

AN EMPIRICAL STUDY OF THE TRADE CREATION EFFECTS AND TRADE POTENTIAL OF RCEP

UM ESTUDO EMPÍRICO SOBRE OS EFEITOS DA CRIAÇÃO DE COMÉRCIO E O POTENCIAL COMERCIAL DO RCEP

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Abstract

Developing countries sign free trade agreements aimed to expand their access to markets, improve trade balance, revitalise their economies by increasing production and create jobs opportunities. Keeping in view these objectives, the RCEP agreement was signed by 15 countries which collectively account for 30% of economic production of the whole world and 25% of global trade. Thus, it became the biggest FTA of the world. This study answers two questions. First, what are the trade creation effects of RCEP? and second, what is the trade potential of the RCEP? Results of this study show that RCEP is helping member countries strengthen their trade and increased market access. The 90% tariff reductions serving under RCEP determine its effects on trade, both inside and beyond the union. Intra-regional exports are supposed to increase 2%, or 42 billion dollars. This is due to two forces: trade creation and trade diversion. Trade creation is expected to create trade among member by 17 billion dollars while the trade diversion will increase trade 25 billion dollars among the member countries. On country level China will obtain the highest benefits in terms of improved trade, followed by Japan. While least will go to Cambodia followed by Laos.

Keywords: Rcep. Trade Creation. Trade Potential. Tariff Reduction. Free Trade Agreement.

Resumo

Os países em desenvolvimento assinam acordos de livre comércio com o objetivo de expandir seu acesso aos mercados, melhorar a balança comercial, revitalizar suas economias através do aumento da produção e criar oportunidades de emprego. Tendo em vista esses objetivos, o acordo RCEP foi assinado por 15 países que, juntos, representam 30% da produção econômica mundial e 25% do comércio global. Assim, tornou-se o maior acordo de livre comércio do mundo. Este estudo responde a duas perguntas. Primeiro, quais são os efeitos da RCEP na criação de comércio? E, segundo, qual é o potencial comercial da RCEP? Os resultados deste estudo mostram que a RCEP está ajudando os países membros a fortalecer seu comércio e aumentar o acesso ao mercado. As reduções tarifárias de 90% previstas na RCEP determinam seus efeitos sobre o comércio, tanto dentro quanto fora da união. As exportações intrarregionais devem aumentar 2%, ou 42 bilhões de dólares. Isso se deve a duas forças: criação de comércio e desvio de comércio. Espera-se que a criação de comércio aumente o comércio entre os membros em 17 bilhões de dólares, enquanto o desvio de comércio aumentará o comércio em 25 bilhões de dólares entre os países membros. Em nível nacional, a China obterá os maiores benefícios em termos de melhoria do comércio, seguida pelo Japão. Enquanto o Camboja terá os menores benefícios, seguido pelo Laos.

Palavras-chave: Rcep. Criação de Comércio. Potencial Comercial. Redução de Tarifas. Acordo de Livre Comércio.



1 INTRODUCTION

The Regional Comprehensive Economic Partnership (RCEP) is a mega FTA signed on 15th November 2020, among the 15 Asia Pacific countries, which are China, Brunei, Indonesia, Cambodia, Laos, Japan, Myanmar, Malaysia, New Zealand, Australia, Singapore, Philippines, Thailand, South Korea, and Vietnam, to improve their international trade relations (Ratna & Huang, 2016). The RCEP concept was initially presented and discussed in detail in the ASEAN leader's meeting of 2012 (Shimizu, 2021). As this club has fast-growing economies like China, Japan, South Korea, etc., the RCEP has huge importance for its member countries. It will significantly further improve their trade relations and remove the tariff and non-tariff barriers to international trade among these countries. The RCEP club has many prominent features in respect of trade creation like geographic contiguity, common borders, fast-growing world economies, high gross domestic products, industrialized economies, 2.2 billion population (30% of the world), huge export and import potentials, manufacturing capabilities, big market size, least tariffs, exchange rate volatility currency union, and similarities in industrial structure. So, the determined objectives of the RCEP are to facilitate trade in services and goods, foreign investment facilitation, technical and economic collaboration, cooperation in Intellectual Property rights, and trade-related disputes settlement. The guiding principles of this agreement are to reduce both tariff barriers and non-tariff barriers liberalize international trade based on the participants' obligations under the World Trade Organization. The main objective of RCEP is to get a progressive, inclusive, high-level, and commonly useful financial partnership among the member countries (Li, Scollay & Gilbert, 2017).

At present international trade is playing a very crucial role in the financial growth of every state (Vijayasri, 2013). It plays a significant role in increasing gross domestic products, employment generation, economic development, and poverty reduction. The RCEP member states account for around 25% (12.7 trillion dollars) of international trade and 30% of total global GDP (26.2 trillion dollars) as of 2020 statistics (ADB Briefs, 2020), which is making it the largest trade union of the world.

To get maximum benefits from international trade, further trade liberalization is necessary. For this purpose, trade creation effects are adopted by countries. World Bank defines trade creation effects as “the direct growth in the imports following a decrease of

the tariff levied on a particular product from a state. If the tariff reduction on a good from the country decreases, then the import price of that good from that particular country decreases and thus imports increase” (World Bank, 2010). In other words, to put it another way, trade creation means the gain in financial wellbeing that comes with joining a country of an FTA. Trade creation happens when tax obstacles are decreased, causing lower pricing. Therefore, the increase in the move to reduced-cost manufacturers, consumer surplus, and economic well-being. The trade creation impact boosts the flow of products to other countries that rely on imported products instead of indigenously manufactured products. Due to limitations and low tariffs, customers may acquire products at a low price. This thing increases international trade. The influence of trade creation effects depends on supply and demand flexibility. Tariff reduction has a variety of possible advantages. If you cut import tariffs, other states are inclined to answer by decreasing levies on your exports. It unquestionably boosts the country's exports. To improve trade relations, different countries are signing free trade agreements. Tariffs, quotas, incentives, customs, taxes, rules of origin, investment, public procurement, trade facilitation, and trade diversification have always been issues for East Asian and Asia Pacific countries regarding trade creation, trade policy formulation, and implementation. For this purpose, RCEP was created.

As we know that the centre of economic activities is shifting to Asia, while the RCEP is composed of big economies of Asia and the Pacific region; therefore, it is supposed to be a very important turning point in international trade. The Comparative Advantage Theory of international trade helps to understand the phenomena. The agreement has drawn the consideration of economic analysts and scholars because it is the biggest free trade agreement in history. It is a paradigm shift in regional trade creation. Therefore, an empirical analysis of trade creation effects and trade potential of RCEP are very important. This study tries to answer two questions; what are the trade creation effects of RCEP, and, what is the trade potential of the RCEP? These two questions are very important. These need to be answered because the projected outcome and success of this free trade agreement depends on its trade creation and trade potential of this agreement.

2 LITERATURE REVIEW

Many studies have discussed the effect of FTAs and its effect on members and those who are not its members. The available literature on RCEP is mainly related to the formation of the RCEP and its economic prospects. Flach, Hildenbrand and Teti (2021) says that RCEP makes the biggest free trade regional union. It strengthens commercial ties and growth of value chains among its members. According to another study by Gilbert, Furusawa and Scollay (2018), the RCEP will significantly boost China's economic development and international trade growth. Free trade agreements, without a doubt, encourage economic progress. The members of the RCEP, in particular, are important commercial allies for China, and FTA is essential for both nations' economic growth. The study of Ferrantino, Maliszewska and Taran (2019) evaluated the economic implications of the existing four FTAs in the regions i.e., RCEP, CPTPP, Transpacific Partnership, and Free Trade Area of the Asia Pacific. RCEP is more significant than all of these, according to this study as larger aggregate gains in trade flows are expected in sectors such as food processing, apparel, textiles, and transportation equipment due to remarkable provisions.

The RCEP's investment regime liberalization is modelled to influence FDI directly and indirectly through trade liberalization. Li, Scollay and Gilbert (2017) studied RCEP's impacts on FDI using an innovative computable general equilibrium (CGE) model, showed that trade liberalization will encourage significant increases in FDI into member nations. Only China is predicted to benefit economically from the RCEP, with benefits ranging from 103 to 214 billion dollars, or 1.1 percent to 2.2 percent of GDP. Similarly, Ratna and Huang (2016) found that the RCEP reduces trade costs by eliminating non-tariff barriers, resulting in a large rise in international trade. Similarly, Lee and Oh (2020) looked at panel data on international trade between 10 ASEAN members and 29 key trade colleagues. It discovered that the partnership will result in 4 times more trade than non-member countries. Sharma *et al.* (2020) analysed the effect of tariff reduction of the RCEP on key macroeconomic factors of RCEP members using the CGE Global Trade Analysis Project (GTAP) Static model, which exposes the conclusions of its financial ramifications on member states. Despite being the world's biggest FTA, Gao and Shaffer (2021) study labelled RCEP is a narrow FTA. However, this study

suggested that RCEP is best considered within the framework of trade war between China and the US.

3 ROLE OF RCEP IN TRADE CREATION

The phrase “trade creation” means forming a trade zone where countries may freely trade their goods. The flow of commodities is subsequently diverted to other states, which use imported commodities instead of locally made ones. Trade creation is an economic concept in international economics that indicates the rerouting of trade movements because of the development of the free trade bloc. The origin of an item shifts from one intra-bloc manufacturer with higher supply expenses to another intra-bloc manufacturer with reduced supply expenses as a result of trade creation. This improves resource allocation and, presumably, has favourable welfare implications.

RCEP has clear trade creation effects. The mechanism which led to trade creation are; tax reduction, elimination of barriers to trade, further liberalization of trade, removal of tariff barriers and non-tariff trade barriers, investment facilitation, and improving the overall business phenomenon through guidelines connecting to intellectual property rights, safety, governments procurement practices and e-commerce. Through the following mechanisms, RCEP is playing role in trade creation in the region.

First. The RCEP covers a wide range of cooperation in regard to tariff reductions as it provided for 90% of tariffs inside the union. Tariff reductions are crucial in determining the RCEP's first effects on trade, both inside and outside the union. RCEP members are expected to gain varying degrees of benefits from tax reduction. Second, it reduces trade costs, incentivizing companies and countries to export to member countries. It will also create competition among the exporters where the already big exporters will further increase its exports many folds. Third, this agreement also allows huge flexibility (like in the implementation timeline) and contains specific requirements for disparity treatment, particularly for Laos, Cambodia, Vietnam, and Myanmar. This confirms that member countries' economies at various phases of growth, different sizes, and a wider variety of stakeholders have the prospects to take advantages from executing their obligations. Fourth, it also provides for common rules of origin for all trading goods. It means that products that meet RCEP standards are subject to similar regulations around all fifteen

members. RCEP's common origin regulations will promote modern manufacturing procedures and trade logistics agreements. Sixth, another very important provision of RCEP is the "establishment of competitive market." which will boost the productions of the companies of the member countries. The establishment of competitive and open markets that encourage financial productivity and sustain customer well-being is another important trade creation effect.

4 EFFECT OF RCEP

4.1 Tariff reduction of RCEP

The RCEP covers a wide range of cooperation sectors, with tariff reductions serving as a basic premise that will abolish 90% of tariffs inside the union. Many tariffs will be eliminated immediately, while others will be progressively decreased over 20 years (Nicita, 2021a). The remaining tariffs will mostly apply to key sectors, where several RCEP members have chosen to opt out of any liberalization obligations.

Table 1

Bilateral tariff rates between RCEP members in %.

Expor ter	Bru nie	Cam bodia	Indo nesia	La os	Mala ysia	Mya nmar	Philip pines	Singa pore	Thai land	Viet nam	Ch ina	Ja pa n	So uth Korea	Aust ralia	Ne w Zeal and
Impor ter															
Brunei	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cambodia	3.0	-	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	11.0	7.0	7.0	7.0
Indonesia	1.0	0.0	-	1.0	1.0	0.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0
Laos	1.0	1.0	1.0	-	1.0	1.0	1.0	1.0	1.0	1.0	1.0	8.0	3.0	6.0	6.0
Malaysia	0.0	1.0	0.0	1.0	-	1.0	0.0	0.0	0.0	0.0	2.0	1.0	3.0	2.0	2.0
Myanmar	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	1.0	6.0	3.0	4.0	4.0
Philippines	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0
Singapore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	0.0	1.0	0.0	1.0	0.0	1.0	0.0	0.0	-	0.0	3.0	1.0	3.0	1.0	1.0

Vietnam	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	-	2.0	5.0	3.0	3.0	3.0
China	1.0	1.0	2.0	1.0	2.0	1.0	2.0	2.0	2.0	1.0	2.0	-	12.0	9.0	5.0	1.0
Japan	1.0	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	1.0	2.0	3.0	-	2.0	2.0	5.0
South Korea	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	8.0	13.0	-	6.0	7.0
Australia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	-	0.0
New Zealand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	1.0	0.0	-

Sources: Flach, Hidenbrand and Teti. (2021).

Table 1 illustrates the average tariffs applied for bilateral trade interactions between the RCEP countries. The rows indicate the importers, and the columns show the exporters. So, it should read like Brunei's average duty on exports to South Korea is 5%. Taxes are especially lower among ASEAN countries, reducing mutual trade among ASEAN and RCEP. The high tariffs between Laos, Cambodia, and Myanmar and Australia, Japan, and New Zealand are attributable to development policy goals: more established business collaborators enable those three states to gradually lower tariffs to decrease competition from New Zealand, Australia, and Japan. China, Japan, and South Korea are projected to see the most tariff reductions in the three biggest economies. As a result, the RCEP is likely to boost trade between these three nation pairings the most. Although China and South Korea have a trade deal, it has failed to significantly tariff reductions. Instead, tariffs are still between 8% and 9%, and non-tariff obstacles persist. Most other current accords are more ambitious than the RCEP. While the European Union-Canada Comprehensive Economic and Trade Agreement (CETA), widely regarded as one of the most comprehensive globally, abolished 99 percent of all taxes, the RCEP is just anticipated to lower tariffs by up to 90 percent. Exemptions are likely, particularly in agriculture, which is scarcely mentioned in the accord. Full tariff reduction in other industries, such as automobiles, might take 20 years.

Tariff obligations under the RCEP vary per industry. Total tariff reductions of RCEP are prevalent in almost all sectors of the economy, including the agricultural industries, which are somewhat more protected. The RCEP pledges are important in agriculture since there will be a tariff decrease of roughly 12.8% for around 8.4 percent of items. On the other hand, the agriculture industries will continue to be somewhat more

secure. as witnessed by the comparatively large number of undecided items (about 17% for agricultural products vs. about 5% for manufacture). Food items will remain the least liberalized sector in agriculture. with around 18% of the tariff. A considerable portion of the vegetable and animal industry taxes. roughly 16%. are uncommitted (Table 4.2).

Table 2

RCEP Tariff Reductions by Sectors

Sectors	Pre-RCEP Tariffs		RCEP Reductions in Tariff		RCEP Exceptions	
	Percentage of tariff lines with zero-tariff	Percentage of tariff lines with non-zero tariffs	Percentage of tariff lines for tariff reduction	Average concession percentage points)	Percentage of tariff lines remaining uncommitted	Average tariff on uncommitted lines
Agriculture	75	25.2	8.4	12.8	16.8	69.8
Animal Products	74.0	25.50	9.10	11.80	16.40	29.410
Foods	73.0	27.40	9.50	15.70	17.90	29.80
Fats and Oils	73.0	16.90	7.30	6.60	9.60	36.80
Beverages and Tobacco	84.0	16.30	5.00	6.30	11.20	30.10
Vegetable and its Products	76.0	23.70	7.30	12.50	16.40	154.20
Natural Resources	90.0	10.0	4.5	4.8	5.5	13.7
Mining and Metal Ores	96.0	4.10	2.20	2.50	1.90	19.01
Minerals that aren't metallic	92.0	8.01	5.90	8.80	2.01	18.80
Gas, Oil, Coal	95.0	4.80	3.10	3.30	1.70	0.30
Products made from petroleum	81.0	19.0	5.7	5.9	13.2	8.0
Manufacturing	91.0	9.4	5.5	8.0	3.9	14.5
Apparel	91.0	9.10	7.70	12.70	1.50	16.40
Metals	89.0	10.60	4.30	5.01	6.30	10.50
Chemicals	92.0	7.80	5.50	5.90	2.30	13.20
Communication equipments	94.0	5.80	4.10	9.70	1.60	18.70
Electrical Equipments	92.0	8.10	5.50	7.80	2.60	13.90
Masculineness Machinerries	91.0	8.80	5.20	7.90	3.70	14.40
Metal Goods	91.0	9.00	5.20	9.20	3.80	13.50
Automobiles	74.0	25.60	8.50	8.70	17.10	21.30
Office Machinerries	95.0	4.80	3.80	6.20	1.0	15.30
Papers	90.0	9.70	2.70	5.50	6.90	6.80
Precision Tools	94.0	5.60	5.00	9.30	0.60	10.90

Plastics	89.0	11.10	7.50	8.30	3.60	19.90
Tannings	82.0	18.20	8.70	10.20	9.50	16.50
Cloths	93.0	7.40	5.50	8.30	1.90	15.10
Transportation Equipments	90.0	9.70	5.80	7.80	3.90	31.10
Wood Manufactured goods	90.0	9.80	6.0	9.10	3.90	14.0

Source: Nicita (2021)

Trade among RCEP members in the natural resource sector was already liberalized. with nearly 90% of Harmonized System (HS) 6-digit items having zero taxes. Despite this. RCEP agreements will cause a 4.8 % drop in around 4.5% of natural resource items (Table 4.2). Petroleum products will be relatively protected among the different natural resource industries. with around 13% remaining undecided lines.

The industrial sector is likewise highly liberalized. with zero tariffs on nearly 91% of Harmonized System (HS) 6-digit items. Despite this. the RCEP continues to liberalize the industrial sector by delivering an average drop of nearly 8% in roughly 5.5% of taxes agreed to liberalization. Only 4% of the lines in the RCEP will remain undecided. It's worth noting that there's a lot of variation amongst industrial industries. Some of the most vulnerable industries. such as metals. automobiles. and tanning. are still reasonably secured. In the case of automobiles. RCEP pledges will lower prices by around 8.7 percent for around 8.5 percent. The ratio of undecided taxes. on the other hand. is quite high. at over 17%.

Overall. RCEP's tariff cuts are estimated to boost trade within the region by roughly US\$ 42 billion. or almost 2%. The majority of the benefits will be caused by trade diversion away from the nations which are not a member of RCEP. It is estimated at \$25 billion. Lower tariffs would generate around US\$ 17 billion in new trade in the RCEP region. Due to trade diversion effects. Japan would profit the most from RCEP tariff cuts. Its exportations are predicted to grow by roughly 20 billion dollars. around 5.5 percent to RCEP members' exportations (Nicite *et al.* 2021).

Because of trade diversion effects. Japan would profit the most from RCEP tariff cuts. Even Japan's yearly exports to other RCEP members are forecast to rise by around \$20 billion. representing a nearly 5.5 percent increase. The government of Japan estimates that the trade agreement would boost the country's Gross Domestic Product by 2.7% and

create 570.000 job positions (Japan Times. 2021. December 31). China's tariffs on car parts and other commodities from Japan will gradually decrease. increasing the proportion of tariff-free Japanese industrial goods heading to China from 8% to 86 percent. In terms of imports. Japan will eliminate duties on 56 percent of Chinese agricultural goods. 49 percent South Korean farm products. and 61 percent of ASEAN. New Zealand. and Australia commodities. For the moment. Japan has kept taxes on five key agricultural products.

4.2 Trade liberalization effects

Over a certain period of time. the RCEP gets member countries to decrease tariffs on around 90% of products traded within the area. It aims to expand shareholder restrictions in 65 percent of all service industries. The members have about 31% of global GDP (\$26.1 trillion) and 30% of the global population (2.3 billion). making it big than the EU. North American Free Trade Agreement. and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership. The countries that are members of RCEP also play a significant role in international trade. Their share in international trade was increased from 20 percent to 28 percent between 2000 and 2019. (Park. Das. and Crivelli. 2021). Trade liberalization will stimulate economic activity by opening sectors and markets. For example. RCEP aims to increase shareholding limits in 65% of service sectors (financial. telecommunications. and professional).

4.3 Regional investment effects

Chapter 10 of the RCEP standardizes laws on intellectual property. investment. and e-commerce. among other things. in addition to tariff benefits. Intra-RCEP investment stands at \$122 billion at present (Park. Das. and Crivelli. 2021). Investment in the region may grow even more as the RCEP prohibits investors from being subjected to performance requirements like a certain percentage of local content or a technology transfer requirement as conditions for market access and locks in potential liberalization of measures. reducing the risk of backtracking. The RCEP makes it simpler for companies to utilize Southeast Asia as a manufacturing centre. The RCEP is projected to boost FDI.

multinational firm investment, and global value chains that originate in the area. Signatories have suffered a 15% drop in FDI since the pandemic, with a total of \$310 billion in 2020 (Financial Express, 2022 January 14). The least developed members like Cambodia, Myanmar, and Laos are the most likely to profit since they get greater foreign direct investment from the countries of RCEP.

4.4 Common rules of origin framework

Chapter 3 of the RCEP agreement provides for the common rules of origin. The coordination of the rules of origin is perhaps a significant success of this FTA. It indicates that RCEP exporters simply need to get at least 40% of their final products from inside the bloc to be eligible for tax benefits while exporting to other participants. The RCEP's unified rules of origin will promote intra-regional trade. Exporters must submit evidence of origin that indicates "domestic production" to be eligible for favoured market access. For example, Chinese car exporter, must show that a minimum of 40% of its manufacturing is done in China or another country of ASEAN in order to get tax-free entry to Laos. A 20% fee is levied if this proof is not provided (Flach, Hildenbrand & Teti, 2021).

5 RESEARCH METHODOLOGY AND DATA

5.1 Design of the study

The study has been conducted for a total sample of 15 RCEP member countries of members and the countries are grouped sample based on GDP and trade potential (high GDP, middle GD and lower GDP group sample; and high trade potential, middle trade potential and lower trade potential group sample).

To discover the trade creation effects and trade capability of RCEP, the result and study are built on the Gravity Model. Jan Tinbergen initially introduced this concept in 1962. According to the gravity model of trade, the amount of trade among states is proportionate to their financial size and the quantity of their comparativeness. It can be known by employing the "gravity equation". This has been used as a main world trade

model for the last 50 years. perhaps due to its intuitive appeal. At first. this concept was presented as a straightforward parallel between Newton's Universal Law of Gravitation and variables that affect international trade inflow. The inflow of trade among states was thought to be proportionate to their financial size and in reverse proportional to their remoteness from one another. The gravity equation of world trade. as described. might be reformulated as a log-linear empirical formulation. which might be calculated simply. The empirical data were shown to be compatible with the naive gravity model in a significant number of investigations. The flexibility of international trade to exporter and importer GDP near to harmony. and the flexibility of trade to distance between the destinations was negative. Also. the empirical formulation can account for a good percentage of examined variance in trade (Baier & Standaert. 2020).

5.2 Data description and methodology

This research looks at the influence of the RCEP on the complexity of trade creation impacts from 2010 to 2020. The data on trade potentials and GDP. calculated in a million dollars. was collected from the RCEP member nations' statistics bulletins. World Bank. and UN trade database. World Development Indicators provides statistics on additional control variables such as trade openness (TO). Gross Domestic Product (GDP). trade potential (TP). market value (MV). customers purchasing power (CPP). market openness (MOP). export (EX). import (IM) and manufacturing potentials (MOP). The ratio of total imports and exports of a member country of this FTA to its GDP is known as trade openness. For the dependent variable of this research on trade creation effects and trade potential sophistication. this study relies on the technique of Hausmann *et al.* (2007). who developed the index finger of trade smoothness.

5.3 Gravity model and econometric methodology

Poyhonen (1963) and Tinbergen (1962) were among the earliest to use an enhanced gravity model to analyze trade flows among countries experimentally. The model became popular in empirical research of financial variables such as international trade inflow among countries. migration. and FDI. The traditional gravity models lacked

a theoretical foundation. Due to economic size (typically measured in GDP) and distance were limited to trade flows. Still, theoretical advancements in the 1970s bolstered this model. Helpman (1987), Bergstrand (1985), and Soloaga and Winters (1999) are examples of such theories, which changed the model by including a mutual variable alongside the trade inflow. Based on the revised structure of gravity model, to evaluate the impact of trade creation effects and trade potential of RCEP sophistication of RCEP member countries among themselves, this study is constructed across-countries panel-data by using the Gravity model.

$$EXS_{ci} = I_{ci}M_iK_iS_c G_i\phi_{ci} \quad (1)$$

Where EXS_{ci} is bilateral export sophistication of RCEP member countries. I_{ci} is outward foreign direct investment from RCEP to state i . M_i denotes particular elements of country i that demonstrate the capability of how the country economy is set up (Institutional Quality IQ_i) to offer a foundation for accepting new things like technology etc. K_i and S_c signify the volume (GDP) of state i and the members of RCEP individually. G_i is the variable related to the state i and symbolizes how the state is opened as its trade sophistication method is not limited to the openness of state i to another member of RCEP. After all, ϕ_{ci} denotes the openness of RCEP to access of state i trade market, which is the opposite of prices. A range of variables is employed to capture transaction fees and liberalization in general. Bilateral distance (D) is utilized as a substitute for international trade costs, while Trade Openness (TO) is used as a proxy for liberalization in empirical research.

For instance, Donaubauer *et al.* (2018) expanded the model mentioned above by arguing the degree to which both trading partners states get an advantage in terms of output from more open trade with each other. Let F_{ci} denotes RCEP and state i variations in different aspects. It might provide the below equation.

Anderson and Wincoop (2003) enhanced the “gravity model” by including the multilateral resistance term (MRT), arguing that only addressing trade costs would result in a prejudiced estimator. A two-sided flow variable might meaningfully differ because of the MRT, which is based on the justification that *ceteris paribus*, two states bounded

by big trade countries. are to a lesser extent expected to do business with each other if they remained bordered by seas. Let γ_i shows the multiparty endurance phrase. So. the Anderson and Wincoop enhanced “gravity model” develops as bellow.

$$EXS_{ci} = I_{ci} M_i K_i S_c F_{ci} G_i \left[\frac{\emptyset_{ci}}{\gamma_i} \right]^{1-\rho} \quad (2)$$

Where \emptyset_{ci} is the reverse of trading expense and γ_i is the multidimensional repellent word and $\rho > 1$ is the flexibility of exchange. There are two prevalent approaches for regulating MRT impact in the literature on gravity models. depending on whether the researcher is interested in measuring variable or the particular state impact. In the 1st scenario. unbiased estimators are provided by introducing a dummy for state and the 2nd example of state-specific impact. which is slow but might change at different times. We can add a collection of control variables and additional factors of concern to this basic calculation. like institutional quality. transportation. etc.

Because the gravity equation is multiplicative. the traditional procedure for estimating it takes the natural logarithms to get a log-linear equation that is easier than non-linear approximation approaches and can be projected using the conventional least square method. For convenience and to prevent misunderstanding. variables on the right side of equation 3 are expressed in one letter case. These have been replaced with the abbreviated version of the variable. the alphabets signify. For example. I_{ci} shown export to state i so I_{ci} is exchanged. In a similar symbol. M_i with IQ_i . K_i and S_c with GDP_i and GDP_c . G_i with TO_i . F_{ci} with INF_{ci} . HC_{ci} and POP_{ci} (calculated as the proportion of values of these symbols for Regional Comprehensive Economic Partnership agreement to the relevant directories’ values for state I. The reverse of trade expenses \emptyset_{ci} is substituted with distance from state i to another member country (D_{ci}) and γ_i with dummy=1 for state I if not 0. Getting replaced and natural. the variable gives the finalized model version.

$$\begin{aligned} \ln TP_{ci} = & \beta_0 + \beta_1 \ln MV_{ci} + \beta_2 \ln CPP_i + \beta_3 \ln GDP_i + \beta_4 \ln GDP_c + \beta_5 \ln MOP_i + \\ & + \beta_9 \ln D_{ci} + \beta_6 + \beta_7 \gamma_i \end{aligned} \quad (3)$$

$$\ln EX_{ci} = \beta_0 + \beta_1 \ln MV_{ci} + \beta_2 \ln CPP_i + \beta_3 \ln GDP_i + \beta_4 \ln GDP_c + \beta_5 \ln MOP_i + \beta_9 \ln D_{ci} + \beta_6 + \beta_7 \gamma_i \quad (4)$$

$$\ln IM_{ci} = \beta_0 + \beta_1 \ln MV_{ci} + \beta_2 \ln CPP_i + \beta_3 \ln GDP_i + \beta_4 \ln GDP_c + \beta_5 \ln MOP_i + \beta_9 \ln D_{ci} + \beta_6 + \beta_7 \gamma_i \quad (5)$$

$$\ln MP_{ci} = \beta_0 + \beta_1 \ln MV_{ci} + \beta_2 \ln CPP_i + \beta_3 \ln GDP_i + \beta_4 \ln GDP_c + \beta_5 \ln MOP_i + \beta_9 \ln D_{ci} + \beta_6 + \beta_7 \gamma_i \quad (6)$$

where

$\beta_6 = 1 - \rho$ and \emptyset_{ci} is the opposite of trade price.

Santos *et al.* (2006) recommended employing PPML in gravity models for commerce and other bilateral trade flows. To begin with, it can deal with bias, which occurs when this model is in logarithmic shape and the error term is heteroskedastic. Second, Santos *et al.* (2006) found good results, even when the dependent variable has missing values or measurement error. Third, as Gourieroux *et al.* (1984) stated, it is resistant to incorrectly specified and allows for using a continuous variable as a dependent variable. Finally, since we use a pseudo-maximum likelihood estimator, the data doesn't follow the Piosson distribution.

$$\ln EX_{ci} = \exp(\beta_0 + \beta_1 \ln T_{ci} + \beta_3 \ln GDP_c + \beta_4 \ln GDP_i + \beta_5 \ln POP_c + \beta_2 \ln POP_i + \beta_9 \ln D_{ci}) \times \varepsilon_{ci} \quad (7)$$

Table 3

Description of variables and variable source

Variables	Description	Source
EX _{ci}	indicates exports from the country I to country J	IMF
T _{ci}	represents trade costs between the country I and country J	IMF
GDP _c	gross domestic product GDP of country C (current US\$)	World bank
GDP _i	gross domestic product GDP of country I (current US\$)	World bank

Dist _{ci}	Geographical distance from country C to the country I (km)	Google map
POP _c	The population of country C	World bank
POP _i	The population of country I	World bank

6 RESULT AND DISCUSSION

6.1 Descriptive statistics

Table 4 descriptive statistics explain the essential characteristics of the data in the study and allow for comparisons. For the study period, the average value for Chinese export and trade with other RCEP member countries are 27502.66 and 9.952937, respectively, with standard deviations of 37475.75 and 1.724294. The high-level changes for the dependent variable are familiar in trade assessment as the statistics and data are extensively distributed throughout all sectors. China is an export-oriented economy backed by the related results of previous experimental analyses that applied PPML assessment. The average Chinese GDP is 29.98485, with a standard deviation of .2667012, and the average GDP for other RCEP member countries is 26.14881, with a standard deviation of 1.767824. China's population is 21.0437 on average, and the geographical distance to RCEP member countries is 8.09484, with standard deviations of .0186053 and .5358882, respectively. The average population of RCEP member countries is 17.04781, with the standard deviations of 1.648864.

The minimum and maximum values identify a possible outlier. Table 7.1 suggests the two-sided export rates are spread across a larger variety of amounts, with the lowest amount of 52.6625 and the highest of 161.818.2. The highest amount is owing to the kind of data at the point. The minimum and maximum GDP values for the China and RCEP member countries were 29.4372 and 22.68783, respectively. The trade volume has 6.109234 and 12.75339 as the minimum and maximum values, respectively; however, population and distance had normal values.

Table 4*Explanatory Figures of the variables*

Variables	Obs	Mean	Std. Dev	Min	Max
EX _{ci}	154	27502.66	37475.75	52.6625	161818.2
lnT _{ci}	154	9.952937	1.724294	6.109234	12.75339
lnGDP _i	154	26.14881	1.767824	22.68783	29.46717
lnGDP _c	154	29.98485	.2667012	29.4372	30.32041
lnDist _{ci}	154	8.09484	.5358882	7.463937	9.320091
lnPOP _i	154	17.04781	1.648864	12.87039	19.4269
lnPOP _c	11	21.0437	.0186053	21.01422	21.06751

Calculated by Stata 15

6.2 Correlation analysis

Table 5*Results of correlation analysis of the variables*

	EX _{ci}	lnT _{ci}	lnGDP _i	lnGDP _c	lnDist _{ci}	lnPOP _i	lnPOP _c
EX _{ci}	1.0000						
lnT _{ci}	0.7582	1.0000					
lnGDP _i	0.6891	0.7666	1.0000				
lnGDP _c	0.0631	0.1354	0.0680	1.0000			
lnDist _{ci}	0.2597	0.3049	0.2582	0.0000	1.0000		
lnPOP _i	0.2967	0.5746	0.6314	0.0204	-0.2522	1.0000	
lnPOP _c	0.0612	0.1301	0.0649	0.9825	-0.0000	0.0208	1.0000

Calculated by Stata 15

Table 5 shows that EX_{ci} has a positive relationship with all the variables in the study. lnDist_{ci} has no relationship with lnGDP_c and lnPOP_c. lnPOP_i has a negative relationship lnDist_{ci}.

The correlation analysis indicates that there is no multi-collinearity between the variables.

6.3 Pseudo-maximum likelihood estimator

The assessment findings of the PPML regression for China exports can be noticed in Table 7.3. In total, the regression results align with the “gravity model”, with very constants showing mixed signs. All results are reported in terms of coefficients. The model's high R² value (0.995) indicates that the current estimation result is reliable.

Table 7.3 shows that trade volume has significant and positive relations with two-sided exports. It indicates that bilateral exports are more likely to increase if trade volume with partner countries increases. Surprisingly, exporters' GDP has no statistically significant impact on bilateral trade, while importer GDP has a positive and significant relationship with bilateral trade. Furthermore, it detected that the distance decline outcome is nearly non-existing for the exports of China, with the coefficient equivalent to 0.2096306 and statistically important at a 1% level, which challenges the significance of its addition in standard log-normal gravity model conditions and provisions previous results by Santos and Tenreyoro (2006). The exporter population has no significance with bilateral export, while the import results are significant and positive.

Table 6

Results of pseudo-maximum likelihood estimator.

	Coefficient	Robust Std. Error	z	P> z
$\ln T_{ci}$	1.048297	.0189298	55.38	0.000
$\ln GDP_i$.0388024	.0165647	2.34	0.019
$\ln GDP_c$	-.3332426	.1765487	-1.89	0.059
$\ln Dist_{ci}$.2096306	.0201968	10.38	0.000
$\ln POP_i$	-0.898557	.0096599	-9.30	0.000
$\ln POP_c$	3.838187	2.630266	1.46	0.144

Calculated by Stata 15

According to figures, intra-RCEP trade was valued at around US\$ 2.3 trillion. The tariff cuts member countries exports by roughly 2%, or around US\$42 billion. This is due to two forces: trade creation would increase trade volume by approximately US\$17 billion and trade diversion would increase trade by about US\$25 billion in the RCEP region (Nicita and colleagues, 2021). Tariff concessions are projected to result in stronger trade impacts for the bloc's major economies due to the already low point taxes among several members of RCEP. The RCEP's tariff reductions benefit the whole region. Most of these profits result from trade being redirected away from non-members towards the members. These diversion effects may become more noticeable as the RCEP members' integration process progresses, a consideration that non-RCEP members should not overlook. The

RCEP will promote commercial links among signatory nations. particularly for those who a trade agreement has never governed.

Table 7

RCEP Members Exports Change because of the tariff reductions (billion US\$).

Countries name	Total Effects	Trade diversion	Trade Creation	As a % of exports to RCEP
RCEP members	41.8	25.2	16.6	1.8
Japan	20.2	15.7	4.5	5.5
China	11.2	6.9	4.3	1.8
South Korea	6.7	4.4	2.3	2.0
Australia	4.1	2.8	1.3	1.9
New Zealand	1.1	0.8	0.3	4.5
Malaysia	0.2	-0.3	0.6	0.1
Singapore	0,1	-0.3	0.5	0.2
Lao	0.1	0.0	0.1	2.7
Myanmar	0.1	0.0	0.1	1.2
Brunei	0.0	0.0	0.0	0.6
Thailand	0.0	-1.1	1.1	0.0
Philippine	-0.1	-0.2	0.2	-0.1
Cambodia	-0.3	-0.4	0.0	-3.9
Indonesia	-0.3	-0.8	0.4	-0.3
Viet Nam	-1.5	-2.3	0.8	-1.2

Data Source: Nicita, A. *et al.*. (2021, December 15)

In terms of financial sectors. agriculture has a greater degree of protection than natural resources. Tariffs play a significant role in the industrial sector. particularly in Cambodia. China. and South Korea. Trade liberalization will be realized by progressive tariff reductions under the RCEP framework. Many tariffs will be eliminated immediately. while others will be decreased over the course of 20 years. The remaining tariffs will mostly be restricted to vital sectors like agriculture and automobiles. where several RCEP members have chosen to opt out of any liberalization obligations.

As per the terms of trade theory. states working separately would be likely to exploit taxes to the degree that changing the terms of trade allows them to transfer the expense of safeguarding home sectors on foreign producers. Subjectively. the bigger the negotiated tariff reduction necessary to attain the optimum tariff level. the more the pre-discussed tax results from the cost-altering method. Under the premise of direct supplies and demands. the theory recognizes the factors that explain cost-shifting tendencies as the flexibility of flows of imports. the flexibility of export demand. and the amount of exports. In overview. cost-shifting intentions are greater when the following criteria are

satisfied: higher import requirement elasticity (so that a non-helpful tax creates a greater decrease in imported goods). minor international export supply flexibility (so that a non-helpful tax creates a bigger decrease in the international export market value). and bigger import volume. To put it another way. commodities with a high import demand flexibility. a low export supply flexibility. and large import quantities create additional incentives for exporters to get tariff reductions.

The study is based on the following regression model to see whether the above assumptions are fulfilled in the pattern of negotiated tariff reduction or not.

$$\tau_{ij}^p = \beta_0 + \beta_1 ToT_{ij}^p + \omega_{ij} + \vartheta_s^p + \varepsilon_{ij} \quad (8)$$

Where the dependent variable τ_{ij}^p is the tariff reduction of state i to state j in item p . ToT_{ij}^p is a collection of variables that must be linked to agreed tax reduction as expected by the theory of the terms-of-trade: imports need flexibility (ϑ_i^p) exports provide flexibility from the importer's view (ϑ_j^p) and trade quantities (M_j^p). Finally. ω_i denotes importer-exporter (or importer) fixed effects. ϑ_s^p sector fixed effects. and ε_{ij} is the error term. Both the OLS and the Tobit models are used in the prediction. Data is cleansed in calculating equation (1) for instances where taxes were already at "0". since additional reductions would be unthinkable. Import volumes for certain items are unobservable; hence data for excessive tariffs is likewise removed.

Table 8

Tariff Reduction Regressions on the trade level

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) OLS	(7) OLS	(8) OLS
Level of trade	0.0270** *	0.0330 ***	0.0123** -0.005	0.0185** *	0.0357** *	0.0424** *	0.0175** *	0.0237** *
Constant	3.0269 -0.2555	6.9415 -0.116	3.4796* -0.0336	9.7400 -0.4081	2.3889* -0.3363	5.5673 -0.357	5.9304* -0.0035	8.4863 -0.5428
Observations	25 985	25 985	26 271	26 271	25 985	25 985	26 271	26 271
R-squared (Pseudo)	0.3604	0.3743	0.4724	0.4845	0.0874	0.092	0.122	0.127

Fixed effects	Two digits ISIC, exporter and importer	Two digits ISIC, exporter * importer	Two digits ISIC, exporter and importer	Two digits ISIC, exporter * importer	Two digits ISIC, exporter and importer	Two digits ISIC, exporter * importer	Two digits ISIC, exporter and importer	SIC 3 digit, importer * exporter
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Notes: *, **, and *** indicate significance levels of 10 percent, 5 percent, and 1 percent, accordingly.
Data Source: Nicita (2021)

The results are shown in the first and 2nd columns of Table 6.5, with exporter and importer, fixed effect model (column 1), and importer * exporter fixed effects (Column 2). Columns 3 and 4 forecast the same requirement but use Harmonized System (HS) 3-digit sectors instead of ISIC 2-digit (approximately 25 sectors), which are far more restrictive (approximately 175 sectors). Columns 5–8 use the TOBIT model rather than the OLS model to mimic the prior requirements. Around 15% of the reductions in the sample data are “0”, indicating that the TOBIT estimate is preferable to OLS. TOBIT estimates are used to deal with considerable censoring (i.e., a high number of zeros) for which OLS estimates can be skewed and not consistent. Overall, all parameters, independent of fixed effects and econometric model, support the conclusion suggesting a positive link between RCEP tariff reductions and export amounts.

Estimates for various RCEP members reveal the consequence of a positive link between concessions and trade volumes. Table 6.6 shows the findings of the basic specification (ISIC two digits with importers and exporters fixed effects) on the discounts provided by each of the three biggest economic powers, followed by the results for the other RCEP countries. The results are still favourable and substantial for China, Japan, and other RCEP countries (though just at a 10% level), but they are no longer important for South Korea.

Table 9

Reduced Samples of the Regressions of Tariff Reductions on Trade Level.

	(1) OLS China	(2) OLS Japan	(3) OLS South Korea	(4) OLS Others	(5) TOBIT China	(6) TOBIT Japan	(7) TOBIT South Korea	(8) TOBIT Other members
Trade level	0.0410*** (0.0091)	0.0503*** (0.0153)	0.0049 (0.0077)	0.0270* (0.0160)	0.0486*** (0.0107)	0.0978*** (0.0192)	0.0063 (0.0084)	0.0323* (0.0190)
Continuous	4.3767***	4.3161***	5.5152***	5.1494***	4.6154***	1.2477*	5.6825***	6.3928***

	(0.3025)	(0.3675)	(0.3518)	(0.2709)	(0.4794)	(0.6388)	(0.4103)	(0.5579)
Observations	10,700	3,969	9,094	2,222	10,700	3,969	9,094	2,222
Required (Pseudo)	00.5226	0.2105	0.2389	0.2611	0.152	0.0413	0.0467	0.0521

Notes: The values inside the parenthesis are derived from the Standard Robust Errors. *, **, and *** indicate significant levels of 10 percent, 5 percent, and 1 percent accordingly. ISIC Two digits, exporter, and importer fixed effects are among the outcomes.
Data Source: Nicita (2021)

Tariff reductions under the RCEP are intended to boost trade among members while diverting some trade away from non-members. Reduced tariffs, resulting in lower import prices, which encourage demand and, as a result, boost imports. Furthermore, RCEP tariff concessions will redirect trade away from exporters who received substantially greater tariff reductions and towards exporters who received lower or no tariff reductions, as in the case of non-member states. One issue is that decreased tariffs may not completely reflect lower local pricing since exporters may have absorbed some tariff expenses. Lower tariffs will result in a rise in exporter costs rather than decrease importer costs in such instances, resulting in a partial shift in demand. In reality, the proportion of a tariff reduction that accounted for changes in importers' pricing and the amount that accounts for exporters' prices are almost always the same.

The impact of tariff reduction on the international prices of a specific product may be easily estimated in a partial adjustment scenario utilizing import need and export elasticities. As a result, the shift in worldwide rates (p^p) for an item p is given by:

$$P^p = \varphi_i^p \left(\tau_i^p / (\theta_i^p - \varphi_i^p) \right) \quad (9)$$

where

ϑ_j^p is the negative of the importation need flexibility for an importer i . θ_i^p is the total export trade flexibility confronted by state i , and τ_i^p is the tariff reduction of state i from importations of item P come from a country that is RCEP members. Then, the effects of the trade creation (TC_i^p) for state i resulting to the shift in the global rate of an item P is just given by $P^p \varphi_i^p m_i^p$, where m_i^p shows the entire importations of state i of an item P . The concept mentioned above may be modified to include bilateral impacts by assuming that trade creation effects are allocated among

exporters based on the extent of their tariff reductions (τ_{ij}^p), their total exports (x_{ij}^p) and their export supply elasticity ϕ_i^p .

$$TD_{ij}^p = TD_{ij}^p \left(\frac{\delta_j^p x_i^p t_{ij}^p}{\sum_j x_i^p t_{ij}^p} \right) \quad (10)$$

The second part of the study examines the impacts of trade diversion. Relative demand reactions to relative changes in global pricing might be conceived of as these. Intuitively, if a tariff reduction does not apply to all trade members, importations from states that benefit from the concession would rise even more owing to substitution away from nations that become more costly. The effects of trade diversion for state j result to a tariff discount of state i can be estimated as:

$$TD_{ij}^p = \frac{(\rho_{ij}^p \sigma^p m_{ij}^p m_{i.ROW}^p)}{(m_{ij}^p + m_{i.ROW}^p)} \quad (11)$$

where

m_{ij}^p shown imports of an item ρ of state i from state j . $m_{i.ROW}^p$ are imports of state i from the other countries. σ^p is the exchange elasticity describing the need, and ρ_{ij}^p is the shift in the favored margin describing the adjustment in global prices.

The impact of RCEP tariff reductions on trade flows for members and selected non-member states is shown in Table 7.6. Altogether, RCEP tariff cuts are estimated to boost trade within the region by around US\$ 40 billion, or over 2%. Most of the effects will be caused by trade diversion away from non-member nations (about \$25 billion). Around US\$ 17 billion is generated in trade owing to decreased tariffs.

At the country level, Japan will be benefited the most from RCEP tariff concessions, owing to the diversion effects of trade. On the other hand, Indonesia, Cambodia, the Philippines, and Vietnam will have lower exports as a consequence of the RCEP tariff reductions.

Table 10*Changes in Export because of Tariff Reductions (Billion US\$).*

	As % of exports to RCEP	Overall effects	Trade diversion	Trade creation
RCEP Members	1.8	41.8	25.2	16.6
Australia	1.9	4.1	2.8	1.3
Cambodia	-3.90	-0.30	-0.40	0
Brunei	0.60	0	0	0
Indonesia	-0.30	-0.30	-0.80	0.40
China	1.80	11.20	6.90	4.30
Japan	5.50	20.20	15.70	4.50
Laos	2.70	0.10	0	0.10
Malaysia	0.10	0.20	-0.30	0.60
Myanmar	1.20	0.10	0	0.10
New Zealand	4.50	1.10	0.80	0.30
South Korea	2	6.70	4.40	2.30
Philippines	-0.10	-0.10	-0.20	0.20
Singapore	0.20	0.20	-0.30	0.50
Thailand	0	0	-1.10	1.10
Viet Nam	-1.20	-1.50	-2.30	0.80

Data Source: Nicita, A. *et al.* (2021, December 15)

Tariff reductions under the RCEP have been demonstrated to promote trade in various areas (Table 6.7) considerably. The bulk of the time, the negative consequences originate from trade diversion and creation differ from those countries that are not members. Tariff reductions are projected to have a considerable impact on agricultural trade, notwithstanding the several exceptions adopted by member countries in the liberalization of their agricultural production. Agricultural trade is likely to witness relatively high improvements, estimated at over US\$ 10 billion, or a 7% rise. Lower tariffs among RCEP members are estimated to generate an extra \$4 billion in agricultural trade and redirect \$5.6 billion from non-member nations. Vegetable items would have the greatest advantages among agricultural sectors.

Table 11*Sector-wise export changes because of tariff Reductions of RCEP members.*

Sectors	Trade diversion (Billion US\$)	Trade creation (Billion US\$)	Overall effects (Billion US\$)	As % of exports to RCEP
Agriculture	5.6	4.0	9.6	7.0
Products of Animals	1.70	0.60	2.40	7.0
Foods	1.70	1.20	2.90	6.0
Fats and Oils	0	0.10	0.10	1.0

Beverages, Tobacco	0.10	0.30	0.40	3.0
Products made of Vegetable	2.0	1.80	3.80	10.0
Natural Resources	1.70	1.20	2.90	1.0
Metal, Mining and Ores	0.0	0.0	0.0	0
Mineral (Non-Metals)	0.80	0.50	1.20	5.0
Gas, Oil, Coal	0.20	0	0.20	0
Petroleum	0.70	0.70	1.50	1.0
Manufacturing goods	17.80	11.30	29.10	2.0
Clothing	1.20	1.20	2.40	7.0
Metals	1.50	0.60	2.10	1.0
Chemicals	4.50	1.90	6.40	3.0
Equipments of Communication	1.0	0.80	1.80	0
Electrical Equipments	0.70	0.40	1.10	1.0
Miscellaneous Machinery	1.80	1.50	3.30	2.0
Metal Products	0.90	0.80	1.80	4.0
Vehicles	0.60	0.40	0.90	1.0
Office Equipment	0	0	0	0
Papers	0.10	0.10	0.20	1.0
Precision Tools	1.70	0.40	2.10	2.0
Plastics	1.20	0.50	1.60	3.0
Tanning	0.50	0.20	0.70	3.0
Fabrics	1.60	1.80	3.40	6.0
Transportation Equipments	0.20	0.40	0.60	3.0
Wood Goods	0.30	0.30	0.50	1.0

Data Source: Nicita (2021).

Tariff reductions in industrial sectors are estimated to contribute around 30 billion dollars, or 2%, to trade inside of RCEP region. Tariff reductions are predicted to generate increased trade of around US\$ 11 billion, while non-members are likely to lose US\$ 18 billion. Textile products are the manufacturing industries expected to enjoy the largest percentage rises, at about 6% and 7%, respectively. In terms of value, the chemical sector has grown the greatest, with a rise of roughly 6.4 billion dollars, among which the 4.5 billion dollars growth is because of the trade diversion effects. Natural resources have minor effects, except for non-metallic minerals, which are predicted to see a 5% increase in intra-RCEP trade (Table 6.8).

As noted above, the tariff reductions among RCEP members would cause trade to shift from those countries that are not member to those that are a member. These

consequences for non-member economies are proportional to their exposure to the RCEP region. But their deficits will be comparatively low compared to their overall exports. On the other hand, Tariff concessions under the RCEP would greatly enhance trade in all industries. The impacts are caused by both trade creation and trade diversion in most situations. Regardless of the many exemptions, its member states take in liberalizing their agricultural sectors, the implications for this sector should be considered. Agricultural trade is predicted to earn around US\$ 10 billion, or 7%, in the next year (Table 7.9). Most of this advantage is predicted to come from non-member states' trade diversion impacts.

Table 12

Sector-wise Trade Increase of RCEP members because of tariff concessions (billion dollars).

Sectors	Total Effects	Trade Creation	Trade Diversion	As % of exports to RCEP
Manufacturing	29	11	18	2
Agriculture	10	4	6	7
Natural Resources	3	1	2	1

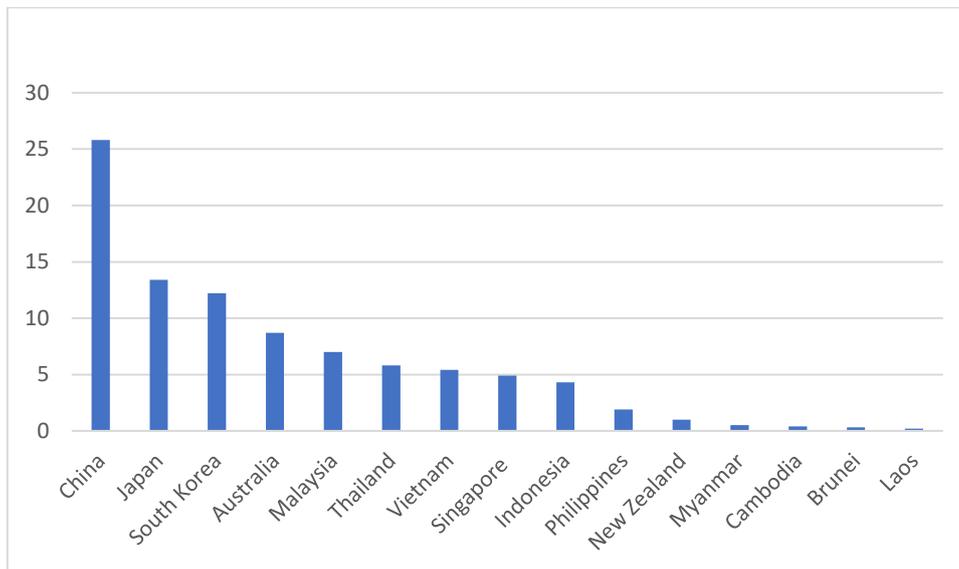
Source: Author's Calculation from UNCTAD.

Tariff reductions in the industrial sectors are estimated to boost intra-RCEP trade by around US\$ 30 billion, equal to about 2%. Trade diversion effects account for more than 60% of this benefit, or US\$ 18 billion. Natural resources have substantially fewer trade impacts since tariffs are often lower. Overall, the RCEP tariff reductions result in 60% from trade diversion and 40% from trade creation. These effects may become more apparent as the integration process progresses, a consideration that non-RCEP members should not overlook. The Regional Comprehensive Economic Partnership is on track to become the world's biggest trading bloc and hence a new centre of gravity for global trade.

6.5 Increase in trade due to rcep common rule of origin

A very important element of RCEP is the Common Rule of Origin, which will increase trade many folds. Non-tariff barriers are reduced under the RCEP by establishing

a single Rule of Origin, which harmonizes information needs and domestic content criteria for enterprises to be qualified for the agreement's favorable terms. By establishing a specific certificate of origin to export the identical items across members, RCEP made supply-chain management easier. It would lower transit expenses for exports across many nations in the area and promote a more stable business environment. The cost of rules of origin varies from 1.4 percent to 5.9 percent of the total value of export transactions. As a result, the single rule of origin would lower export costs, following annual growth in exports of goods of approximately 90 billion dollars among member countries. It accounts for 4 percent of intra-region trade in goods in 2019 and 0.5 percent worldwide retail trade. It will increase the trade of China 25.8 billion dollars, Japan 13.4 billion dollars, South Korea 12.2 billion dollars, Malaysia 7 billion dollars, Thailand 5.8 billion dollars, Vietnam 5.4 billion dollars, Singapore 4.9 billion dollars, Indonesia 4.3 billion dollars, the Philippines 1.9 billion dollars, New Zealand 1 billion dollars, Myanmar 0.5 billion dollars, Cambodia 0.4 billion dollars, Brunei 0.3 billion dollars, and Laos 0.2 billion dollars (Figure 6.1) (Bib. Huang & Poulou, 2020). This FTA promoted deeper trade integration in the region and made the area further relevant to multinational corporations seeking to diversify their supply chains or multi-shoring. However, the accord excludes "sensitive" industries, such as agriculture, and progress on services trade liberalization is only limited.

Figure 1*Average Increase of Trade (in billion dollars)*

6.6 Real income effects of RCEP

The possibility after establishing RCEP is that it will increase the income of the member countries. An FTA with larger memberships and major economies is projected to result in greater aggregate financial advantages in GDP and increased trade. Because of trade increase and many other benefits, the RCEP is expected to increase exports by 4.9%, imports by 4.9%, income by 2.1% and GDP by 1.5% of the member countries (Ferrantino, Maliszewska, and Taran, 2019). As per the models of Petri and Plummer (2020) analysis, RCEP is supposed to provide 0.4% to the overall GDP growth of its members (187 billion dollars) real income by 2030 on a permanent base annually (Table 6.10).

Table 13*RCEP Real Income Effects, 2030.*

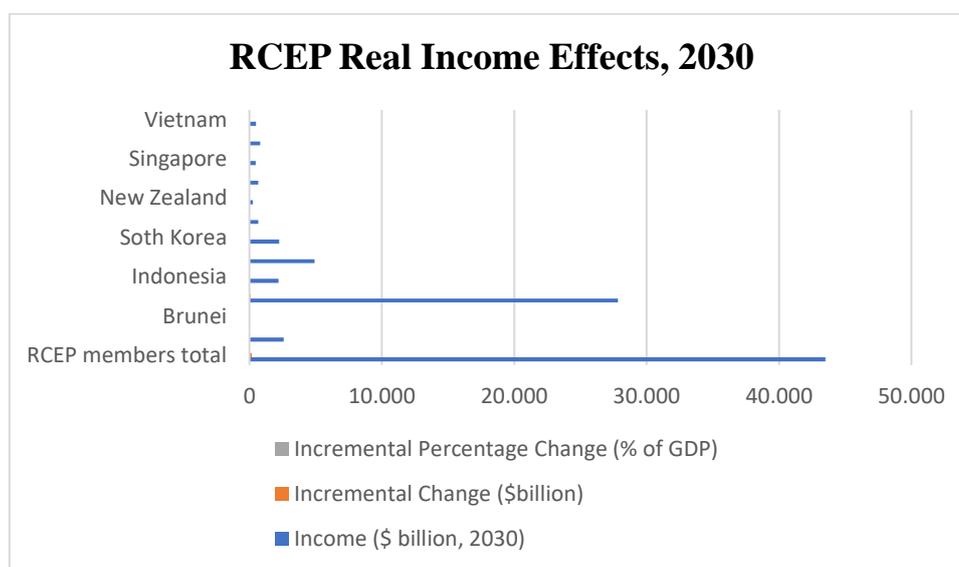
Economy	Income (\$ billion, 2030)	Incremental Change (\$billion)	Incremental Percentage Change (% of GDP)
RCEP members total	43,516	187	0.4
Australia	2,590	1	0.0
Brunei	31	0	0.5
China	27,839	85	0.3
Indonesia	2,192	3	0.1

Japan	4,924	48	1.0
Soth Korea	2,243	23	1.0
Malaysia	675	4	0.6
New Zealand	264	1	0.2
Philippines	680	2	0.3
Singapore	485	0	0.0
Thailand	812	4	0.5
Vietnam	497	3	0.5

Source: Petri & Plummer. (2020).

Figure 2

Potential Benefits of RCEP-Real Income Increases in 2030 (\$ billion).



Source: Petri and Plummer. (2020).

Moreover, Trade growth potential is further increasing because of the expected reduction in tariff and non-tariff barriers imposed in RCEP markets. For example, the Chinese average trade tariffs will fall from 2.2% to 0.4%, while its trade-weighted average tariffs on RCEP members will fall from 2.7% to 0.5% (Ferrantino, Maliszewska & Taran, 2019). The following industries are expected to enjoy the most dynamic export growth as a result of improved access to big RCEP markets. Beverages and Food 23.4%. Textiles 25.8%. Transport equipment 15.4%. Natural resources 6.2%. leather 13.6%. Metals 12%. Chemical, rubber and plastic products 11.4%. machinery 4%. The RCEP will enhance member export flows to RCEP markets by \$616 billion (Ferrantino, Maliszewska & Taran, 2019). It has not only positive impacts on trade but also increases jobs significantly. Due to this agreement, 2.8 million jobs will also be created in the regional economy (Park, Das & Crivelli, 2021).

6.7 Impact of rcep on balance of trade in member countries

RCEP will also have notable impacts on the balance of trade in member countries. Table 6.14 shows that Japan is the largest gainer in the Balance of Trade post-RCEP with 100 percent liberalization, followed by Australia and New Zealand. At the same time, Brunei's Balance of Trade increases somewhat. It's worth noting that these figures are for tariff liberalization using 2019 rates, so any access of market benefits that members like Australia would have gotten via free trade like the CPTPP before the RCEP is not used. The statistics suggest that the other ASEAN states' trade balances are deteriorating. Even when sensitive lists (SLs) and Tariff Rate Quotas (TRQs) in their schedules are taken into account, the ASEAN countries' Balance of Trade decreases by roughly 6%, implying that the ASEAN countries' goods trade balance would lose around 8.5 billion dollars per year after the RCEP. Malaysia would lose 4 billion dollars per year, followed by Cambodia, which will lose 2.3 billion dollars per year. Following the RCEP, Thailand, Vietnam, and Myanmar would lose roughly 0.5 million dollars each year. The Philippines and Indonesia will lose around 260 and 150 million dollars. Japan will have the greatest growth in its Balance of Trade, which will rise from 12.1 billion dollars to 24 billion dollars, an almost 99 percent increase. New Zealand's balance of trade increased by around 6%. While the RCEP leads Malaysia's Balance of Trade to suffer by 36%, Myanmar and Thailand's by more than 20%, and Cambodia's by 17% (Table 6.11). Although China's exports to RCEP member nations have increased due to the agreement, China's imports have increased faster than its exports, resulting in a negative net balance of trade.

Table 14

Impact of RCEP on Balance of Trade of RCEP Member Countries (Million dollars)

Country	Balance of Trade Before RCEP	Post RCEP Balance of Trade with 100 % liberalization	Post RCEP Balance of Trade with limited liberalization	Change in Balance of Trade	Change in % in Balance of Trade
Australia	93,453	96,388	94,429	976	1.0
Brunei	3,654	3,662	3,658	4	0.1
Cambodia	-13,360	-17,932	-15,678	-2,318	-17.3
China	-139,684	-141,061	-144,536	-4,851	-3.5
Indonesia	-9,628	-10,006	-9,781	-152	-1.6

Japan	12,162	28,944	24,157	11,995	98.6
South Korea	36,073	29,793	33,169	-2,904	-8.0
Laos	-607	-361	-623	-16	-2.6
Malaysia	11,218	3,638	7,122	-4,095	-36.5
Myanmar	-1,728	-2,078	-2,206	-479	-27.7
New Zealan	4,726	5,416	4,989	263	5.6
Philippines	-23,359	-24,264	-23,623	-264	-1.1
Singapore	-50,987	-50,467	-51,067	-80	-0.2
Thailand	-2,983	-3,061	-3,654	-671	-22.5
Vietnam	-52,133	-56,433	-52,635	-502	-1.0
ASEAN	-139,912	96,388	-148,487	-8,572	-6.1

Source: Banga, Gallagher, and Sharma. (2021).

7 CONCLUSION

RCEP region is a new centre of gravity for international trade marked as the biggest trade block of the world. It will increase trade volume of member countries in two ways: tariff reductions on trade and trade diversification effects. It is evident that trade and dependencies among the RCEP member will further strengthen than those who are not its members. The RCEP's tariff reductions are projected to enhance trade inside the union by diverting trade from outside the zone, not just by establishing trade within the block. The trade effects of RCEP tariff reductions for members are assessed in this study. The findings of this study shows that RCEP tariff obligations would result in significant reductions in tariffs among members. Overall, RCEP tax cuts would enhance trade between members by around 42 billion dollars, or over 2%. Agriculture, among economic sectors, is comparatively more protected than industries, owing to the enormous number of agriculture goods that are not committed to liberalization.

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Authors' Contribution

All authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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