FINAL REPORT

Impacts of a Regional Comprehensive Economic Partnership (RCEP) on New Zealand

A Dynamic Computable General Equilibrium Analysis

***Impact*ECON**

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A Dynamic Computable General Equilibrium Analysis

Authors: Terrie Walmsley,[1] Anna Strutt[2] and Peter Minor[3]

1   Terrie Walmsley, Managing Director and Senior Economist, ImpactECON, LLC.
2   Anna Strutt, Associate Professor, Waikato Management School, The University of Waikato, New Zealand.
3   Peter Minor, Director of Trade Policy, ImpactECON, LLC.

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Acronyms

ASEAN	Association of Southeast Asian Nations
AVE	Ad valorem equivalent
CEPII	Centre d'Etudes Prospectives et d'Informations Internationales
CGE	Computable general equilibrium
CIF	Cost, insurance and freight
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
EIF	Entry into force
FDI	Foreign direct investment
FTA	Free trade agreement
FOB	Free on board
IEDyn	ImpactECON Dynamic model
GDP	Gross domestic product
GDyn	Dynamic GTAP Model
GTAP	Global Trade Analysis Project
HS	Harmonised system
MFAT	Ministry of Foreign Affairs and Trade (New Zealand)
MFN	Most favoured nation
NTM	Non-tariff measure
NZ	New Zealand
OECD	Organisation for Economic Cooperation and Development
RCEP	Regional Comprehensive Economic Partnership
TFA	Trade Facilitation Agreement
TFP	Total factor productivity
TRQ	Tariff-rate quota
UN	United Nations
UNCTAD	United Nations Commission for Trade and Development
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNITC	International Trade Centre
WTO	World Trade Organisation

Executive Summary

This report presents results from a large-scale modelling effort undertaken to improve understanding of the potential economic impacts of RCEP on New Zealand. The RCEP region encompasses the 10 ASEAN countries along with Australia, China, India, Japan, New Zealand and South Korea.

We model three main RCEP scenarios that include tariff reductions, reductions in non-tariff measures (NTMs) on goods and services, and improved trade facilitation. Implementation commences in 2022 and is phased in over 20 years. Scenario 1 is the most conservative in terms of tariff and NTM reductions. Scenario 2 models more ambitious tariff and NTM reductions. Scenario 3 reduces tariffs furthest, with the same NTM reductions as in the second scenario. Improvements in trade facilitation are the same in all scenarios. Each scenario is modelled against a baseline projection of the global economy to 2045. The baseline does not include the impacts of RCEP, but incorporates other trade agreements already concluded, including the CPTPP. This avoids double counting the impacts of liberalisation already agreed upon, with RCEP results reported as changes from this baseline.

The overall impacts on New Zealand's real GDP for the main RCEP liberalisation scenarios modelled are summarised in Table E1. In the first scenario, real GDP is projected to increase by 0.29 percent relative to the 2045 baseline, increasing to 0.62 percent in the second scenario and 0.59 percent in the third scenario. In constant 2014 dollar terms, these increases range from approximately NZ$1.5 billion to NZ$3 billion.

The three scenarios become progressively more ambitious in terms of tariff reductions. As well as increases in trade, tariff reductions in the region lead to some diversion of exports from New Zealand to other RCEP members. This reflects the fact that New Zealand already has one of the most comprehensive set of free trade agreements within the RCEP region. The impacts of this are most evident in the difference in results between Scenarios 2 and 3, with the third scenario contributing slightly lower GDP growth than the second, despite more ambitious RCEP tariff cuts.

Table E1: Simulated change in New Zealand's real GDP, relative to the 2045 baseline, RCEP Scenarios 1-3 (percent and NZ$m)

	Real GDP		
	Scenario 1	Scenario 2	Scenario 3
GDP change in 2045 (%)	0.29	0.62	0.59
GDP change in 2045 (NZ$m*)	1,486	3,186	3,000

* Constant 2014 NZ dollars.

In all RCEP scenarios modelled, reductions in goods NTMs are the most significant source of GDP gains. Trade facilitation and reductions in services NTMs also contribute to positive gains. Reductions in tariffs have modest and mixed effects across scenarios, in part due to the relatively small reductions in tariffs, as well as shifts in trade to other RCEP countries. While we find that liberalisation of NTMs is likely to offer important potential gains from RCEP, we acknowledge challenges in quantifying and modelling them. Furthermore, their ultimate reduction will depend on the details of the final agreement, along with implementation and enforcement mechanisms.

When assessing the potential impacts of RCEP on New Zealand, it is useful to consider a counterfactual in which New Zealand does not participate while the rest of RCEP liberalises. We supplement Scenarios 1 and 2 with simulations in which New Zealand does not engage in RCEP. In addition to losing the potential gains from RCEP, we find a reduction in New Zealand's GDP of 0.15 to 0.18 percent in these scenarios. Also of interest is to consider the consequences of India not participating, since it is the only RCEP member with which New Zealand does not currently have a trade agreement. In this case, if New Zealand implements RCEP but India does not, we find that the GDP gains to New Zealand in Scenarios 2 and 3 will reduce by almost 40 percent.

1 Introduction and Background

This report was prepared at the request of the New Zealand Ministry of Foreign Affairs and Trade (MFAT). It presents results from a large-scale modelling effort undertaken to improve understanding of the potential economic impacts on New Zealand of implementing the proposed Regional Comprehensive Economic Partnership (RCEP) agreement.

RCEP negotiations commenced in 2012 between the 10 Association of Southeast Asian Nations (ASEAN) governments[4] and their six free trade agreement (FTA) partners: Australia, China, India, Japan, New Zealand and South Korea. In this study, we model implementation of the proposed RCEP agreement among all sixteen members,[5] as well as additional scenarios to examine the potential impacts of New Zealand or India not participating. RCEP is a large regional grouping that is diverse in terms of the size of economies, populations and per capita incomes (Table 1). Total 2018 economic output, as measured by GDP, ranges from almost NZ$20 trillion in the case of China to just under NZ$20 billion for Brunei Darussalam. There are substantial differences in the level of economic development within the region, for example with per capita GDP ranging from NZ$93,000 in Singapore to less than NZ$5,000 in Cambodia, India, Lao PDR, Myanmar, the Philippines and Vietnam.[6]

All economies in this regional grouping are relatively strong trading economies, with their total trade (exports plus imports) being at least one third of the value of GDP (Table 1). For ten of these sixteen countries, total trade is greater than 50 percent of GDP; in the case of Cambodia, Malaysia, Singapore, Thailand and Vietnam, the ratio is more than 100 percent. In total, the RCEP region comprises more than 32 percent of global GDP, almost 30 percent of global trade and close to half of the world's population (Table 1).

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4   Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam.
5   Myanmar is not separately identified in the underlying GTAP 10 Data Base used, and therefore remains aggregated with East Timor in a 'rest of ASEAN' region in the current study.
6   Though we note that were we to use purchasing power parity (PPP) estimates, rather than current dollar values, some of these values would be significantly higher: for example, PPP estimates of per capita GDP for Indonesia, Myanmar and India are between three and five times as large as the estimates presented in Table 1 (World Bank, 2019).

Table 1: Summary data for RCEP countries, 2018[7]

	GDP (NZ$ billion)	Exports of goods and services (NZ$ billion)	Imports of goods and services (NZ$ billion)	Population (million)	GDP per capita (NZ$ thousand)
Australia	2,066.8	448.2	440.6	25.0	82.7
Brunei Darussalam	19.6	10.2	8.2	0.4	45.6
Cambodia	35.5	21.8	22.4	16.2	2.2
China	19,638.0	3,832.3	3,678.5	1392.7	14.1
India	3,934.4	774.9	921.8	1352.6	2.9
Indonesia	1,504.0	315.3	331.7	267.7	5.6
Japan	7,173.6	1,246.6	1,181.0	126.5	56.7
Lao PDR	26.2	8.4	10.1	7.1	3.7
Malaysia	511.4	356.3	320.0	31.5	16.2
Myanmar	102.8	19.2	26.9	53.7	1.9
New Zealand	295.9	84.8	82.7	4.9	60.6
Philippines	477.5	151.3	211.9	106.7	4.5
Singapore	525.5	926.9	787.3	5.6	93.2
South Korea	2,337.0	1,028.5	911.3	51.6	45.3
Thailand	728.8	486.9	411.7	69.4	10.5
Vietnam	353.5	337.2	325.7	95.5	3.7
P R O P O R T I O N O F W O R L D (%)					
RCEP	32.1	29.7	27.2	47.5	

* Trade data for Japan, Lao PDR and Myanmar are for 2017. Trade data for New Zealand are for the year ended June 2019.

Source: World Bank (2019); New Zealand trade data from Statistics New Zealand (2019).

For New Zealand, the RCEP region is a significant regional trade partner and New Zealand already has FTAs with all RCEP members, except India. In the year to June 2019, the RCEP region comprised 62 percent of New Zealand's goods exports and 48 percent of New Zealand's services exports, a total value of over NZ$49 billion (Statistics New Zealand, 2019). Policy changes in the RCEP region are therefore likely to be of importance to New Zealand.

1.1   Approach taken in this study

To model the potential impacts of implementing the RCEP agreement, we employ a dynamic computable general equilibrium (CGE) model of the world economy, with detailed regional and commodity disaggregation and global projections to the year 2045. The modelling approach used allows us to capture key features of the various economies involved, including

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7   Data (except New Zealand trade data) converted to New Zealand dollars (NZ$) applying a 2018 exchange rate of 0.6930, calculated using the simple average of B1 monthly exchange rates from the Reserve Bank of New Zealand, available at https://www.rbnz.govt.nz/statistics/b1/

inter-sectoral and inter-regional linkages. This facilitates simulation of the projected direction and magnitude of impacts on the New Zealand economy.

The RCEP negotiations aim to cover tariffs and non-tariff barriers on goods and services, investment, economic and technical cooperation, intellectual property, competition, dispute settlement and other issues (ASEAN Secretariat, 2012). The November 2018 Joint Leaders' Statement reaffirmed the commitment to create "a modern, comprehensive, high-quality and mutually beneficial economic partnership agreement" (ASEAN Secretariat, 2018). In the current study, we focus our analysis on reductions in tariff barriers on goods trade; reductions in the cost of non-tariff measures (NTMs) on goods trade and services trade;[8] and improvements in trade facilitation. We also consider the potential impacts of reducing barriers to foreign direct investment (FDI). We examine a number of indicators of the potential impact of RCEP on New Zealand, including GDP, trade flows, investment, employment and industry output. Our study does not cover issues such as economic and technical cooperation, intellectual property and competition policy, among others; it is therefore not a full cost-benefit analysis of all the potential impacts of an RCEP agreement. The aspects of the agreement we model and assumptions made are discussed in the report, with further detail provided in the appendices.

1.2   Organisation of the report

The report proceeds as follows: Section 2 briefly summarises the modelling framework, baseline construction and policy scenarios modelled, supplemented by more detailed explanations and supporting data in the appendices. Section 3 presents results from our modelling, focusing first on an overview of the potential impacts of RCEP on New Zealand, followed by more detailed analysis of selected sectors. Section 4 offers our concluding comments.

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8   A non-tariff measure (NTM) is a policy measure, other than a tariff, which may restrict trade. Many NTMs are legitimate measures to achieve particular objectives, such as biosecurity or protecting consumer health and safety, and some measures apply equally to domestic and imported products.

2 Modelling Framework and Scenarios

2.1 Model and database

In this study, we employ an extended version of the ImpactECON Dynamic model (IEDyn).[9] This model is based on the dynamic Global Trade Analysis Project (GTAP) model known as GDyn (Ianchovichina and Walmsley, 2012), which in turn is based on the widely used standard GTAP model (Hertel, 1997), long considered the benchmark for analysis of trade agreements. IEDyn is a recursive dynamic model that provides a theoretically consistent method for projecting long term macro- and micro economic variables, allowing for the modelling of trade policy impacts in the year and economic environment in which they are projected to occur.

The IEDyn model improves on the GDyn model in several important areas.[10] First, our model and database include the number of workers and wages by occupation (5 categories), sector and region. This facilitates analysis of the number of jobs created or lost by occupation and sector. It also enables us to model the movement of workers across sectors and the impact of this movement on wages, which differ by occupation and sector. Second, alternative assumptions regarding labour have been incorporated. In particular, it is assumed that while wages are upwardly flexible, they fall only gradually over time, thereby potentially creating unemployment. Thirdly, the IEDyn model is also extended to allow for improved modelling of NTMs. We incorporate NTMs through mechanisms that impact both exporter and importer costs, and trade facilitation through changes in importers' willingness to pay.

The pre-release of the GTAP v10 database, with a 2014 benchmark year, (Aguiar et al., 2019) provides the starting point for our analysis. The data are aggregated into 31 commodities and 21 regions, as detailed in the Appendix Table 15 and Appendix Table 16. Additional parameters for IEDyn model, including unemployment rates and foreign factor incomes, are also included for 2014. The GTAP 2014 database is further adjusted to take account of improved estimates of tariffs.[11] The resulting 2014 database is then used as the starting point for our simulations.

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9   The model is solved using GEMPACK (Harrison, Horridge, Jerie & Pearson, 2014).
10   Other improvements made to the IEDyn model allow for endogenous changes in the income elasticities over time and in the productivity of land (see Walmsley, Minor and Strutt, 2015).
11   Using the altertax facility, however, adjustments were made to the traditional altertax facility developed by Malcom (1998) to minimise changes in the value of exports at FOB and CIF prices. This ensures a better match between the COMTRADE data and resulting trade data in the updated GTAP database. We also use this altertax procedure to update the savings rates of Laos, Philippines and Vietnam to rates shown in World Bank data (in the GTAP database, savings are usually estimated as a residual).

2.2 Baseline

A business-as-usual or baseline scenario must be established for the dynamic model. Our baseline extends from 2014 to 2045, giving ample time for implementation of all RCEP policy changes (or shocks). To build the baseline scenario, forecasts are obtained for key exogenous variables, including population, labour by education, real GDP, and investment. Forecasts to 2023 for real GDP and investment are obtained for 191 countries from the IMF's World Economic Outlook database (IMF, 2018). After 2023, we use the implied technological change, risk premiums and other relevant rates implied by the forecasts to 2023 and the model, to endogenously determine real GDP and investment. Forecasts for labour by education to 2045 are obtained from CEPII (methodology documented in Fouré et al., 2012) and updated to reflect more recent forecasts in total labour growth from the ILO (2015). Population forecasts to 2045 are obtained from the ILO (2015) and based on UN (2015) forecasts, except for New Zealand where Statistics New Zealand (2016) forecasts are used.

Various signed free trade agreements involving RCEP members, as well as the World Trade Organisation's (WTO) trade facilitation agreement, are also incorporated into the baseline. Including existing agreements in the baseline avoids our RCEP modelling double counting the benefits of liberalisation that has already been agreed. New Zealand, for instance has existing agreements with all RCEP members except India.[12] The tariff reductions over the baseline are implemented using projected tariff changes prepared by the United Nations International Trade Commission (UNITC).[13] For Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) members, in addition to reductions in tariffs, reductions in NTMs and improved trade facilitation implemented as part of the agreement are also incorporated into the baseline, based on previous CPTPP analysis (Walmsley, Strutt, Minor and Rae, 2018). It is assumed that RCEP does not lead to further improvements in NTMs and trade facilitation between CPTPP member countries who are also members of RCEP. Finally, the baseline also uses the results from previous CPTPP analysis (Walmsley, Strutt, Minor and Rae, 2018) to model Japanese quotas on dairy and their expansion as part of the CPTPP.

2.3 Scenarios

Table 2 contains an overview of the seven scenarios examined in this study. Each scenario includes reductions in tariff barriers on goods trade, reductions in the cost of NTMs on goods and services trade, and improvements in trade facilitation. Scenarios 1, 2 and 3 are the main scenarios and these scenarios assume that all RCEP member countries liberalise trade. Implementation begins in 2022 and is completed by 2042 in Scenarios 1 and 2, and by 2038 in

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12 Existing agreements between RCEP members are summarised in Table 18, Appendix III.
13 See Appendix III.

Scenario 3. Scenarios 4 and 5 are based on Scenarios 1 and 2 without New Zealand; while Scenarios 6 and 7 are based on Scenarios 2 and 3 without India.

In a separate section, we also consider the impacts of reduced barriers to FDI that may result from an RCEP agreement.

2.3.1 TARIFFS

Table 3 summarises the main elements of tariff reductions in the three main scenarios. The four main elements are:

- Percent of trade duty free on entry into force of the agreement (EIF) (percent based on non-excluded products). Taking New Zealand's Scenario 1 as an example, the 65 percent in Table 3 means that 65 percent of (non-excluded) products are given a zero duty in 2022 by New Zealand.

- The proportion of products with tariff elimination phased in over 10 years, referred to as intermediate phase-in (percent based on non-excluded products). Continuing our example, "10 years, 15%" in Table 3, means that New Zealand eliminates tariffs on a further 15 percent of (non-excluded) products gradually over 10 years.

- Years to final phase-in of tariff elimination (the percent of products is the remainder of non-excluded products after EIF and intermediate phase-in are identified). Hence, based on our example of New Zealand (Table 3), tariffs on the remaining 20 percent of non-excluded products are eliminated over 15 years by New Zealand.

- The proportion of excluded products which do not have their tariffs reduced under RCEP. For example, New Zealand excludes only 1 percent of products from RCEP tariff reductions in Scenario 1 (Table 3).

Table 2: Summary of RCEP scenarios

Scenario	Tariffs	NTMs	Trade Facilitation
Scenario 1	As per Table 3, Scenario 1	Reduction of 5 percent in goods and services NTM barriers, implemented over 10 years from EIF	Reduction in the cost of trading as a 10 percent reduction in customs processing time over 10 years
Scenario 2	As per Table 3, Scenario 2	Reduction of 10 percent in goods and services NTM barriers, implemented over 10 years from EIF	As in Scenario 1
Scenario 3	As per Table 3, Scenario 3	Reduction of 10 percent in goods and services NTM barriers, implemented over 10 years from EIF (i.e. as for Scenario 2)	As in Scenario 1
Scenario 4—Scenario 1 without New Zealand	As per Table 3, Scenario 1, without New Zealand	As in Scenario 1	As in Scenario 1
Scenario 5—Scenario 2 without New Zealand	As per Table 3, Scenario 2, without New Zealand	As in Scenario 2	As in Scenario 2
Scenario 6—Scenario 2 without India	As per Table 3, Scenario 2, without India	As in Scenario 2	As in Scenario 2
Scenario 7—Scenario 3 without India	As per Table 3, Scenario 3, without India	As in Scenario 3	As in Scenario 3

* Reductions in barriers to FDI are modelled separately. See section 2.3.4 for details.

Source: Authors' construction

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Table 3: RCEP tariff phase-ins

| Country | Scenario 1 | | | | | Scenario 2 | | | | | Scenario 3 | | | | |
	EIF[a]	Intermediate phase-in[a,b]	Final phase-in[b]	Excluded[c]		EIF[a]	Intermediate phase-in[a,b]	Final phase-in[b]	Excluded[c]		EIF[a]	Intermediate phase-in[a,b]	Final phase-in[b]	Excluded[c]	
Australia	65%	10 Years 15%	15 years	1%		65%	10 Years 15%	15 years	1%		65%	10 Years 15%	15 years	1%	
Brunei	65%	10 Years 15%	15 years	1%		65%	10 Years 15%	15 years	1%		65%	10 Years 15%	15 years	1%	
Singapore	65%	10 Years 15%	15 years	1%		65%	10 Years 15%	15 years	1%		65%	10 Years 15%	15 years	1%	
New Zealand	65%	10 Years 15%	15 years	1%		65%	10 Years 15%	15 years	1%		65%	10 Years 15%	15 years	1%	
Philippines	65%	10 Years 15%	15 years	3%		65%	10 Years 15%	15 years	1%		65%	10 Years 15%	15 years	1%	
Vietnam	65%	10 Years 15%	15 years	3%		65%	10 Years 15%	15 years	1%		65%	10 Years 15%	15 years	1%	
Indonesia	65%	10 Years 15%	20 years	3%		65%	10 Years 15%	20 years	1%		65%	10 Years 15%	15 years	1%	
Malaysia	65%	10 Years 15%	20 years	3%		65%	10 Years 15%	15 years	3%		65%	10 Years 15%	15 years	3%	
India	65%	10 Years 15%	20 years	10%		65%	10 Years 15%	20 years	3%		65%	10 Years 15%	15 years	1%	
Cambodia	0%	10 Years 15%	20 years	35%		65%	10 Years 15%	20 years	3%		65%	10 Years 15%	15 years	3%	
Laos	0%	10 Years 15%	20 years	35%		65%	10 Years 15%	20 years	3%		65%	10 Years 15%	15 years	3%	
Myanmar	0%	10 Years 15%	20 years	35%		65%	10 Years 15%	20 years	3%		65%	10 Years 15%	15 years	3%	
China	65%	10 Years 15%	20 years	10%		65%	10 Years 15%	20 years	10%		65%	10 Years 15%	15 years	3%	
Thailand	0%	10 Years 15%	20 years	35%		65%	10 Years 15%	20 years	35%		65%	10 Years 15%	15 years	1%	
Korea	0%	10 Years 15%	20 years	35%		65%	10 Years 15%	20 years	10%		65%	10 Years 15%	15 years	1%	
Japan	0%	10 Years 15%	15 years	35%		65%	10 Years 15%	15 years	10%		65%	10 Years 15%	15 years	1%	

a. Percentages are based on non-excluded products.

b. RCEP tariff reductions are calculated from MFN rates (MFN rates are phased down to zero, in contrast to preferential rates, which may be zero already).

c. Percentages are based on all products

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Excluded products are defined as the cumulative percent of trade value indicated in Table 3, when a country's imports are ordered from highest tariffs to lowest tariffs, with some notable exceptions.[14]

Table 4 includes a summary of the reduction in applied preferential tariff rates under each of the three scenarios in the RCEP region. Current and projected preferential tariffs due to free trade agreements in place are included in the row "preferential or baseline". Most favored nation (MFN) tariffs are included for reference, since RCEP tariff reductions are calculated from MFN rates (i.e., where RCEP tariff reductions are applied, MFN rates are phased down to zero, in contrast to preferential rates, which may be zero already). In 2014, trade weighted tariffs paid by RCEP members in the RCEP region were approximately 53 percent of the MFN rate. By 2021, preferential rates are projected to be 40 percent of the MFN rate, as numerous ratified free trade agreements result in further tariff reductions. In 2022, the first year RCEP is projected to be in force, it is projected that overall preferential rates in the region will have declined to 2.19 percent in the baseline (without the RCEP agreement). Adding RCEP preferences has a modest impact on overall average preferential tariffs in the region, reducing the overall preferential tariff rate by the end of the implementation period to 1.10 percent (Scenario 1) in contrast to 1.99 percent without RCEP (Preferential or Baseline) by 2045. Reductions in tariffs under Scenarios 2 and 3 are somewhat greater, with the average in Scenario 3 falling to 0.33 percent by 2045.

Although each scenario, taken as a whole, is more liberalised than the previous one, there are important differences between countries. Some of these differences stem from the fact that many of the preferences provided under RCEP are covered by existing preferential agreements included in the baseline, such as CPTPP. This does not mean that there are no tariff reductions between countries with existing agreements; changes can occur if the RCEP tariff scenarios result in faster or deeper reductions of tariffs, although the changes tend to be relatively small. Table 18, Appendix III depicts the plethora of existing agreements governing bilateral trade amongst RCEP member countries. The ASEAN countries have existing agreements with all RCEP members; although some ASEAN countries will see more rapid reductions in tariffs to other RCEP members than under the current FTAs (baseline). This leads to some modest declines, particularly in Scenario 2, where the smaller ASEAN economies liberalise tariffs much more quickly than in Scenario 1. India has the least FTA coverage, having trade agreements with only ASEAN, Japan and Korea, hence tariff reductions are likely to be larger on trade flows with India. Tariff rates between China, Japan and Korea are also not managed under any

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14   The following exceptions are made: first, in all cases, products with TRQs are ranked highest (TRQs are considered a strong indicator of import sensitivity); second, in India dairy products (HS0401-0406), apples (HS-080810, 081330, 200971, 200979), tomatoes (HS-0702), oranges (HS-0702) and onions (HS-0703) are ranked second highest, behind TRQs; and third, in Japan the CPTPP product exclusion list applies to rank and then sort from highest to lowest tariffs (those with the with greatest trade value being ranked higher for exclusion if there were identical tariffs between two products).

comprehensive preferential agreements.[15] Finally, with the exception of India, RCEP trade with New Zealand and Australia is also covered by various existing agreements, limiting the extent to which tariff reductions, due to RCEP, can affect tariff preferences. RCEP tariff cuts are therefore most likely to impact trade flows between China, Japan and Korea and with India. Detailed graphs of the changes in tariffs by country on goods from RCEP are available in Figure 5, Appendix III.

Table 4: Average merchandise tariffs, non-oil and gas, 2014-2045 (percent)

Rate / Scenario	Year							
	2014	2021	2022	2025	2030	2035	2040	2045
RCEP (Excluding New Zealand)								
MFN	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60
Preferential / Baseline	2.94	2.23	2.19	2.08	2.01	1.99	1.99	1.99
Scenario 1	2.94	2.23	1.94	1.73	1.43	1.23	1.12	1.10
Scenario 2	2.94	2.23	1.90	1.65	1.27	1.02	0.87	0.83
Scenario 3	2.94	2.23	1.81	1.47	0.90	0.43	0.33	0.33
RCEP Tariffs on New Zealand								
MFN	7.57	7.57	7.57	7.57	7.57	7.57	7.57	7.57
Preferential / baseline	4.47	2.71	2.63	1.57	1.35	1.28	1.28	1.28
Scenario 1	4.47	2.71	2.53	1.45	1.21	1.13	1.13	1.13
Scenario 2	4.47	2.71	2.52	1.44	1.18	1.10	1.08	1.08
Scenario 3	4.47	2.71	2.51	1.42	1.17	1.07	1.06	1.06

Note: preferential tariffs are maximum preferences without RCEP, but inclusive of existing trade agreements. Scenario rates include the lesser of the preferential rate or the new tariff rate under RCEP – in many cases, RCEP rates are above preferential rates, especially in earlier years as tariff cuts are not fully phased-in.

Source: Calculations from UNITC TradeMap data (UNITC 2014). India, Indonesia, Japan and New Zealand data are calculated from national tariff line data (HS8-HS9). All other countries calculated from HS6 averages of national tariff line data.

Table 4 shows the average tariffs New Zealand faces in the RCEP region. These tariffs are somewhat higher than overall average tariffs in the RCEP region because New Zealand exports a high proportion of agricultural products, which carry higher tariffs on average than manufactures (see Figure 1). New Zealand also obtains more modest gains under RCEP, since many of the products it ships are agriculture, and these products are frequently on exclusion lists. The high proportion of agriculture on exclusion lists also results in only modest declines in average tariffs between Scenario 1 and Scenario 2 and even smaller declines between Scenario

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15 The UN data indicates some preferences, though limited, between India and some of the countries. India have done some limited scope application of preferences and in some cases, a country may also be eligible for GSP etc.

2 and Scenario 3 for New Zealand. This is illustrated in Figure 1, where the difference between the preferential rates (baseline) and all three scenarios in agriculture is relatively small. The differences are larger in manufactures (Figure 1). Detailed graphs of the changes in tariffs by country on goods from New Zealand are also available in Figure 5, Appendix III. They show that the largest tariff changes for New Zealand goods occur as a result of the liberalisation of trade by India.

Figure 1: RCEP average tariffs on New Zealand (2014-2045, percent)
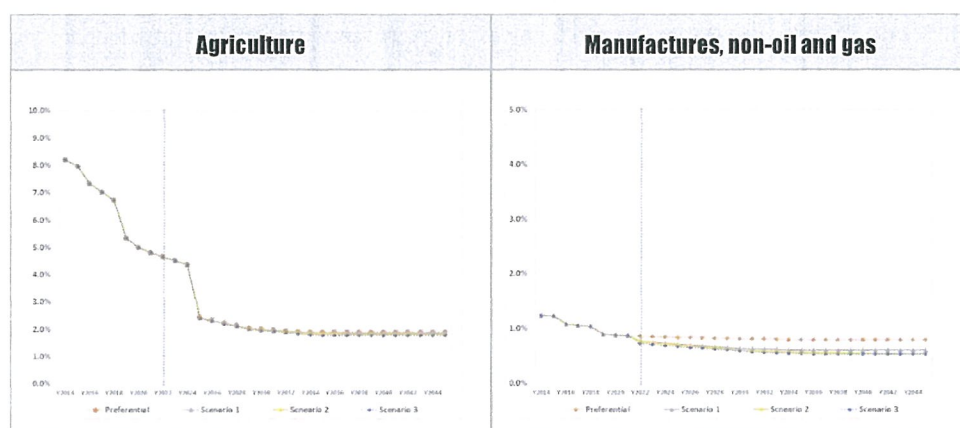
Source: Authors' calculations.

2.3.2 NTMs

We model reductions in NTMs on both goods and services. Available estimates of the impact of NTMs on trade costs, while continuing to improve, remain much less developed than data on tariffs. In this study we employ what we believe to be the most appropriate datasets for goods and services NTMs that are currently available for RCEP countries, though we acknowledge that estimates of NTMs are still evolving and have limitations. In addition, there is considerable uncertainty in terms of what RCEP may achieve with respect to reductions in the costs of NTMs. Therefore, our simulations of reductions in NTMs should be viewed with appropriate caution. We also note that the estimates we use do not discriminate between barriers that are actionable through trade negotiations and those which are in place to achieve legitimate policy objectives; therefore, we limit the size of the reductions to account for the portion of NTMs that is non-actionable.

In each of the scenarios modelled, the reductions in costs imposed by goods and services NTMs are divided into two parts, with half applied as changes in import productivity and the other half applied as a productivity gain that captures the impacts on exporters' production costs (Walmsley and Strutt, 2019). It is important to note that reductions in NTMs for the CPTPP region are included in the baseline, therefore we assume no further reduction in NTMs within this group of countries as a result of RCEP. This assumption does not extend to other existing bilateral and regional agreements, since these other agreements are generally believed not to be as extensive as the CPTPP in the liberalisation of NTMs.

Goods NTMs

Goods NTMs are not inherently good or bad and they often serve legitimate purposes (UNESCAP 2019). However, since they can raise costs and inhibit international trade, an important focus for trade agreements can be reducing the costs of NTMs by lowering unnecessary barriers or harmonising regulations in ways that support trade. For modelling the impact of reductions in goods NTMs within RCEP, we use new estimates based on ad valorem equivalents (AVEs) from United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP).[16] These new estimates use highly detailed and internationally consistent datasets of NTMs collated through significant national and international efforts, led by UNCTAD and supported by other key international agencies.[17] In conjunction with their Multi-Agency Support Team (MAST),[18] UNCTAD has been leading efforts to improve information on goods NTMs by collecting comprehensive data within a consistent framework that helps to make data transparent and internationally comparable (UNCTAD, 2013). These UNCTAD data are used in the new econometric estimates of AVEs that we draw on. Detailed bilateral estimates are available in the UNESCAP dataset for all RCEP countries, with the exception of Korea and the Philippines.[19]

We model two scenarios for reductions in the AVEs of goods NTM in the RCEP region. In Scenario 1, we assume a 5 percent reduction for goods NTMs, with a 10 percent reduction in Scenarios 2 and 3. These reductions exclude CPTPP countries and are implemented evenly over 10 years from EIF. A summary of the average reductions applied to goods NTMs is provided for New Zealand in Table 19 of Appendix III.

Services NTMs

For services NTMs, we employ services barrier estimates from CEPII (Fontagné et al., 2011), updated in Fontagné et al. (2016). These estimates are a good match to the GTAP sectors and the GTAP services trade data. As in the case of goods NTMs, we model two scenarios for reductions in services NTMs. We assume a 5 percent reduction in services NTMs in Scenario 1 and a 10 percent reduction in Scenarios 2 and 3. These reductions exclude CPTPP countries and are implemented evenly over 10 years from EIF. A summary of the average reductions applied to services NTMs is provided for New Zealand in Table 20 of Appendix III.

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16   We are very grateful to Alex Kravchenko of UNESCAP for making UNESCAP's preliminary econometric estimates of AVEs of NTMs available to us (based on Kravchenko et al., 2019). UNESCAP (2019) provides some discussion of NTMs and the UNESCAP estimates. Details of how we use these estimates in our modelling are provided in Appendix III.

17   As part of this international effort, a team at the University of Waikato prepared a highly detailed database of New Zealand's NTMs (Webb and Strutt, 2017).

18   Composed of eight international organisations: Food and Agricultural Organisation of the United Nations, International Monetary Fund, International Trade Centre, Organisation for Economic Cooperation and Development, United Nations Industrial Development Organisation, World Bank and World Trade Organisation. Further details are available from http://unctad.org/en/Pages/DITC/Trade-Analysis/Non-Tariff-Measures/MAST-Group-on-NTMs.aspx

19   Regional averages are used for these two countries (see Appendix III for details).

2.3.3 TRADE FACILITATION

Since improvements in trade facilitation have already been achieved through the implementation of the WTO trade facilitation agreement and the CPTPP, the gains from trade facilitation from the introduction of RCEP are expected to be relatively small. Gains from RCEP are likely to be the result of standardised paperwork between RCEP members regarding certificates of origin and customs processing. We therefore implement trade facilitation as a 10 percent reduction in customs processing time over a period of 10 years. The 10 percent reduction in time to trade is applied to country specific estimates of time to complete paperwork.

2.3.4 FDI

In a standalone section of the results, we explore the potential impact of increases in FDI that may result from RCEP liberalisation. Modelling the impact of this policy component involves first estimating potential increases in RCEP FDI stocks, at the sectoral level, given reductions in FDI barriers. Estimates of barriers to FDI are based on the Organisation for Economic Cooperation and Development's (OECD) FDI Regulatory Restrictiveness Index (OECD, 2018), which are combined with econometric estimates in Lakatos and Fukui (2014) and the GTAP FDI database (Lakatos, Walmsley and Chappuis, 2011), to calculate increases in FDI when barriers are lowered.[20]

We model a 25 percent reduction in barriers to FDI sourced from RCEP member countries, with no reduction in barriers between RCEP countries who are also CPTPP members. Estimates are therefore weighted to take account of the extent to which FDI is sourced from the RCEP region, and in the case of CPTPP countries, from RCEP countries who are not CPTPP members. For instance, while New Zealand has relatively large barriers to FDI, less than 4 percent of its FDI comes from the RCEP countries which are not CPTPP members (see Table 21 of Appendix III), resulting in very small overall changes in barriers modelled for New Zealand. The estimates are implemented in the model to calibrate tax equivalents, with appropriate reductions in the tax on using capital by each sector then modelled to simulate reductions in barriers to FDI. This raises the return to capital in the liberalising sector, causing capital to flow into that sector over time. While the model does not distinguish between foreign and domestic capital, the increased (relative) rates of return caused by the reduction in the tax on capital draws in additional foreign investment.

Further details on the assumptions regarding cuts to tariffs, reductions in NTMs, improved trade facilitation and reduced barriers to FDI are provided in Appendix III.

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20   We are grateful to My Duong, University of Waikato, for her detailed work on data that support these estimates.

3 Projected Impacts of an RCEP Agreement

3.1 Overview

In this section, we present results for the seven scenarios modelled (Table 2), focusing primarily on the effects of Scenarios 1 to 3 on New Zealand. We begin by examining the overall impacts of RCEP on GDP, investment and trade flows, before turning to a detailed analysis of selected sectors then factor markets. Finally, we include a brief section exploring some potential impacts of reducing barriers to FDI.

We note that even without implementation of the RCEP agreement, all economies in the world evolve over the baseline period that we model to 2045. We therefore analyse results for the different liberalisation scenarios relative to our baseline which does not include RCEP. We generally focus on reporting changes relative to the results for the 2045 baseline projection since by this time full implementation of RCEP will have occurred. Results are reported in percentage changes or constant 2014 United States dollar values.[21]

3.2 Macroeconomics impacts

We first explore the potential impacts of RCEP on aggregate economic indicators including real gross domestic product (GDP), investment, and trade flows. We also use decompositions to explain some of mechanisms driving the results.

3.2.1 REAL GDP

Figure 2 shows the projected changes in real GDP for New Zealand from 2022 through to 2045, relative to the baseline. Simulated changes in real GDP in 2045, due to the RCEP scenarios modelled, are summarised in Table 5. In the first scenario, New Zealand's real GDP is projected to increase by 0.29 percent relative to the baseline. This increases to 0.62 percent in the second scenario, but then falls slightly to 0.59 percent in the third scenario, despite the fact that tariffs are liberalised further (Table 4). In constant 2014 dollar terms, this means that in 2045, real GDP is between NZ$1.5b and NZ$3b more than the baseline.

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21 Converted to 2014 NZ$ by applying the average 2013-2015 exchange rate of 0.7839, calculated using the simple average of monthly exchange rates from the Reserve Bank of New Zealand https://www.rbnz.govt.nz/statistics/b1/

Figure 2: Simulated change in New Zealand's real GDP relative to the baseline over time, Scenarios 1-7 (percent)
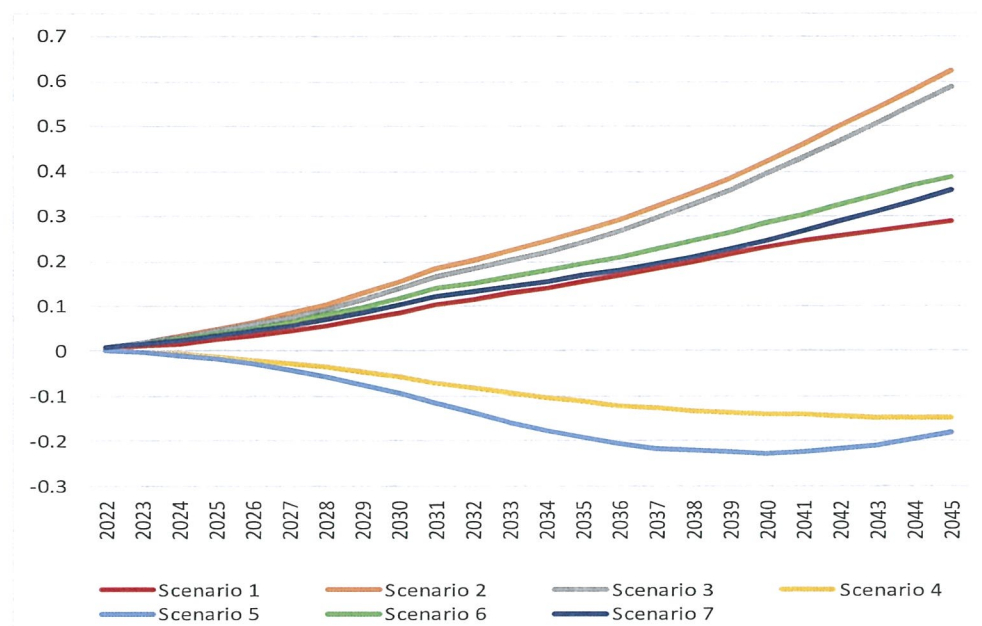
Table 5 also shows that the other RCEP countries gain overall from the RCEP agreement. Gains are lowest in Scenario 1 (0.57 percent), rising considerably to 0.85 percent in Scenario 2, and then slightly more in Scenario 3 to 0.92 percent. The total gains to RCEP are greatest in Scenario 3, where trade is liberalised the most.

Scenarios 4 and 5 demonstrate that if New Zealand does not engage in RCEP, there will be around 0.15 to 0.18 percent lower GDP growth for New Zealand than the baseline. The losses in Scenario 5 are larger than those found under Scenario 4, due to the greater and faster liberalisation of trade for remaining RCEP members. Given these results, if we assume that the counterfactual to Scenarios 1 and 2 is RCEP going ahead without New Zealand, the gains to New Zealand rise to 0.43 or 0.79 percent in Scenarios 1 and 2.[22]

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22 0.43 is the loss from Scenario 4 relative to Scenario 1 calculated as (((1-0.15/100)/(1+0.29/100))-1)*100) while 0.79 is the loss from Scenario 5 relative to Scenario 2, calculated as (((1-0.18/100)/(1+0.62/100))-1)*100.

16

Table 5: Simulated change in real GDP relative to the 2045 baseline, New Zealand and rest of RCEP, Scenarios 1-7 (percent and NZ$m)

	Percent		NZ$ Million*	
	New Zealand	Other RCEP – Average	New Zealand	Other RCEP – Average
Scenario 1	0.29	0.57	1,486	550,600
Scenario 2	0.62	0.85	3,186	813,367
Scenario 3	0.59	0.92	3,000	880,317
Scenario 4	-0.15	0.57	-748	549,294
Scenario 5	-0.18	0.84	-930	811,306
Scenario 6	0.39	0.56	1,990	541,078
Scenario 7	0.36	0.62	1,828	592,158

Constant 2014 NZ dollars.

Source: Authors' model results.

Scenarios 6 and 7 consider how the gains might change if India does not participate in RCEP. The results indicate that the gains from RCEP are significantly reduced if India is not a member, with New Zealand's gains falling by almost 40 percent (Table 5). This is not surprising, since India does not have a preferential agreement with New Zealand and has not liberalised NTMs under other agreements.

3.2.2 DECOMPOSITION OF GDP BY POLICY INSTRUMENT

Each of the scenarios we model includes various interacting policy components. Reductions in tariffs differ across all three scenarios, while the liberalisation of NTMs in Scenario 1 is more conservative than the reductions imposed in Scenarios 2 and 3. Trade facilitation, on the other hand, is the same across all three scenarios. Table 6 provides a decomposition of the real GDP impacts by policy instrument for each of Scenarios 1-5.[23] In the first three scenarios modelled, reductions in goods NTMs contribute the most to increases in GDP, followed by trade facilitation and reductions in services NTMs. Reductions in tariffs have mixed effects across scenarios.

In Scenario 1, we find that by 2045, reductions in goods NTMs contribute the most (0.19 percent) to the real GDP of New Zealand from RCEP. This is followed by improved trade facilitation, which contributes 0.12 percent to New Zealand's real GDP, and reductions in services NTMs, which contribute just 0.03 percent to real GDP. Somewhat surprising is the contribution of tariffs, which contributes negatively to New Zealand's total gain, lowering the gains by 0.04 percent. In the second scenario, the liberalisation of NTMs and tariffs is much larger, altering their total and relative contributions to New Zealand's gains from RCEP. In 2045, tariff

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[23] Figure 6 in Appendix IV shows the decompositions for each of the five scenarios over time.

reductions now contribute positively (0.05 percent) towards New Zealand's total gain in 2045. The contribution of reductions in NTMs to real GDP approximately doubles to 0.39 percent for goods NTMs and 0.05 percent for services, due to the doubling of reductions in NTMs on goods and services. The contribution of trade facilitation remains unchanged at 0.12 percent, although its importance to the total gain falls considerably. In Scenario 3, the liberalisation of NTMs and trade facilitation are the same as in Scenario 2, however, the contribution of tariffs to New Zealand's real GDP now falls relative to Scenario 2 (from 0.05 percent to 0.01 percent).

Table 6 also decomposes the results for Scenarios 4 and 5, in which New Zealand does not participate in RCEP. In both scenarios, the liberalisation of tariffs between the other RCEP countries causes a decline in New Zealand's real GDP of 0.09 percent. Trade facilitation also leads to the same decline in both scenarios, 0.1 percent. The larger decline in Scenario 5 compared to Scenario 4 is therefore due to the doubling of the liberalisation of NTMs, which leads to roughly double the losses when New Zealand does not engage in RCEP.

Table 6: Decomposition of New Zealand's real GDP change, Scenarios 1-5, relative to the baseline (cumulative percent increase in total GDP and percent contribution of tariffs, goods and services NTMs, and trade facilitation for 2045)

	I Tariff reductions	II Goods NTMs	III Services NTMs	IV Trade Facilitation	V Total
Scenario 1	-0.04	0.19	0.03	0.12	0.29
Scenario 2	0.05	0.39	0.06	0.12	0.62
Scenario 3	0.01	0.39	0.06	0.12	0.59
Scenario 4	-0.09	-0.04	0.00	-0.01	-0.15
Scenario 5	-0.09	-0.08	-0.01	-0.01	-0.18

Source: Authors' model results

In order to further understand the negative contribution of tariffs to New Zealand's gains from RCEP, we further decompose the tariff results into three components:

1. the impact of liberalisation amongst the rest of RCEP (excluding New Zealand) – this is analogous to New Zealand not participating in the agreement;

2. the impact of New Zealand reducing tariffs on other RCEP members; and

3. the impact of RCEP members reducing tariffs on New Zealand goods.

The results of this decomposition of the tariff effects are shown in Table 7.[24] The impact of the liberalisation of tariffs by the rest of RCEP (excluding New Zealand) on the New Zealand economy (Column I) is negative. This is due to tariffs amongst the rest of RCEP falling under all three scenarios (Table 4 and Figure 5 in Appendix III), causing diversion of trade away from

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[24] Figure 7 in Appendix IV shows the decompositions for the three main scenarios over time.

New Zealand goods. For New Zealand, these losses are approximately 0.09 percent in Scenarios 1 and 2,[25] increasing to 0.13 percent in Scenario 3. This increase in New Zealand's loss is due to the larger reduction in tariffs amongst RCEP members in Scenario 3.

Table 7: Decomposition of New Zealand's real GDP change due to tariffs, Scenarios 1-5, relative to the baseline (cumulative percent contribution of each component to total GDP for 2045)

	I RCEP (excluding NZ) tariffs	II NZ liberalises tariffs on RCEP goods	III RCEP liberalises tariffs on NZ goods	IV Tariff reductions (all)
Scenario 1	-0.09	0.02	0.03	-0.04
Scenario 2	-0.09	0.02	0.12	0.05
Scenario 3	-0.13	0.02	0.12	0.01
Scenario 4	-0.09	n.a.	n.a.	-0.09
Scenario 5	-0.09	n.a.	n.a.	-0.09

Source: Authors' model results

The second component of our decomposition relates to the impact of New Zealand lowering its tariffs on RCEP countries, which has a positive impact on New Zealand's real GDP. Since New Zealand already has very low tariffs and offers the same liberalisation of tariffs across all three RCEP scenarios, this component is small and the same across all three scenarios (Column II, Table 7).

Finally, the third component (column III, Table 7) is the impact of RCEP's liberalisation of tariffs on New Zealand goods. As other RCEP countries lower their tariffs on New Zealand goods, the gains to New Zealand rise. These gains rise in proportion to the decline in tariffs faced by New Zealand goods, with larger gains obtained in Scenarios 2 and 3, where tariffs on agricultural and processed foods fall proportionately more than in Scenario 1 (Table 4).

Overall, the net impact of the changes in real GDP due to the liberalisation of tariffs depends on the combination of these three components, and in particular the extent to which the diversion of trade[26] losses in column I offset the gains in columns II and III. In Scenario 1, the losses caused by the diversion of trade (Column I) offset the gains (columns II and III). For Scenario 2, we find that gains from the liberalisation of tariffs by RCEP countries on New Zealand goods rise (column III), while the losses from the diversion of trade (column I) stay the same, causing a net gain. Comparing Scenarios 2 and 3, we find that in Scenario 3, the losses from the diversion of trade (column I) increase further, while the gains from the liberalisation of tariffs on New Zealand goods (column III) remain the same as Scenario 2. This causes the net

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25 This is the same as the loss due to tariffs from New Zealand's exclusion from RCEP under Scenarios 4 and 5 (0.09 percent in both cases, Appendix IV Figure 6(d) and Figure 6(e)).

26 The term "diversion of trade" is used to refer to the reallocation of trade between members within RCEP. While this could be viewed as a type of trade diversion, we do not imply any efficiency losses associated with these changes in trade flows. The shifts in trade flows are simply due to relative changes in the preference margins of member countries, as members with weak or fewer existing trade agreements are granted better market access in the region.

gain to decrease, relative to Scenario 2, although it is still greater than the overall loss in Scenario 1.

Readers may be wondering why the diversion of trade does not dominate for the liberalisation of NTMs. Table 6, Scenarios 4 and 5, shows that there is indeed some diversion of trade due to NTMs. As NTMs reduce costs between RCEP members, excluding New Zealand, trade is diverted away from New Zealand and hence New Zealand loses. There are, however, a number of factors that ensure this diversion of trade is smaller than the trade creation effects of RCEP (including New Zealand) reducing NTMs. First, with the exception of the CPTPP, many of the existing free trade agreements do not reduce NTMs and hence New Zealand's NTMs are relatively high prior to the implementation of RCEP. Second, NTMs include regulations that may require additional processing or additional costs imposed on producers or importers. Hence NTMs alter the cost of producing or importing traded commodities, and their removal is therefore treated similarly to an improvement in productivity, rather than as a reduction in a tax or tariff. For example, improvements in productivity allow producers to produce the same good with fewer intermediate inputs, resulting in greater gains than the removal of a tax, which simply reduces the price of those intermediate inputs.

3.2.3 REAL INVESTMENT

The impact of RCEP on New Zealand's investment is positive in all three of our main scenarios (Table 8). The increase in investment stems from a rise in New Zealand's rate of return, which is driven by a reduction in the price of imported capital goods caused by the decline in tariffs and reductions in NTMs, and by an increase in the returns to capital caused by the trade liberalisation. Note that this increase in investment does not take account of the reductions in barriers on FDI, which are considered in Section 3.5.

Table 8: Simulated change in real investment and the trade balance relative to the 2045 baseline, New Zealand and other RCEP countries, Scenarios 1-3 (percent and NZ$m)

	Scenario 1	Scenario 2	Scenario 3
INVESTMENT (PERCENT)			
New Zealand	0.88	2.66	2.52
Other RCEP	1.87	2.44	2.52
INVESTMENT (NZ$ MILLION)			
New Zealand	1,532	4,604	4,370
Other RCEP	505,718	659,258	679,942
CHANGE IN TRADE BALANCE (NZ$ MILLION)			
New Zealand	-24	-1,206	-1,106
Other RCEP	-50,587	-44,800	-40,360

Source: Authors' model results.

In Scenario 1 this additional investment is mostly funded by additional domestic savings, resulting from rising incomes and the trade balance falls only slightly (Table 8). In Scenarios 2 and 3, foreign investment increases to fund the additional investment, and the trade balance falls more.

Figure 3 illustrates the change in investment over time for New Zealand. In 2022, rates of return and therefore investment begin to rise as a result of the trade liberalisation under RCEP, with the greatest gains occurring in Scenario 2. This additional investment adds to the capital stocks available in New Zealand, increasing growth in real GDP. Eventually, returns diminish with the increase in capital stocks, and the gains in investment begin to stabilise and fall off.

Figure 3: Simulated change in New Zealand's real investment relative to the baseline over time, Scenarios 1-3 (percent)

Source: Authors' model results.

3.2.4 TRADE

Exports and imports also increase as a result of RCEP (Table 9). New Zealand imports increase from 1.4 percent in Scenario 1 to 3.2 percent in Scenario 2 and RCEP imports increase further with each scenario. This increase in imports reflects the decline in the price of imported goods from RCEP countries, due to the trade liberalisation. New Zealand's exports also rise, although the rise is much smaller in Scenarios 2 and 3 (0.37 and 0.32 percent, respectively) than in Scenario 1 (0.71 percent). This relative decline in exports is due to the liberalisation of tariffs, with both the diversion of trade (component 1 discussed above) caused by the rest of RCEP liberalising tariffs and the liberalisation of tariffs by RCEP on New Zealand goods (component 3 discussed above), both reducing the gains to exports in Scenarios 2 and 3, relative to Scenario 1. This result is discussed further when we turn to the sectoral results below.

Table 9: Simulated change in real exports and imports relative to the 2045 baseline, New Zealand and other RCEP countries, Scenarios 1-3 (percent and NZ$ millions)

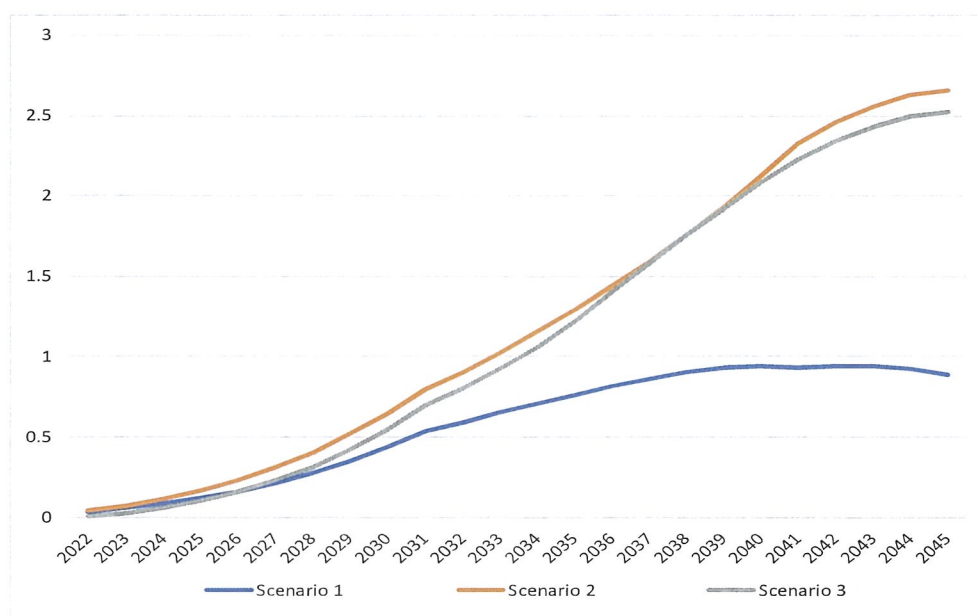|	Exports			Imports		
	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
P E R C E N T						
New Zealand	0.71	0.37	0.32	1.40	3.23	3.11
Other RCEP	3.19	4.70	4.87	4.75	6.74	7.06
N Z $ M I L L I O N S						
New Zealand	607	321	273	2,861	6,595	6,355
Other RCEP	1,518,013	2,233,685	2,313,571	1,327,556	1,884,335	1,972,276

Source: Authors' model results.

3.3   Sectoral impacts

In this section we consider the impact of RCEP on production, exports and imports for the aggregate sectors of agriculture, processed food, manufactures and services, as summarised in Table 10. These effects are decomposed by policy instruments in Table 22 and Table 23, Appendix IV with detailed discussion of disaggregated results for agriculture and processed foods provided in Appendix V.

While the direction of the changes in sectoral trade and production are generally driven by the liberalisation of NTMs and trade facilitation, the liberalisation of tariffs also impacts the results in important ways. The liberalisation of tariffs, NTMs and trade facilitation generally stimulates New Zealand's imports of all goods and services. Reductions in goods NTMs also stimulate exports of goods, although for production, only the production of processed food and services rise as New Zealand's demand for domestic agriculture and manufactured goods falls. Trade facilitation also benefits mostly the processed food and services industries. Reductions in services NTMs, on the other hand, stimulate exports and production of services, as well as goods. Since liberalisation of NTMs increases from Scenario 1 to 2, the gains and losses in production and exports from NTMs also increase proportionately.

The relative decline in gains in production and exports of processed food (Table 10), and of total exports (Table 9), between Scenarios 1, 2 and 3 are therefore attributable to the assumptions made in each of the scenarios about tariff reductions. The average tariff reduction by commodity, shown in Table 11, can assist in explaining the impact of the tariff liberalisation on these aggregate commodities. The first point to note from Table 11 is that in Scenario 1, most of the reductions in tariffs by New Zealand and the other RCEP countries occur in manufactured goods. New Zealand's exports of manufactured goods rise as a result, although production falls as imports also rise and fulfil more domestic demand. New Zealand's exports of agricultural

goods also rise as a result of the liberalisation of tariffs under Scenario 1. This is primarily due to the liberalisation of tariffs amongst the other RCEP countries; as they reduce tariffs on manufactured goods and increase their production of manufactured goods, they turn to other countries, such as New Zealand, for their agricultural commodities.

Table 10: Simulated change in aggregate sectoral production, exports and imports relative to the 2045 baseline, New Zealand, Scenarios 1-3 (percent and NZ$m)

	Production			Exports			Imports		
	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
PERCENT									
Agriculture	0.00	-0.08	-0.10	0.07	0.89	1.13	1.19	2.98	2.87
Processed food	0.89	0.75	0.55	1.52	1.28	0.91	1.23	2.33	2.14
Manufactures	-0.58	-1.72	-1.68	0.78	-2.15	-1.97	1.38	3.16	3.06
Services	0.36	0.84	0.81	0.05	-1.74	-1.49	1.53	4.10	3.97
NZ$ MILLIONS									
Agriculture	-1	-30	-40	11	148	188	36	90	87
Processed food	500	422	306	482	407	287	129	245	225
Manufactures	-485	-1,434	-1,398	79	-217	-199	2,197	5,021	4,871
Services	2,907	6,708	6,456	10	-314	-269	605	1,619	1,568

Source: Authors' model results.

In Scenario 2, tariffs on agriculture and processed food begin to come down more sharply. New Zealand increases its exports of agriculture even further (Table 10), while exports of processed food decline relative to Scenario 1, as tariffs on processed food from other RCEP countries fall relatively more than those on New Zealand's exports of processed food (Table 11). New Zealand's exports of manufactured goods also fall, as more resources are shifted to agriculture and wages and the returns to land rise, raising prices in general in New Zealand. New Zealand's terms of trade improves by 2.1 percent in Scenarios 2 and 3, compared to 0.63 percent in Scenario 1. The result is an overall decline in exports in Scenario 2, relative to Scenario 1, despite the doubling of the liberalisation of NTMs. The increase in production is mainly attributed to an increase in production of services. Scenario 3 continues to reduce relative tariffs on agricultural and processed food in the same way, further reducing the gains to New Zealand. Without any further increase in the liberalisation of NTMs to offset the losses from the tariff liberalisation, real GDP, sectoral production and trade are all lower in Scenario 3 than in Scenario 2.

Table 11: Comparison of tariffs by aggregate commodity, New Zealand, Baseline and Scenarios 1-3, 2045 (percent)

	Baseline Tariffs	Scenario 1 Tariffs	Scenario 2 Tariffs	Scenario 3 Tariffs
NEW ZEALAND TARIFFS ON RCEP* GOODS				
Agriculture	0.00	0.00	0.00	0.00
Processed Food	0.00	0.00	0.00	0.00
Manufactures	0.17	0.00	0.00	0.00
RCEP* TARIFFS ON NEW ZEALAND GOODS				
Agriculture	2.21	2.21	1.52	1.36
Processed Food	1.01	1.01	0.94	0.90
Manufactures	0.54	0.10	0.08	0.08
RCEP TARIFFS ON RCEP GOODS*				
Agriculture	6.71	6.31	4.02	3.27
Processed Food	6.80	6.71	1.87	1.34
Manufactures	1.37	0.28	0.19	0.03

* *RCEP excluding New Zealand*

Source: Authors' model results.

Figure 4 depicts the changes in aggregate sectoral production for New Zealand over time due to all the effects. In the case of agriculture, there is a small decline in production of agriculture in Scenario 1. The negative impact of goods NTMs, mentioned above, offsets any gains from the liberalisation of tariffs on (primarily) manufactured goods. In Scenario 2, agricultural exports and production rise with the reduction in agricultural tariffs, although in the long run production of agriculture falls as the diversion of trade effects of RCEP liberalising tariffs on other RCEP countries (component 3 above) and the negative impact of goods NTMs and trade facilitation dominate (Figure 4a and Table 22 and Table 23, Appendix IV).

For processed food, production rises due to the liberalisation of NTMs and trade facilitation (Figure 4b) in all three scenarios. As indicated above, however, when tariffs on processed food from other RCEP countries fall relative to those on New Zealand processed food in Scenarios 2 and 3, New Zealand's exports and production of processed food fall in Scenarios 2 and 3, relative to Scenario 1.

In the case of manufactures, the reduction in NTMs and trade facilitation cause New Zealand's production to decline as consumers increase demand from other RCEP countries (Figure 4c). In Scenario 1, with the relatively large reductions in tariffs, exports of manufactured goods in New Zealand rise, although production does not. These increases in manufactured exports reverse in Scenarios 2 and 3 as tariffs on agriculture and processed food are reduced, and production of manufactures falls further (Table 22 and Table 23, Appendix IV).

Finally, while there are no tariffs on services commodities, domestic services gain from increased investment (and hence construction) and cheaper intermediate inputs resulting from

reductions in tariffs, as well as the liberalisation of goods and services NTMs and trade facilitation efforts. Domestic demand and production of services increase (Figure 4d).

Figure 4: Simulated change in New Zealand's production relative to the baseline over time, Scenarios 1-3 (percent, aggregate commodities)
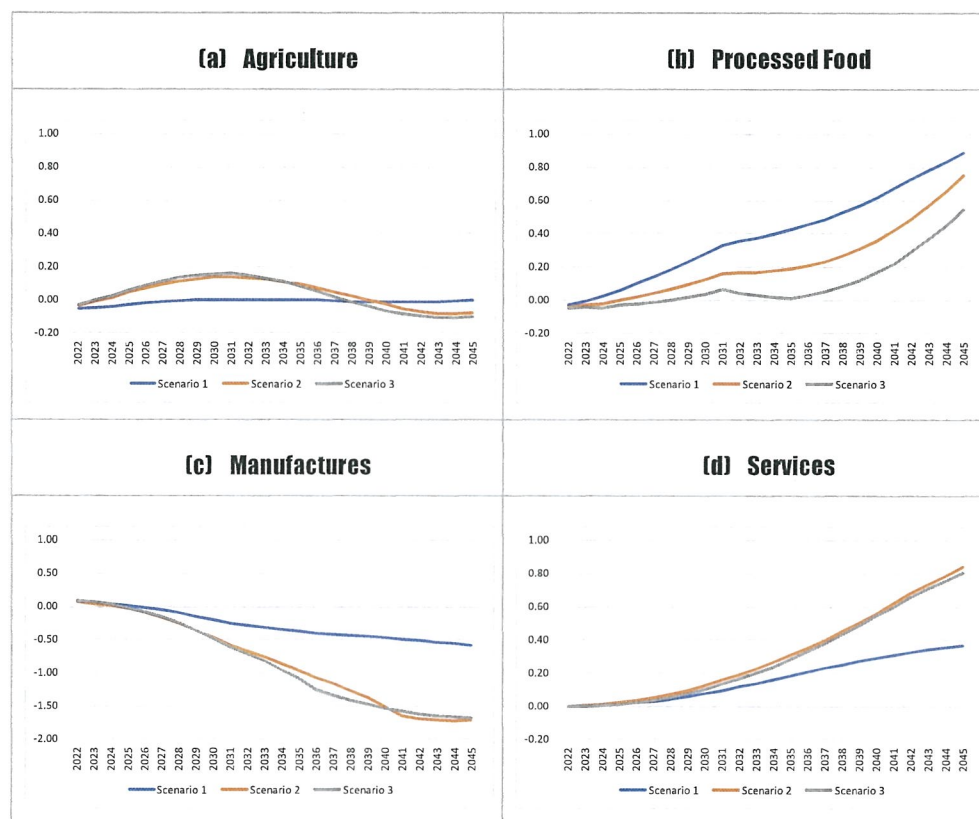
Source: Authors' model results.

3.4 Factor markets and real wages

With increasing demand for New Zealand goods at home and abroad, the returns to workers, land and capital rise, particularly in Scenarios 2 and 3. As capital accumulates, this drives the returns to capital back down, leading to the small negative impact on returns to capital in the long run (Table 12). Land and returns to agricultural and low skilled workers rise the most as production of services, processed food and agriculture, which use these factors most intensely, increase. Workers therefore move out of manufacturing and into the services, processed food (other processed food and other meats) and agriculture (wool and fruit & vegetables) sectors (Table 13).

Table 12: Simulated change in real wages relative to the 2045 baseline, New Zealand, Scenarios 1-3 (percent)

	Scenario 1	Scenario 2	Scenario 3
Land	0.80	1.80	1.84
Professionals and managers	0.37	0.92	0.87
Technical and assistant professionals	0.37	0.89	0.85
Service workers	0.37	0.92	0.88
Clerks	0.37	0.91	0.87
Agricultural and low skilled workers*	0.55	1.29	1.20
Capital	-0.09	-0.06	-0.06

Source: Authors' model results.

Table 13: Simulated change in employment by sector relative to the 2045 baseline, New Zealand, Scenarios 1-3 (number of full-time equivalents)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Agriculture – Total	11	-74	-82	113	48
Rice	-	-	-	-	-
Fruit & vegetables	111	112	167	164	362
Sugar	2	0	0	-1	-2
Other crops	14	1	10	15	31
Raw milk	-124	-600	-643	-52	-207
Cattle & sheep	9	-170	-216	-9	-43
Other animals	1	44	50	-2	-10
Wool	-3	539	549	-2	-83
Processed food – Total	362	452	370	-127	-280
Beef & sheep meat	-3	-67	-130	-28	-67
Other meats	-3	356	354	-13	-30
Dairy	-83	-238	-250	-5	-44
Other processed foods	473	453	446	-74	-123
Beverages & tobacco	-21	-50	-51	-7	-15
Manufacturing – Total	-705	-1,767	-1,751	-733	-1,332
Services – Total	331	1,389	1,462	738	1,556

Source: Authors' model results.

3.5 FDI

The overall impacts on real GDP and investment of a 25 percent reduction in barriers to FDI into New Zealand and other RCEP countries are shown in Table 14. These indicators suggest that for New Zealand, there may only be an additional 0.06 percent increase in investment from the reduction of barriers on FDI, with real GDP increasing by 0.04 percent or $180m by 2045. This relatively small impact for New Zealand is perhaps unsurprising given that reductions in barriers to FDI are not applied between CPTPP members of RCEP. Since we exclude intra-

CPTPP FDI, the reductions in investment barriers modelled for most CPTPP members of RCEP are significantly lower than those modelled for non-CPTPP members (Appendix III, Table 21). In the case of New Zealand, less than 4 percent of the FDI stock comes from RCEP countries who are not members of CPTPP, therefore, only this very small proportion of the barriers to FDI are reduced.

Since investment is determined by relative rates of return, investment tends to move towards those with the largest reductions in barriers to FDI in sectors that are very capital intensive. Countries with the largest increases in investment also tend to realise the largest gains in real GDP. We note that this impact on investment of reducing barriers on FDI is in addition to the increase in investment that resulted from the liberalisation of trade barriers discussed in Section 3.2.3.

Table 14: Simulated change in real GDP and investment from a 25 percent reduction in barriers to FDI, New Zealand and other RCEP countries, relative to the 2045 baseline (percent and NZ$m)

	Real GDP		Investment	
	Percent	NZ$ millions	Percent	NZ$ millions
New Zealand	0.04	180	0.06	105
Other RCEP	0.02	20,790	0.03	7,087

Source: Authors' model results.

4 Conclusions

This report modelled impacts of a proposed RCEP, including on New Zealand's GDP, trade and investment. The elements of RCEP modelled were reductions in tariffs, reductions in goods and services NTMs, improvements in trade facilitation and reduced barriers to FDI. Three main scenarios were constructed to frame the potential impacts of increasing liberalisation in these areas. In addition to these three RCEP scenarios, simulations were conducted without New Zealand and India in RCEP. These simulations are important to understand how New Zealand could be impacted if it did not participate in RCEP, or if India, the only RCEP country with which New Zealand does not have a preferential trade agreement, does not participate.

In the three main scenarios, New Zealand gains from an RCEP agreement. The gains are driven principally by reductions in goods NTMs, as well as by improved trade facilitation and reductions in services NTMs. These impacts are positive in all three simulations, offering gains in areas which have not tended to be a significant part of New Zealand's earlier trade agreements in the region. The gains from RCEP tariff reductions are modest, because New Zealand already has preferential tariff access to all RCEP countries except India. When a country, such as New Zealand, initially has preferential access to markets, the reduction in tariffs on previously non-preferential suppliers can lead to shifts of trade away from the established preferential supplier. These types of changes in trade flows exist in all scenarios modelled, but the net outcome depends on the relative magnitudes of export market gains and export market losses. In Scenario 1, New Zealand experienced small losses resulting from reductions in tariff barriers between other RCEP members, reducing its gains from RCEP somewhat. This does not imply that RCEP is not advantageous, but in this case, diversion of trade to other member countries can modestly reduce gains.

However, it is important to note that even where tariff changes contribute slightly negatively to GDP, such as in Scenario 1, these effects cannot be eliminated by New Zealand simply opting out of RCEP. In fact, our analysis shows that if New Zealand does not participate in RCEP, it will experience an overall loss in real GDP from RCEP's liberalisation of NTMs and trade facilitation, as well as increased losses from the diversion of trade to remaining RCEP members when they reduce tariffs.

Finally, we find that India's inclusion in RCEP contributes approximately 40 percent to New Zealand's real GDP gains — India is a large country with relatively high tariffs and NTMs, with which New Zealand does not currently have a trade agreement. However, even if India does not participate in RCEP, New Zealand still stands to gain from additional liberalisation in the rest of the RCEP region.

Overall, the proposed RCEP agreement represents an opportunity to increase New Zealand's market access and real GDP. We find the extent of the gains depends largely on reductions in NTMs in the RCEP region, with improved trade facilitation and reductions in FDI barriers in the region also contributing to gains for New Zealand. We find that the GDP changes due to tariff reductions alone are generally modest. This underscores the importance to New Zealand of advancing areas outside traditional tariff reductions, for example, improving rule-based market access, harmonising paperwork (through the amalgamation of numerous preferential agreements) and increasing predictability.

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Appendix I: Aggregation of the GTAP Database

Table 15: Regional aggregation

Country/region modelled	GTAP regions*	Aggregated regions for reporting
New Zealand	NZL	New Zealand
Australia	AUS	Other RCEP
Brunei	BRN	Other RCEP
Cambodia	KHM	Other RCEP
China	CHN	Other RCEP
India	IND	Other RCEP
Indonesia	IDN	Other RCEP
Japan	JPN	Other RCEP
Laos	LAO	Other RCEP
Malaysia	MSY	Other RCEP
Philippines	PHL	Other RCEP
Singapore	SGP	Other RCEP
South Korea	KOR	Other RCEP
Thailand	THA	Other RCEP
Vietnam	VNM	Other RCEP
Rest of ASEAN	XSE**	Other RCEP**
United States	USA	Non-RCEP
Rest of Asia	HKG, MNG, TWN, XEA, BGD, NPL, PAK, LKA, XSA	Non-RCEP
Central & Latin America	MEX, XNA, ARG, BOL, BRA, CHL, COL, ECU, PRY, PER, URY, VEN, XSM, CRI, GTM, HND, NIC, PAN, SLV, XCA, DOM, JAM, PRI, TTO, XCB	Non-RCEP
Western Europe: EU28 and EFTA	AUT, BEL, CYP, CZE, DNK, EST, FIN, FRA, DEU, GRC, HUN, IRL, ITA, LVA, LTU, LUX, MLT, NLD, POL, PRT, SVK, SVN, ESP, SWE, GBR, CHE, NOR, XEF, BGR, ROU	Non-RCEP
Rest of the World	XOC, CAN, ALB, BLR, HRV, RUS, UKR, XEE, XER, KAZ, KGZ, TJK, XSU, ARM, AZE, GEO, BHR, IRN, ISR, JOR, KWT, OMN, QAT, SAU, TUR, ARE, XWS, EGY, MAR, TUN, XNF, BEN, BFA, CMR, CIV, GHA, GIN, NGA, SEN, TGO, XWF, XCF, XAC, ETH, KEN, MDG, MWI, MUS, MOZ, RWA, TZA, UGA, ZMB, ZWE, XEC, BWA, NAM, ZAF, XSC, XTW	Non-RCEP

* See https://www.gtap.agecon.purdue.edu/databases/regions.aspx?version=10.211 for details of the GTAP countries and regions

** This region comprises Myanmar and Timor-Leste: while Timor-Leste is not an RCEP member country, Myanmar is a much larger economy and dominates this composite region.

Table 16: Sectoral aggregation

Sectors modelled	Description	GTAP sectors*	Aggregated sectors for reporting
Rice	Rice (paddy and processed)	PDR, PCR	Agriculture
Fruit & vegetables	Vegetables, fruit, nuts	V_F	Agriculture
Sugar	Sugar (raw and processed)	C_B, SGR	Agriculture
Other crops	Other crops: wheat, other grains, oilseeds, plant fibres etc.	WHT, GRO, OSD, PFB, OCR	Agriculture
Raw milk	Raw milk	RMK	Agriculture
Cattle & sheep	Cattle, sheep, goats, horses etc.	CTL	Agriculture
Other animals	Pigs, poultry etc.	OAP	Agriculture
Wool	Wool, silk etc.	WOL	Agriculture
Beef & sheep meat	Beef and sheep meat	CMT	Processed Food
Other meats	Other meat: pork, chicken etc.	OMT	Processed Food
Dairy	Dairy products	MIL	Processed Food
Other processed foods	Vegetable oils, other processed foods incl. fish	VOL, OFD	Processed Food
Beverages & tobacco	Beverages and tobacco products	B_T	Processed Food
Forestry, wood and paper	Forestry, wood and paper products	FRS, LUM, PPP	Manufactures
Fisheries	Fisheries (not including processed fish)	FSH	Agriculture
Extractive	Extract of coal, oil, gas & other minerals; petroleum & coke	COA, OIL, GAS, OMN, P_C	Manufactures
Textiles	Textiles	TEX	Manufactures
Apparel & leather	Wearing apparel and leather products	WAP, LEA	Manufactures
Motor vehicles	Motor vehicles & parts	MVH	Manufactures
Electronics	Electronic equipment	ELE, EEQ	Manufactures
Other machinery	Other machinery and equipment	OME	Manufactures
Other manufactures	Manufactures nec: metal prods, transport equip & other	FMP, OTN, OMF	Manufactures
Chemicals, rubbers and plastics	Chemicals, rubber and plastic products	CHM, BPH, RPP	Manufactures
Mineral products	Non-metallic mineral prods: cement, plaster, concrete etc.	NMM	Manufactures
Metal products	Iron & steel and non-ferrous metals	I_S, NFM	Manufactures
Construction	Construction	CNS	Services
Business & financial services	Business, insurance and financial services	OBS, INS, RSA, OBS	Services
Air & other transportation	Air and other transport	ATP, WTP, OTP, WHS	Services
Trade & communications	Trade and communications	TRD, CMN, AFS	Services
Public sector	Government services	OSG, EDU, HHT	Services
Other services	Other services	ELY, GDT, WTR, ROS, DWE	Services

* See https://www.gtap.agecon.purdue.edu/databases/contribute/detailedsector.asp#Sector65 for details of the 65 GTAP sectors.

Appendix II: Baseline

Sources of macroeconomic forecasts

Table 17 lists the sources of the projections employed in this study. Forecasts to 2023 for real GDP, investment, and global exports are obtained for 191 countries from the IMF's (2018) World Economic Outlook database. Implementation of these forecasts provides estimates of technological change and changes in risk premiums over the period 2014 to 2023. For instance, the imposition of real GDP forecasts, along with forecasts of labour and capital (or investment) growth, determine the level of technological change that must have occurred to achieve the increases in real GDP. This level of technological change is region-specific, but we apply it differentially across factors and sectors using factor- and sector-specific multipliers estimated from OECD data on differential productivities. The productivity differentials apply to all factors. The rate of productivity applied to natural resources and land is significantly reduced. After 2023, we assume some limited convergence of technological change towards the rate of technological change in developed countries.

A similar procedure is used to estimate risk premiums. Growth in capital is the result of the accumulation of investment to existing capital stocks, less depreciation. Growth in capital is therefore driven primarily by the level and growth in investment. Growth in investment in the model is determined by the gradual equalisation of rates of return across countries. When investment forecasts are imposed in the baseline, rates of return may deviate from this equalisation path. We attribute this deviation to risk premiums. After 2023, we assume that these risk premiums remain unchanged or gradually reduce, depending on pre-2023 behaviour.

Forecasts for labour by education to 2045 are obtained from CEPII (methodology documented in Fouré et al. (2012)) and updated to reflect more recent forecasts in total labour growth from the ILO (2015). The GTAP v10 Data Base has five labour categories based on occupation. In order to develop a baseline scenario, it is important to include forecasts of the supply of labour. Forecasts of labour supply are usually developed for total labour (ILO, UN) or sometimes for labour by education level (Fouré et al., 2012). In the case of labour by occupation, forecasts are usually for labour demand, not supply. In this baseline, we use forecasts of total labour from the ILO (2015) and of labour supply by education (Fouré et al., 2012) to determine the supply of labour by education, which is then used to meet demand for labour by occupation. We do this using ILO mappings between education and occupations, ILO data on labour by occupation and education by country, and then allow for some endogenous movement of educated workers across occupational categories in response to wages, particularly as countries' education rates improve over time. Sticky wages are also incorporated to allow for changes in unemployment in the baseline. Further information on the techniques used in the IEDyn model are documented in Walmsley, Minor and Strutt (2015).

Table 17: Sources of macroeconomic forecasts

	Source	Original data units	Countries	Time frame of data provided	Period tracked in baseline
Real GDP	IMF (2018)	National currency	191	1980-2023	2014-2023 Post 2021: continue trend shown in pre-2021 TFP rates. Generally, some limited convergence towards TFP of developed countries.
Investment	IMF (2018)	Share of GDP	191	1980-2023	2014-2023 Post 2021: risk premiums remain constant or decline gradually based on pre-2021 behaviour.
New Zealand population	Statistics New Zealand (2016)	Thousands	1	2017-2068	2017-2045
Population	UN (2015) forecasts	Thousands	228	2007-2100	2014-2045
Labour force	ILO (2015)	Thousands of people	167	1980-2050	2014-2045
Labour force by education	Fouré et al. (2012)	Percentage of working-age population	167	1980-2050	2014-2045

Source: Authors' compilation

Finally, population forecasts to 2050 are obtained from the UN (2015). Population forecasts for New Zealand are taken from Statistics New Zealand's (median) estimates of population over time.

Free trade agreements

The GTAP v10 Data Base employed in this study is calibrated to 2014 trade and tariffs. The IEDyn model is then used to project trade, production, and prices from 2014 to 2045. Projecting these values requires the database to be adjusted to include important trade agreements and the effects of their tariff reductions on trade flows. Baseline tariffs also set the stage for tariff reductions to be implemented in the RCEP scenarios — if tariffs have already been reduced between partner countries, any RCEP agreement must reflect the lower tariffs in place, or risk crediting RCEP for tariff reductions which were already made under another agreement. The agreements between the RCEP countries that are incorporated into the baseline are shown in Table 18 and are discussed further below.

NTMs between CPTPP member countries were also reduced based on Scenario 2 of Walmsley, Strutt, Minor and Rae (2018). NTMs between CPTPP members of RCEP are not reduced further as a result of the RCEP agreement. As in the case of tariffs, this assumption ensures that reductions in NTMs between CPTPP member countries is not attributed to RCEP.

Trade Facilitation Agreement

The WTO Trade Facilitation Agreement (TFA) is included in the baseline using the approach outlined in Walmsley and Minor (forthcoming). To estimate the potential reduction in customs clearance times resulting from the WTO TFA we employ two data sets: the World Bank Doing Business (2016) Trading Across Borders Data and the OECD Trade Facilitation Indicators (Moïsé, Orliac, and Minor, 2011). Improvements in customs clearance times as a result of the TFA (measured in days) are then converted to tariff equivalents by employing Hummels, Minor, Reismann and Endean (2007), which found that a one-day reduction in trade time was roughly equivalent to a one-percent reduction in import tariffs in influencing importer preferences on where to source traded goods. The tariff equivalents are then implemented in the model as changes in consumers' willingness to pay for faster delivery of goods (Walmsley and Minor, forthcoming).

Trade facilitation undertaken between CPTPP members is also incorporated into the baseline, using assumptions taken from Scenario 2 of the CPTPP study (Walmsley, Strutt, Minor and Rae, 2018). Scenario 2 reduce customs clearance times by 7.5 percent. Customs clearance times are obtained from the World Bank Doing Business (2016) Trading Across Borders Data. Improvements in customs clearance times, as a result of the trade facilitation (measured in days), are then converted to tariff equivalents by employing Hummels et al. (2007), which found that a one-day reduction in trade time was roughly equivalent to a one percent reduction in

import tariffs in influencing importer preferences on where to source traded goods. These time to trade estimates differ by commodity. The tariff equivalents are then divided into two parts, with half being applied as changes in consumers' willingness to pay for faster delivery of goods (Walmsley and Minor, forthcoming); and half as an iceberg productivity gain to the importing country. The apportioning of the shock across the two mechanisms reflects the fact that faster delivery of good increases consumers' willingness to pay and may also reduce the physical loss of goods as they wait in customs. As in the case of tariffs and other NTMs, this baseline assumption ensures that trade facilitation between CPTPP member countries is not attributed to RCEP.

Appendix III: Policy Scenarios

Tariffs

Data Sources

Except where noted below, data from UNITC was employed to calculate average tariffs (projected and current) from 2014 - 2048. The UNITC database includes average tariffs at the Harmonised System six-digit (HS-6) level for all RCEP members.[27] The database includes projections of bi-lateral tariffs between RCEP members, including preferential rates for trade agreements being phased-in (Table 18). The data were assembled prior to 2019 and include trade agreements completed before 2017. The database does not include projections of CPTPP rates. For CPTPP countries, projected preferential rates were extracted from a separate UNITC database projecting tariff reductions under TPP and were rebased to 2019 from their original 2017 base year of EIF.

For four countries, India, Japan, Indonesia and New Zealand, national tariff line (NTL) data were assembled for 2014 (the base year of RCEP tariff negotiations and reductions) and existing preferential tariffs at the NTL level were obtained for 2016 from the UN Trains Database and the UNITC databases. Most favored nation (MFN) NTL tariff rates for India were provided by the Government of India via MFAT for 2014.

Tariff rate quota (TRQ) data for all countries were obtained from the WTO - self reported at the national tariff line level.[28] Ad valorem rates for specific duties were derived from the UN Trains and UNITC databases. Ad valorem rates of TRQs were calculated with a formula which attempts to utilise NTL data, if those data are not sufficient or available, ad valorem rates are calculated at the HS-6 level for that country and are applied at the NTL level. If HS-6 country data are not available, global ad valorem rates are employed at the HS6 level and projected to the NTL level.

Table 18 summarises existing RCEP trade agreements and Figure 5 shows the projected changes in the average tariff rates by country in the baseline and each of the three scenarios studied in this report.

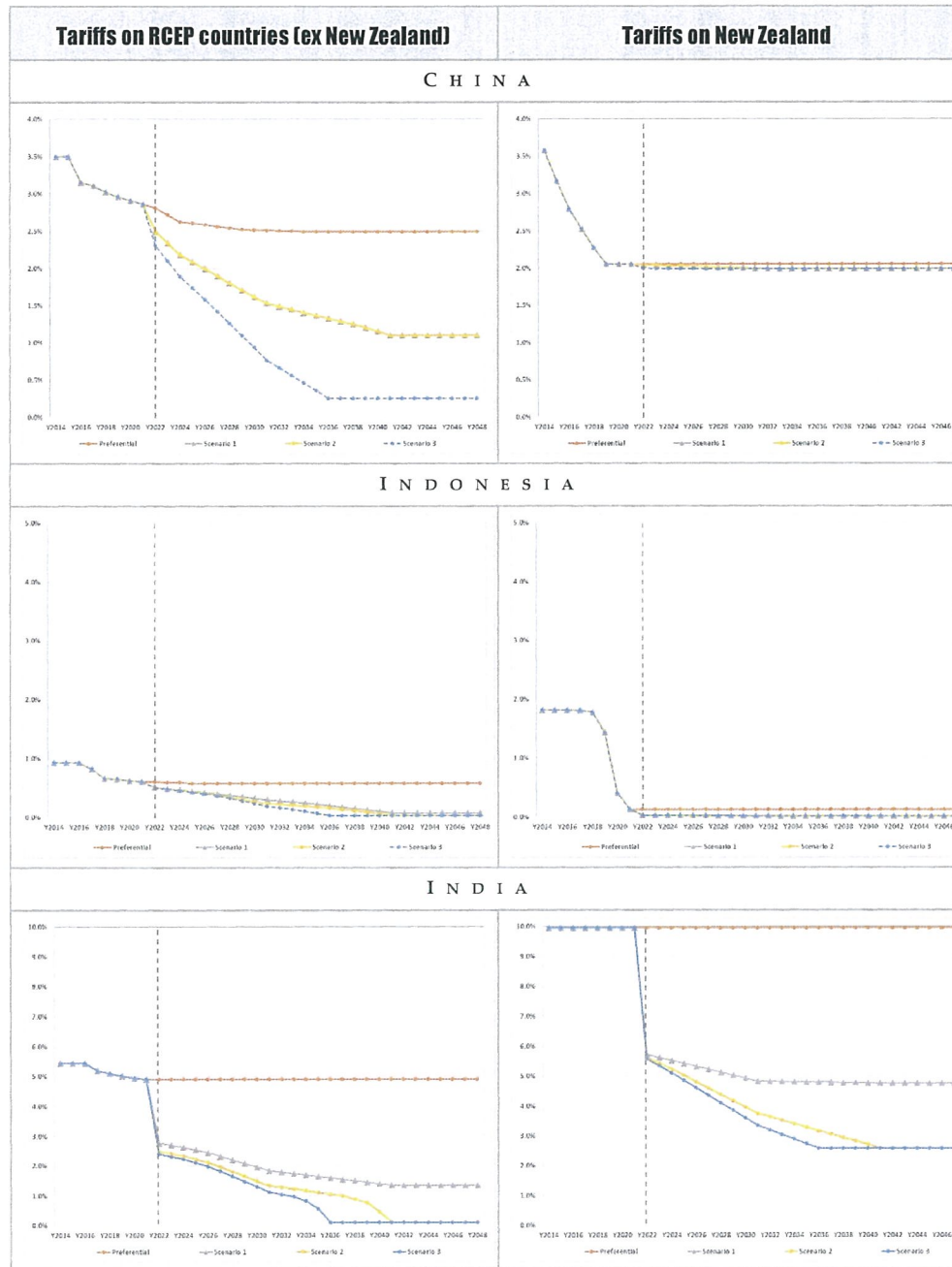27 The data were accessed on the UNITC Market Access Map website, March 2019
    (http://legacy.macmap.org/RawDataDownload/FtaDownload.aspx).
28 Data were accessed from the WTO web page in March 2019 (WTO Tariff Analysis Online (TAO) system
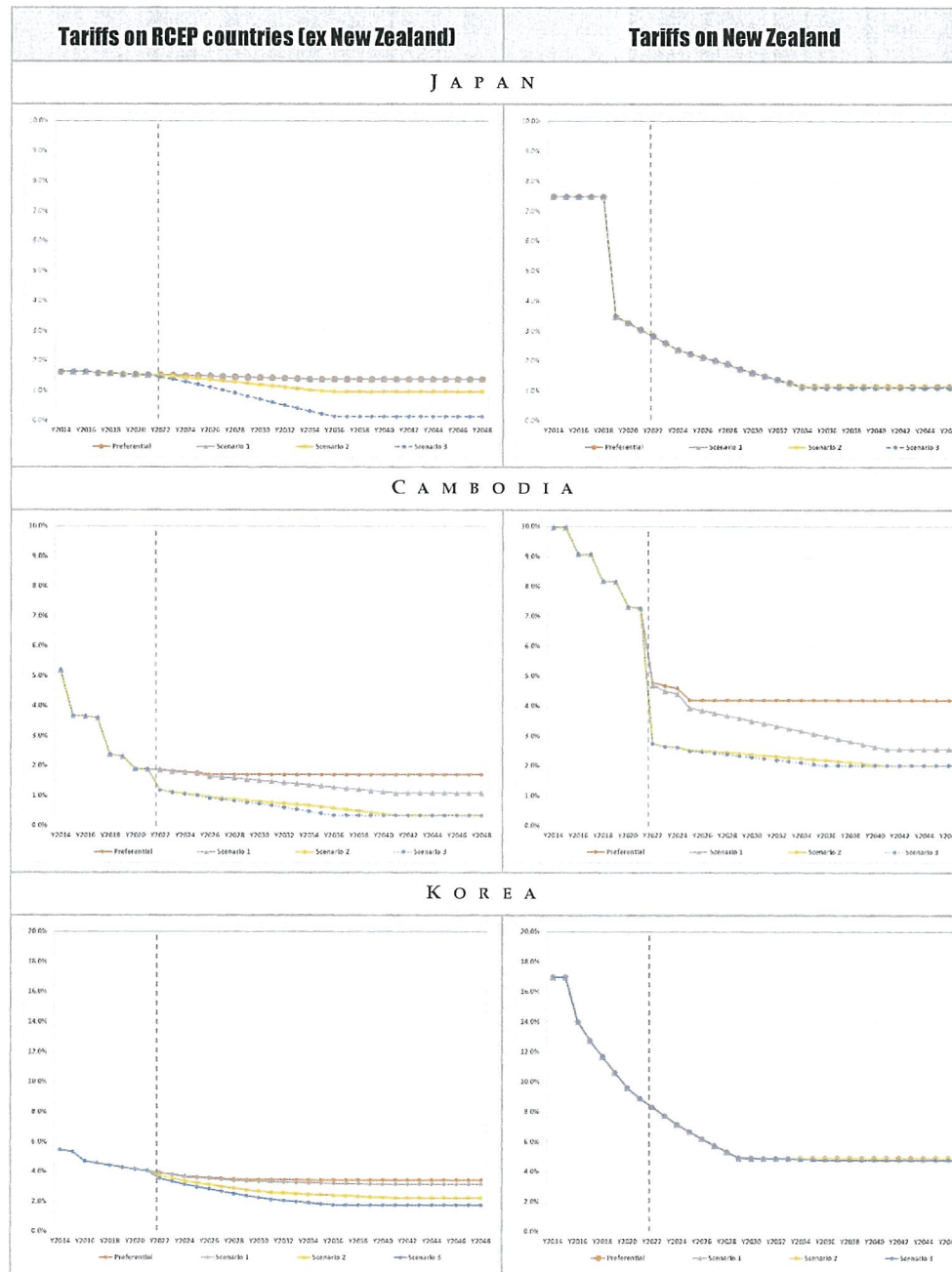   found at: http://tariffdata.wto.org/).

Table 18: RCEP trade agreements (ratified, completed and currently phasing in)
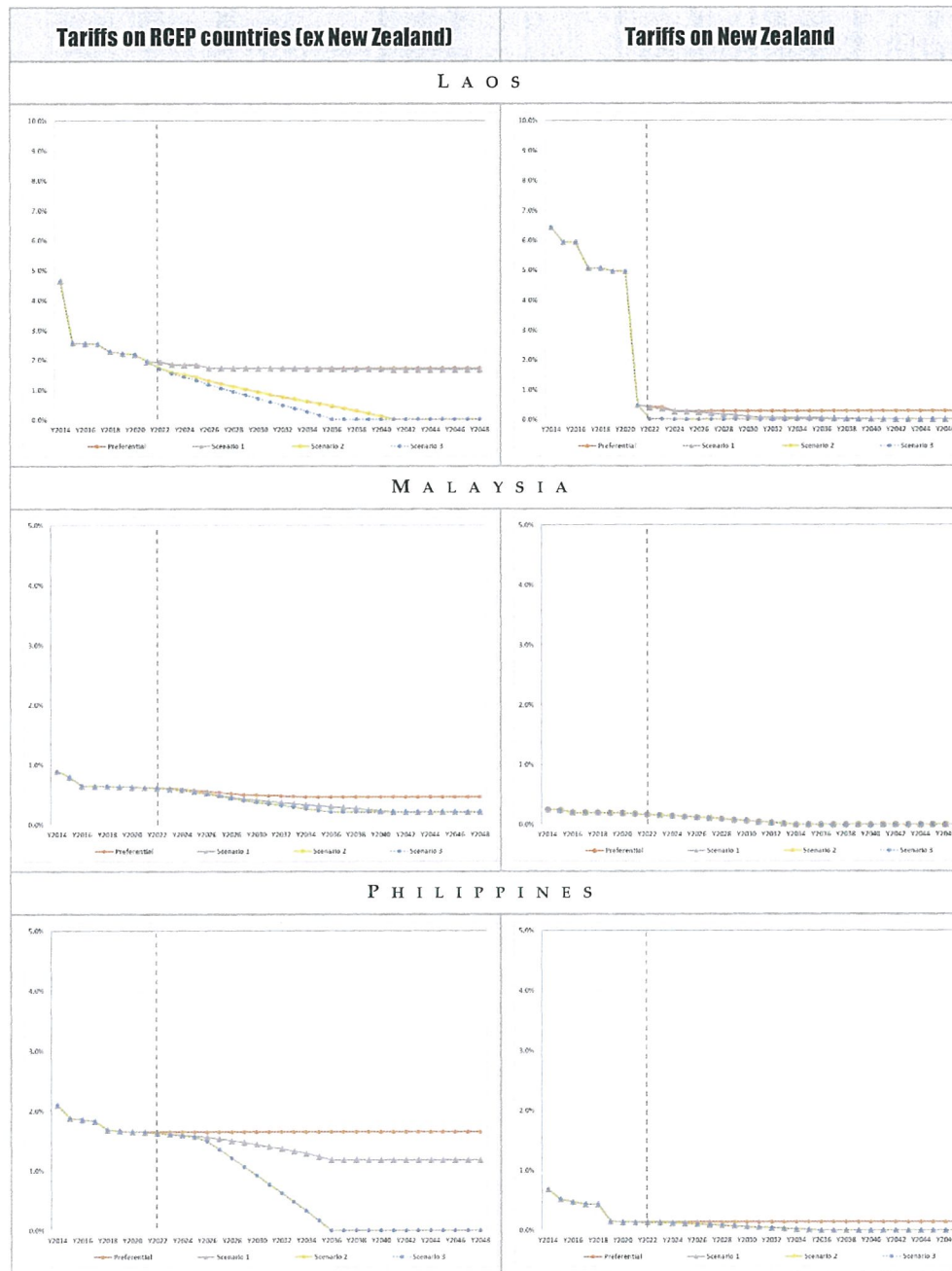
Country From (r)\to (c)	Brunei	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam (CLMV)	Myanmar (CLMV)	Laos (CLMV)	Cambodia (CLMV)	Australia	New Zealand	Japan	South Korea	China	India
Brunei	--	ASEAN	CPTPP\ASEAN	ASEAN	CPTPP\ASEAN	ASEAN	CPTPP\ASEAN	ASEAN	ASEAN	ASEAN	CPTPP\AANZ	CPTPP\AANZ	CPTPP\JPN-ASEAN\JPN-BRN	KOR-ASEAN	CHN-ASEAN	IND-ASEAN
Indonesia	ASEAN	--	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	AANZ	AANZ	JPN-ASEAN\JPN-IDN	KOR-ASEAN	CHN-ASEAN	IND-ASEAN
Malaysia	CPTPP\ASEAN	ASEAN	--	ASEAN	CPTPP\ASEAN	ASEAN	CPTPP\ASEAN	ASEAN	ASEAN	ASEAN	CPTPP\AANZ\AUS-MLY	CPTPP\AANZ	CPTPP\JPN-MLY\JPN-ASEAN	KOR-ASEAN	CHN-ASEAN CHN-MLY	IND-ASEAN\IND-MLY
Philippines	ASEAN	ASEAN	ASEAN	--	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	AANZ	AANZ	JPN-ASEAN\JPN-PHL	KOR-ASEAN	CHN-ASEAN	IND-ASEAN
Singapore	CPTPP\ASEAN	ASEAN	CPTPP\ASEAN	ASEAN	--	ASEAN	CPTPP\ASEAN	ASEAN	ASEAN	ASEAN	CPTPP\AANZ	CPTPP\AANZ	CPTPP\JPN-ASEAN\JPN-SGN	KOR-ASEAN\KOR-SNG	CHN-ASEAN\CHN-SNG	IND-ASEAN\IND-SGN
Thailand	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	--	ASEAN	ASEAN	ASEAN	ASEAN	AUS-THL\AANZ	NZL-THL\AANZ	JPN-ASEAN\JPN-THI	KOR-ASEAN	CHN-ASEAN CHN-THL	IND-ASEAN\Ind-THL
Vietnam (CLMV)	CPTPP\ASEAN	ASEAN	CPTPP\ASEAN	ASEAN	CPTPP\ASEAN	ASEAN	--	ASEAN	ASEAN	ASEAN	CPTPP\AANZ	CPTPP\AANZ	CPTPP\JPN-ASEAN\JPN-VNM	KOR-VNM	CHN-ASEAN	IND-ASEAN
Myanmar (CLMV)	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	--	ASEAN	ASEAN	AANZ	AANZ	JPN-ASEAN	KOR-ASEAN	CHN-ASEAN	IND-ASEAN
Laos (CLMV)	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	--	ASEAN	AANZ	AANZ	JPN-ASEAN	KOR-ASEAN	CHN-ASEAN	IND-ASEAN
Cambodia (CLMV)	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	ASEAN	--	AANZ	AANZ	JPN-ASEAN	KOR-ASEAN	CHN-ASEAN	IND-ASEAN
Australia	AANZ\CPTPP	AANZ	AANZ\AUS-MLY	AANZ	AUS-SNG\ASEAN\CPTPP	AUS-THL\AANZ	CPTPP\AANZ	AANZ	AANZ	AANZ	--	AUS-NZL\AANZ\CPTPP	AUS-JPN\CPTPP	AUS-KOR	AUS-CHN	
New Zealand	CPTPP\AANZ	AANZ	NZL-MLY\AANZ	AANZ	NZL-SNG\AANZ\P4	NZL-THL\AANZ	AANZ	AANZ	AANZ	AANZ	CPTPP\AUS-NZL\AANZ	--	CPTPP	NZL-KOR	NZL-CHN	
Japan	CPTPP\JPN-ASEAN\JPN-BRN	JPN-ASEAN\JPN-IDN	CPTPP\JPN-MLY\JPN-ASEAN	JPN-ASEAN\JPN-PHL	CPTPP\JPN-ASEAN\JPN-SGN	JPN-ASEAN\JPN-THI	CPTPP\JPN-ASEAN\JPN-VNM	JPN-ASEAN	JPN-ASEAN	JPN-ASEAN	CPTPP\JPN-AUS	CPTPP	--			JPN-IND
South Korea	KOR-ASEAN	KOR-ASEAN	KOR-ASEAN	KOR-ASEAN	KOR-ASEAN\KOR-SNG	KOR-ASEAN	KOR-VNM	KOR-ASEAN	KOR-ASEAN	KOR-ASEAN	KOR-AUS	KOR-NZL		--	KOR-CHN	KOR-IND
China	CHN-ASEAN	CHN-ASEAN	CHN-ASEAN CHN-MLY	CHN-ASEAN	CHN-ASEAN\CHN-SNG	CHN-ASEAN	CHN-ASEAN	CHN-ASEAN	CHN-ASEAN	CHN-ASEAN	CHN-AUS	CHN-NZL		KOR-CHN	--	
India	IND-ASEAN	IND-ASEAN	IND-ASEAN\IND-MLY	IND-ASEAN	IND-ASEAN\IND-SGN	IND-ASEAN\Ind-THL	IND-ASEAN	IND-ASEAN	IND-ASEAN	IND-ASEAN			IND-JPN	KOR-IND		--

Figure 5: Average tariffs on non-oil and gas imports (2014-2045, percent)

Tariffs on RCEP countries (ex New Zealand)	Tariffs on New Zealand

C H I N A

I N D O N E S I A

I N D I A

Tariffs on RCEP countries (ex New Zealand)	Tariffs on New Zealand
JAPAN	

CAMBODIA	

KOREA	

Tariffs on RCEP countries (ex New Zealand)	Tariffs on New Zealand

L A O S

M A L A Y S I A

P H I L I P P I N E S

44

Tariffs on RCEP countries (ex New Zealand)	Tariffs on New Zealand
S I N G A P O R E	

| T H A I L A N D | |

| V I E T N A M | |

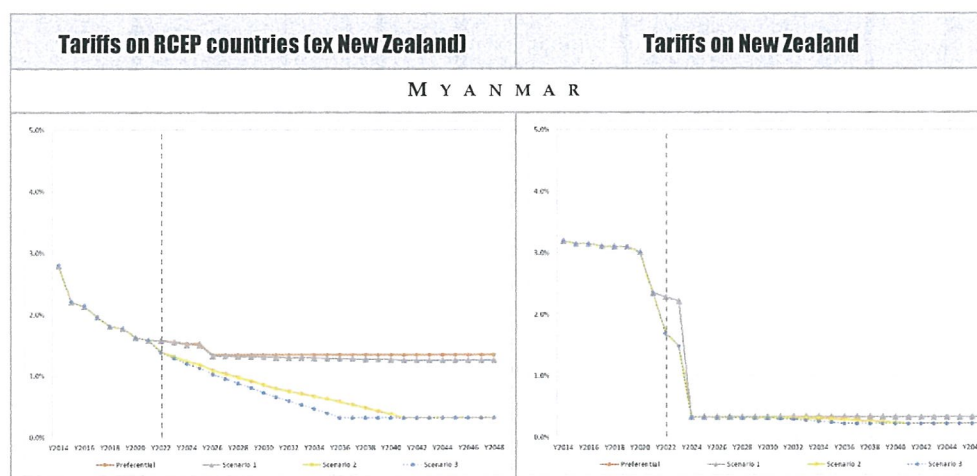| Tariffs on RCEP countries (ex New Zealand)	Tariffs on New Zealand
M Y A N M A R	

Source: Authors' calculations

Goods NTMs

In conjunction with their Multi-Agency Support Team (MAST), UNCTAD has been leading efforts to improve information on NTMs in goods by collecting comprehensive data within a consistent framework that helps to make data transparent and internationally comparable (UNCTAD 2013). By 2018, this database systematically covered 109 countries and 90 percent of world trade (UNCTAD & World Bank, 2018).[29]

In the current study, we use new estimates of AVEs of goods NTMs for goods from UNESCAP, based on these highly detailed and internationally consistent datasets of NTMs (Kravchenko et al., 2019). These econometric estimates are undertaken at the HS6 level to capture the magnitude of bilateral NTMs at a very detailed level. We believe this to be the most appropriate database to use for current purposes and it provides estimates for most RCEP countries. Though, in the current version of the database used,[30] we note that South Korea and the Philippines are not available. We also note that, due to underlying data limitations, data are not available for some sectors and regions. Given the potential to produce misleading results if we assume these missing values are zero, we undertake a careful process of augmenting the database at the GTAP commodity and region level to fill some of these missing data. First, where bilateral AVEs for a particular commodity and destination are missing we apply the most frequent NTM value for imports of that commodity and destination.[31] Next, we fill

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29   www.unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=1627 . As part of this international effort, a highly detailed database of New Zealand's NTMs was developed by a team at the University of Waikato (Webb and Strutt, 2017). Examples of recent studies using these new data include Webb, Strutt and Rae (2017); and Webb, Gibson and Strutt (2018).
30   Kindly provided by Alex Kravchenko of UNESCAP, July 2019.
31   This first step assumes that if a country imposes an NTM on a commodity to several countries, then it likely imposes the NTM on all countries from which it imports the commodity. This is particularly true for homogenous agricultural goods, where the estimated AVEs of NTM were identical across many source countries, despite being estimated on a bilateral basis. This was the justification for using the most frequent AVE. In commodities which were not homogeneous, the average NTM was applied.

missing commodities by using the average for "similar" commodities for that country. We base our choice of "similar" commodities on existing NTM data and our own aggregation. For instance, where NTMs exist for cattle & sheep and beef & sheep meat, we find them to be of similar magnitude. Lastly, we assume that where NTM estimates are missing for particular countries or regions, that they will be similar to the average for their region. Hence South Korea is filled using the average NTMs of East Asia, while the Philippines is filled using averages based on other South-east Asian countries.

We model two main scenarios for reductions in the AVEs of goods NTM in the RCEP region. In particular, we assume a relatively conservative reduction of goods NTMs in Scenario 1 and a moderate reduction in Scenarios 2 and 3. These reductions assume no further reductions in NTMs between CPTPP countries, with cuts between remaining countries implemented evenly over 10 years from EIF.

We make the following assumptions for goods NTMs in the scenarios we model:

— Scenario 1 models a 5 percent reduction in the AVEs of goods NTMs;

— Scenarios 2 and 3 assume a 10 percent reduction in the AVEs of goods NTMs;

— Scenario 4 is identical to Scenario 1 but with New Zealand not participating in RCEP implementation;

— Scenario 5 is identical to Scenario 2 but with New Zealand not participating in RCEP implementation;

— Scenarios 6 and 7 match Scenarios 2 and 3, but with India not participating in RCEP implementation.

Table 19 summarises the reduction in trade costs imposed by goods NTMs that we simulate in Scenario 1. We show the average reduction in NTMs on imports from RCEP into New Zealand as well as faced by exports from New Zealand to RCEP and, in the final column, from RCEP to RCEP. However, it is important to note that in our modelling these reductions are applied bilaterally and at the detailed sectoral level: Table 19 is simply a summary of the trade weighted average reductions imposed. Overall, the reductions applied by New Zealand to RCEP imports are lower than those applied by RCEP to New Zealand imports. The reductions in NTMs applied within the whole RCEP region are much larger than those impacting New Zealand, largely because New Zealand is a CPTPP member and no further reductions in NTMs are assumed for these countries, while for non-CPTPP members, reductions are applied between all RCEP countries.

Table 19: RCEP partners' average reduction in AVE of goods NTMs over 10 years, Scenario 1*
(percent)

Sector	New Zealand NTMs on RCEP goods	RCEP NTMs on New Zealand goods	RCEP NTMs on other RCEP goods
Agriculture	0.27	0.31	0.66
Processed food	0.20	0.21	1.04
Manufactures	0.18	0.49	0.62

* *Changes for Scenarios 2 and 3 are double these changes.*

    Source: Based on updated and augmented estimates from Kravchenko et al. (2019), as described above.

While we believe the goods NTM estimates we use are the best available for the current study, they should be regarded as preliminary and this remains an emerging area of research. There also remains considerable uncertainty about exactly what level of reductions in NTM costs may be achieved through implementation of agreements such as RCEP. Thus, caution is appropriate when assessing the results of liberalisation of these barriers.

Services NTMs

In this report, we employ services barrier estimates from the French research organisation CEPII. CEPII (Fontagné et al., 2011), updated in Fontagné et al. (2016). These estimates for each GTAP sector are barriers to GATS mode 1 services trade that is cross border services barriers; they are a good match to the GTAP sectors and the GTAP services trade data, which are restricted to mode 1 services trade. However, the CEPII estimates are aggregate econometric estimates that do not discriminate between services barriers that are actionable through trade negotiations and those which are in place for reasons such as health and safety, thus we recognise that not all barriers are actionable within an FTA negotiation.

Table 20 shows the change in services NTMs applied by New Zealand and other RCEP on each other under the RCEP agreement. The table suggests that New Zealand applies lower NTMs on air and other transportation and on trade and communications, than other RCEP countries apply on these same goods from New Zealand. The changes in services NTMs introduced by New Zealand and by RCEP on New Zealand goods are both significantly lower than the changes in services NTMs applied by RCEP countries on goods from other RCEP countries – this is in large part due to the fact that New Zealand reduces NTMs only on RCEP countries who are not CPTPP members, while RCEP countries who are not CPTPP members reduce NTMs applying to all RCEP members.

Table 20: RCEP partners' average reduction in AVE of services NTMs over 10 years, Scenario 1*
(percent)

Sector	New Zealand NTMs on RCEP services	RCEP NTMs on New Zealand services	RCEP NTMs on other RCEP services
Air and other transport	0.33	0.99	1.59
Construction	0.93	0.62	1.46
Government services	0.54	0.56	1.11
Business and financial services	0.60	0.74	1.47
Trade and communication	0.62	0.99	2.06

    * *Changes for Scenarios 2 and 3 are double these changes.*

    Source: Services trade data from the GTAP V9 Database. Estimates of services NTM reductions are the authors' calculations based on CEPII (2016) updated services NTMs.

The proportional cuts modelled to services NTMs are the same as those assumed for goods NTMs. We phase in these reductions to services NTMs over the first ten years of the agreement. This recognises that commitments in the agreement are likely to require refinement by committees and implementing legislation, since barriers are complex.

As with goods NTMs, quantifying reductions in barriers to services trade remains an emerging area of research. Thus, caution is also appropriate when assessing the results of liberalisation of these barriers.

FDI barriers

To estimate the impact of liberalisation of FDI as part of an RCEP agreement, we first estimate the potential increase in sectoral FDI stocks for RCEP members. Initial investment barriers are based on the OECD's 2017 FDI regulatory restrictiveness index (Kalinova, Palerm, and Thomsen 2010), which covers four different restrictions on FDI including foreign equity limitations, discriminatory screening, restrictions in the employment of foreigners, and other operational restrictions (OECD, 2018). These indices are mapped to our GTAP aggregation. To estimate the increase in sectoral FDI stocks as a result of removing all FDI barriers, we use Lakatos and Fukui's (2014) estimated elasticity of FDI stocks with respect to the FDI restrictiveness index. When splitting total FDI stocks into the sectors modelled, we use total FDI stocks from UNCTAD (2019) along with a global database to split total FDI into the sectors modelled (Lakatos, Walmsley & Chappuis, 2011). This allows us to estimate the percentage change in FDI stocks for each sector in each RCEP country, were a removal of FDI barriers to occur.[32]

Since our global CGE model includes total capital stocks, rather than FDI, we adjust for the proportion that FDI contributes to total capital stocks in each sector to calculate the estimated changes in capital stocks. The increases in capital stocks are used to calibrate shocks to taxes on

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32   Thanks are due to My Duong (University of Waikato) for very helpful input to support this analysis.

sectoral capital endowments that are then used to model the FDI liberalisation. We assume that 25 percent of FDI barriers are removed within the RCEP region and that there is no reduction in FDI barriers between RCEP members who are also CPTPP member countries. In particular, we only liberalise the proportion of total FDI that is sourced from RCEP regions and for CPTPP member countries, we only liberalise the barriers to FDI sourced from RCEP countries who are not CPTPP members.

Table 21 shows the total FDI stocks in RCEP countries, along with the proportion of the FDI for which we simulate a reduction in barriers. As can be seen, for most CPTPP countries, the reductions in barriers only apply to a small proportion of total FDI – less than 4 percent in the case of New Zealand.

Table 21: Total FDI stocks, 2017, and proportion of FDI liberalised in simulation

	Total FDI stocks from all sources (US$b)	Proportion of FDI liberalised (%)
Australia	689.4	7.6
Brunei Darussalam	6.6	3.5
Cambodia	20.8	48.1
China	1,488.7	21.2
India	377.3	18.7
Indonesia	231.5	50.9
Japan	200.2	6.2
Korea, Republic of	229.4	22.0
Lao	7.3	100.0
Malaysia	146.6	9.3
Myanmar	27.8	65.9
New Zealand	76.0	3.7
Philippines	79.0	33.0
Singapore	1,393.4	7.5
Thailand	223.8	41.7
Vietnam	129.5	19.3

Source: Total FDI stocks are from UNCTAD (2019). Bilateral FDI data from UNCTAD,[33] supplemented by IMF (2019).

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33 We are grateful to Mr Astrit Sulstarova, Chief, Investment Trends and Data Section, UNCTAD, for providing available bilateral data.

Table 22: Simulated change in sectoral production of aggregate commodities relative to the 2045 baseline, New Zealand, Scenarios 1-3 (percent)

	RCEP (excluding NZ) Tariffs	NZ liberalises tariffs on RCEP goods	RCEP liberalises tariffs on NZ goods	Goods NTMs	Services NTMs	Trade Facilitation
SCENARIO 1						
Agriculture	0.04	0.02	-0.01	-0.01	0.00	-0.04
Processed Food	-0.09	0.06	-0.04	0.25	0.01	0.79
Manufactures	-0.50	0.00	0.33	-0.22	0.05	-0.14
Services	-0.11	0.06	0.03	0.12	0.02	0.13
SCENARIO 2						
Agriculture	-0.02	0.02	0.00	-0.02	0.01	-0.04
Processed Food	-0.21	0.06	-0.29	0.50	0.03	0.80
Manufactures	-0.74	0.00	-0.30	-0.41	0.11	-0.14
Services	-0.08	0.06	0.19	0.25	0.04	0.14
SCENARIO 3						
Agriculture	-0.04	0.02	-0.01	-0.02	0.01	-0.04
Processed Food	-0.32	0.06	-0.36	0.47	0.03	0.80
Manufactures	-0.70	0.00	-0.30	-0.41	0.11	-0.14
Services	-0.12	0.06	0.20	0.24	0.04	0.14

Source: Authors' model results

Table 23: Simulated change in exports of aggregate commodities relative to the 2045 baseline, New Zealand, Scenarios 1-3 (percent)

	RCEP (excluding NZ) Tariffs	NZ liberalises tariffs on RCEP goods	RCEP liberalises tariffs on NZ goods	Goods NTMs	Services NTMs	Trade Facilitation
SCENARIO 1						
Agriculture	0.19	-0.02	0.00	0.11	0.00	-0.21
Processed Food	-0.09	0.10	-0.08	0.31	0.01	1.27
Manufactures	-2.39	0.45	2.90	0.09	0.08	-0.27
Services	0.11	0.31	-0.14	-0.72	0.57	-0.08
SCENARIO 2						
Agriculture	0.23	-0.02	0.72	0.18	-0.01	-0.21
Processed Food	-0.32	0.10	-0.48	0.68	0.02	1.30
Manufactures	-3.26	0.45	0.82	0.04	0.18	-0.35
Services	-0.27	0.31	-1.35	-1.50	1.19	-0.11
SCENARIO 3						
Agriculture	0.37	-0.02	0.78	0.21	-0.01	-0.21
Processed Food	-0.56	0.10	-0.59	0.65	0.02	1.30
Manufactures	-3.11	0.45	0.83	0.06	0.18	-0.35
Services	-0.05	0.31	-1.35	-1.47	1.19	-0.11

Source: Authors' model results

Appendix V: Detailed Results for Agriculture and Processed Food

Agriculture

The results for disaggregated agricultural commodities are depicted in Table 24. They show that the increase in demand for agricultural exports that accompanies Scenario 1 primarily come from increased exports of sugar, other crops and other animals, all of which are relatively small sectors in New Zealand. Exports of fruit & vegetables also rise as a result of the liberalisation of tariffs amongst the other RCEP countries, but this is offset by a fall in exports due to trade facilitation efforts – the trade facilitation shocks on fruit & vegetables from New Zealand are very low due to a lower value of time used to estimate the trade facilitation shocks. Despite lower exports, production of fruit & vegetables still rises, due to increased domestic demand, offsetting the decline in production of raw milk, an input into the dairy sector. The result is that production of agriculture in aggregate does not change significantly, although exports rise slightly.

In Scenario 2, the liberalisation of NTMs and tariffs on agricultural goods is much higher than in Scenario 1, particularly RCEP tariffs on New Zealand wool, which fall from 11.92 to 1.19 percent (Table 25). Exports and production of wool increase significantly, while the exports of most other agricultural commodities initially rise, but then fall relative to the baseline by 2045 (Table 24). Domestic demand for other animals also rises, due to the liberalisation of goods NTMs and increased demand by the other meat sector, which also experiences a significant fall in tariffs (Table 25). The increased demand for land and other resources causes wages, land rentals and hence prices to increase – as the terms of trade improves significantly in Scenarios 2 and 3.

Table 24: Simulated change in sectoral production, exports and imports of agricultural commodities relative to the 2045 baseline, New Zealand, Scenarios 1-3 (percent and NZ$m)

	Production			Exports			Imports		
	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
	PERCENT								
Fruit & vegetables	0.24	0.21	0.33	-0.06	-0.24	-0.01	1.46	2.84	2.69
Sugar	2.71	1.39	1.48	4.47	3.33	3.41	0.84	1.86	1.81
Other crops	0.28	0.00	0.19	0.72	-0.41	0.23	1.31	3.29	3.13
Raw milk	-0.44	-2.01	-2.16	-	-	-	-	-	-
Cattle & sheep	0.03	-0.68	-0.86	0.04	-0.50	-0.27	0.50	0.11	-0.14
Other animals	0.19	1.16	1.27	0.23	-1.66	-1.50	0.37	1.16	1.17
Wool	-0.08	12.12	12.34	0.13	15.35	15.59	3.88	31.58	31.52

	Production			Exports			Imports		
	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
				NZ$ MILLIONS					
Fruit & vegetables	32	28	45	-5	-18	0	15	29	28
Sugar	4	2	2	4	3	3	7	15	14
Other crops	4	0	3	4	-2	1	11	27	25
Raw milk	-46	-212	-227	0	0	0	0	0	0
Cattle & sheep	3	-69	-89	2	-26	-14	0	0	0
Other animals	4	25	27	4	-28	-25	0	1	1
Wool	-1	196	200	2	220	223	2	18	18

Source: Authors' model results.

It is interesting to note that while the other RCEP countries reduce tariffs on cattle & sheep in Scenario 1, the New Zealand's cattle & sheep sector is not adversely impacted until Scenario 2. The reason for this is that cattle & sheep are an important input into the beef & sheep meat sector and hence are more heavily impacted by what is happening in the beef & sheep sector and by the rental price of land, than by changes in tariffs on cattle & sheep (Table 25). Similarly, production of raw milk also depends primarily on demand by the dairy sector. In the long run, the decline in production in the cattle & sheep and raw milk sectors offset the gains in wool, other animals and fruit & vegetables (giving the s-shape seen in agricultural production in Figure 4a).

Finally, in Scenario 3, fruits & vegetables and other animals experience slightly larger gains due to continuing reductions in RCEP tariffs on these New Zealand goods, but these are offset by larger losses in the raw milk and cattle & sheep sector.

Table 25: Tariffs on agricultural commodities, baseline and Scenarios 1-3 (percent)

	Baseline Tariffs (2045)	Scenario 1 Tariffs (2045)	Scenario 2 Tariffs (2045)	Scenario 3 Tariffs (2045)
	RCEP* TARIFFS ON NEW ZEALAND GOODS			
Fruit & vegetables	2.71	2.64	2.52	2.19
Sugar**	12.27	10.58	10.41	10.43
Other crops**	2.26	2.18	2.12	2.14
Raw milk	0.00	0.00	0.00	0.00
Cattle & sheep	0.01	0.01	0.00	0.00
Other animals	1.91	1.91	1.78	1.71
Wool	11.96	11.92	1.19	1.19

	Baseline Tariffs (2045)	Scenario 1 Tariffs (2045)	Scenario 2 Tariffs (2045)	Scenario 3 Tariffs (2045)
R C E P T A R I F F S O N R C E P G O O D S *				
Fruit & vegetables	8.38	8.17	7.42	5.68
Sugar	13.96	11.92	11.10	10.85
Other crops	6.98	6.33	1.93	1.92
Raw milk	0.00	0.00	0.00	0.00
Cattle & sheep	1.10	0.01	0.00	0.00
Other animals	0.67	0.44	0.18	0.02
Wool	2.90	2.93	0.01	0.01

* RCEP excluding New Zealand

** The small increases in average tariffs are the result of changes in the sourcing shares.

Source: Authors' model results.

Processed Food

The results for disaggregated processed food commodities are depicted in Table 26. They show that the increase in production of processed food comes primarily from increased exports of other processed food, which are subject to larger reductions in both tariffs and NTMs, as well as improvements in trade facilitation.

In Scenario 1, the changes in tariffs are relatively small, with only other meats experiencing a small reduction. Hence most of the changes in Scenario 1 are due to the reduction of NTMs and trade facilitation faced by New Zealand goods, which tend to be higher for beef & sheep and processed food. Goods NTMs on New Zealand dairy are relatively low, especially when compared to those on dairy from other sources. As a result, we see gains for beef & sheep and processed food, while dairy and beverages & tobacco experience declines in exports and production.

Table 26: Simulated change in sectoral production, exports and imports of processed food relative to the 2045 baseline, New Zealand, Scenarios 1-3 (percent and NZ$m)

	Production			Exports			Imports		
	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
P E R C E N T									
Beef & sheep meat	0.28	-0.53	-1.71	0.49	-1.27	-3.64	1.93	5.19	4.56
Other meats	0.11	13.22	13.17	0.74	46.87	46.73	1.94	5.93	5.84
Dairy	-0.95	-2.95	-3.15	-1.26	-3.73	-4.01	1.08	2.62	2.04
Other processed foods	2.61	2.89	2.84	4.65	5.15	5.03	1.29	2.01	1.86
Beverages & tobacco	-0.08	-0.28	-0.32	-0.61	-1.68	-1.71	0.66	1.75	1.69

	Production			Exports			Imports		
	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
	NZ$ MILLIONS								
Beef & sheep meat	16	-31	-101	15	-38	-108	5	13	11
Other meats	2	228	227	4	234	233	11	34	33
Dairy	-145	-453	-483	-145	-430	-463	13	31	24
Other processed foods	634	703	690	629	695	680	90	140	130
Beverages & tobacco	-7	-25	-28	-20	-54	-55	10	27	26

Source: Authors' model results.

In Scenario 2, tariffs on New Zealand other meats fall to zero, resulting in a significant increase in New Zealand exports and production for this commodity. As mentioned above the liberalisation of RCEP tariffs on New Zealand goods, namely on wool and other meats, causes prices in New Zealand to rise, reducing production of other goods. Beef & sheep meat production declines, as does dairy and beverages & tobacco, which are also negatively impacted by the doubling of NTMs in Scenario 2. Finally, in Scenario 3, RCEP continues to reduce tariffs on processed food from other RCEP countries, causing New Zealand's exports and production of processed food to decline further relative to Scenario 2.

Table 27: Tariffs on processed food in baseline and Scenarios 1-3, 2045 (percent)

	Baseline Tariffs	Scenario 1 Tariffs	Scenario 2 Tariffs	Scenario 3 Tariffs
RCEP* TARIFFS ON NEW ZEALAND GOODS				
Beef & sheep meat	0.33	0.29	0.27	0.30
Other meats	2.54	2.19	0.00	0.00
Dairy**	0.39	0.41	0.44	0.37
Other processed foods	2.12	2.04	1.89	1.86
Beverages & tobacco	0.34	0.34	0.32	0.32
RCEP TARIFFS ON RCEP GOODS*				
Beef & sheep meat**	3.13	3.38	3.17	0.07
Other meats	0.68	0.32	0.29	0.05
Dairy**	3.57	3.66	3.60	2.44
Other processed foods	7.65	7.51	1.60	1.27
Beverages & tobacco	6.22	6.15	5.79	4.76

RCEP excluding New Zealand

** The small increases in average tariffs are the result of changes in the sourcing shares.*

Source: Authors' model results.

Overall, we find the RCEP liberalisations modelled do not directly benefit New Zealand's dairy and beef & sheep sectors, but instead divert resources towards wool, other meats and other

processed food, which have higher tariffs, NTMs and stronger trade facilitation effects. The expansion of these sectors raises the cost of land and other factors of production used in the production of dairy (raw milk) and beef & sheep (cattle & sheep) sectors, causing demand for these goods to decline.