Assessing the Trade Impact of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership and the Regional Comprehensive Economic Partnership on Australian Exports: A Synthetic Control Approach

Abstract

This study aims to examine the impact of two trade agreements, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and the Regional Comprehensive Economic Partnership (RCEP), on Australia's export performance using the Synthetic Control Method (SCM). The results show that the CPTPP has enhanced Australia's exports performance, resulting in an average increase of 18% in exports since its implementation in December 2018. This positive increase continued during the COVID-19 pandemic, highlighting the agreement's role in stabilizing trade flows and mitigating global economic disruptions. In contrast, RCEP, which entered into force in January 2022, has shown a more modest and short-lived effect, with an average export increase of 4% that declined over time. This difference is attributed to CPTPP's more powerful trade liberalization provisions and the overlap of RCEP membership with pre-existing bilateral agreements. This paper contributes to the literature by using the SCM to assess the impacts of these mega-regional trade agreements on Australian exports. Future studies should investigate sector-specific effects and extend the analysis to other member countries to gain a more comprehensive understanding of the broader implications of these agreements.

Trans-Pasifik Ortaklığı Kapsamlı ve İlerici Anlaşması ile Bölgesel Kapsamlı Ekonomik Ortaklığın Avustralya İhracatına Olan Ticari Etkilerinin Değerlendirilmesi: Sentetik Kontrol Yaklaşımı

Özet

Bu çalışma, Sentetik Kontrol Yöntemi (SCM) kullanılarak, Trans-Pasifik Kapsamlı ve İlerici Ortaklık Anlaşması (CPTPP) ile Bölgesel Kapsamlı Ekonomik Ortaklık (RCEP) adlı iki ticaret anlaşmasının Avustralya'nın ihracat performansı üzerindeki etkisini incelemektedir. Sonuçlar, CPTPP'nin Avustralya'nın ihracat performansını artırdığını ve Aralık 2018'deki yürürlüğe girmesinden bu yana ihracatta ortalama %18'lik bir artışa yol açtığını göstermektedir. Bu olumlu artış, COVID-19 pandemisi sırasında da devam etmiş ve anlaşmanın ticaret akışlarını istikrara kavuşturma ve küresel ekonomik aksaklıkları hafifletmedeki rolünü vurgulamıştır. Buna karşılık, Ocak 2022'de yürürlüğe giren RCEP, zamanla azalan ortalama %4'lük bir ihracat artışıyla daha mütevazı ve kısa süreli bir etki göstermiştir. Bu fark, CPTPP'nin daha güçlü ticaret serbestleştirme hükümlerine ve RCEP üyeliğinin önceden var olan ikili anlaşmalarla çakışmasına atfedilebilir. Bu makale, SCM'yi kullanarak bu mega-bölgesel ticaret anlaşmalarının Avustralya ihracatı üzerindeki etkilerini değerlendirmek suretiyle literatüre katkı sağlamaktadır. Gelecekteki çalışmalar, bu anlaşmaların daha geniş kapsamlı etkilerini daha kapsamlı bir şekilde anlamak için sektöre özgü etkileri araştırmalı ve analizi diğer üye ülkelere de genişletmelidir.

Prof. Dr. Harun Bal (Çukurova University, Adana, Türkiye)
ORCID: 0000-0003-0878-8253 balharun@gmail.com

Prof. Dr. Selahattin Sarı (Eurasian Economists Association, Istanbul, Türkiye)
ORCID: 0000-0003-3218-2753 1950ssari@gmail.com

Ph.D. candidate Esma Erdoğan (Çukurova University, Adana, Türkiye)
ORCID: 0000-0002-7324-8512 esma01erdogan@gmail.com

Mr. Yasser Al Hasbi (Çukurova University, Adana, Türkiye)
ORCID: 0009-0000-3581-1960 alhasbiyasser@gmail.com

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1 Introduction

International trade agreements are one of the factors that shape the global economy by providing integration and increased access to markets. Two important agreements in recent years are the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and the Regional Comprehensive Economic Partnership (RCEP). These agreements bring together a diverse group of countries to reduce trade barriers and harmonize regulations. Australia has actively sought to develop trade relations in this region through bilateral and regional free trade agreements (FTAs) as a primary tool to support economic integration. This journey began in 1983 with the first FTA with New Zealand, which set the stage for Australia's broader trade liberalization at the beginning of the twenty-first century (see Table 1).

Plurilateral agreements	ASEAN - Australia - New Zealand	1 January 2010
	Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)	30 December 2018
	Pacific Agreement on Closer Economic Relations (PACER) Plus	13 December 2020
	Regional Comprehensive Economic Partnership Agreement (RCEP)	1 January 2022
Bilateral Agreements	Australia - New Zealand	1 January 1983
	Singapore - Australia	28 July 2003
	Australia - United States	1 January 2005
	Thailand - Australia	1 January 2005
	Australia - Chile	6 March 2009
	Malaysia - Australia	1 January 2013
	Korea - Australia	12 December 2014
	Japan - Australia	15 January 2015
	China - Australia	20 December 2015
	Australia - Hong Kong	17 January 2020
	Peru - Australia	11 February 2020
	Indonesia- Australia Comprehensive Economic Partnership Agreement	5 July 2020
	Australia-India Economic Cooperation and Trade Agreement	29 December 2022
	Australia-United Kingdom Free Trade Agreement	31 May 2023

Table 1: The timeline of Australia's FTAs ***Source:*** *Australian Gov., Department of Foreign Affairs and Trade*

Indicator	2010	2018	2019	2020	2021	2022	2023
GDP (current Billion US$)	1149	1429	1393	1328	1557	1691	1728
GDP growth (annual %)	2.2%	2.9%	2.8%	0.1%	2.1%	4.2%	3.44%
GDP per capita (current US$)	52145	57197	54973	51792	60608	64997	64820

Table 2: *Economic Growth and Income Indicators* ***Source:*** *World Bank, World Development Indicators*

Indicator	2010	2018	2019	2020	2021	2022	2023
Agriculture, forestry, and fishing, value added (% of GDP)	2.2%	2.5%	2.1%	2.1%	2.3%	2.7%	2.6%
Industrial sector (including construction) share of GDP	25.17%	24.12%	25.27%	25.39%	25.42%	27.5%	27.7%
Services, value added (% of GDP)	65.65%	66.56%	66.01%	66.25%	65.73%	63.28%	63.57%

Table 3: *Contribution of Economic Sectors to GDP* ***Source:*** *World Bank, World Development Indicators*

The CPTPP and RCEP are particularly significant for Australia because a large proportion of its exports go to the countries involved in these agreements. In 2018, the year the CPTPP entered into force, about 20% of Australia's total exports went to CPTPP member economies. Similarly, when the RCEP entered into force in 2022, the participating countries in the agreement represented 60% of the overall Australian exports.

To understand the Australian economy and its developments in recent years, it is worthy to provide a set of economic and sectoral indicators that reflect the performance of the Australian economy in recent years. Based on

this data (Tables 2,3,4, and 5) we can explore key trends in economic growth, the distribution of production across different sectors, the structure of foreign trade, and employment distribution across sectors.

Indicator	2010	2018	2019	2020	2021	2022	2023
Share of Agriculture in Exports (%)	13%	15%	13%	13%	13%	13%	13%
Share of Fuels and Mining in Exports (%)	61%	65%	67%	61%	70%	72%	70%
Share of Manufactures in Exports (%)	13%	11%	11%	10%	8%	7%	8%
Share of Agriculture in Imports (%)	5%	7%	8%	8%	7%	7%	7%
Share of Fuels and Mining in Imports (%)	14%	15%	14%	10%	12%	17%	16%
Share of Manufactures in Imports (%)	68%	74%	74%	77%	77%	73%	74%

Table 4: *Commodity Composition of Exports and Imports* ***Source:*** *World Bank, World Development Indicators*

Indicator	2010	2018	2019	2020	2021	2022	2023
Unemployment Rate	5.21%	5.30%	5.16%	6.46%	5.12%	3.70%	3.67%
The share of employment in the service sector	75.79%	77.50%	78.38%	78.04%	78.59%	79.16%	N/A
The share of employment in the industry sector	20.98%	19.89%	19.06%	19.19%	18.91%	18.64%	N/A
The share of employment in the agriculture sector	3.23%	2.62%	2.56%	2.77%	2.49%	2.20%	N/A

Table 5: *Employment Structure by Economic Sector* ***Source:*** *World Bank, World Development Indicators*

The study contributes to the expanding literature on the economic implications of mega-regional trade agreements by using the SCM to assess the causal effects. Unlike previous studies that depended heavily on computable general equilibrium (CGE) models, this analysis utilizes empirical evidence and a data-driven analysis to shed light on the contribution that the CPTPP and RCEP make towards the export performance of Australia. By disentangling the impacts of the agreements, the study offers a differentiated picture of the respective roles that the CPTPP and RCEP have in shaping Australia's trade trajectory.

This study has the following structure: Section II reviews the literature on free trade agreements focusing on CPTPP and RCEP and discusses new approaches for estimating trade impacts. Section III explains the empirical strategy, specifically how SCM is used to construct synthetic counterfactuals for evaluating Australia's export performance. Section IV presents the results comparing the diverse impacts of the CPTPP and RCEP on Australia's exports, including robustness tests to ensure the results. Section V presents the key conclusion insights and suggestions for additional research.

2 Literature Review

The effect of FTAs on international trade has been a focal point of much economic research. This section reviews the current literature on the effects of trade agreements, with a special focus on CPTPP and RCEP. It also examines methodological advancements in impact analysis, with a focus on SCM. Discussions about preferential trading arrangements (PTAs) date back to Viner's (1950) seminal work, *The Customs Union Issue*. This study laid the foundation for evaluating the impacts of PTAs. Subsequent global developments, which saw the establishment of the General Agreement on Tariffs and Trade (GATT) in 1947, followed by the establishment of the World Trade Organization (WTO) in 1995, have also stimulated interest in the economic impacts of FTAs. Additionally, the signing of the North American Free Trade Agreement (NAFTA) in 1994 sparked significant academic discourse on its impacts. Frankel et al. (1995) used gravity models to analyze trade flows under NAFTA, illustrating the broader applicability of such agreements in shaping economic dynamics.

Australia's engagement with FTAs has been the subject of some studies. Oxley (2003) emphasized the strategic role of FTAs in increasing competitiveness and deepening the economic relationship of Australia, especially with the United States. According to Oxley, these agreements not only liberalize trade but also foster economic integration. Petri et al. (2011) assessed the economic impacts of the Trans-Pacific Partnership (TPP) and other Asia-Pacific integration pathways, projecting significant welfare and trade gains for participating countries. Their findings underscored Australia's export growth potential and its strategic role in unifying fragmented trade rules. Petri & Plummer (2019) highlighted Australia's additional trade and income benefits from mega-regional agreements such as the CPTPP and RCEP, emphasizing its leadership in these negotiations and using a CGE model to project these gains.

Park et al. (2021) used a computable general equilibrium (CGE) model to analyze the economic impacts of the RCEP and CPTPP within the context of the U.S.-China trade war. Their findings revealed substantial economic benefits for key East Asian economies while noting that these agreements partially mitigated global income losses caused by trade disruptions. Shepherd (2019) employed a structural gravity model combined with general

equilibrium simulations using OECD–WTO TiVA data to assess the trade and welfare impacts of major mega-regional agreements, including RCEP and CPTPP. The study finds that these agreements significantly expand trade, particularly in manufacturing and intermediate goods, while producing only modest gains in real income. Timsina & Culas (2020) examined Australia's FTAs' effects on agricultural trade using a gravity model, identifying significant gains in commodities such as sugar and wine. More recently, Pan et al. (2024) employed a dynamic GTAP model to assess the economic implications of the RCEP under the U.S.-led Indo-Pacific Strategy. Their simulations show that Australia's GDP increases modestly by approximately 0.9%, while its imports and exports expand by around 6.5% and 4.8%, respectively. The study further reveals that agricultural and livestock sectors experience substantial output gains, with livestock production rising by over 13%, whereas manufacturing sectors such as textiles and light industry contract sharply by roughly −23% and −10%, respectively.

The evolution of models evaluating the impacts of FTAs illustrates steady methodological progress aimed at improving causal inference. Early frameworks, such as the Gravity Model by Tinbergen (1962), provided key insights into the determinants of trade flows. Later developments by Anderson (1979) and Anderson & Van Wincoop (2003) incorporated theoretical advances, such as multilateral resistance, that deepened the model's explanatory power. A breakthrough came with the introduction of the SCM by Abadie & Gardeazabal (2003), later refined by Abadie et al. (2010). SCM constructs a weighted combination of control units that closely matches the treated unit's pre-intervention characteristics, thereby enabling credible causal evaluation. The method has since been applied to various trade-related contexts, including NAFTA (Billmeier & Nannicini, 2013), global and Latin American FTAs (Hannan, 2016; Hannan, 2017), and bilateral agreements such as China–New Zealand (Verevis & Üngör, 2021). Barral & Quimba (2019) also applied SCM to the Japan–Philippines Economic Partnership Agreement (JPEPA), further demonstrating its applicability in Asian economies.

However, to the best of the authors' knowledge, no prior empirical study has applied SCM to assess the trade effects of the CPTPP or the RCEP. Previous analyses of these mega-regional agreements have predominantly relied on CGE simulations or structural gravity frameworks, which, while informative, depend heavily on theoretical assumptions and lack ex-post causal identification.

This study, therefore, fills a crucial methodological and empirical gap by being the first to apply SCM to measure the causal trade impacts of the CPTPP and RCEP on Australia, one of the key member countries of both agreements. By focusing on a highly open and trade-dependent economy, the paper extends the frontier of SCM applications to mega-regional FTAs in the Asia–Pacific, providing robust empirical evidence on how deep trade integration shapes export performance.

3 Methodology

3.1 The Synthetic Control Method

The synthetic control method (SCM) is an econometric approach for assessing the impact of major interventions. It was first introduced by Abadie & Gardeazabal (2003) and later refined by (Abadie et al., 2010). SCM creates a composite control unit by assigning weights to several control units. This weighted average estimates the outcome that the treated unit would have experienced without the intervention. The weights are chosen based on data to ensure the synthetic control closely resembles the treated unit in key predictors.

SCM offers several advantages over conventional econometric methods, such as difference-in-differences and fixed effects models, particularly when a single unit is exposed to an intervention. The method accommodates unobserved time-varying factors by ensuring a close match between the treated unit and its synthetic version in the pre-intervention period, thereby reducing the influence of confounders and improving the credibility of the causal estimates. Additionally, the donor country weights are derived through an optimization process that minimizes the pre-treatment discrepancy, enhancing the predictive accuracy of the estimated counterfactual. SCM is also transparent and interpretable, as the contribution of each donor country is explicitly reflected in its assigned weight, allowing for clear verification and replication of the results.

Following Abadie et al. (2010), let us consider a setting with $J + 1$ regions, where only the first region is exposed to the intervention of interest (that is, "treated") during period $T_0 + 1, \dots, T$. The remaining J regions are untreated reservoir of potential controls (a "donor pool").

For any region i and time t , the potential outcomes can be defined as follows:

Y_{it}^N the outcome that would have been observed in the absence of intervention.

Y_{it}^I the outcome that would have been observed under the intervention in period $T_0 + 1$ to T

The effect of the intervention on region i at time t is thus expressed as $\alpha_{it} = Y_{it}^I - Y_{it}^N$. The observed Y_{it} outcome can be represented as:

$$Y_{it} = Y_{it}^N + \alpha_{it} D_{it},$$

where D_{it} is a binary indicator that equals 1 if region i is exposed to the intervention at time t and 0 otherwise. For the treated region.

To estimate the intervention effect α_{it} for $t > T_0$, the key challenge lies in constructing Y_{it}^N, the counterfactual outcome for region i in the absence of the intervention. The SCM assumes that Y_{it}^N follows a factor model:

$$Y_{it}^N = \delta_t + \theta_t Z_i + \gamma_t \mu_i + \varepsilon_{it},$$

In this context, δ_t represents an unidentified common factor with uniform loadings across all units, Z_i is a $(r \times 1)$ vector of observed covariates (not affected by the intervention) θ_t, is a $(r \times 1)$ vector of unknown parameters, γ_t is a $(1 \times F)$ vector of unobserved common factors, μ_i is an $(1 \times F)$ vector of unknown factor loadings, and the error terms ε_{it} are unobserved transitory shocks at the region level with zero mean.

The synthetic control for the treated region is constructed as a weighted average of the untreated regions, defined by a vector of weights $W = (w_1, w_2, \ldots w_{J+1})$. These weights are non-negative $(w_j \geq 0)$ and sum to one $(\sum_{j=2}^{J+1} w_j = 1)$. The weights are chosen to ensure that the synthetic control closely matches the treated region in terms of pre-intervention outcomes and covariates:

$$\sum_{j=2}^{J+1} w_j Y_{jt} \approx Y_{1t}, \text{ for } t = 1, \ldots, T_0,$$

$$\text{And: } \sum_{j=2}^{J+1} w_j Z_j = Z_1.$$

Once synthetic control is constructed, the intervention effect for the treated region is estimated as:

$$\alpha_{it} = Y_{1t} - \sum_{j=2}^{J+1} w_j^* Y_{jt}, \text{ for } t > T_0$$

Where w_j^* are the optimal weights.

3.2 Pretreatment Fit Index

In our analysis, we assess the suitability of the SCM as a counterfactual by employing a pre-treatment fit index, following the method described by Adhikari & Alm (2016). This index measures how closely the synthetic control matches the treated unit before the intervention. One major advantage of this index is its ability to normalize the Root Mean Squared Prediction Error (RMSPE), which facilitates direct comparisons across various SCM models. This approach defines the benchmark RMSPE, which is obtained from the zero-fit model. The fit index is defined as the ratio of the RMSPE to the benchmark RMSPE.

$$Fit\ Index = \frac{RMSPE}{Benchmark\ RMSPE}$$

The index ranges from 0 to an upper bound U, where a value of 0 indicates a perfect fit, and a value greater than 1 signals a poor fit, warranting the exclusion of the synthetic control. We report both the pretreatment fit index and the RMSPE values, as a strong pretreatment fit is essential for ensuring a reliable post-intervention counterfactual.

3.3 Synthetic Control Robustness

Multiple methods for testing the significance of results obtained through SCM have been developed over the past few years. These are analogous to permutation tests, often performed in medical statistics, and entail the variation of either the treatment period or the treated unit. This method allows us to assess whether the estimated treatment effects are significant or driven by random chance. By running this permutation test, we aim to further validate the results obtained from SCM and ensure the reliability of our conclusions.

3.4 Application to Australian Exports

We apply SCM to analyze the impact of Australia's participation in the CPTPP and RCEP on its exports. Quarterly data from 2010 Q1 to 2024 Q3 are sourced from the World Trade Organization (WTO) and the World Bank's World Development Indicators (WDI). The donor pools are selected based on economic similarities and exclude countries directly affected by the agreements to mitigate biases. For CPTPP, the donor pool includes Algeria, Brazil, Greece, Nigeria, Norway, Saudi Arabia, South Africa, Iceland, India, the Netherlands, and the United States. For RCEP, the donor pool expands to include Canada, Chile, and Peru countries also in CPTPP but not RCEP to disentangle overlapping effects.

4 Results and Discussion

This study assessed the impact of the CPTPP and RCEP on Australia's exports using SCM. We developed two independent models. Figures 1 and 2 illustrate the synthetic counterfactuals for each agreement. The models exhibit strong pre-intervention fit, as indicated by the pre-treatment fit indices of 0.0588 for the CPTPP and 0.0674 for the RCEP, confirming their reliability in replicating Australia's trade dynamics before implementation.

An analysis of Australia's post-CPTPP trade performance using the SCM reveals that joining the CPTPP had a notably positive impact. Between the first quarter of 2019 (Q1 2019) and the third quarter of 2024 (Q3 2024), Australia's exports increased by an average of 18%, reflecting a significant improvement in total goods exports compared to the scenario where the country had not joined the agreement.

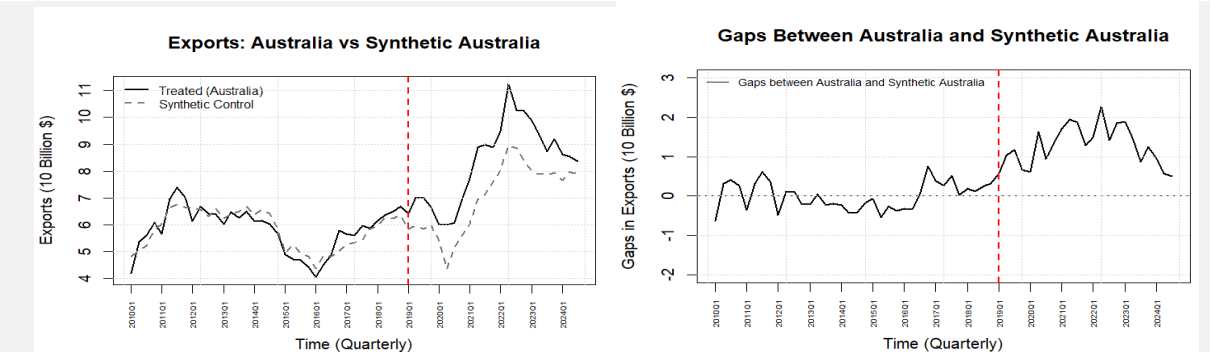

Figure 1: *Synthetic counterfactual for Australia' exports (CPTPP)* **Pretreatment Fit Index** = 0.0588

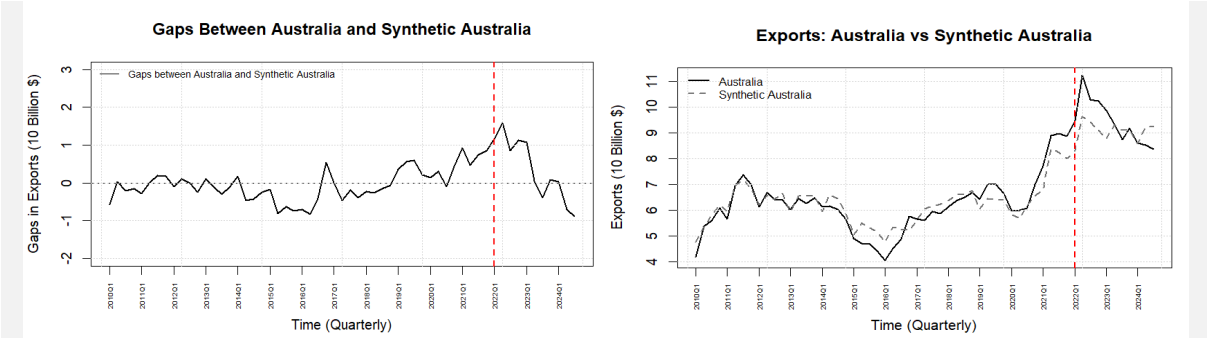

Figure 2: Synthetic counterfactual for Australia' exports (RCEP) **Pretreatment Fit Index** = 0.0674

This positive deviation is illustrated in Figure 1, which highlights both the immediacy and persistence of the agreement's impact. Exports increased by 10% in the first quarter following accession (Q1 2019) and sustained this upward trajectory. Even during the COVID-19 pandemic, the CPTPP was critical in mitigating adverse economic effects, bolstering Australia's exports relative to the synthetic counterfactual. Notable export growth during the pandemic included increases of 37% in Q2 2020, 18% in Q3 2020, 24% in Q4 2020, 28% in Q1 and Q2 2021, and 26% in Q3 2021.

In contrast, the impact of RCEP was more limited. SCM analysis of the post-RCEP period (Q1 2022 to Q3 2024) indicates a modest 4% average increase in exports. Although the initial effects were positive, they were smaller and less sustained compared to those of CPTPP. As shown in Figure 2, export growth under the RCEP peaked at 14% in Q1 2022 and 17% in Q2 2022, followed by a gradual decline: 9% in Q3 2022, 12% in both Q4 2022 and Q1 2023, and just 1% in Q2 and Q4 of 2023. By Q3 2023, the effect turned negative, with exports decreasing by 4%, 8%, and 10% in Q3 2023, Q2 2024, and Q3 2024, respectively. By Q1 2024, actual and synthetic exports were virtually identical.

Agreement	Treatment Period	Average Increase in Exports	Cumulative Increase in Exports (Billion US$)	COVID-19 Period Impact (2020 Q1 - 2021 Q4)
CPTPP	Q1 2019-Q3 2024	18%	292.4	24%
RCEP	Q1 2022-Q3 2024	4%	40	N/A (pre-agreement period)

Table 6: *Average and Cumulative Increases in Australian Exports Under CPTPP and RCEP (SCM Estimates)*

In summary, while both agreements have positively influenced Australia's export performance, their impacts have differed significantly in magnitude and duration. The CPTPP delivered a substantial and sustained boost, even during global disruptions like the COVID-19 pandemic. Conversely, RCEP's impact was more limited, temporary, and inconsistent, with diminishing benefits over time and eventual declines.

4.1 Robustness Analysis of SCM Results

We find it worthy to apply the robustness tests developed by Abadie et al. (2010). This approach utilizes "placebo" SCM tests across time and space by systematically altering either the treatment period or the treated unit to assess the robustness of the observed effects.

4.2 In-Time Placebo

To ensure the robustness of our findings and rule out any potential biases, we conducted an in-time placebo test by re-running the SCM with different inputs for the treatment periods. For CPTPP, we applied the SCM model to

hypothetical dates, Q1 2015 and Q1 2016, which precede the actual implementation of the agreement. Similarly, for the RCEP, we tested the model on hypothetical dates, Q3 2020 and Q1 2021, which were before the RCEP came into effect.

Under the necessary assumptions for the validity of the SCM results, we expect that there should be no deviation in the structure of the post-treatment impact when testing these placebo periods. As clearly shown in Figure 3, using data from the CPTPP and RCEP agreements before their actual implementation dates does not alter the observed deviation and results. This indicates that the differences observed in the post-treatment period were not driven by the choice of period but rather by the actual impact of Australia's accession to these agreements.

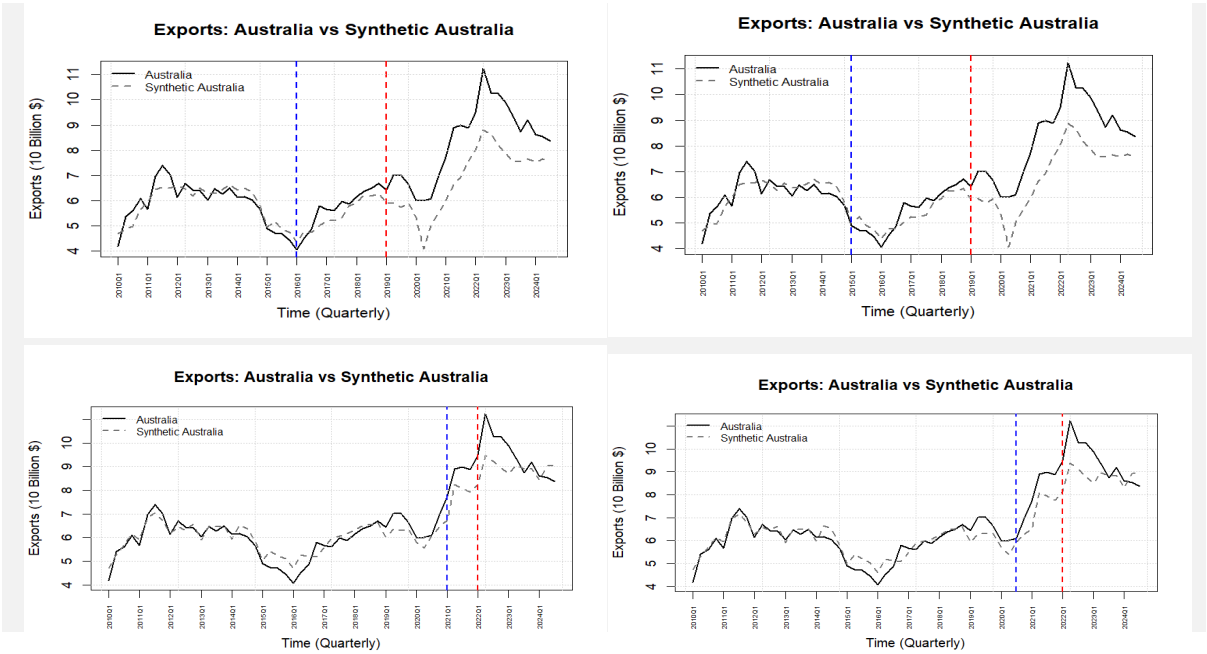

***Figure 3**: SCM In-Time Placebo*

By isolating the treatment in this manner, as outlined by (Abadie et al. 2010), we can confidently reject the hypothesis that the observed deviation was driven by anything other than Australia's participation in the CPTPP and RCEP agreements.

4.3 In-Space Placebo

To further examine the robustness of the results, we conducted an in-space placebo test, which examines the deviations observed in other countries not directly exposed to the CPTPP and RCEP agreements. This method involves applying the SCM to some of the control countries that did not join the agreements, using these countries as placebo units to evaluate whether similar deviations could be observed in the absence of treatment.

For the CPTPP, the placebo test was applied to non-member countries with similar trade profiles, (Brazil and South Africa). For the RCEP, the placebo test was applied to non-member countries with similar trade profiles and members at CPTPP, (Canada, Chile). The results, as depicted in Figure 4, reveal that no significant deviations were observed for these placebo units, either during the actual treatment period or in hypothetical post-treatment periods. This indicates that the observed impact on Australia's exports is unique to its membership in the agreements.

The absence of substantial deviations in the placebo countries supports the validity of the causal relationship between Australia's accession to the CPTPP and RCEP and the observed export increases. Furthermore, the findings align with the premise that the trade agreements generate real economic effects, distinct from broader global or regional trade trends.

The absence of substantial deviations in the placebo countries supports the validity of the causal relationship between Australia's accession to the CPTPP and RCEP and the observed export increases. Furthermore, the findings align with the premise that the trade agreements generate real economic effects, distinct from broader global or regional trade trends. Through the results of In-Time and In-Space Placebo tests, the analysis confirms the robustness of the SCM models and strengthens the confidence in attributing the observed impacts on Australia's exports to its participation in these agreements.

However, it is important to recognize certain limitations of this study. Although the findings offer strong empirical evidence on the effects of the CPTPP and RCEP on Australia's export performance, the analysis faces temporal limitations. Specifically, because RCEP only entered into force in January 2022, the available post-treatment data covers a relatively short period. As a result, the full effects of the RCEP may emerge gradually as

trade patterns, investment flow, and supply-chain linkages adjust over time. Therefore, the modest and short-lived gains observed in this study should be interpreted as initial short-run impacts rather than conclusive long-term outcomes. Future research should update the synthetic control models once additional post-agreement data become available, enabling a more comprehensive evaluation of the RCEP's enduring economic implications for Australia and the wider Indo-Pacific region.

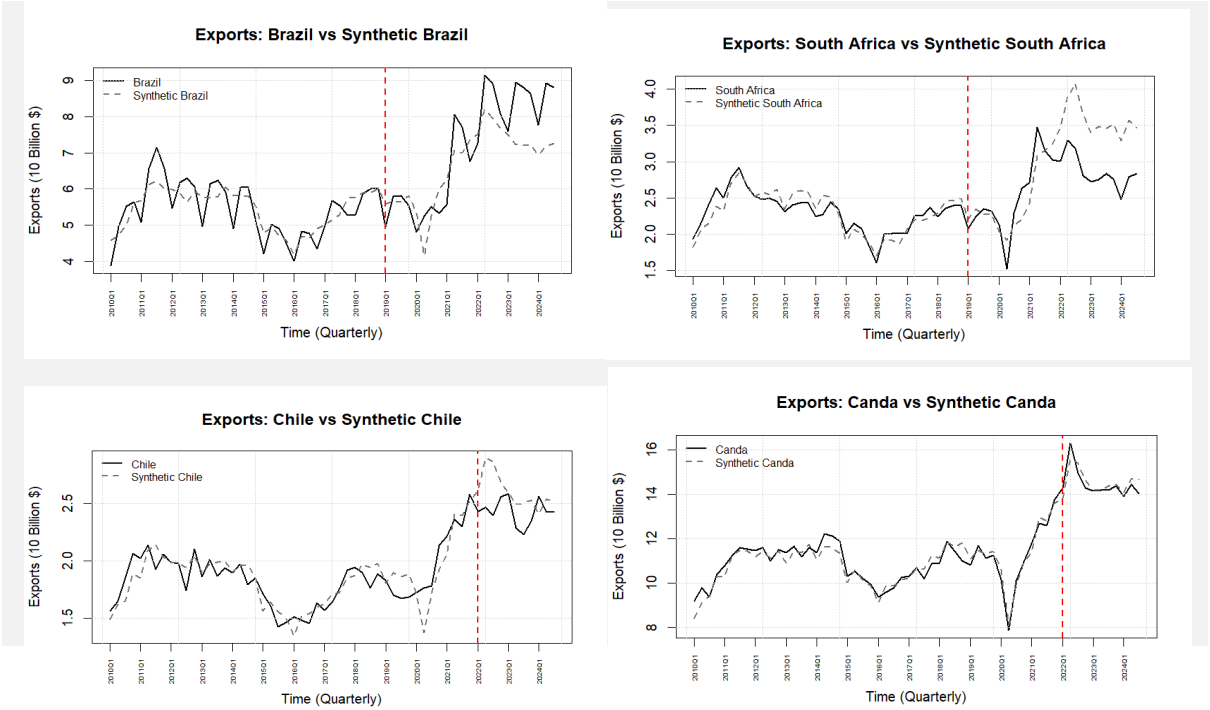

Figure 4: *SCM In-Space Placebo*

5 Concluding Remarks

This study examines the effects of Australia's participation in two prominent trade agreements, the CPTPP and the RCEP, on its export performance using SCM. The results provide valuable insights into the distinct effects of these agreements on Australia's trade dynamics. The results emphasize the significant and sustained positive impact of the CPTPP on Australia's export performance. Since its implementation in December 2018, the agreement has led to an average 18% increase in exports compared to the synthetic counterfactual, highlighting its effectiveness in enhancing Australia's trade competitiveness. Notably, these benefits have persisted even during the global economic disruptions caused by the COVID-19 pandemic, underscoring the agreement's role in improving market access and reducing trade barriers for Australian exporters. Peak export growth during periods of heightened economic uncertainty underscores the stabilizing effect of the CPTPP on trade flows.

In contrast, the RCEP, which became effective from January 2022, showed a more modest and transient impact. The agreement resulted in an average increase of 4% in exports; but this effect waned over time, with actual and synthetic exports converging by the first quarter of 2024. This limited impact may reflect the agreement's broad focus on harmonizing existing trade agreements rather than introducing new trade opportunities. Additionally, the overlap in membership with the CPTPP and the presence of pre-existing bilateral free trade agreements with RCEP member states likely diluted the incremental benefits for Australia. It is also plausible that the full impacts of RCEP have yet to materialize, given its relatively recent implementation.

While this research provides important evidence on the impacts of the CPTPP and RCEP on Australia's exports, future studies could delve into sector-specific analyses to identify industries that have derived the most significant benefits from these agreements. Moreover, exploring the influence of non-economic factors, such as geopolitical considerations and environmental commitments, could yield a more comprehensive understanding of the broader implications of trade agreements. Expanding the analysis to include other member states could also facilitate comparative evaluations and contribute to the design of more effective trade policies in the future.

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Appendix

Donor country	Weight w_j
Algeria	0.122
Brazil	0.200
Greece	0.050
Nigeria	0.059
Norway	0.087
Saudi Arabia	0.134
South Africa	0.063
Iceland	0.117
India	0.036
Netherlands	0.101
United States	0.030

***Table 6**: Country weights in the synthetic Australia (CPTPP)*

Variables	Australia	Synthetic Australia	Sample Mean
Merchandise Exports	5.835	5.835	7.612
Merchandise Imports	5.707	5.712	9.129
Real Effective Exchange Rate	98.042	98.042	98.758
Export Value (annual averages, pre-treatment)	124.466	124.472	122.366
Export Volume (annual averages, pre-treatment)	96.619	96.618	90.863

***Table 7:** Australia exports predictor means before (CPTPP)*

Donor country	Weight w_j
Algeria	0
Brazil	0.576
Canada	0
Chile	0.273
Greece	0
Nigeria	0
Norway	0
Peru	0
Saudi Arabia	0
South Africa	0
Iceland	0
India	0
Netherlands	0.151
United States	0

***Table 8:** Country weights in the synthetic Australia (RCEP)*

Variables	Australia	Synthetic Australia	Sample Mean
Merchandise Exports	6.182	6.227	7.036
Merchandise Imports	5.727	5.647	8.374
Real Effective Exchange Rate	95.355	86.001	97.492
Export Value (annual averages, pre-treatment)	131.830	118.762	120.248
Export Volume (annual averages, pre-treatment)	99.844	102.300	93.802
special. merchandise exports in the Q2 2020	6.000	5.689	5.172

***Table 9:** Australia exports predictor means before (RCEP)*