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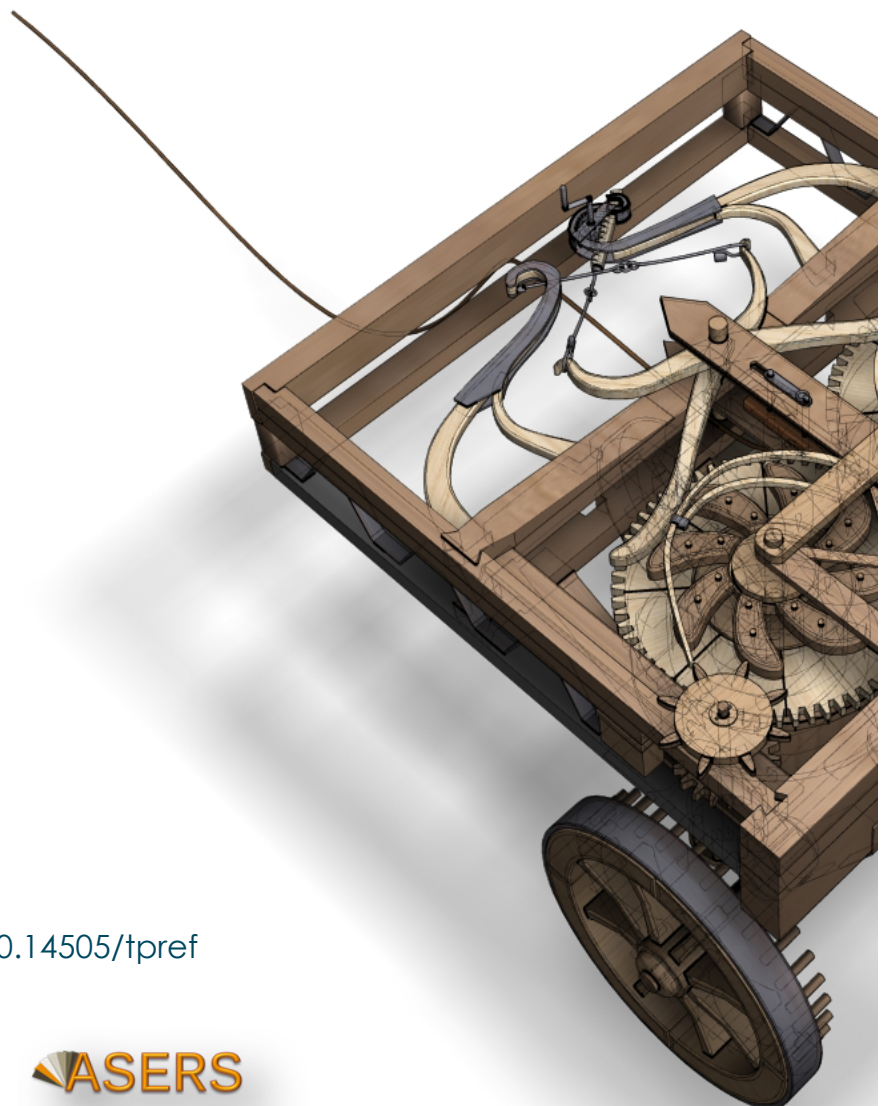# *Table of Contents*

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The Effects of the Regional Comprehensive Economic Partnership on China's Trade, Tariff Revenue and Welfare

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Abstract: Increasing attention is being paid to the role of regional economic integration in facilitating a country's trade. This is especially true for the state like China, which has the second largest GDP in the world. This study explores the effects of the Regional Comprehensive Economic Partnership (RCEP) on China, looking at changes in welfare, trade creation, trade diversion, and tariff revenue under four tariff reduction scenarios with RCEP members. The study evaluates how RCEP affects China's trade relations with Japan, Korea, ASEAN, Australia, and New Zealand by using the World Bank's World Integrated Trade Solution Software for Market Analysis and Restrictions on Trade (WITS-SMART) tool. The findings demonstrate increased market accessibility and competitiveness of commodities in the Chinese market, with notable increases in trade creation and diversion, especially with Korea and Japan. RCEP considerably increases welfare even though it results in lower tariff revenues, indicating that the advantages of lower trade costs and more effective supply chains exceed the fiscal drawbacks. The paper concludes with policy recommendations that emphasize the need for strategic adaptations in China's trade policies to fully capitalize on the economic opportunities presented by RCEP, ensuring sustainable growth and the equitable distribution of trade benefits among all member states.

Introduction

As global economic integration accelerates, regional trade agreements (RTAs) have emerged as formidable forces within international economic exchanges. The Regional Comprehensive Economic Partnership (RCEP), as one of the largest free trade agreements (FTAs) in the Asia-Pacific region, encompasses nearly one-third of global GDP and exerts significant influence on the trade policies and economic development of its member states. As Table 1 indicates, China and Japan held the highest GDPs among RCEP members, ranking as the second and third largest economies globally, following the United States. Meanwhile, Australia and South Korea were positioned as the 12th and 13th largest economies worldwide in 2022.

Trade liberalization is a pivotal strategy for enhancing national competitiveness, and as the largest economy within RCEP, China plays a crucial role in regional trade. Since the late 20th century, China has

progressively expanded its openness, actively engaging in and promoting RTAs to secure a favorable position in the global economic restructuring. As Table 2 shows, the share of foreign trade in China's GDP has remained at approximately one-third over the past five years, serving as a vital source of GDP growth. Notably, ASEAN countries have been China's largest trading partners for four consecutive years, followed by Japan, South Korea, and Australia, ranking fourth, fifth, and eighth, respectively. The implementation of RCEP is regarded as a critical step for China to further integrate into the Asia-Pacific economy, promote trade liberalization, and facilitate regional economic integration.

Table 1. Economic performance of RCEP nations in 2022, (US$ billion)

	GDP	GDP per capita	Export of goods	Import of goods	Trade in goods balance
China	17960	12720	3590	2720	870
Japan	4232	33823	747	897	-150
Korea	1674	32422	684	731	-48
Australia	1693	65099	424	309	115
New Zealand	248	48418	45	54	-9
Brunei Darussalam	17	37446	14	9	5
Cambodia	30	1758	21	30	-9
Indonesia	1317	4778	292	237	55
Lao PDR	15	2022	10	8	2
Malaysia	407	12468	357	299	59
Myanmar	63	1130	17	17	0
Philippines	404	3624	79	145	-66
Singapore	467	82795	515	475	40
Thailand	495	7494	287	305	-18
Viet Nam	409	4110	371	359	12

Source: General Administration of Customs of China

It is particularly important to comprehensively assess the impact of the RCEP on China's economy, as the member countries covered by the agreement occupy an important position in China's foreign trade. This not only helps to gain a deeper understanding of the specific impact of RCEP on China's economy, but also provides an important reference for China's pursuit of a more sustained and deepened economic development and reform strategy.

Table 2. Import and export data of China's top ten trading partners in 2022

	Total Trade Value	Growth Rate	% in China's Foreign Trade	Growth Rate	Imports	Growth Rate
ASEAN	6.5	15	15.5	21.7	2.7	6.8
EU	5.7	5.6	13.4	11.9	1.9	-4.9
United States	5.1	3.7	12	4.2	1.2	1.9
Korea	2.4	3.2	5.7	13	1.3	-3.7
Japan	2.4	-0.7	5.7	7.7	1.2	-7.5
Chinese Taiwan	2.1	0	5	8	1.6	-2
Chinese Hongkong	2	-12.6	4.8	-13	0	-17
Australia	1.5	-0.7	3.5	24	1	-10
Russia	1.3	34.7	3	18.6	0.8	51
Brazil	1.1	8.6	2.7	20.6	0.7	2.8

Source: General Administration of Customs of China

The novelty of this study is the comprehensive application of World Integrated Trade Solution Software for Market Analysis and Restrictions on Trade (WITS-SMART) model to assess the multifaceted economic impacts of the RCEP agreement on China's trade relations with its major regional partners, including Japan, Korea, ASEAN,

Australia and New Zealand. In contrast to earlier research that primarily examined specific trading partners or trade agreement sectors, this paper examines trade creation, trade diversion, changes in tariff revenue, and welfare implications in a comprehensive way. Significant variations in trade dynamics are revealed by this integrated methodology, which are impacted by the distinct market structure and economic environment of each partner nation. The importance of this study lies in its potential to inform policymakers about the differential impacts of regional economic integration, thereby helping to develop targeted strategies to enhance trade efficiency. In addition, this study contributes to academic literature by filling an important gap in the understanding of the full economic impact of RCEP and provides a solid foundation for future empirical and policy-oriented research.

1. Literature Review

1.1 Trade Creation and Diversion

The impact of FTAs on international trade patterns has garnered widespread attention, particularly, the phenomena of trade creation and trade diversion.

Trade creation is the expansion of trade flows among member nations due to FTAs. Tariffs are reduced or eliminated, rendering products and services from FTA members more economically viable in comparison to those from non-member nations (Balassa 1961). It is estimated that international trade can be increased by an average of 54% within ten years of an FTA's implementation; more recent FTAs have a more pronounced effect than their predecessors (Franco-Bedoya and Frohm 2021). To illustrate, Japan's FTAs have had a beneficial impact on the establishment of trade with the majority of its partner nations. However, the effects on third countries have been comparatively less consistent (Mitsuyo *et al.* 2019).

Empirical findings in terms of how a nation's trade can be affected by FTAs have been conducted by many scholars. Wine and sugar exports, for example, have expanded dramatically as a result of Australia's FTAs (Timsina and Culas 2020). The Middle East and North Africa (MENA) region's agricultural exports have shown to benefit greatly from North-South FTAs (Parra *et al.* 2016). Moreover, Korean businesses have used FTAs to boost the sales of their domestic subsidiaries in both Korea and other nations within the manufacturing sector (Chun *et al.* 2016). Similarly, by reducing trade policy uncertainty, the EU-Korea FTA has made it possible to have a larger and more diverse export portfolio (Lakatos and Nilsson 2017). More evidences can be found from Hong Kong-ASEAN FTA (Pham *et al.* 2024;)

FTAs do not, however, have the same impact. An analysis of three major FTAs in Asia shows that the effects of FTAs can vary depending on the specific agreement and the countries that are involved. FTAs have the potential to increase trade, but they can also divert trade (Lakatos and Nilsson 2017). Japan ratified new free trade agreements in the midst of a trade spat. While these agreements have presented prospects for market growth and improvements in welfare, they may also negatively impact the GDP and the welfare of non-member nations (Gaurav and Bharti 2019). Wheat export analysis in Australia reveals that the trade creation effects of FTAs surpass intra-bloc export diversion, suggesting the possibility of additional market investigation (Biyik 2020). Agricultural imports were initially the primary sector in which South Korea benefited substantially from FTAs; however, as time passed, the repercussions of trade diversion became more conspicuous (Timsina and Culas 2021).

Trade diversion occurs when member countries substitute less efficient products from non-member countries for more cost-effective ones (Lipsey 1960), due to tariff reductions among FTA participants. Based on empirical evidence, FTAs do not substantially redirect investments from non-member nations, despite facilitating bilateral cross-border acquisitions and mergers among member nations (Li *et al.* 2018). This shows that FTAs promote economic integration rather than just divergence. Additionally, trade diversion is lessened by a decrease in trade shifts from non-member to member nations, which is accomplished by enacting stringent preferential norms of origin in FTAs (Lee 2016).

The effectiveness and structure of FTAs are improving in relation to changes in global economic policy (Franco-Bedoya and Frohm 2021). The fact that recent FTAs have significantly improved global trade by reducing border effects suggests that this trend is still going strong. FTAs have the potential to encourage non-member nations to lower their tariffs on FTA members by reducing their capacity to influence trade policies (Saggi *et al.* 2018). This shows that the effects of FTAs extend beyond their member countries.

Concerns about trade diversion are evident throughout Asia, particularly with respect to significant FTAs established between South Korea and ASEAN, the EU, and the US. These trends, however, also suggest that trade creation and structure may present challenges (Ji and Yoo 2018). To fully understand the consequences of free trade agreements on trade diversion, more investigation is required (Suslov 2020). However, compared to

FTAs with Korea and Japan, ASEAN-plus-one agreements, especially the one with China, have shown more significant effects on trade diversion (Taguchi 2015).

1.2 Tariff Revenue

FTAs typically promote international trade between participating countries by decreasing both tariff and non-tariff obstacles. Although there can be a temporary decline in tariff revenues, the long-term benefits of improved economic integration and higher trade activity usually outweigh these losses.

The development of FTAs is closely connected to the reduction of tariff rates and non-tariff obstacles. This leads to a significant increase in trade between member states, but it also has the potential to decrease tariff revenue (Hayakawa and Kimura 2015). In addition, the establishment of FTAs may lead to a decrease in tariff revenues from non-member nations (Saggi *et al.* 2018; Karacaovali 2013; Kawabata 2014).

Studies suggest that while FTAs may lead to a decline in tariff revenues, this drawback is typically balanced out by the enhanced economic well-being that fosters stronger ties among member nations (Yi 2020). In addition, the expenses related to adhering to rules of origin (ROO) may lead to increased import prices due to the adoption of FTAs. However, this effect does not fully offset the decline in tariff revenue (Mukunoki and Okoshi 2020).

The magnitude of domestic industries competing for imports and the government's assessment of the trade-off between political support and social welfare also impact the viability of FTAs. The aforementioned elements collaborate in determining the tariff rates levied by foreign countries and the wider economic ramifications of the FTA (Karacaovali 2010; Karacaovali 2013).

1.3 Welfare

Eliminating tariffs in FTAs boosts GDP, exports, imports, and consumer welfare by lowering import prices and improving quality. Welfare effects vary depending on the depth of the agreement, the presence of FDIs and ROOs, and the countries' economic structures. Non-member countries may adjust tariffs in response to FTAs, affecting global trade.

If they increase imports from the rest of the world, FTAs can boost welfare, according to theoretical models. FTAs alone do not guarantee welfare gains for SOEs (Mandal 2019). FTAs can increase GDP, welfare, and productivity in markets and targeted countries, but they may hurt GDP and welfare in non-FTA countries (Biyik 2020).

European FTAs improve import quality and lower quality-adjusted prices, improving consumer welfare through product variety, quality, and price (Breinlich *et al.* 2016). FTA welfare effects can be complicated by factors like FDI and ROO, which may deter outside firms' FDIs or lead to less efficient firms replacing more efficient ones, decreasing consumer surplus (Mukunoki 2017).

FTAs like those between Korea, Japan, and the EU have shown that removing tariffs and non-tariff measures (NTMs) boosts GDP, exports, imports, and welfare (Yi 2020). A bilateral FTA, such as one between Japan and the US, may also benefit the involved nations, depending on the agreement's depth and integration (Walter 2018). Tariff liberalization can benefit India, but trade diversion and sector-specific effects may occur (Khorana and Narayanan 2017). Trading volume, economic growth, and welfare in ASEAN-China Free Trade Area (ACFTA) countries have improved after tariff and non-tariff trade barriers were eliminated (Safuan 2017).

The removal of tariffs can have a positive impact on production and the amount of exports and imports. This can in turn affect the well-being of households and the labor market, with the extent of the impact varying depending on the specific sector and area (Heng *et al.* 2015). FTAs can potentially reduce the tariffs imposed by non-member countries on FTA members as a result of external trade diversion (Saggi *et al.* 2018).

2. Research Method

2.1 WITS-SMART Model

This study assesses the economic consequences of reducing tariffs by employing the WITS-SMART model developed by the World Bank. The structure of tariff reductions allows for an analysis of the impact on China's trade creation, trade diversion, tariff revenue, and welfare affected from other RCEP member nations.

The WITS-SMART model, categorized as a partial equilibrium (PE) model, can evaluate a wide range of scenarios, such as complete tariff elimination, different levels of tariff reductions, and various market responses and elasticities (Fathelrahman *et al.* 2021). The WITS-SMART model has the ability to accurately replicate a diverse set of situations, such as complete elimination of tariffs, different levels of tariff reductions, and varied degrees of market response elasticity (Guei *et al.* 2017). Econometric models communicate complicated

economic phenomena to policymakers with limited technical understanding by presenting conclusions in terms of statistical significance rather than real monetary values, such as dollars (Arapova and Maslova 2020).

2.2 Data Used

The trade data used in this study is sourced from the WITS-SMART system and pertain to the year 2020. The results will be presented using trade data that have been standardized based on the HS 2-digit criteria. The application of this data processing technology enables a more accurate analysis of the impacts of tariff reductions under the RCEP on China and its various industries.

This study designates China as the recipient country, while the remaining fourteen countries are categorized as Australia, New Zealand, Japan, Korea, and ASEAN. To facilitate the organization and analysis of data, the World Bank has categorized its comprehensive list of over 90 industries into 16 distinct sectors, considering the specific characteristics and types of products associated with each industry.

2.3 Setting of Scenarios

According to the Chinese Ministry of Commerce's RCEP tariff reduction schedule, China would apply a zero-tariff policy to about 90 percent of goods from other member countries. This study uses four scenarios to examine the impact of tariff reductions at different stages (Phan and Jeong 2016).

Scenario 1: Imposing zero tariffs on 25% imported goods from Japan, 38.6% from South Korea, 67.9% from ASEAN, 65.8% from Australia, and 66.1% from New Zealand;

Scenario 2: Imposing zero tariffs on 71.5% imported goods from Japan, 79.6% from South Korea, 80.6% from ASEAN, 80% from Australia, and 80% from New Zealand;

Scenario 3: Imposing zero tariffs on 83% imported goods from Japan, 82.7% from South Korea, 83.6% from ASEAN, 80% from Australia, and 80% from New Zealand;

Scenario 4: Imposing zero tariffs on 86% imported goods from Japan, 85.9% from South Korea, 90.5% from ASEAN, 90% from Australia, and 90% from New Zealand;

2.4 Technical Notation and Equations

This study examines the trade, tariff, and welfare impacts of RCEP member countries with China as the importing country, and the analysis involves all industries, so all elasticities are calculated using the system defaults of the WITS-SMART analysis.

In this paper, 1.5 is used as the system's default elasticity of substitution, indicating that the items considered exhibit a degree of similarity while maintaining different characteristics. The default value of the export supply elasticity is set at 99, indicating an infinite elasticity. This value is held constant across all trading partners. It is possible for the elasticity value to change, but it remains unique for a given product. It is worth noting that the export supply elasticity is not affected by the partner in question (World Bank). The practical calculations described below are included in equation (1):

$$TC_{ijk} = M_{ijk} \times \eta \times \frac{\Delta_{ijk}}{(1 + t_{ijk}) \times (1 + \eta/\beta)}$$

(1)

where;

TC_{ijk} : Trade creation;

M_{ijk} : Imports;

t_{ijk} : Tariff;

η : Import elasticity of demand (system defined);

β : Export supply elasticity (99 by default);

i : Commodity;

j : Exporting country;

k : Importing country;

Trade diversion, which is mostly dependent on substitution elasticity, is represented by equation (2):

$$TD_{ijk} = \frac{M_{RCEP} \times M_{RoW}\left[\left(\frac{1+t_t}{1+t_0}-1\right) \times \lambda\right]}{M_{RCEP} + M_{RoW}\left[\left(\frac{1+t_t}{1+t_0}\right)-1\right] \times \lambda}$$

(2)

Where;

TD_{ijk} : Trade diversion;

M_{RCEP} : Imported commodities from RCEP countries;

M_{RoW} : Imported commodities from the rest of the world;

t_t : Tariff (where t_0 and t_t represent pre and post integration levels of tariffs) ;

λ : Elasticity of substitution (1.5 by default);

Equation (3) indicates the net trade impact (TE), which can be defined as the combined result of trade creation and trade diversion:

$$TE = TC + TD$$

(3)

The net revenue effect (RE) in equation (4) represents the revenue fluctuations caused by tariff changes. It is mostly determined by the price and quantity of imports.

$$\Delta R_{ijk}/R_{ijk} = \left[\Delta t_{ijk}/(1+\Delta t_{ijk})\right] \times \eta \times \left[(1+\beta)/(\beta-\eta)\right]$$

(4)

Where;

ΔR_{ijk} : The effects on revenue due to tariff changes

η : The elasticity of demand for the importing economy

t_{ijk} : Tariff

β : Elasticity of supply for the exporting economy.

Equation (5) estimates the welfare effects are basically the summation of the producer and consumers' surplus.

$$W_{ijk} = \frac{1}{2} \times \left(t_{ijk} \times M_{ijk}\right)$$

(5)

Where:

W_{ijk}: Welfare;

t_{ijk}: Tariff;

M_{ijk}: Imports.

3.5 Limitation of WITS-SMART

The WITS-SMART uses a partial equilibrium paradigm to analyse tariffs and trade policy, focusing on sector-specific consequences rather than macroeconomic changes. This assumption restricts the model's dynamic trade policy adaptation. Additionally, the model's use of past trade and tariff data may not account for future trade policy or global economic changes, which could undermine its long-term impact assessment of RCEP. Due to its limitations in measuring non-tariff measures' impact on trade dynamics, the model may underestimate the RCEP's economic impact. These constraints advise care when interpreting model conclusions, especially when creating policy based on these assessments (World Bank).

4. Research Results

4.1 Results Analysis

In this section, China's trade, tariff revenue and welfare simulation results with each RCEP member will be presented.

China-Japan

Under the RCEP framework, the trade dynamics between China and Japan demonstrate significant economic impacts in several scenarios. Analysis of the data shows a significant trade creation effect, which increases from US$728.9 million in Scenario 1 to US$623.1 million in Scenario 4. This increase reflects the role of RCEP in reducing trade barriers, which significantly improves the access and competitiveness of Japanese goods in the Chinese market.

Trade diversion, a measure of shifts from efficient global suppliers to regional partners due to preferential tariffs, also shows an increasing trend, from US$596.8 million in Scenario 1 to US$4589.6 million in Scenario 4. This suggests that China is relying more on Japan for its imports at the expense of other countries, which may reflect China's strategic reorientation to seek more favorable economic partnerships within Asia.

Table 3. Impacts on China as importer from Japan under four scenarios, US$ million.

	S1	S2	S3	S4
Trade Creation	728.9	3608.9	5464.9	6223.1
Trade Diversion	596.8	2893.5	4289.7	4589.6
Total Trade Effect	1325.7	6502.3	9754.6	10812.7
Tariff Revenue	-686.6	-3232	-4783.2	-5117.7
Welfare Change	802.1	3831.7	5747.9	6506.2

Source: Authors' calculation from SMART-WITS

In Scenario 4, tariff revenues loss exhibits a distinct upward trajectory, increasing from US$686.6 million in Scenario 1 to US$5117 million. The decrease in question is a direct consequence of the tariff reductions implemented under the RCEP. Although these tariff reductions diminish fiscal revenues from imports, they further the objectives of economic integration and trade facilitation.

In terms of welfare, the figure for each scenario is positive, with an increase of US$6506.62 million from US$802.1 million. The rise in welfare indicates that the advantages stemming from increased supply chain efficiency and reduced trade expenses are substantial enough to compensate for the drawbacks linked to decreased tariff revenues.

China-Korea

The trade relationship between China and South Korea demonstrates distinct economic patterns in various scenarios within the framework of the RCEP. Scenario 1 exhibits an initial trade volume of US$155.6 million, whereas Scenario 4 witnesses a substantial surge in trade volume to US$1954.1 million. Due to the reduction of trade barriers mandated by the RCEP agreement, access for Korean goods to the Chinese market has increased substantially, as indicated by this substantial increase.

Simultaneously, the rise in trade diversion from US$1536.4 million in Scenario 4 from US$166.3 million in Scenario 1 indicates a substantial shift in the origin of China's imports, with South Korean goods being increasingly favored over those originating from non-RCEP members. This modification exemplifies China's astute implementation of regional synergies, which are critical components of the anticipated economic framework of the RCEP.

Table 4. Impacts on China as importer from Korea under four scenarios, US$ million

	S1	S2	S3	S4
Trade Creation	155.6	1751.3	1827.4	1954.1
Trade Diversion	166.3	1339	1420.4	1536.4
Total Trade Effect	321.9	3090.2	3247.8	3490.5
Tariff Revenue	-198.4	-1350.5	-1423	-1536.1
Welfare Change	158.9	1759.6	1835.7	1962.5

Source: Authors' calculation from SMART-WITS

There is an ongoing increase in tariff revenue loss, which grows from US$198.4 million in Scenario 1 to US$1536.1 million in Scenario 4. This declining trend underscores the comprehensive tariff reductions implemented under the Partnership. Although these reductions are designed to foster a more liberalized trade climate, they concurrently lead to diminished import fiscal revenues.As for welfare impact, the figure continues to trend positively, increasing from US$158.9 million in Scenario 1 to US$1962.5 million in Scenario 4. This suggests that as consumer surplus increases and market efficiency improves, the broader economic benefits far outweigh the direct fiscal costs stemming from reduced tariff revenues. The data provided not only illustrates the influence of RCEP on the trade dynamics between China and Korea, but also expose the potential benefits of economic integration in fostering collaboration within the region.

China-ASEAN

Under the RCEP framework, China's trade creation from ASEAN countries is lower than that of Japan and Korea. The results of the analysis show a steady increase in trade creation from US$13.9 million in Scenario 1 to US$40.1 million in Scenario 4. The incremental growth observed signifies the strengthening of trade ties between China and ASEAN, as ASEAN nations assume greater importance in China's import strategy.

In scenario 4, trade diversion continues to rise from USUS$8.3 million in scenario 1 to US$39.8 million. This finding suggests that China's import dependence on ASEAN countries is increasing, which may have a negative impact on other trading partners. This change suggests that China has made strategic adjustments in response to the favorable conditions brought about by RCEP, which has facilitated regional economic cooperation.

Tariff revenue loss grows significantly from US$12.2 million in Scenario 1 to US$53.3 million in Scenario 4. The observed decline suggests that the substantial tariff reductions implemented within the framework of RCEP not only increase the volume of trade but also reduce fiscal revenues from imports.

Table 5. Impacts on China as importer from ASEAN under four scenarios, US$ million

	S1	S2	S3	S4
Trade Creation	13.9	23.8	31.7	40.1
Trade Diversion	8.3	22.2	33.2	39.8
Total Trade Effect	22.2	46	65	79.8
Tariff Revenue	-12.2	-35.1	-44.5	-53.3
Welfare Change	13.8	49.8	57.8	66.2

Source: Authors calculation from SMART-WITS

Welfare changes tend to increase in all scenarios, with Scenario 4 increasing by US$52.4 million to US$66.2 million. These analyses suggest that the economic benefits of increased market access and reduced trade costs far outweigh the adverse effects of reduced tariff revenues. The results of these analyses demonstrate the wide-ranging impact of RCEP on regional trade dynamics. They also provide important insights for future policy formulation.

China-Australia

Results on China-Australia trade collected under the RCEP framework show significant changes in the bilateral trade relationship. Trade creation in Scenario 4 sees a great increase from US$1.6 million in Scenario 1 to US$234.4 million as trade barriers are removed or eliminated. This significant increase suggests that Australian goods have much greater access to the Chinese market.

Table 6. Impacts on China as importer from Australia under four scenarios, US$ million

	S1	S2	S3	S4
Trade Creation	1.6	162.3	162.3	234.4
Trade Diversion	1.9	27.8	27.8	53.4
Total Trade Effect	3.4	190.2	190.2	287.9
Tariff Revenue	-1.5	-32.5	-32.5	-55.9
Welfare Change	1.5	162.4	162.4	234.5

Source: Authors calculation from SMART-WITS

Meanwhile, the trend of trade diversion continues to expand from USUS$1.9 million in Scenario 1 to USUS$53.4 million in Scenario 4. According to this pattern, China is gradually shifting from imports to Australian products. This shift could result in non-members importing more products from Australia if RCEP provides preferential treatment.

This trend is evident in the steady growth in tariff revenue from a loss of US$1.5 million in Scenario 1 to a significant loss of US$55.9 million in Scenario 4. This loss is directly attributable to the tariff reductions implemented by RCEP, while facilitating cross-border trade, have also reduced government import tariff revenues.

On the welfare side, the changes are equally positive, with all scenarios showing a significant increase, from US$1.5 million in Scenario 1 to US$234.5 million in Scenario 4. This suggests that the economic benefits of increased consumer surplus and market efficiency due to increased market access and reduced trade costs far outweigh the fiscal impact due to reduced tariff revenues. These data not only demonstrate the far-reaching impact of RCEP on China-Australia trade dynamics, but also provide an important basis for assessing the overall economic benefits of the trade agreement.

China-New Zealand

Data on the trade relationship between China and New Zealand under the RCEP framework illustrate the economic interactions under different scenarios, although the scale of the impacts is significantly smaller compared to China's dealings with other RCEP members. The trade creation effect is extremely limited, growing from zero in Scenario 1 to a slight increase to 100,000 USD in Scenario 4. This slight increase reveals that while there are some benefits from reducing trade barriers, the overall impact of RCEP on trade flows between two nations is very limited.

Table 7. Impacts on China as importer from New Zealand under four scenarios, US$ million

	S1	S2	S3	S4
Trade Creation	0	0	0	0
Trade Diversion	0	0	0	0.1
Total Trade Effect	0	0	0	0.1
Tariff Revenue	0	0	0	0
Welfare Change	-0.1	-0.1	-0.1	-0.1

Source: Authors calculation from SMART-WITS

In all scenarios, trade diversion is almost zero, showing no significant change in China's imports from New Zealand and no impact on other countries. This stability may stem from the already fairly low trade barriers between the two countries prior to the implementation of RCEP, or because the traded goods involved are insensitive to changes in tariff structures.

The effect of tariff revenues is also minimal, showing no significant variations across different scenarios. This is in line with the relatively limited extent of trade generation and transfers. The minimal decrease in tariff revenue provides additional evidence that the impact of RCEP on the trade volume between China and New Zealand is extremely limited.

The welfare changes are insignificantly small, with an average of approximately US$100,000 across all conditions. This indicates that the effect of RCEP on market efficiency and consumer surplus between China and New Zealand is minimal. This could be attributed to the restricted extent of tariff reductions implemented on goods exchanged between the two nations. These evaluations indicate that considering the distinctiveness of each nation's trade agreements and goods is crucial when evaluating the economic consequences of RCEP.

5. Discussions

The findings of this analysis suggest an enormous increase in trade among the states within the RCEP. These findings are consistent with the predictions made by studies in the field of international economics. The significant increase in trade creation impacts seen in Japan and South Korea supports the conclusions of Cui *et al.* (2019) and Wang (2023).

Out of all the members of RCEP, China's economic changes with New Zealand have undergone the smallest changes. Magee (2008) observed that trade diversion with New Zealand is negligible, possibly due to distinctive market dynamics resulting from low trade barriers. These differences emphasize the complex relationship between the economic structures and preferences of different regions, which could potentially change

the expected outcomes of trade agreements. The analysis is corroborated by recent studies that quantify the impact of the RCEP and predict substantial growth in regional commerce. The observed increase in trade flows is supported by empirical evidence from this research (Rahman and Sharma 2023). Moreover, the strong agreement between the expected academic results and the collected data strengthens the dependability of the study's findings (Lee *et al.* 2022).

The results indicate a constant and positive improvement in well-being under different conditions and in different countries, which closely corresponds to the economic literature that emphasizes the advantages of trade liberalization. FTAs have the potential to enhance overall well-being by increasing household incomes and expenditures, improving the quality of imported commodities, and encouraging specialization in services and manufacturing (Vo and Nguyen 2020; Berlingieri *et al.* 2016; Deswal 2020).

However, the slight differences in well-being between China and ASEAN, as well as New Zealand, suggest that even small or less extensive decreases in tariffs can have a more subtle effect on overall wellbeing, as emphasized by Venables (2003). Hence, the level of trade integration and the unique economic attributes of member nations would significantly impact the total welfare advantages obtained by RCEP.

The strength and reliability of these findings are further supported by a recent empirical investigation undertaken by Cheong *et al.* (2020), which highlights significant improvements in welfare in East Asia due to trade facilitation measures used in similar economic accords. These references confirm the trends discovered in this study and emphasize the broad applicability and trustworthiness of the study's findings.

Conclusions

The paper thoroughly examines the economic consequences of the RCEP agreement on China's trading ties with Japan, Korea, ASEAN, Australia, and New Zealand. This is achieved by utilizing the WITS-SMART model to provide an in-depth analysis of trade creation, trade diversion, tariff revenue, and welfare changes. The analysis reveals significant disparities in trade dynamics among various partner countries and circumstances. These distinctions have emerged as a result of an intricate interaction between the removal of trade obstacles, regional economic integration, and market peculiarities.

The effectiveness of RCEP in fostering stronger economic connections and improved market entry in the area is seen by the substantial growth in trade creation and diversion with Japan and South Korea. The findings of the current study support both theoretical predictions and empirical evidence, confirming that trade liberalization under the RCEP framework can lead to significant economic advantages by promoting higher levels of trade and strengthening regional cooperation.

Welfare studies indicate that the removal of trade barriers through the RCEP significantly enhances economic welfare. This is primarily achieved by boosting consumer surplus and improving market efficiency. However, the extent of these economic benefits varies between countries, suggesting that increased integration and consistent policy implementation may be required to optimize rewards for all member states.

To sum up, this analysis presents persuasive data that underscores the profound influence of RCEP on the transformation of China's trade landscape, thereby substantiating the substantial economic benefits associated with trade liberalization. To ensure optimal utilization of the benefits offered by RCEP, it is imperative to enact policy initiatives that are both comprehensive and strategic. The aforementioned findings emphasize the criticality of enhancing policy alternatives in order to maintain stability and economic expansion in the area. Ensuring the complete enjoyment of the benefits by all nations involved in this significant trade agreement is of the utmost importance.

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Credit Authorship Contribution Statement

Wenjie Zhang: Conceptualization, Investigation, Methodology, Software, Writing – original draft;
Muhammad Daaniyall Abd Rahman: Formal analysis, Project administration, Supervision;
Mohamad Khair Afham Muhamad Senan: Writing – review and editing, Visualization;

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-Assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.
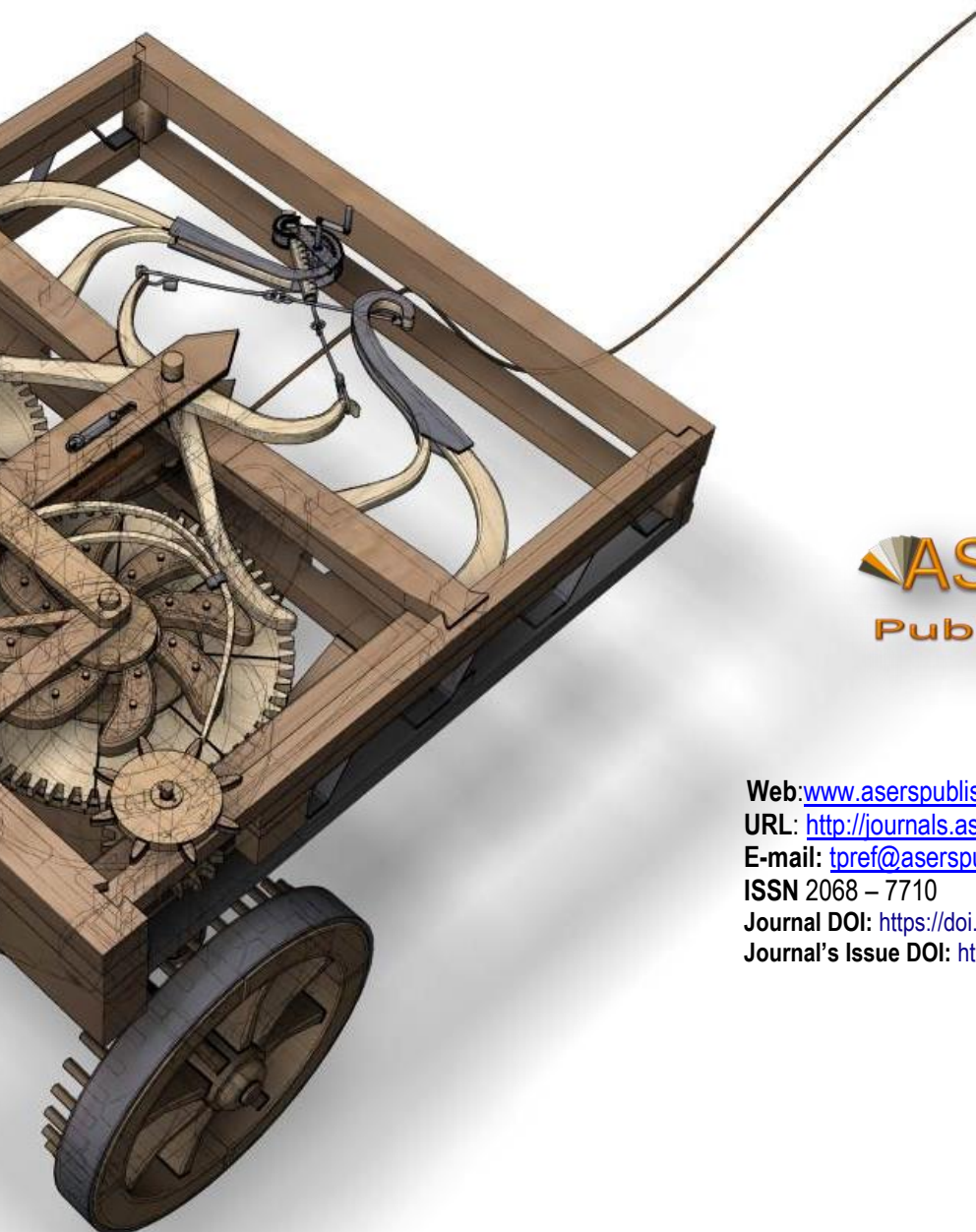
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