020). Vietnam is considered one of the biggest wooden furniture exporters in the world, ranking only behind China, Germany, Italy, and Poland, and is expected to continue to grow as the market for this product is still unexploited.

Figure 1. Vietnam's key export wooden furniture products (value in thousand USD)



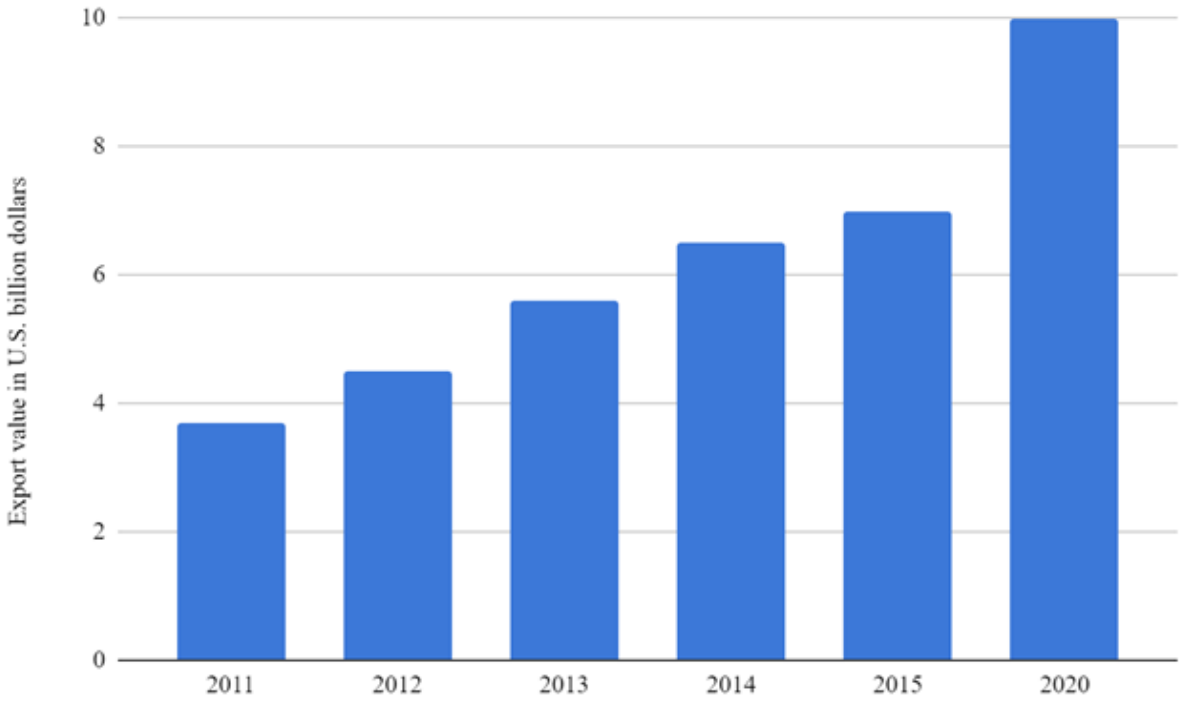
Source: Trademap (2021)

As depicted in Figure 1, wooden furniture for bedrooms and other wooden furniture are made up of mostly key export wooden furniture products. HS940360 and HS940350 play a major role in the contribution to revenues of Vietnam wooden furniture exports.

According to the Vietnam Timber and Forest Product Association, wooden furniture accounts for the largest value in the total value of furniture exports in Vietnam. In 2020, wooden products exports in Vietnam reached USD5.679 billion, of which, bedroom furniture was USD1.373 billion;

kitchen furniture was USD679 million; office furniture was USD434 million USD and wooden furniture was USD1.939 billion. Besides, Vietnam also exported wooden chairs valued up to USD2.67 billion.

Figure 2. Export turnover of wooden furniture in Vietnam 2011-2020 (values in billion USD)



Source: Statista (2017)

Figure 2 shows that the export value of Vietnam's wood industry in 2020 continued to set a new record, reaching more than USD10 million and compared to the previous 9 years, this figure had increased nearly threefold. 2020 was the second consecutive year that Vietnam's wood furniture industry registered an export turnover of over USD10 billion.

In the first 5 months of 2021, Vietnam's wooden furniture export turnover value reached almost USD5 billion, which is 57% higher compared to the same period last year (Nhung, 2021). According to the Deputy Minister of the Ministry of Agriculture and Rural Development, Vietnamese firms have been able to maintain business effectively and have adapted to the new situation, and they are now proactively searching for foreign business partners (Nhung, 2021).

Despite the effects of the COVID-19 epidemic and trade disruptions, Vietnam's wooden furniture exports maintained its growth rate. Thanks to CPTPP, Vietnamese wood furniture can come onto fastidious markets such as Japan, Canada, or new markets such as Chile, Peru. COVID-19 is also an opportunity for online business, letting Vietnamese products be known in this industry.

On the other hand, the pandemic has caused serious difficulties for trade and transportation activities, directly affecting the working and living needs of people. More than 80% of the buyers have announced to stop buying and cancel orders in a pandemic situation. In the EU market, 81% of foreign businesses have received notices of order cancellation and order extension. Exports to

Japan, South Korea, and China also decreased by 60-80% (Tra, 2020). The shortage of empty containers to export goods through international ports before foreign delivery is a common problem not only for Vietnam (Nhung & Hung, 2021). Furthermore, shipping costs to the US and European markets have increased in the COVID-19 situation. As of July 2021, global container freight rates, as measured by the Freightos Baltic Index (FBX), quadrupled over the last year. Additionally, should the pandemic be prolonged, Vietnam's furniture market will suffer from a shortage of raw materials, considering China as an essential supplier of wood inputs. The price of raw wood increased from 10-20 USD/m3 due to the lack of workers to harvest raw materials and the increase in freight rates from 500-1,000 USD/container, which continued to rise in recent years due to disruption of many global supply chains (Tra, 2020).

3. Research methodology

3.1. Partial Equilibrium

To estimate the impacts of FTAs on trade, a variety of different analyses have been performed by studies. For those who use equilibrium models, either a partial equilibrium (PE) or a general equilibrium (GE) can be chosen, each with its advantages and downsides. While GE models are frequently used to simulate the impact of international trade policy changes on the economy as a whole, PE models are more suitable for analyses that target a specific sector (Mikic, 2005). Such PE models include trade indicators, Software for Market Analysis and Restrictions on Trade (SMART) in WITS, and Global Trade Analysis Project (GTAP) (Cheong, 2010).

Trade indicators is a method that uses an index or a ratio to describe the state of trade flows as well as trade patterns of an economy (Mikic and Gilbert, 2007). It can be considered simple to implement and it also requires minimal data which can be taken from an economy's trade statistics. However, its simplicity fails to provide precise numbers for quantifying the effects of an FTA. The second method - SMART in WITS - can be used to evaluate the economic effects of an FTA in an individual market. It can quantify changes in trade flows, economic welfare as well as tariff revenue resulting from an FTA in a specific market (Ahmed, 2010), though it does not account for other indirect effects of that FTA. Lastly, the GTAP focuses on macroeconomic features and interdependence among agents in an economic system, in which an adjustment such as the implementation of an FTA can be simulated simultaneously. However, the method requires more data and contains assumptions that may not be correct in practice. Hence, it is most suitable to adopt the partial equilibrium approach, specifically the WITS-SMART model, to evaluate the effects of CPTPP on Vietnam's wooden furniture exports.

Akinkugbe (2000) used SMART to quantify the potential impacts of the European Union and Republic of South Africa (EU-SA) FTA on Africa. Veeramani and Saini (2010) used SMART along with the Gravity model to evaluate the effect of the Asian-India Free Trade Area (AIFTA) on agricultural products. The study reveals that such an agreement would stimulate trade creation in Indian importation and would therefore leave a negative impact on the livelihood of Indian farmers involved in producing products related to the FTA. Othieno and Shinyekwa (2011) also made use of SMART simulation to analyse the outcome of the application of the East African Community Customs Union on Uganda's trade, welfare, and revenue effects.

In Vietnam, although the usage of SMART to assess the effect of FTAs can only be seen until recently, there have been numerous studies using this method. Tu and Le (2015) studied the

potential effects of the Regional Comprehensive Economic Partnership Agreement (RCEP) on Vietnam's trade. Later on, research carried out by Vu and Pham (2017) used SMART to identify the impacts that the EU-Vietnam Free Trade Agreement (EVFTA) might have on Vietnam's imports of automobiles. Nguyen and Tran (2021) also used SMART to analyse the tariff impact of the EVFTA on Vietnam pharmaceutical imports from the EU market. Nevertheless, there has not been any research focusing on the impact of CPTPP on Vietnam's wooden furniture exports.

One limitation of the SMART model is that its analyses are performed on a predetermined number of economic variables, hence the results are limited to the direct effects of a trade policy change only in one market. As mentioned above, SMART tends to neglect important interactions and input/output (or upstream/downstream) linkages between various markets (Plummer et al., 2010). Also, the model may not consider the existing constraints that apply to factors of domestic production and their movement across sectors, as well as the possibility of new foreign exporting countries serving the domestic market.

Despite its shortcomings, the authors still choose the WITS-SMART model as it allows analyses to be carried out at a detailed level of 6-digit HS, which is beneficial to the study as recent FTAs are conducted at a highly disaggregated level. Furthermore, the partial equilibrium approach has minimal data requirements: data for the trade flows, the trade policy (tariff) can be found in the rich WITS database. Finally, the results acquired can be easily interpreted as there are only a few equations used in the process of calculating changes in demand and supply (Amjadi et al., 2011).

3.2. Model assumption

The SMART model is a partial equilibrium modelling tool for market analysis that is included in WITS. It examines the impact of a tariff adjustment scenario on one importing market and its exporting partners by predicting new values for a set of variables. In particular, partial equilibrium means that the analysis only considers the consequences of a policy action in the market(s) that are directly impacted and ignores the economic connections that exist between different markets in a particular country. In a general equilibrium model, all markets are represented at the same time and interact with one another (World Bank, 2018).

Numerous scientists have spent a great deal of effort to simulate the impact of preferential trade agreements by WITS-SMART Simulation. According to previous research, the SMART model has been widely used to analyse the prospective economy of a free trade agreement (FTA), which is known as ex-ante economic evaluation. Furthermore, the findings of these studies proved that inferring from the outcomes of SMART simulation is useful for both governments and businesses as they prepare for the FTA's upcoming changes.

3.2.1. Export supply side

The setup of the SMART model is that different countries compete to supply a given home market for a given commodity. The focus of the simulation exercise is on the composition and volume of imports into that market. The price that a particular good obtains in the export market is considered to be relevant to the export supply of that commodity by a specific country provider. The degree of responsiveness of export or supply to impact the export price is given by the export supply elasticity. SMART can assume infinite export supply elasticity, which means that the export supply curves are flat, and the world prices of each variety are exogenously determined

(price-taker assumption). SMART can also operate an upward-sloping supply curve with a price effect as well as a quantity effect. Vietnam is viewed as a small exporting country in this research. As a result, our SMART assumption is infinitely elastic.

3.2.2. Demand side

The SMART model depends on the Armington assumption to model the behaviour of the consumer. In particular, this modelling approach represents the imperfect substitutions between products of different countries. In Armington's approach, consumers tend to have a "love of variety" that meets the demand for both domestic and foreign-produced merchandise within a product category. Even though similar goods (defined at the HS 6-digit level) are imported from different countries, they still can be considered imperfect substitutes. Because of the Armington assumption, a preferential trade agreement does not result in a "big bang solution", in which all import demand shifts to the preferential tariff recipient.

3.2.3. Trade effects

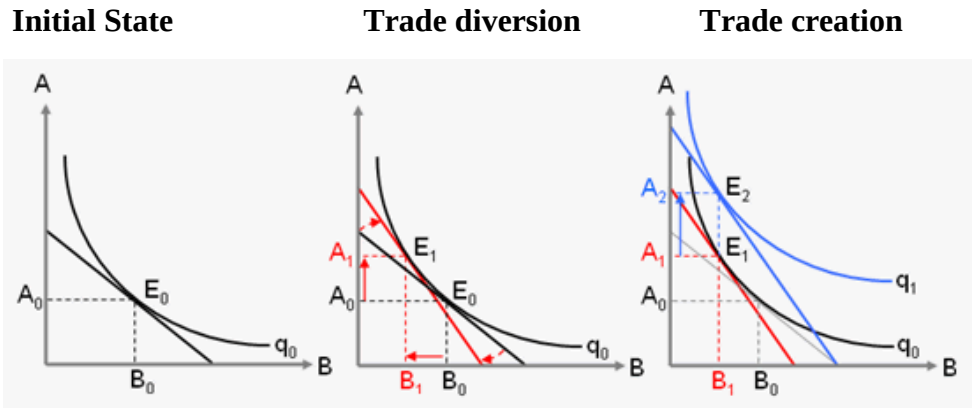


Figure 3. Theoretical Framework of SMART

Source: World Bank (2010)

SMART reports the results of any trade policy shock on several variables. It also decomposes those trade effects in trade creation and trade diversion. It is assumed that A and B are two trading partners from which the target market imports a product. Consumed composite quantity q_0 is imported from A and B. E_0, the intersection of q_0 and the line representing the relative pricing of the two kinds, gives the amount imported from A (A_0) and B (B_0).

In terms of the trade diversion effect, partner A receives a preferential tariff, which lowers its relative pricing in comparison to B. The composite good's consumption remains constant, but the relative price line steepens. It results in a new equilibrium (E_1) where imports from A grow (from A_0 to A_1) while imports from B drop symmetrically (from B_0 to B_1).

In terms of the trade creation effect, it is meant to reduce the domestic price of the variety originating from A by lowering the tariff on imports from partner A. It has a revenue effect, allowing for a higher composite quantity curve q_1. Consumers may now import more of the variety from A for the same expenditure level (A_1 to A_2).

The overall trade effect for exporting nations is made up of trade diversion and trade creation. Beneficiaries of tariff reductions in SMART have both positive diversion (A_0 to A_1) and positive creation (A_1 to A_2) effects, but all other partners experience negative diversion (B_0 to B_1) and no trade creation effect (no B_2 on the figure).

In terms of price effect, this occurs only with a finite export supply elasticity assumption. It represents the increase in international prices for items with increased demand as a result of the tariff reduction. The price effect shows the additional import value from rising world prices, while the trade creation and trade diversion impacts depict the influence on quantity.

3.3. Model specification

As Vietnamese wooden products have an elasticity of supply by price and are under competitive pressure compared to other markets (Ha, 2016), the simulation should be run under two scenarios. The base year for both scenarios is 2020. By constructing these scenarios, this research aims at quantifying changes in Vietnam's wooden products exports to CPTPP members and comparing these changes with the case when the United States remains part of the agreement.

Scenario 1: Vietnam and 10 countries in the CPTPP eliminate tariffs on wooden furniture. No further integration of Vietnam's wooden furniture exports with other nations is taken into account. Tariffs are cut to 0% for the specified commodity groups.

This represents a total opening of the Vietnamese market to the remaining CPTPP members. Due to the availability of secondary data used, the research assumes that the tariff elimination process starts in 2020 and ends in 2030. Although this may not be the exact outcome of FTA negotiations in general and the CPTPP in particular, analysing the impact of full liberalisation within a partial equilibrium framework allows for identifying the most "sensitive" products and sectors for which a country may want to benefit from the provision of special and differential treatment. Hence, the authors decided to apply a 100 percent tariff reduction to all products at the HS-6 level.

Scenario 2: Vietnam and 11 countries in the original TPP-12 (including the United States) eliminate tariffs on wooden furniture. All countries enjoy the preferential tariff of 0% for the specified commodity groups.

After the US officially withdrew from the TPP on 23rd January 2017 and the remaining countries established the CPTPP, research forecasting trade flows under the impact of this agreement has been notably lacking. Besides, many believe that Vietnam's wooden furniture exports will hardly benefit from the CPTPP on account of the US market's absence while having to compete against China's participation. This study assumes that the US will be entitled to enjoy preferential trading terms in the CPTPP, whose findings will offer practical suggestions in the policymaking process for the Vietnamese government and guidance for enterprises on improving conditions to fight off international competition for wooden furniture exports now that the CPTPP has come into effect. Therefore, Scenario 1 includes 10 countries and Scenario 2 includes 11 countries.

3.3.1. Data collection

SMART and its simulation tools are part of the World Integrated Trade Solution (WITS) trade database and software, developed by the World Bank in conjunction with the United Nations

Conference on Trade and Development (UNCTAD) for access and retrieval of information on merchandise trade and tariffs data maintained by various International Organisations: The Trade Map database maintained by the International Trade Centre (ITC); The Commodity Trade (UN Comtrade) database maintained by the United Nations Statistical Division (UNSD); The Trade Analysis Information System (TRAINS) maintained by UNCTAD; The Integrated Database (IDB) and the Consolidated Tariff Schedule Database (CTS) maintained by the World Trade Organisation (WTO).

3.3.2. Input data

SMART requires the following data, which can be extracted from the WITS database or other reliable sources, for the simulation of an FTA: the import value of each foreign partner, the tariff levied on each foreign partner, the import demand elasticity for the commodity, the export supply elasticity for the commodity, and the substitution elasticity between varieties of the commodity.

The tariffs imposed on Vietnam's exports by each foreign partner are extracted from TRAINS and IDB. In this research, all data on the export and import values of wood furniture is retrieved from the UN Comtrade and Trade Map database.

3.3.3. Sensitive Analysis and Robustness test

After estimating the effect of FTAs on trade using the SMART model, sensitivity analysis and robustness tests should be carried out to ensure that the results obtained in the base case scenario are accurate and can be used to guide policy-making.

To conduct sensitivity analysis, according to previous studies by Thurlow and Holden (2002), Zgovu and Kweka (2008), Mugano et al. (2013), and Ratisai (2014), the SMART simulation needs repeating under several scenarios, each is put a different value of substitution elasticity. This analysis is required before assessing the robustness of the results in the base case.

Table 1. Elasticities used in the sensitivity analysis

Elasticity	Lower bound	Base case	Upper bound	Worst case
Substitution elasticity	0.5	1.5	2	6
Export supply elasticity	99	99	99	99

As illustrated in Table 1, the base case is given the substitution elasticity of 1.5, the standard value in the SMART model. The other scenarios constructed in the robustness test include the lower bound, upper bound, and worst case. These scenarios are in line with literature that the substitution elasticity of 0.5 is set for the lower bound, 2 for the upper bound, and adds 4 to the upper bound to get the worst-case scenario (Thurlow & Holden, 2002; Ratisai, 2014). The export supply elasticities remained at 99 (as explained in the model assumption).

Furthermore, this study adopts the Harmonised System (HS) classification and focuses on the export of Vietnam's wooden furniture at HS 6–digit level, including HS codes in Subheading 9403 - Furniture and parts thereof, n.e.s. (excluding seats and medical, surgical, dental, or veterinary furniture), specifically HS 940330 - Wooden furniture for offices (excluding seats), HS 940340 - Wooden furniture for kitchens (excluding seats), HS 940350 - Wooden furniture for bedrooms

(excluding seats), and HS 940360 - Wooden furniture (excluding for offices, kitchens, and bedrooms, and seats). Other product lines such as raw wood, timber, and wood material products are not subject to this study.

4. Results and discussions

4.1. Trade effects

Prior to the implementation of the CPTPP, six out of ten countries in the bloc had already applied a 0% tariff for Vietnamese wooden furniture exports. In these two proposed scenarios, it is highly concentrated on the benefits when tariffs on wooden furniture products in Vietnam are eliminated in all CPTPP countries. These scenarios are forecast to be feasible in 2030.

The positive trade creation impact and total export shift are compatible with economic theories, according to the results from the WITS-SMART model shown in Table 2.

Table 2. Changes in indicators of Vietnam's wooden furniture exports to CPTPP countries

Indicators	Scenario 1	Scenario 2
Initial export value (in 1000 USD)	800586.402	5028238.917
Final export value (in 1000 USD)	803960.254	5031612.769
Total export change (in 1000 USD)	3373.852	3373.852
Increase in exports (%)	0.421	0.067
Trade creation effect (in 1000 USD)	462.952	462.952
Trade diversion effect (in 1000 USD)	2910.900	2910.900
Trade total effect (in 1000 USD)	3373.853	3373.853
Trade creation/Total export change (%)	21.083	13.722

In general, Scenario 1 demonstrates that, with the tariff line reduced to 0% in 2030, Vietnam's wooden furniture exports to CPTPP nations will rise progressively by 0.42% over the base year, reaching USD0.8 billion in the next nine years. This increase is primarily attributed to the effect of trade diversion, whose value is six times higher than that of the trade creation effect (USD2.91 and 0.46 million, respectively). CPTPP would lead to a trade diversion effect which outweighs the trade creation effect in both scenarios when Vietnam's wooden furniture is exported to the region. This increase in Vietnam's exports to CPTPP members due to the reduction of Vietnam's price would lower the welfare of several other countries, as low-cost production from the rest of the world is replaced by Vietnam.

Despite comparable trade creation and trade diversion values compared to Scenario 1, Scenario 2 results indicate that the United States will bring five times higher in Vietnam's wooden

furniture exports, accounting for USD5.03 billion. The total export changes estimated in Scenario 1 and 2 are 21.08% and 13.72%, respectively. However, the difference between trade creation and trade diversion suggests that the improvement in Vietnam's welfare would be relatively insignificant.

The results confirm that the total trade effect has increased over time, with varying implications throughout the Vietnamese wooden furniture product lines. Table 3 summarises the aggregate results derived from the partial equilibrium analysis at the 6-digit HS code level.

Table 3. Changes in export value and the trade effect in both scenarios at level 6-digit of HS

Code	Initial export value (in 1000 USD)	Scenario 1		Scenario 2	
		Final export value (in 1000 USD)	Trade total effect (in 1000 USD)	Final export value (in 1000 USD)	Trade total effect (in 1000 USD)
940330	11452.471	11566.885	114.414	55051.916	114.414
940340	67911.678	68046.044	134.366	171563.028	134.366
940350	249776.170	250705.408	929.238	2369519.908	929.238
940360	471446.083	473641.917	2195.835	2435477.917	2195.835
Total	800586.402	803960.254	3373.853	5031612.769	3373.853

It is evident that participation in the CPTPP grants Vietnam access to new markets for wooden furniture. As can be seen above, all product lines would witness a positive total trade effect. Regarding the product groups, HS 940360 would be the top product line to be exported when tariffs were entirely eliminated in both scenarios at approximately USD 2.2 million, whereas the increase in export of product line HS 943050 is estimated to increase by USD 929 thousand. The rise in export value for the other two product lines would be relatively small, at USD 114 thousand for HS 940330 and USD 134 thousand for HS 940340. It should be noted that the participation of the US would have no impact on the trade effect, as the US import tariff for such product lines from Vietnam had already been 0%.

This positive trade effect could be ascribed to the fact that this has already been Vietnam's forte in furniture exports, with the initial export value being around USD 400 million. Hence, when tariff barriers are removed, its absolute growth will also be higher than other products. Moreover, the 2.2-million increase in export value accounts for over 65% of the total trade effect, which suggests a great potential for the export market of Vietnamese furniture products in HS 940360.

While Vietnam is expected to gain when exporting to the CPTPP region, it will be interesting to identify non-member nations whose trade will be diverted to the CPTPP due to the preferential tariff liberalisation for Vietnamese wooden furniture products. Table 4 shows the top five non-CPTPP countries that account for the most considerable extent of trade diversion.

Table 4. *List of top 5 non-CPTPP countries suffering from trade diversion in Scenario 1*

No.	Country	Trade diversion effect
1	China	−1132.313
2	United States	−413.314
3	Italy	−317.825
4	Spain	−316.52
5	Indonesia	−61.025

Countries outside the CPTPP that would be most affected by the total tariff liberalisation consist of top suppliers and importers of wooden furniture around the world. In detail, China, Italy, and the United States are suffering greatly from tariff cuts for Vietnamese wooden furniture products under the CPTPP.

4.2. Sensitive Analysis and Robustness test

Two scenarios were constructed with varying substitution elasticities under which the simulation was re-run to test the robustness of the base case's results. As shown in Table 5, differing values of elasticity reveal no change in the trade creation effect from the base case.

Table 5. Sensitive Analysis and Robustness Test using different elasticities

Impacts	Scenario 1			
	Lower bound	**Base case**	**Upper case**	**Worst case**
Trade creation	462.952	462.952	462.952	462.952
Final export value	802024.044	803960.254	804921.855	812463.628
	Scenario 2			
Trade creation	462.952	462.952	462.952	462.952
Final export value	5029676.559	5031612.769	5032574.370	5040116.143

Using the results of the sensitive and robustness test in Table 5, the percentage changes of these scenarios are calculated as follows:

$$\% \text{ change} = \frac{\text{Base case value} - \text{Scenario value}}{\text{Base case value}} \text{ x } 100$$

Table 6. Percentage changes of scenario simulations from the base case (Unit: %)

Impacts	Scenario 1			Scenario 2		
	Lower bound	**Upper case**	**Worst case**	**Lower bound**	**Upper case**	**Worst case**
Trade creation	0	0	0	0	0	0
Final export value	0.241	0.120	1.058	0.038	0.019	0.169

As can be noticed, changes in trade creation on the lower bound and upper bounds fall within the 5% level of variation, which means that the results from the base case are appropriate and can be utilised to propose policy implications. In relative terms, the future export change is profound; although insignificant in absolute terms. The percentage change between the base case and upper bound is considered minimal and the worst case is considered robust.

5. Conclusion

As of now, it can be said that Vietnam is one of the leading exporters of wood furniture to large economies across the world. The CPTPP has taken effect since 2019, and by 2030, all tariffs on Vietnamese wood furniture will be eliminated.

This research aims to quantify the possible impacts of the CPTPP's tariff abolition on Vietnam's wooden furniture exports. It employs SMART, a PE modelling tool contained in the WITS, to fully capture these impacts at a disaggregated level. Two scenarios are developed based on the tariff reduction commitments under the CPTPP and the prospects of Vietnam's furniture industry.

Vietnam's wooden furniture export turnover to CPTPP nations will rise progressively, with a total increase of USD 3.3 million in both scenarios. However, it is demonstrated that the increase in exports in Scenario 1 is dramatically higher than Scenario 2, accounting for 42.1% and 6.7% respectively. Therefore, there would be no adverse impact from the United States' joining the CPTPP on exporting Vietnam's wooden furniture products. These scenarios also lead to the loss from trade diversion in most developed countries, including China, the United States, Italy, Spain. Despite the remarkable change in wooden furniture export of Vietnam to CPTPP countries, there is a small attribution of trade creation compared to the size of trade diversion in both scenarios, with USD2.91 million for the former and USD0.46 million for the latter. The enactment of CPTPP would also elicit a positive trade effect among all product lines examined, albeit at different rates. This is because wooden furniture has been one of the leading export products for Vietnam, hence the elimination of tariff barriers would produce high growth. Although Vietnam will undoubtedly gain more than non-CPTPP members, this is not because of an effective allocation of resources, but rather because the vast majority of increases in the CPTPP countries' imports from Vietnam are attributable to tariff eradication. The tariff elimination would also divert trade away from several top importers of wooden furniture for Vietnam.

This study proposes several measures to continuously improve the competitiveness of the Vietnamese wooden furniture industry as follows. The results of the study indicate higher export

turnover to other CPTPP countries over the reduction of tariff to 0%, which presents a valuable opportunity for Vietnamese businesses and exporters. As such, an increase in export turnover is expected to happen, regardless of whether the US would join the CPTPP or not, but only if Vietnamese firms can capitalize on the given preferential tariff. Therefore, the Vietnamese government should make amendments to trade policies, especially by aligning them to the country's current context and its commitments in the agreement, with a view to improving the efficiency of adopting these policies and promoting sustainable growth of Vietnam's wooden furniture production and exports. The Ministry of Industry and Trade thus should complete and publish the "Government's Plan of Implementing CPTPP", which acts as a guideline for other ministries, industries, and local authorities to construct their plans to implement the agreement. Additionally, the Government should raise the awareness among businesses in this sector about the responsibility to produce high quality products with a complete legality. Developing programs affiliating wooden furniture businesses and forest planters in order to conduct the process of legal planting and logging can increase investment for the sector, leading the companies to invest in small households for planting development. Finally, enterprises should focus their efforts and resources on updating management production systems, applying science and technology throughout the supply chains, as well as improving the quality of human resources to maintain their competitive advantages.

Limitations

Although the research has contributed important figures about the impacts of CPTPP on Vietnam's exports of wooden furniture to CPTPP members, there are still limitations that can be addressed in further studies. First of all, due to the nature of the partial equilibrium methodology (the SMART model), the research method chosen has several problems. It is static by definition, allowing only a static comparison of pre-and post-policy change while all other variables remain constant, which is an oversimplification of the real world. Moreover, SMART results are limited to the direct effects of a trade policy change only in one market and may be sensitive to the modelling assumptions and parameter values used. Secondly, SMART results do not include the impact of new foreign exporting countries serving the domestic market. Thirdly, the research gathers data from the World Bank, and this data might be less precise for a developing country such as Vietnam. Fourthly, though there are many trade defence mechanisms in the real world, the single variable that the study examines is tariff rates. Therefore, the impact of non-tariff barriers that are removed by the CPTPP is neglected in this study. Last but not least, the lack of prior research studies on this topic limits our resources to discover more deeply and gain new perspectives on this topic.

Further suggestion

To begin with, this research performs the SMART simulation using data on trade and tariffs from secondary sources such as TRAINS and Trade Map, which may be less reliable and timely in the case of developing nations. In this regard, future studies may retrieve data from domestic sources to substitute or supplement the WITS trade and tariffs information, thereby increasing the results' trustworthiness. Second, further research on the effects of lowering non-tariff barriers may offer more original insights and practical policy implications for this industry. Third, the complexity of such an agreement in the context of COVID-19 is beyond the scope of the analysis given in this study. Many nations, including CPTPP members, are incurring severe economic

losses as a result of the pandemic, hence the impacts may not be as substantial as this simulation indicates. Future studies may take the effects of the pandemic into account when evaluating the CPTPP's effects.

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