Economic Impact Assessment of the New Zealand-India Free Trade Agreement

Motu economic & public policy research

Niven Winchester

February 2026

Document information

Author contact details

Niven Winchester

niven.winchester@motu.org.nz

Acknowledgements

The author is grateful for information provided by New Zealand Ministry of Foreign Affairs and Trade staff and for research support from Dr Élodie Blanc. The views and conclusions expressed in this document are solely those of the author. Any errors or omissions in this report are the responsibility for the author.

Motu Economic and Public Policy Research

PO Box 24390 info@motu.org.nz +64 4 9394250

Wellington www.motu.org.nz

New Zealand

Table of Contents

Contents

Executive Summary **7**
1 Introduction **9**
2 Modelling Framework **10**
2.1 What is a CGE model? *10*
2.2 An overview of the CGE model developed in this report *11*
2.3 Model Baseline *13*
3 Modelling the New Zealand-India FTA **14**
3.1 Tariffs *14*
3.1.1 Tariffs on New Zealand exports to India 14
3.1.2 Tariffs on New Zealand imports from India 17
3.2 Non-tariff measures *18*
3.2.1 Ad valorem equivalents of non-tariff measures 18
3.2.2 Reductions in non-tariff measures 20
3.3 Trade facilitation *21*
3.4 Summary of the New Zealand-India FTA scenario *21*
4 Modelling Results and Findings **23**
4.1 GDP *23*
4.2 Terms of trade *24*
4.3 International Trade *25*
4.3.1 New Zealand Exports to India 25
4.3.2 New Zealand Imports from India 27
4.4 Labour market outcomes *28*
4.4.1 Employment 28
4.4.2 Wages 29
4.5 Limitations *30*
5 Conclusions **32**
References 33
Appendix A: Characteristics of CGE models **38**
Appendix B: Structure of the CGE Model Developed for this Report **39**
B1. Production *39*
B2. Final expenditure *40*
B3. International trade *40*
B4. Modelling of TRQs *41*
B5. Dynamics *41*
B6. Closures *42*
Appendix C. Adjustments to the GTAP12 Database **43**
Appendix D: Tariffs by Year **44**
Appendix E: Trade Changes by Sector **45**

List of tables

Table 1. CGE model sectors. 12

Table 2. Tariff changes on New Zealand exports to India. 14

Table 3. Tariffs on New Zealand exports to India in selected years and merchandise export shares, %. 16

Table 4. New Zealand tariffs on imports from India and merchandise import shares, %. 18

Table 5**.** AVEs of NTMs on model sectors trade, %. 20

Table 6. Summary of reduction in trade barriers simulated in the FTA scenario. 22

Table 7. Changes in New Zealand annual exports by major sector and destination in the FTA scenario relative to the baseline (millions of NZD). 26

Table 8. Changes in New Zealand annual imports by major sector and source in the FTA scenario relative to the baseline (millions of NZD). 28

List of figures

Figure 1. Changes in New Zealand annual GDP in the FTA scenario relative to the baseline (millions of NZD). 23

Figure 2. Changes in New Zealand annual GDP in the FTA scenario relative to the baseline (%). 24

Figure 3. Changes in New Zealand's terms of trade in the FTA scenario relative to the baseline (%). 24

Figure 4. Changes in New Zealand annual total exports in the FTA scenario relative to the baseline (millions of NZD) 25

Figure 5. Changes in New Zealand annual total imports in the FTA scenario relative to the baseline (millions of NZD). 27

Figure 6. Changes in employment by major sector and labour type in the FTA scenario relative to the baseline, %. 29

Figure 7. Changes in real wages by labour type, % 30

List of acronyms

AVE	Ad Valorem Equivalent
CAGR	Compound Annual Growth Rate
CES	Constant Elasticity of Substitution
EIF	Entry Into Force
EU	European Union
FTA	Free Trade Agreement
GDP	Gross Domestic Product
GGE	Computable General Equilibrium
GAMS	Generalized Algebraic Modelling System
GTAP	Global Trade Analysis Project
HS	Harmonized System
IMF	International Monetary Fund
MCP	Mixed Complementarity Problem
MFAT	Ministry of Foreign Affairs and Trade
MPSGE	Mathematical Programming Subsystem for General Equilibrium
NTB	Non-Tariff Barrier
NTM	Non-Tariff Measure
TRQ	Tariff-Rate Quotas
TSF	Trade-flow Specific Factor
ROW	Rest Of World
UK	United Kingdom
US	United States

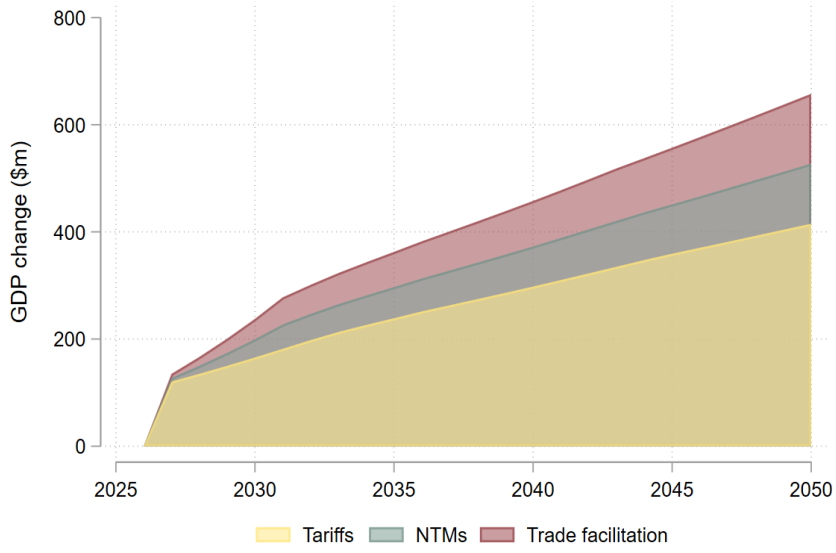
Executive Summary

1. Using a model of global production, consumption and trade, this study assesses the economic impacts of New Zealand–India Free Trade Agreement (FTA) negotiations concluded on 22 December 2025. The modelling assumes that the New Zealand-India FTA is legally binding from 1 January 2027, and simulates the global economy out to 2050.

2. The impact of the FTA is assessed by comparing outcomes from an FTA scenario to those from a baseline simulation that does not include the agreement. The FTA scenario simulates changes in tariffs, non-tariff measures, and trade facilitation consistent with the New Zealand-India FTA.

3. The FTA increases New Zealand Gross Domestic Product (GDP), with larger increases over time due to a rapid expansion of the Indian economy and the phase-in of reductions in trade barriers (see Figure ES1).

Figure ES1. Changes in New Zealand GDP in the FTA scenario relative to the baseline (millions of NZD).



4. Relative to the baseline, New Zealand annual GDP (in 2024 NZD) is projected to be $135.0m higher in 2027, $382.4m higher in 2036 and $657.7m higher in 2050 because of the FTA. These gains are equivalent to 0.03%, 0.07% and 0.10% of annual baseline GDP in the respective years.

5. The FTA's tariff eliminations and reductions are the largest contributor to GDP gains in all years, though their relative contribution reduces over time as the FTA's non-tariff measures

and trade facilitation play a larger role. In 2027, tariff outcomes account for 89.3% of the GDP increase, compared with 63.1% in 2050

6. The FTA improves New Zealand's terms of trade in all years, with larger increases over time. Relative to the baseline, New Zealand's term's of trade increase by 0.09% in 2027 and 0.21% in 2050.

7. The FTA increases New Zealand exports of goods and services to India, with annal exports increasing by $339.9m (16.3%) in 2027 and $1,271.6m (25.0%) in 2050. The export increases are driven by agro-food products, especially forestry and wood products, meat products, and horticulture (apples and kiwifruit). Some industrial exports also increase significantly, led by manufacturing, textiles (degreased wool), and metals. Increases in service exports to India are more moderate. New Zealand exports to other regions decrease, but by less than the expansion in exports to India, as some exports are diverted to India to take advantage of higher exporter prices in that market.

8. The FTA increases annual imports from India by $249.0 (10.5%) in 2027 and $899.8 (12.7%) in 2050 relative to the baseline, with imports of industrial products such as manufacturing and clothing increasing the most. New Zealand imports from other regions decline modestly, resulting in increases in total exports.

9. The FTA increases employment in agro-food sectors while reducing it in industrial sectors, but employment changes are small and will likely be absorbed by retirements.

10. The FTA increases real wages for all workers, with larger gains for production workers (e.g., farm and sales employees) than non-production workers (e.g., managers and administrators), narrowing the wage gap between production and non-production workers.

11. Overall, the FTA increases New Zealand GDP, terms-of-trade, exports and imports, and real wages.

12. The emergence of new trade networks for products where little trade previously existed could lead to larger economic impacts than those captured in the modelling.

1 Introduction

On 22 December 2025, New Zealand and India announced conclusion of negotiations on a Free Trade Agreement (FTA). According to the New Zealand Ministry of Foreign Affairs and Trade (MFAT), the FTA marks a significant deepening of trade and investment links between the two countries and is expected to reshape their economic relations over the coming decade (MFAT, 2025a).

In the year ending in June 2025, total two-way trade between the two economies was valued at around NZ$3.68 billion, with New Zealand exports to India at NZ$1.79 billion. India is currently New Zealand's 12th largest goods and services market, accounting for roughly 1.5% of total exports. (MFAT, 2025a).

The agreement is significant for New Zealand because of India's expected rapid economic expansion. India is the fastest-growing major economy in the G20 and is projected to become the world's third largest economy by around 2030, with a large and rising middle class (MFAT, 2025a).

Under the agreement, tariffs are reduced or eliminated for 95% of the current value of New Zealand exports to India and all New Zealand tariffs on imports from India will be eliminated. The FTA also creates a transparent framework that bolsters market access and strengthens trade in goods and services between the two nations (Department of Commerce, Government of India, 2025).

This report was commissioned by the New Zealand MFAT. It evaluates economic outcomes from New Zealand-India FTA negotiations completed in December 2025. The analysis develops and deploys a global whole-economy framework of production and trade aligned with international best practices.

The report has four further sections. The methodological approach and modelling framework are outlined in Section 2. The scenario used to represent the New Zealand-India FTA is detailed in Section 3. Results are presented and discussed in Section 4. Limitation of the modelling analysis are canvassed in Section 5. Concluding remarks are presented in Section 6.

2 Modelling Framework

This report develops and deploys a bespoke computable general equilibrium (GGE) model to evaluate the economic impacts of the New Zealand-India FTA. GGE models underpin the majority of economic analyses of FTAs (van Tongeren et al., 2017). CGE tools are recommended as a core modelling approach for evaluating FTAs by the United Kingdom's (UK) government expert panel on trade modelling (Department for Business and Trade & Department for International Trade, 2022), and a CGE model was used to assess the India–United Kingdom Comprehensive Economic and Trade Agreement (Department of Business and Trade, 2025). CGE models have also been used in studies commissioned by MFAT to evaluate the economic impacts of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (Walmsley et al., 2018), the New Zealand-UK FTA (Walmsley et al., 2022a), and the New Zealand-European Union (EU) FTA (Walmsley et al., 2022b).

2.1 What is a CGE model?

CGE models represent the whole economy, including production, consumption and trade. They integrate economic theory with comprehensive data to provide numerical estimates of the impacts of policy and other changes (Sue Wing, 2004). In CGE models, each sector produces output by assembling inputs of primary factors (e.g., labour and capital), and intermediate inputs (materials, components and services from other industries). Primary factors are owned by households, who use payments for their factor services to purchase products and services produced at home and abroad. Similarly, firms may purchase domestic and foreign intermediate inputs. A detailed explanation of core characteristics of CGE models is set out in Appendix A.

At least four features of CGE models calibrated to global databases make them especially useful for assessing the impacts of FTAs. First, by covering the entire economy with sectoral detail, they estimate changes in macroeconomic (e.g., GDP), industries (e.g., sectoral output), and household (e.g., wages) outcomes. Second, the representation of sectoral bilateral trade flows allows them to consider the combined effect of trade liberalisation across many sectors. Third, including intermediate inputs enables evaluation of how policy changes propagate throughout the economy (e.g., how reduced trade barriers on a nation's textile exports will increase demand for wool). Fourth, as CGE models capture economy-wide activity, they explicitly account for resource

constraints and opportunity costs (e.g. increasing production in one sector typically requires more inputs in that sector, which will reduce inputs and ultimately output in other sectors).[1]

2.2 An overview of the CGE model developed in this report

The model developed for this report is a recursive dynamic CGE model of the global economy. An overview of the model is provided below, and a more detailed description is included in Appendix B.

The modelling framework builds on the modelling tools provided by Lanz and Rutherford (2016). Four key extensions are made to the model set out by Lanz and Rutherford. First, by using more elaborate nesting frameworks than the generic nesting structures employed by Lanz and Rutherford, sectoral production is modelled with greater specificity. Second, the static framework, which only permits policy analysis for the 2023 global economy, is developed into a recursive dynamic model that provides results for each year from 2023 to 2050. Third, the core model is augmented to facilitate reductions in Non-Tariff Measures (NTMs) (see Section 3.2). Fourth, Tariff-Rate Quotas (TRQs) are now explicitly represented in the model used for this report (see Section A1.2.4).

The starting year for the model is 2023. The model is calibrated to represent the global economy in this year using Version 12 (prerelease 3) of the Global Trade Analysis Project (GTAP) Database (Aguiar et al., 2025) (henceforth GTAP12 Database).

The CGE model used for this report aggregates the GTAP12 Database to seven countries/regions, 21 sectors, and five primary factors. The regional aggregation includes New Zealand, India, Australia, China, the United States (US), Europe (EU27, European Free Trade Association countries, and the UK), and Other Regions (i.e. all jurisdictions not included in previous specified regions).

Sectors represented in the model are shown in Table 1. The sectors can be grouped into three major sectors: Agricultural and food products (agro-food), resource extraction and manufacturing (industry), and services.

[1] Two cases where output increases do not require reduced output elsewhere are when there are underemployed primary factors and/or there are productivity improvements.

Table 1. CGE model sectors.

Agro-food	
meat	Meat products (incl. sheep and beef)
dairy	Dairy products (incl. dairy farming)
hort	Horticulture (incl. apples & kiwifruit)
wol	Wool (raw wool, not degreased)
wood	Forestry, wood & paper products
bev	Beverages (incl. wine)
opp	Other primary products (incl. seafood)

Industry	
coa	Coal
extr	Other extractive resources
tex	Textiles (incl. degreased wool)
cloth	Clothing and footwear
metal	Metals & metal products
chm	Chemicals (incl. albumins)
omf	Other manufacturing
ely	Electricity

Services	
tran	Transport
afs	Accommodation & food services
ict	Information and communication services
bsr	Other business services
health	Healthcare services
ser	Other services (incl. educ. & gov. services)

Two adjustments were made to the aggregated GTAP12 Database for the modelling in this report. Namely, some tariffs were adjusted to reflect New Zealand's tariff schedule, and New Zealand exports of forestry and wood products to India were calibrated to reflect the resumption of 'normal' export conditions. After implementing the adjustments, the global data was rebalanced to reflect a micro consistent dataset. Further details on these adjustments are provided in Appendix B, Section B3).

The five primary factors are land, resources, capital, and production and non-production labour. Production workers include agricultural workers, service and sales workers, and clerks. Non-production workers include managers, professionals and technicians.

The model assumes all labour is fully employed and perfectly mobile across sectors. This does not necessarily imply that workers displaced from contracting sectors are re-employed instantly in expanding sectors. In a dynamic setting, retirements may absorb employment losses, while new entrants are employed in industries that differ from those under business as usual (Winchester et

al., 2025). Additionally, reduced employment in one sector relative to the baseline can be consistent with year-on-year employment growth in the that sector, but at a lower rate than under business-as-usual conditions.

2.3 Model Baseline

To evaluate the New Zealand-India FTA, this report first creates a baseline consistent with 'business-as-usual' conditions. The baseline is then used as a reference for evaluating the impacts of the FTA. The baseline used for this report simulates the global economy out to 2050 without the New Zealand-India FTA.

In the baseline, total factor productivity multipliers are chosen endogenously so that the model simulates desired levels of GDP in each country/region for each year. Baseline GDP for New Zealand is informed by projections used by the Climate Change Commission (CCC) in its advice on the New Zealand's Fourth emissions budget (CCC, 2024). Baseline GDP for other regions is based on projections by the International Monetary Fund (IMF, 2025), the European Commission's Joint Research Centre (Garaffa et al, 2024), and The Economist Intelligence Unit (2024).

Under these projections, between 2023 and 2050, the compound annual growth rate (CAGR) for New Zealand GDP is 1.5% and that for India is 5.4%. CAGRs for GDP in other regions is between 1.4% and 2.3%. In the baseline, India's share of global GDP (at market exchange rates) increases from 3.4% in 2023 to 8.3% in 2050.

The baseline also implements a representation of the Australia–India Economic Cooperation and Trade Agreement (Australian Government Department of Foreign Affairs and Trade, 2022). It does not incorporate India's trade agreements concluded since that date, including agreements with the UK and European Free Trade Associations Countries (Switzerland, Norway, Liechtenstein and Iceland).

3 Modelling the New Zealand-India FTA

As noted above, the impact of the New Zealand-India FTA is assessed by comparing the baseline simulation, which excludes the FTA, with results from a scenario that incorporates it. The New Zealand-India FTA scenario considered in this report models reductions in tariffs and NTMs, together with improvements in trade facilitation arising from the agreement. The scenario assumes that Entry Into Force (EIF), the date that the agreement becomes legally binding, is 1 January 2027.

3.1 Tariffs

3.1.1 Tariffs on New Zealand exports to India

Negotiated tariffs changes for New Zealand exports to India are outlined at the Harmonized System (HS) eight-digit level (World Customs Organization, 2022). The tariff changes, summarised in Table 2, can be grouped into five categories: eliminated from EIF, phased-in elimination, conventional reductions, TRQ reductions, and exluded.

Table 2. Tariff changes on New Zealand exports to India.

Category	Description	Example commodities
Eliminated from EIF	Tariffs eliminated from the date the agreement becomes legally binding	Forestry, coal, fish products, wool.
Phased-in elimination	Tariffs linearly reduced to zero over several years	Aluminium scarp, Turbo-jets and turbo-propellers
Conventional reduction	Tariffs reduced but not eliminated	Medical or surgical instruments, mānuka honey, wine
TRQ reduction	Tariff reductions for specific quantities	Apples, kiwifruits, albumins
Exclusion	No tariff changes	Dairy products

Tariffs eliminated at EIF are removed as soon as the agreement takes effect. Tariffs subject to phased-in eliminations are gradually reduced to zero over 3, 5, 7, or 10 years. The annual reduction amounts follow a linear trend, so each yearly tariff reduction is constant (until it reaches zero). Tariffs that are excluded are unchanged by the agreement.

Tariffs subject to conventional reductions are typically decreased by 50% over a period of 5, 7 or 10 years, but other reductions are also stipulated. Some tariff reductions are non-linear (e.g., a 5-year standstill before tariffs are reduced by 50% over years 6 to 10) and there are separate reduction formulas for mānuka honey and wine. Tariffs on mānuka honey will be reduced from 66% to 16.5% (a 75% reduction) over five years.

New Zealand wine exports to India are currently subject to an 150% tariff. Under the FTA, over 10 years, there will be a 66% tariff cut (to 50%) for wine priced between USD5 and USD15 per 750 millilitres (ml), and an 83% tariff cut (to 25%) on wine with a value of USD15 or more per 750ml. Over half of the total tariff cuts will occur at EIF, with the remaining reductions phased in over 10 years.

A TRQ allows a set quantity of imports at a lower tariff, known as the in-quota rate. Once the limit is reached, a higher tariff, the out-of-quota rate, applies to additional imports. The FTA specifies TRQs for New Zealand export of apples, kiwifruit, and albumins (water-soluble proteins used in food, pharmaceutical, and industrial applications).

New Zealand apple exports to India currently attract a 50% tariff. The TRQ for apples specifies a 25% tariff for in-quota exports. The quota subject to the lower tariff is 32,500 tonnes per annum at EIF and increases linearly over the next six years to 45,000 tonnes per annum. Apple exports above the quota will continue to be subject to a 50% tariff. In 2023 (the benchmark year for the model), New Zealand exported 19,995 tonnes of apples to India.

New Zealand kiwifruit exports are currently subject to a 33% tariff. Under the agreement, in-quota exports will enter tariff free. There will also be a 50% reduction in the out-of-quota tariff (to 16.5%). The quota will be 6,250 tonnes per annum at EIF and will rise linearly to 15,000 tonnes per annum over five years. In 2023, New Zealand exported 2,482 tonnes of kiwifruit to India.

The current tariff on New Zealand albumin exports to India is 22%. The TRQ for albumins specifies a 11% in-quota tariff, while out-of-quota exports will continue to attract a 22% levy. The quota subject to the lower tariff will be 1,000 tonnes per annum at EIF, rising linearly to 3,000 tonnes per annum over five years. Although the TRQ applies to albumins produced from all sources, nearly all of New Zealand's exports of this product to India are milk albumins, including concentrates of two or more whey proteins (HS 350220). In 2023, New Zealand exported 2,813 of milk albumins to India.

All reductions in tariffs on New Zealand exports to India are complete within ten years of the agreement entering into force. This report assumes that the FTA enters into force in 2027, so all tariff changes are implemented by 2036.

The specified tariff changes on New Zealand exports to India are aggregated to model sectors using a concordance from HS products to GTAP sectors provided by Aguiar et al. (2023). In this aggregation, the tariff for each model sector is a trade-weighted average of the tariffs on its

constituent HS products.[2] Most allocations of HS products to model sectors are intuitive. Two exceptions are: (1) degreased wool, which is assigned to the textiles sector; and (2) milk albumins, which are included in the chemicals sector.

Calculated tariffs for model sectors in each year, which are simulated in FTA scenario, are provided in Appendix D, Table D1. Tariffs by model sector in selected years and the share of each sector in New Zealand merchandise exports to India in 2023 are shown in Table 3. Values for 2026 represent current tariffs, those for 2027 are tariffs in the first year of the agreement, and 2036 values are tariffs when all eliminations or reductions are fully implemented. For sectors that include products with TRQs – horticulture (apples and kiwifruit) and chemicals (milk albumins) – two tariff values are listed. The first value is the tariff if all exports with TRQs face within-quota rates, and the second value is the tariff if all exports are charged out-of-quota rates. For example, the tariff on horticulture exports in 2027 is 16.6% if all kiwifruit are tariff free and the apple tariff is rate is 25%, and 35.6% if apples and kiwifruit were only traded out of quota (with tariffs rates of 50% and 16.5%, respectively). The two tariff values for sectors with TRQ products are presented for illustration purposes. As described in Appendix B (section B4), TRQs are explicitly represented in the model the share of in-quota and above quota exports is determined in the model simulations.

Table 3. Tariffs on New Zealand exports to India in selected years and merchandise export shares, %.

Sector	Tariffs, %			Export share, %
	2026	2027	2036	
Meat products	33.0	4.0	0.0	1.1
Dairy products	41.4	41.4	41.4	0.5
Horticulture	40.0	16.6 / 35.6[a]	15.0 / 34.3[a]	6.8
Wool	2.8	0.0	0.0	1.2
Forestry, wood & paper products	6.2	0.3	0.0	45.6
Beverages	129.0	88.7	50.1	0.1
Other primary products	28.2	27.3	22.4	1.4
Coal	2.8	0.0	0.0	3.1
Other extractive resources	5.5	4.1	1.0	0.6
Textiles	2.7	0.0	0.0	11.0
Clothing and footwear	12.1	3.4	2.5	0.5
Metals & metal products	1.3	1.1	0.0	14.3
Chemicals	19.1	2.2 / 17.7[a]	1.7 / 17.2[a]	5.3
Other manufacturing	9.6	7.2	2.3	8.4

Note: [a] The first value is the tariff if all imports are at in-quota rates and the second number is the tariff if all imports are at out-of-quota rates.

[2] In these calculations, weights for HS tariffs are imports of that product as a share of total model sector imports.

Source: Author's calculations based on negotiated New Zealand-India FTA outcomes and GTAP12 (prerelease 3) Database (Aguiar et al., 2025).

Tariffs are reduced or eliminated, either at EIF or over time, on several of New Zealand's major exports to India, including forestry and wood products, meat products, horticulture, wool, metals, textiles (which are nearly all degreased wool). Apples account for 60% of New Zealand's horticultural exports to India, and kiwifruit for a further 26%. As a result, there are substantial reductions in the horticultural tariff when is its calculated using in-quota rates. The same applies to tariffs on chemicals, which consist mainly of milk albumins. There is also a substantial reduction in tariffs on beverages, which are predominantly wine.

The trade-weighted average tariff on New Zealand merchandise exports to India in 2026 is 9.2%. The corresponding trade-weighted average tariff in 2036, using the same trade weights, is 1.9% if TRQ products are charged in-quota rates, and 4.1% if those products are charged out-of-quota rates.

3.1.2 Tariffs on New Zealand imports from India

The FTA will eliminate all New Zealand tariffs on imports from India at EIF. Consequently, New Zealand tariffs on imports from India are set to zero from 2027 onwards in the FTA scenario.

Current New Zealand tariffs by model sector and merchandise import shares in 2023 are shown in Table 4. Overall, New Zealand tariffs on imports from India are low. The highest tariffs are for clothing and footwear (6.5%) and textiles (3.3%). Combined, these sectors account for 21.2% of New Zealand imports from India. Imports of other manufacturing, which attract a 2.2% tariff, make up 36.1% of bilateral imports. The trade-weighted tariff on total New Zealand merchandise imports from India is 2.4%.

Table 4. New Zealand tariffs on imports from India and merchandise import shares, %.

Sector	Tariff, %	Import share, %
Meat products	0.0	0.6
Dairy products	0.3	0.5
Horticulture	0.1	0.8
Wool	0.0	0.0
Forestry, wood & paper products	0.5	2.5
Beverages	1.3	0.2
Other primary products	1.6	17.7
Coal	0.0	0.0
Other extractive resources	1.4	9.0
Textiles	3.3	11.7
Clothing and footwear	6.6	9.5
Metals & metal products	2.5	6.2
Chemicals	1.2	5.1
Other manufacturing	2.2	36.1

3.2 Non-tariff measures

Previous research has shown that NTMs can both facilitate trade, by fostering trust, quality insurance, or access; and act as a barrier, by raising costs and restricting access (Santeramo & Lamonaca, 2018; Cadot et al., 2019; United Nations Conference on Trade and Development, 2022). While the New Zealand-India FTA focuses on reducing barriers that impede trade, this report adopts the term NTMs in line with contemporary academic and institutional usage, rather than non-tariff barriers (NTBs).

3.2.1 Ad valorem equivalents of non-tariff measures

NTMs are not included in the GTAP12 Database. For merchandise trade, this report sources estimates of NTMs from Kravchenko et al. (2022). For HS6 sectors, Kravchenko et al. (2022) estimate bilateral ad valorem equivalents (AVEs) of NTMs, where each AVE is the equivalent ad valorem tariff rate that would have the same trade-restricting effect as NTMs.

The authors aggregate their estimates to GTAP sectors and include them in supplementary files.[3] For the modelling in this report, the estimates for New Zealand-India trade are aggregated to sectors specified in the CGE model. For model sectors comprising more than one GTAP sector,

[3] The supplementary files are available at https://jgea.org/ojs/index.php/jgea/article/view/159/213. AVE estimates of NTMs by GTAP sector are provided in the file rawGTAPAgg.xlxs.

estimates for each model sector are calculated as 2023 trade-weighted averages of the corresponding GTAP sector values.

Kravchenko et al. (2022) do not estimate NTMs for services. For these sectors, this report primarily employs AVE estimates by GTAP service sector from Fontagné et al. (2016). Like for merchandise trade, AVEs for each service sector in the model are calculated as 2023 trade-weighted averages of estimates for constituent GTAP sectors.

As Fontagné et al. (2016) quantify service NTMs for 2011, we cross check the estimates with those by Bridger (2022), who estimates AVEs of NTMs for seven service sectors in 2021. AVE estimates are similar across the two sources, except in the case of India's imports of other business services. Accordingly, we use estimates based on Fontagné et al. (2016) – which can be precisely aggregated to model sectors – for all service NTMs, apart from the exception noted above. For India's imports of other business services, the NTM AVE is an average of the estimates by each study.[4]

Estimated AVEs of NTMs are shown in Table 5. Overall, NTMs on New Zealand exports to India are more restrictive than those on India's exports to New Zealand. For example, the AVE on New Zealand exports of other primary products to India is 55.3%, while that on India's other primary product exports to New Zealand in 10.7%.

[4] The report uses an average from the two sources, as the predicted AVE on India's imports of other business services based on Bridger (2022) (231.1%) is much larger than other estimates.

Table 5. AVEs of NTMs on model sectors trade, %.

Sector	New Zealand exports to India	Indian exports to New Zealand
Meat products (incl. sheep and beef farming)	65.9	0.0
Dairy products (incl. dairy farming)	26.3	21.9
Horticulture (incl. apples & kiwifruit)	94.3	0.5
Wool (raw wool, not degreased)	0.0	0.0
Forestry, wood & paper products	0.0	0.5
Beverages (incl. wine)	0.0	0.2
Other primary products (incl. seafood)	55.3	10.7
Coal	0.0	0.0
Other extractive resources	0.7	0.0
Textiles (incl. degreased wool)	0.0	0.4
Clothing and footwear	73.3	25.9
Metals & metal products	31.9	2.1
Chemicals (incl. albumins)	9.4	39.3
Other manufacturing	25.4	10.4
Electricity	-	-
Transport	48.5	31.4
Accommodation & food services	0.0	50.6
Information and communication services	81.9	53.1
Other business services	143.0	54.1
Healthcare services	112.9	62.5
Other services (incl. education & gov. services)	112.9	62.5

Sources: Author's calculations based on estimates by Kravchenko et al. (2022), Fontagné et al. (2016), and Bridger (2022).

3.2.2 Reductions in non-tariff measures

The negotiated outcomes for NTMs largely focus on establishing mechanisms and processes for handling NTMs as they arise rather than addressing immediate trade barriers (MFAT, personal correspondence, 2026). This report assumes that the New Zealand-India FTA will reduce NTMs for both goods and services by 2.5%. These reductions are comparable to those considered when modelling potential outcomes from previous agreements – e.g., the evaluation of the New Zealand-EU FTA by Walmsley et al. (2022b). Similar to Walmsley et al. (2022b), the NTM reductions are phased in at a linear rate over a five-year period beginning in 2027.

Following Walmsley and Strutt (2021), NTM reductions are assumed to increase the productivity of importers and exporters. For each sector, half of the reduction in trade costs is captured by increases in importer productivity, and half by increases in exporter productivity. For each sector, increases in exporter productivity are modelled by raising the productivity of sectoral output. The increase in output productivity is weighted by the share of output exported to the FTA partner. Weights on output productivity are updated each year.

3.3 Trade facilitation

The New Zealand-India FTA chapter on clearance procedures and trade facilitation aims to streamline customs processes at the border and reduce transaction costs: 'India Customs will release all goods within 48 hours, and in the case of perishable goods and express consignments, endeavour to release within 24 hours' (MFAT 2025a).

In 2025, the average Indian customs clearance time was 79 hours at seaports and 39 hours at air cargo complexes (Central Board of Indirect Taxes and Customs, 2025). Hummels et al. (2007), estimate that a one-day reduction in time to trade is equivalent to removing a 1.1% import tariff.

As a result, this report estimates that, for New Zealand merchandise exports to India, the agreement will reduce the time to trade for non-perishable goods via seaports by 1.29 days, which is equivalent to removing a 1.42% tariff. For perishable goods, the agreement will reduce time to trade by 2.29 days via seaports (equivalent to removing a 2.52% tariff) and 0.83 days via airports (equivalent to removing a 0.91% tariff).

In modelling the impact of trade facilitation, this report assumes that all New Zealand exports of non-perishable goods to India move through seaports, while 80% of perishable exports use seaports and 20% use airports. Consequently, to capture improved trade facilitation, this report simulates AVE reductions of 2.05% for perishable goods (meat products, dairy products, horticulture, and other primary products) and 1.42% for non-perishable goods (all other merchandise sectors).

Following Walmsley et al. (2022b), this report assumes that for India's merchandise exports to New Zealand the FTA will reduce the average time to trade by 10% from 25 hours, which is equivalent to removing a 0.11% tariff.

As for NTMs, improvements in trade facilitation are modelled as increases in importer and exporter productivities, with AVE reductions split evenly between the two effects. Trade facilitation impacts are also phased in over a five-year period.

3.4 Summary of the New Zealand-India FTA scenario

For clarity, a summary of reductions in trade barriers implemented in the New Zealand-India FTA scenario is shown in Table 6. All reductions and eliminations of tariffs are fully phased in within 10 years of the FTA taking effect, with reductions occurring earlier. Reductions in NTMs and improvements in trade facilitation are phased in over five years. The scenario assumes that the

FTA takes effect in 2027, so all reductions in trade barriers due to NTMs and trade facilitation are achieved by 2031, and all tariff reductions are complete by 2036.

Table 6. Summary of reduction in trade barriers simulated in the FTA scenario.

Trade barrier	Trade barrier reduction
Tariffs	Reductions in tariffs by product and year as specified in the FTA, see Table D1.
	Tariffs for HS products are aggregated to GTAP model sectors.
	All tariff eliminations and reductions fully implemented 10 years after EIF.
	Explicit representation of TRQs.
NTMs	2.5% reduction in NTMs on all bilateral trade in goods and services between New Zealand and India.
	Linear phase in of NTM reductions over five years.
Trade facilitation	New Zealand merchandise exports to India: 2.52% and 1.42% tariff equivalents removed for perishable and non-perishable goods, respectively.
	India merchandise exports to New Zealand: 0.11% tariff equivalent removed for all goods.
	Linear phase in of trade facilitation improvements over five years.

4 Modelling Results and Findings

4.1 GDP

Changes in New Zealand real GDP in the FTA scenario relative to the baseline are shown in Figure 1 in millions of 2024 NZD, and Figure 2 as a percentage of baseline GDP. The GDP changes are decomposed into those due to changes in (1) tariffs, (2) NTMs, and (3) trade facilitation. The FTA increases New Zealand GDP in all years, with larger increases over time, both in absolute and proportional terms. For example, in 2027, New Zealand annual GDP increases by $135.0m, which is 0.03% of baseline GDP in that year. In 2036, the corresponding annual increases are $382.4m and 0.07%, and in 2050 they are $657.7m and 0.10%.

Between 2027 and 2036, GDP changes relative to the baseline increase over time are driven by phased-in eliminations and reductions in trade barriers and rapid growth of the Indian economy. All reductions in trade barriers are fully implemented by 2036. After this year, larger New Zealand GDP changes over time are due to fast economic growth in India, which the FTA positions New Zealand exports to take advantage of.

Tariff reductions are the largest source of New Zealand GDP increases in all years, but the share of the increases due to tariffs decreases over time. In 2027, driven by immediate tariff eliminations and reductions for some products, 89.3% of the GDP increase is due to tariff liberalisation, 5.2% due to NTMs reductions, and 5.4% due to trade facilitation. The corresponding shares are 63.1%, 17.1%, and 19.8% in 2050.

Figure 1. Changes in New Zealand GDP in the FTA scenario relative to the baseline (millions of NZD).

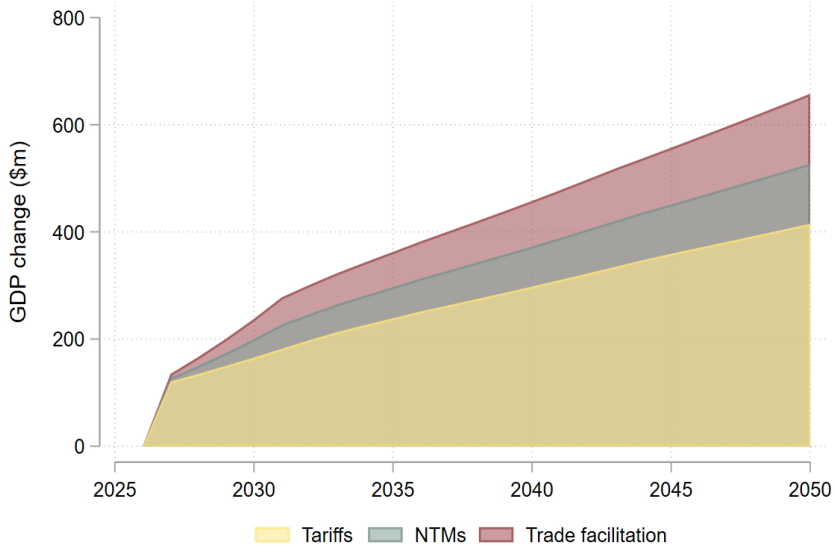
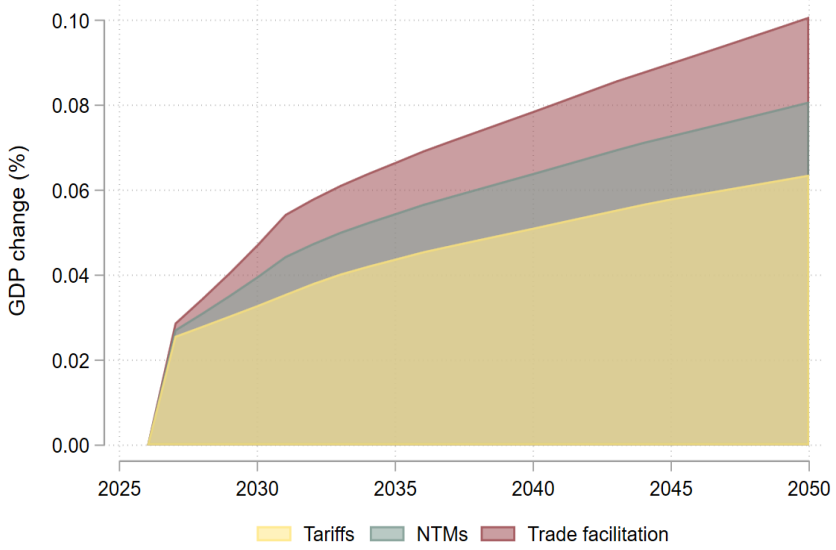


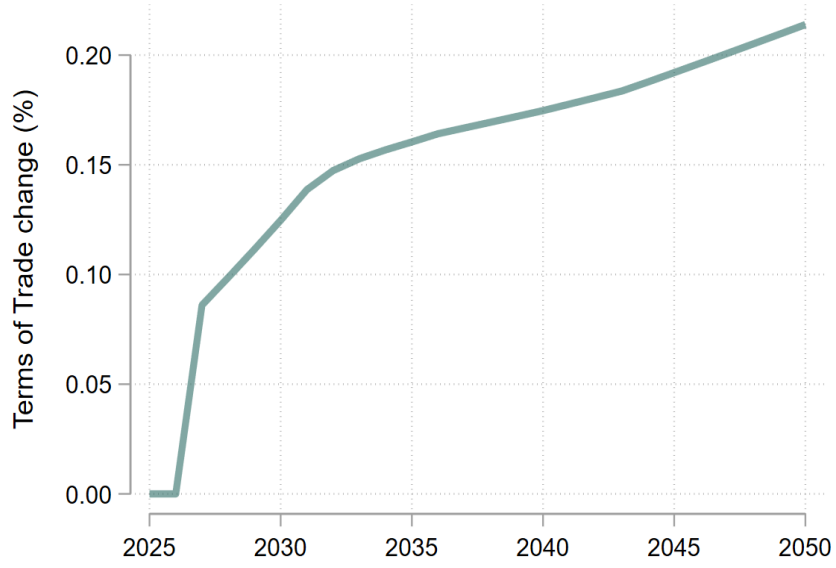
Figure 2. Changes in New Zealand GDP in the FTA scenario relative to the baseline (%).



4.2 Terms of trade

Changes in New Zealand's terms of trade due to the FTA are shown in Figure 3. The illustration (and all subsequent reporting) displays the combined effects of changes in tariffs, NTMs and trade facilitation. The FTA increase New Zealand's terms of trade in all years, with terms of trade improvements increasing overtime. As for GDP, the larger changes over time are driven by the phased-in reduction of trade barriers (up until 2036), and India's increasing share of global GDP, which increase prices for New Zealand exports. Terms of trade increases due to the FTA are 0.09% in 2027, 0.17% in 2037, and 0.21% in 2050.

Figure 3. Changes in New Zealand's terms of trade in the FTA scenario relative to the baseline (%).



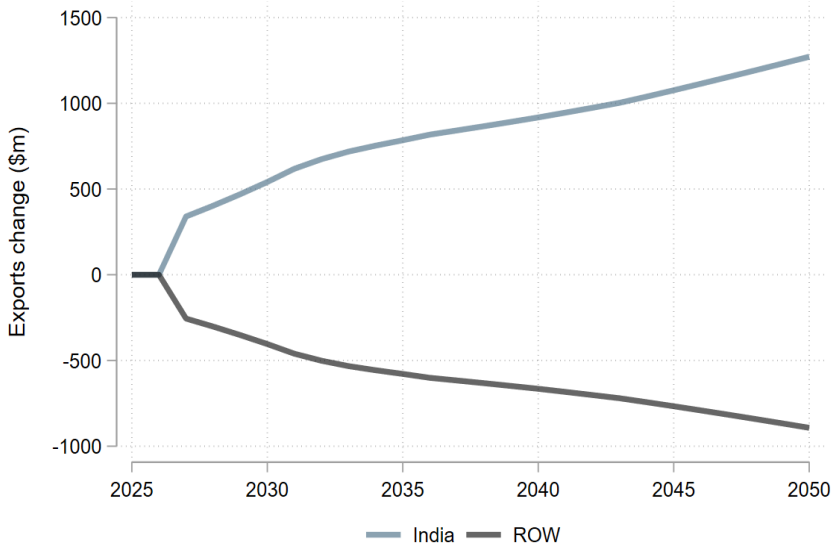
4.3 International Trade

4.3.1 New Zealand Exports to India

Changes in New Zealand total exports of goods and services, in millions of NZD, to India and all other regions (Rest of World, ROW) due to the FTA are shown in Figure 4. In 2027, New Zealand annual exports to India increase by $339.9m (16.3%) relative to the baseline. Due to increased trade liberalisation and economic growth, exports changes increase over time. In 2036, New Zealand annual exports to India increase by $817.4m (26.8%), and in 2050 the increase is $1,271.6m (25.0%).

At the same time, New Zealand exports to other countries decline. Reductions in New Zealand annual exports to ROW relative to the baseline are $255.5m in 2027, $600.9m in 2036, and $892.5m in 2050. These 2027 numbers indicate that 24.8% of the increase in New Zealand exports to India represent new trade, while 75.1% is redirected trade (due to higher export prices in India). The proportion of the increase in exports stemming from new trade rises over time: it is 26.5% in 2036 and 29.8% in 2050.

Figure 4. Changes in New Zealand total exports in the FTA scenario relative to the baseline (millions of NZD)



Changes in New Zealand annual exports to India and ROW by major sector (agro-food, industry, and services) are displayed in Table 7. Changes in New Zealand annual exports by model sector in 2027, 2036 and 2050 are included in Appendix E, Tables E1 and E2.

Table 7. Changes in New Zealand annual exports by major sector and destination in the FTA scenario relative to the baseline (millions of NZD).

Sector	2027		2036		2050	
	India	ROW	India	ROW	India	ROW
Agro-food	259.9	-162.7	504.4	-361.5	799.1	-553.1
Industry	71.7	-48.9	245.3	-122.6	361.3	-169.8
Services	8.2	-43.9	67.7	-116.8	111.2	-169.6
Total	**339.9**	**-255.5**	**817.4**	**-600.9**	**1,271.6**	**-892.5**

FTA-induced changes in New Zealand exports are largest for agro-food products. In 2036, New Zealand annual agro-food exports to India increase by $504.4m (52.0%) relative to the baseline. The largest contributors to the increase are forestry and wood products ($282.7m), meat products ($130.6m), and horticulture ($70.3m).

New Zealand agro-food exports to ROW decrease as some exports are diverted to India to take advantage of higher prices, but total exports still increase. In 2036, annual New Zealand agro-food exports to ROW decrease by $361.5m. New Zealand exports of forestry and wood products (-$126.3m) and meat products (-$108m) to ROW are the largest contributors to decreased agro-food exports to ROW. However, total annual New Zealand exports of both products increase, by $156.4m and $22.6m, respectively.

Annual industry exports from New Zealand to India increase by $245.3m in 2036. Industry sectors with the largest export increases are other manufacturing ($113.7m), textiles ($46.0m), and metals and metal products ($44.2m). As noted above, New Zealand textiles exports to India are mainly degreased wool, so increased textile exports have a direct impact on the wool sector.

Like New Zealand agro-food exports, industry exports to ROW decrease by less than exports to India, so total industry exports increase. In 2036, annual industry exports to ROW decrease by $122.6m but total industry exports increase by $122.7m.

Services exports to India increase in all years, but increases are small relative to other major sectors. In 2036, annual service exports increase by $67.7m, less than 10% of the total increase in New Zealand exports to India.

In all years, total exports of New Zealand services decrease as increases to India are more than offset by decreases to ROW. This is due to general equilibrium and full employment conditions in the model. Specially, although reductions in barriers to services trade increase exports to India, liberalisation for services trade is less than that for other sectors. To maximise gains from reduced trade barriers, capital and labour move from sectors with less liberalisation (services) to sector with more liberalisation (agro-food and industry). Although New Zealand's total exports of

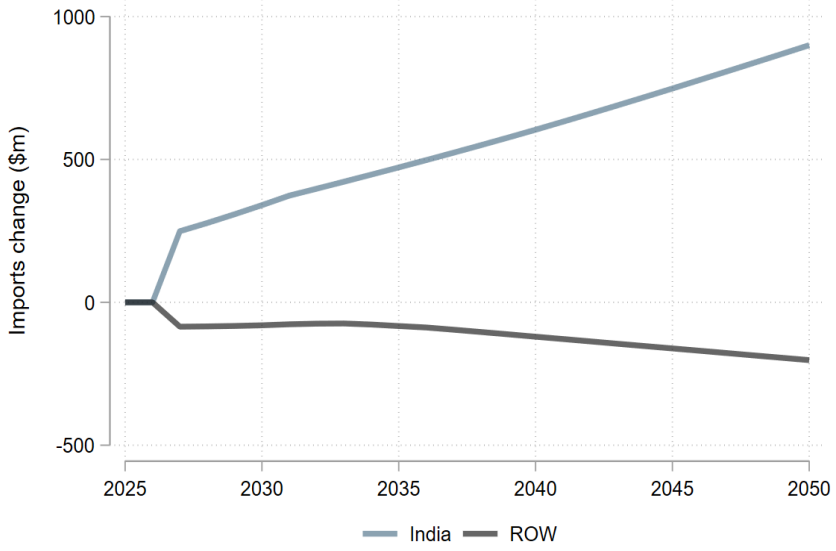
services in the FTA scenario decrease relative to the baseline, they still increase year-on-year. That is, service exports continue to grow, but at a slower rate than in the baseline.

4.3.2 New Zealand Imports from India

Changes in New Zealand total imports of goods and services to India and ROW due to the FTA are shown in Figure 5. Relative to the baseline, New Zealand annual imports from India increase by $249.0m (10.5%) in 2027, $497.7m (12.4%) in 2036, and $899.8m (12.7%) in 2050. The proportional increase in New Zealand imports from India rises over the first five years due the phase-in of NTM and trade facilitation improvements. After 2031, New Zealand annual imports from India increase by 12.1% and 12.7% relative to the base line.

New Zealand annual total imports from ROW decrease by $85.2m in 2027 (0.08%), $87.9m (0.07%) in 2036, and $202.2m (0.14%) in 2050.

Figure 5. Change in New Zealand total imports in the FTA scenario relative to the baseline (millions of NZD).



Changes in New Zealand imports from India and ROW by major sector are displayed in Table 8. Changes in New Zealand imports by model sector in 2027, 2036 and 2050 are included in Appendix E, see Tables E3 and E4.

Table 8. Changes in New Zealand annual imports by major sector and source in the FTA scenario relative to the baseline (millions of NZD).

Sector	2027		2036		2050	
	India	ROW	India	ROW	India	ROW
Agro-food	**16.2**	**6.4**	**26.8**	**20.4**	**35.2**	**40.2**
Industry	**227.3**	**-114.7**	**432.4**	**-156.4**	**800.6**	**-314.5**
Services	**5.4**	**23.1**	**36.9**	**48.1**	**64.0**	**72.0**
Total	**249.0**	**-85.2**	**496.0**	**-87.9**	**899.8**	**-202.2**

New Zealand imports from India increase for all major sectors in all years with industry imports accounting for approximately 90% of the increase in each year. In 2036, annual industry exports increase by $432.4m (24.0%). Within in thus major sector, other manufacturing ($179.21) and clothing ($118.72) account for most of the increases. New Zealand industry imports from ROW decrease in all years, indicating import substitution toward Indian products and away from other countries.

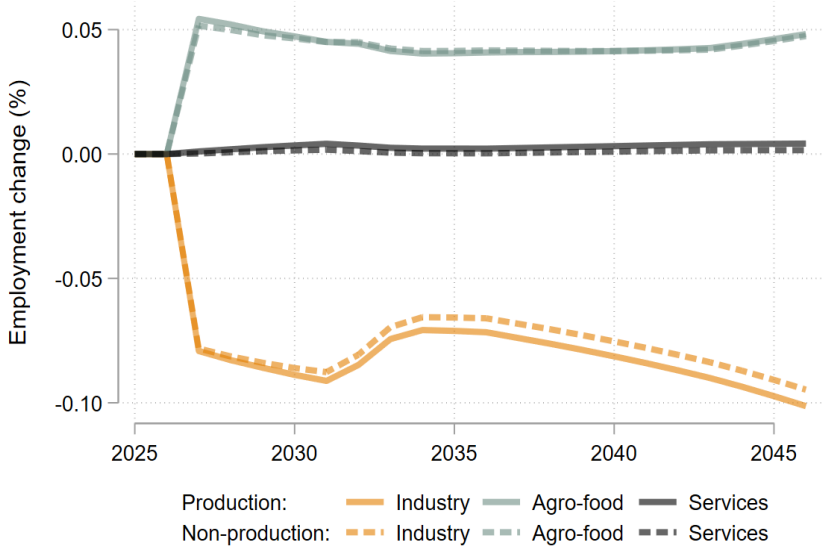
New Zealand imports of agro-food products and services from ROW increase. These increases are driven by at least three factors. First, as New Zealand agro-food tariffs are low, the FTA induces limited substitution toward Indian agro-food products and away from those produced in ROW. Second, New Zealand imports from ROW are used as intermediate inputs for increased goods and services exported to India. Third, especially for agro-food products, the FTA increases the price of New Zealand commodities, which induces substitution towards imported alternatives.

4.4 Labour market outcomes

4.4.1 Employment

As the model assumes full employment, the FTA impacts sectoral employment but not the economy-wide level of employment. In the FTA scenario, more workers are employed in expanding sectors and fewer in contracting ones. Percentage changes in the employment of production and non-production workers by major sector in the FTA scenario relative to the baseline are shown in Figure 6.

Figure 6. Changes in employment by major sector and labour type in the FTA scenario relative to the baseline, %.



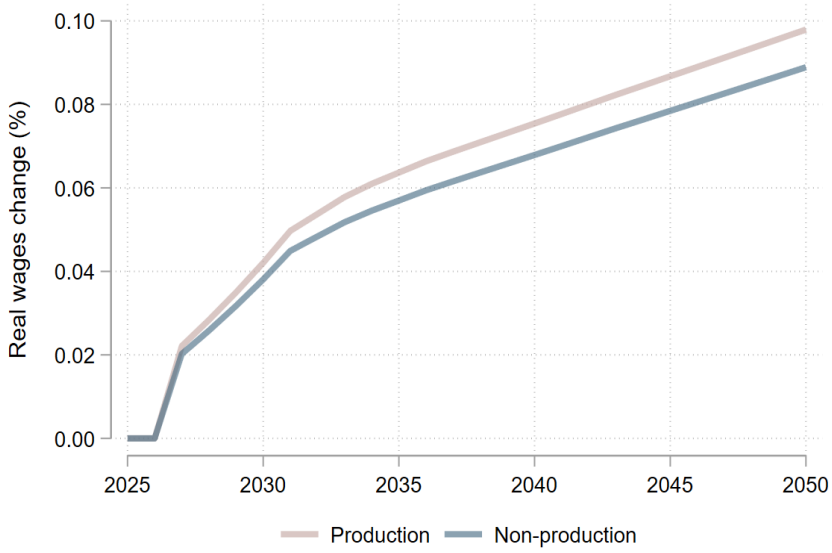
For both production and non-production workers, the FTA increases employment in agro-food production and reduces it in industry sectors. These changes are consistent with the relatively large increase in New Zealand agro-food exports and the increases in total imports of industry and services noted in Section 4.3.2. Proportional employments changes for production workers are larger than those for non-production workers. In 2036, employment of production workers increases by 0.041% in agro-food and 0.002% in services, and decreases by 0.071% in industry. The corresponding changes for non-production workers are 0.042% (agro-food), 0.0003% (services), and -0.066% (industry).

Small changes in sectoral employment suggest that retirements and the entry of new workers into expanding sectors will absorb most job reallocations.

4.4.2 Wages

Full employment in the model is maintained by flexible wages for each labour type. Percentage changes in the employment of production and non-production workers are shown in Figure 7.

Figure 7. Changes in real wages by labour type, %



The FTA increases real wages for both labour types. This is driven by both income and expenditure effects in the FTA scenario relative to the baseline. New Zealand exporters receive higher prices for goods and services shipped to India, which has a flow-on effect to wages. At the same time, reduced trade barriers decrease the price consumers pay for goods imported from India.

Changes in real wages increase over time and, as for employment outcomes, changes are the largest for production workers. In 2036, the FTA increases the real wage for production workers by 0.066% and that for non-production workers by 0.059%. The corresponding changes in 2050 are 0.098% and 0.089%. As production workers generally receive lower wages than non-production workers, these changes will reduce the wage differential for the two labour types.

4.5 Limitations

Although the model used for the analysis in this report is a useful tool for evaluating economy-wide impacts of trade policies, it has limitations. A significant challenge in modelling the New Zealand-India FTA is that, due to high tariffs on some New Zealand exports to India, many current trade flows are small. As the model is calibrated to these small values, large proportional changes in export volumes can still be small numbers. In practice, large tariff reductions may result in the development of new supply chains where trade barely existed before. It is difficult to predict where and when new supply chains may eventuate, so these are not included in the modelling. The economic impacts of the FTA will be larger than those estimated by the model if new trade networks emerge due to the agreement.

The modelling framework also has additional limitations that are common to most CGE models. First, it rests on strong structural assumptions about functional forms and market behaviour. Second, it relies on representative firms and sectors, so it does not capture firm heterogeneity and reallocation effects. Third, the sectoral aggregation in the model may obscure important distributional consequences across industries and households. Fourth, results depend on assigned elasticity parameters.

5 Conclusions

This report assesses the economic impacts of the recently concluded New Zealand-India FTA negotiations using a dynamic CGE model. Relative to a baseline scenario, the FTA is projected to increase New Zealand annual GDP by $135.0m in 2027, $382.4m in 2036, and $657.7m in 2050. Increases are larger over time due to phased-in reductions in trade barriers and rapid growth of the Indian economy. Tariff eliminations and reductions are the main driver of these gains, though non-tariff measures and trade facilitation become increasingly important over time. The FTA also increases New Zealand exports to India, particularly in agro-food products, and imports from India, mainly in industrial goods. Employment shifts are modest, with gains in agro-food sectors and small reductions in industrial sectors. Real wages increase for all workers, especially production workers.

A key caveat is that the model does not capture the potential formation of new supply chains following large tariff reductions. If new trade networks emerge in sectors where little trade previously existed, the impacts of the New Zealand-India FTA are likely to exceed the estimates in this report.

References

Aguiar, A. (2023). *Concordances – six-digit HS sectors to GTAP sectors* (GTAP Resource No. 5111). Purdue University, West Lafayette, IN: Global Trade Analysis Project (GTAP). https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=5111

Aguiar, A., Baldos, U., Chepeliev, M., Corong, E., & Simonato, T. (2025). The Global Trade Analysis Project (GTAP) Data Base: Version 12. *Journal of Global Economic Analysis*, *10*(2), 1-45. https://doi.org/10.21642/JGEA.100201AF

Armington, P. S. (1969). A theory of demand for products distinguished by place of production. *IMF Staff Papers, 16*(1), 159–176. https://doi.org/10.2307/3866403

Australian Government Department of Foreign Affairs and Trade. (n.d.). *Australia-India Economic Cooperation and Trade Agreement (ECTA)*. https://www.dfat.gov.au/trade/agreements/in-force/australia-india-ecta

Böhringer, C., Rutherford, T. F., & Wiegard, W. (2003). Computable general equilibrium analysis: Opening a black box. *ZEW Discussion Paper No. 03-56*. ZEW – Leibniz Centre for European Economic Research.

Bridger, A. (2022). *Estimating tariff equivalents of service trade restrictions*. SSRN. https://doi.org/10.2139/ssrn.4715123

Cadot, O., Gourdon, J., & van Tongeren, F. (Eds.). (2019). *Non-tariff measures: A fresh look at trade policy's new frontier*. World Bank. https://doi.org/10.1596/978-1-4648-1440-1

Carballo, J., Graziano, A. G., Schaur, G., & Volpe Martincus, C. (2025). *Import processing and trade costs*. *Journal of International Economics, 154*, Article 104060. https://doi.org/10.1016/j.jinteco.2025.104060

Central Board of Indirect Taxes and Customs (CBITC). (2025, June). *National Trade Release Study 2025: India trade facilitation performance report*. Ministry of Finance, Government of India. https://static.pib.gov.in/WriteReadData/specificdocs/documents/2025/jun/doc2025620574401.pdf

Climate Change Commission. (2024, 11 December). *Modelling and data: Final reports on the fourth emissions budget and 2050 target review (including whether emissions from international shipping and aviation should be included)*. He Pou a Rangi Climate Change Commission. https://www.climatecommission.govt.nz/our-work/advice-to-government-topic/preparing-

advice-on-emissions-budgets/advice-on-the-fourth-emissions-budget/modelling-and-data-final-report

Department for Business and Trade. (2025). *Technical note of the preliminary economic impacts of the UK-India Free Trade Agreement*. UK Government. https://assets.publishing.service.gov.uk/media/6880fd0a6a7ea0e1ce1d3597/impact-assessment-of-the-free-trade-agreement-between-the-uk-and-india_a.pdf

Department for Business and Trade & Department for International Trade. (2022, 31 January). *Trade modelling review expert panel: report and recommendations*. UK Government. https://www.gov.uk/government/publications/trade-modelling-review-expert-panel-report-and-recommendations/trade-modelling-review-expert-panel-report

Department of Commerce, Government of India. (2025). *Fact sheet: India and New Zealand conclude free trade agreement*. https://www.commerce.gov.in/wp-content/uploads/2025/12/Fact-Sheet-NZ-FTA-dec-22-for-Website-ver2.pdf

Economist Intelligence Unit. (2024, 9 August). India's long-term outlook. https://www.eiu.com/n/indias-long-term-outlook/

Ferris, M. C., & Munson, T. S. (2000). Complementarity problems in GAMS and the PATH solver. *Journal of Economic Dynamics and Control, 24*(2), 165–188. https://doi.org/10.1016/S0165-1889(98)00092-X

Fontagné, L., Mitaritonna, C., & Signoret, J. E. (2016, August). Estimated tariff equivalents of services NTMs (CEPII Working Paper No. 2016-20). CEPII. https://www.cepii.fr/CEPII/en/publications/wp/abstract.asp?NoDoc=9270

GAMS Development Corporation. (2026). GAMS: General Algebraic Modeling System (Release 52.4.0) [Software]. https://www.gams.com

Garaffa, R., Ordonez, J., van der Vorst, C., & Weitzel, M. (2024). *Baseline GECO 2024* [Dataset]. European Commission, Joint Research Centre (JRC). https://data.jrc.ec.europa.eu/dataset?collection=Baseline-GECO

Kravchenko, A., Strutt, A., Utoktham, C., & Duval, Y. (2022). New Price-based Bilateral Ad-valorem Equivalent Estimates of Non-tariff Measures . *Journal of Global Economic Analysis*, 7(2). https://doi.org/10.21642/JGEA.070202AF

Hummels, D., Minor, P., Reisman, M., & Endean, E. (2007). *Calculating tariff equivalents for time in trade* (Report prepared for the United States Agency for International Development). Nathan Associates Inc. https://business.purdue.edu/faculty/hummelsd/papers/tariff_equivalents.pdf

International Monetary Fund. (2025, 29 July). World Economic Outlook Update, July 2025: Global economy: Tenuous resilience amid persistent uncertainty. International Monetary Fund. https://www.imf.org/en/publications/weo/issues/2025/07/29/world-economic-outlook-update-july-2025

Lanz, B., & Rutherford, T. F. (2016). GTAPinGAMS: Multiregional and small open economy models. *Journal of Global Economic Analysis, 1*(2), 1–77. https://doi.org/10.21642/JGEA.010201A

Mathiesen, L. (1985). Computation of economic equilibrium by a sequence of linear complementarity problems. *Mathematical Programming Studies, 23*, 144–162. https://doi.org/10.1007/BFb0121030

Ministry of Foreign Affairs and Trade. (2025a). Overview: New Zealand-India Free Trade Agreement. New Zealand Ministry of Foreign Affairs and Trade. https://www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-concluded-but-not-in-force/new-zealand-india-free-trade-agreement/overview

Ministry of Foreign Affairs and Trade. (2025b). *Key facts on New Zealand-India trade*. New Zealand Ministry of Foreign Affairs and Trade. https://www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-concluded-but-not-in-force/new-zealand-india-free-trade-agreement/key-facts-on-new-zealand-india-trade/

Paltsev, S. (2004). *Moving from static to dynamic general equilibrium economic models: Notes for a beginner in MPSGE* (Technical Note No. 4). MIT Joint Program on the Science and Policy of Global Change. https://web.mit.edu/paltsev/www/docs/move04.pdf

Paltsev, S., Mehling, M., Winchester, N., Morris, J., & Ledvina, K. (2018). *Pathways to Paris: Latin America* (MIT Joint Program Special Report). MIT Joint Program on the Science and Policy of Global Change. https://cs3.mit.edu/publication/p2p-lam

Sharma, G. (2024, 12 February). *New Zealand ironing out trade wrinkles over timber exports*. RNZ News. https://www.rnz.co.nz/news/indonz/508975/new-zealand-ironing-out-trade-wrinkles-over-timber-exports

Ministry of Foreign Affairs and Trade (MFAT). (2025a). New Zealand–India free trade agreement: Summary (PDF). https://www.mfat.govt.nz/assets/Trade-agreements/NZ-India-FTA/New-Zealand-India-Free-Trade-Agreement-Summary.pdf

Rutherford, T. F. (1995). Extension of GAMS for complementary problems arising in applied economic analysis. *Journal of Economic Dynamics and Control, 19*(8), 1299–1324. https://doi.org/10.1016/0165-1889(94)00831-2

Rutherford, T. F. (1999). Applied general equilibrium modeling with MPSGE as a GAMS subsystem: An overview of the modeling framework and syntax. *Computational Economics, 14*, 1–46. https://doi.org/10

Santeramo, F. G., & Lamonaca, E. (2019). The effects of non-tariff measures on agri-food trade: A review and meta-analysis of empirical evidence. *Journal of Agricultural Economics, 70*(3), 595–617. https://doi.org/10.1111/1477-9552.12316

Sue Wing, I. (2004). *Computable general equilibrium models and their use in economy-wide policy analysis* (MIT Joint Program Technical Note No. 6). MIT Joint Program on the Science and Policy of Global Change. http://globalchange.mit.edu/publication/13808

van Tongeren, F., Koopman, R., Karingi, S., Reilly, J. M., & Francois, J. (2017). Back to the Future: A 25-year Retrospective on GTAP and the Shaping of a New Agenda. *Journal of Global Economic Analysis*, *2*(2), 1-42. https://doi.org/10.21642/JGEA.020201AF

United Nations Conference on Trade and Development. (2022). *Non-tariff measures from A to Z* (UNCTAD/DITC/TAB/2021/3). United Nations. https://unctad.org/system/files/official-document/ditctab2021d3_en.pdf

Winchester, N., & White, D. (2022). The Climate PoLicy ANalysis (C-PLAN) Model, Version 1.0. *Energy Economics, 108*, 105896. https://doi.org/10.1016/j.eneco.2022.105896

Walmsley, T., Minor, P., & Strutt, A. (2022a). *Impacts of the New Zealand–UK Free Trade Agreement on the New Zealand economy: A dynamic computable general equilibrium analysis*. New Zealand Ministry of Foreign Affairs and Trade. https://www.mfat.govt.nz/assets/Trade-agreements/UK-NZ-FTA/ImpactECON-UK-NZ-FTA-Final-Report-23-Feb-2022.pdf

Walmsley, T., Minor, P., & Strutt, A. (2022b). *Impacts of the New Zealand-European Union Free Trade Agreement on the New Zealand economy: A dynamic computable general equilibrium analysis* (Final report). ImpactECON; New Zealand Ministry of Foreign Affairs and Trade.

https://www.mfat.govt.nz/assets/Trade-agreements/EU-NZ-FTA/NZ-EU-FTA-Final-Report-Economic-Modelling.pdf

Walmsley, T., & Strutt, A. (2021). A Comparison of Approaches to Modelling Non-Tariff Measures. *Journal of Global Economic Analysis*, *6*(1), 1-33. https://doi.org/10.21642/JGEA.060101AF

Walmsley, T., Strutt, A., Minor, P., & Rae, A. (2018). *Final report: Potential economic impacts of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) on New Zealand* [PDF]. New Zealand Ministry of Foreign Affairs and Trade. https://www.mfat.govt.nz/assets/Trade-agreements/CPTPP/Final-Report-CPTPP.PDF

Winchester, N. (2024). *Supply chain disruption modelling framework* (New Zealand Treasury). https://www.treasury.govt.nz/sites/default/files/2024-05/pc-inq-ier-supply-chain-disruption-modelling-framework.pdf

Winchester, N., Riggs, L., Mitchell, L., & White, D. (2025). *Searching for a just transition: Micro-level employment impacts of climate policies*. *Energy Economics, 141*, 108086. https://doi.org/10.1016/j.eneco.2024.108086

Winchester, N., & White, D. (2022). The Climate PoLicy ANalysis (C-PLAN) Model, Version 1.0. *Energy Economics, 108*, 105896. https://doi.org/10.1016/j.eneco.2022.105896

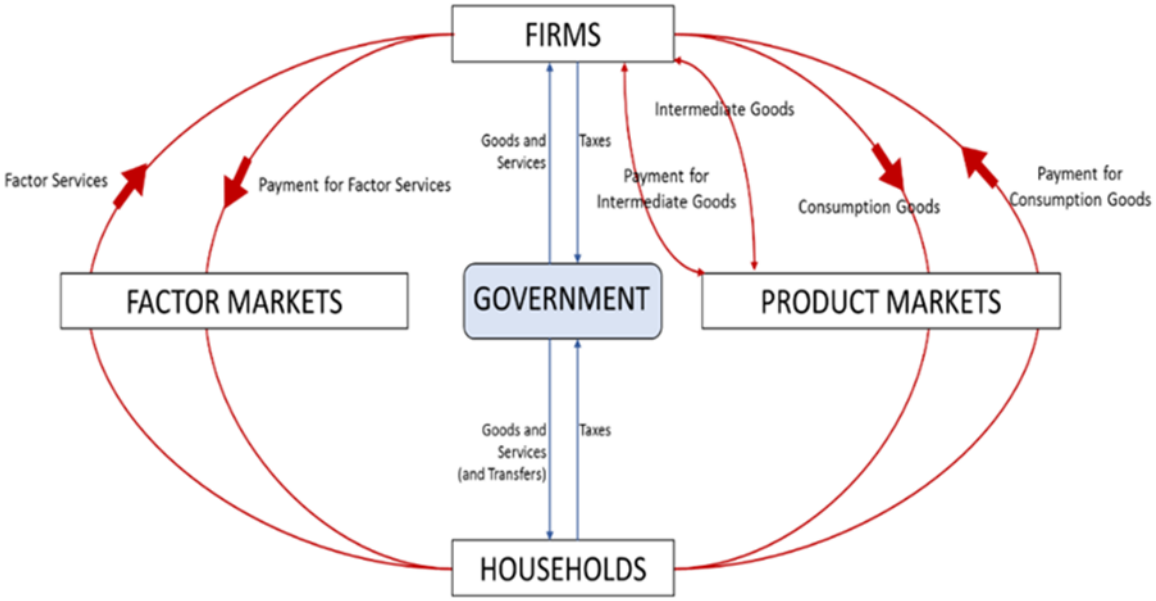
Wood Processors and Manufacturers Association & New Zealand Forest Owners Association. (2024, 17 October). *Consultation on non-tariff barriers faced by New Zealand exporters* (Brief). Foreign Affairs, Defence and Trade Committee. https://wpma.org.nz/assets/Submissions/Non-Tariff-Barriers-brief-WPMA-and-NZFOA-Oct-2024.pdf

World Customs Organization. (2022). *Harmonized Commodity Description and Coding System (HS)*. World Customs Organization. https://www.wcoomd.org/en/topics/nomenclature/overview/what-is-the-harmonized-system.aspx

Appendix A: Characteristics of CGE models

As shown in Figure A1, CGE models describe the interactions between three agents: households, firms and government. Households own the primary factors of production, such as labour, capital and natural resources. They supply these factors to firms and use the resulting income to purchase goods and services. Firms operate within each sector. They produce commodities by combining factors of production with intermediate inputs, namely goods supplied by other sectors. The government sets policy and raises tax revenue. It uses this revenue to provide goods and services, and to make transfer payments to households. An equilibrium is reached when prices adjust until supply equals demand in every market, including those for goods and services and for factors of production. Figure A1 describes a closed economy (i.e., an economy that does not trade with other nations). When there is international trade, households and firms may purchase goods and services from other countries.

Figure A1. The structure of a CGE model.



Source: Paltsev et al. (2018, Appendix E).

Appendix B: Structure of the CGE Model Developed for this Report

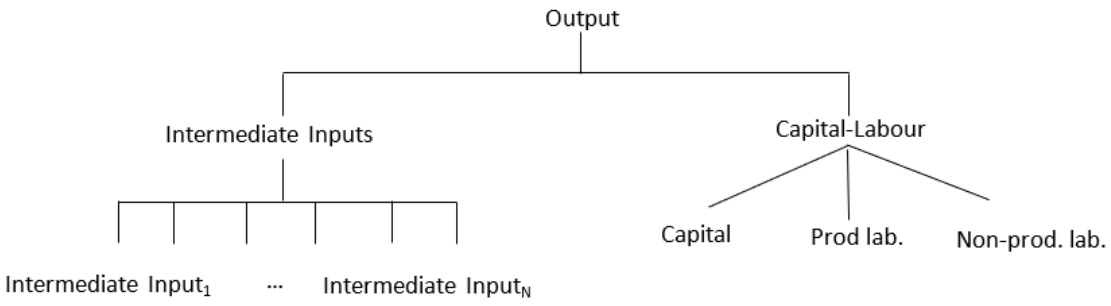
The CGE model developed for this report builds on the modelling tools provided by Lanz and Rutherford (2016). The model takes the form of a mixed complementarity problem (MCP) (Mathiesen, 1985; Rutherford, 1995), in which equilibrium is defined by weak inequalities together with complementary slackness conditions that link variables and their associated constraints (Böhringer et al., 2003). The model is implemented in the Mathematical Programming Subsystem for General Equilibrium (MPSGE) (Rutherford, 1999), a component of the Generalized Algebraic Modelling System (GAMS, 2026) and is solved using the PATH solver (Ferris and Munson, 2000). Key features of the model are described below.

B1. Production

Production in each sector is modelled using a series of nested constant elasticity of substitution (CES) functions. Input substitution depends on the sector's nesting structure, assigned elasticity parameters, and benchmark input cost shares. While each sector has a uniquely calibrated production function, groups of sectors share the same nesting structure (Winchester, 2024). Separate nesting structures are included for (1) agro-food sectors, (2) resource-based sectors (coal and other extractive resources), and (3) all other sectors.

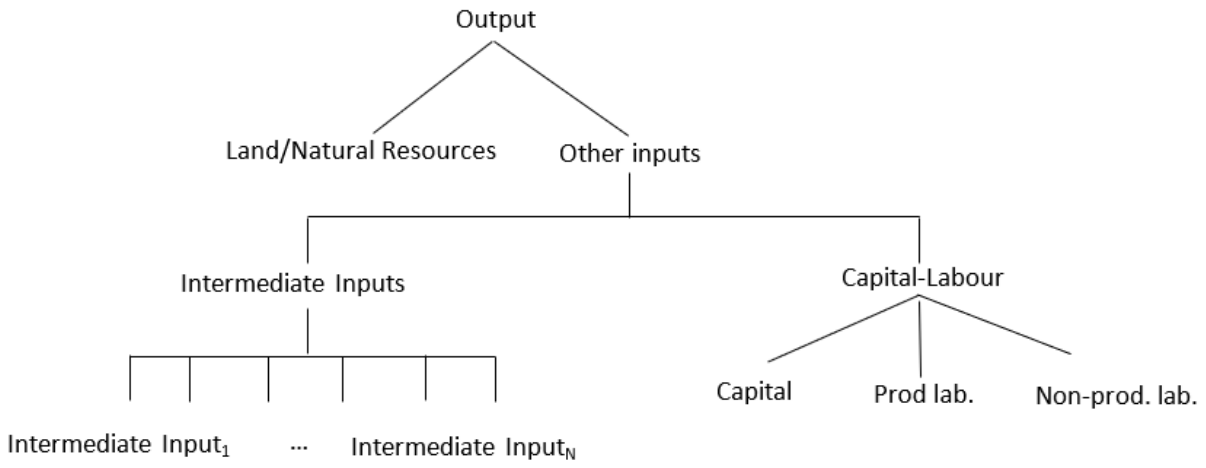
The nesting structure for other sectors, which is sketched in Figure B1, includes aggregate intermediate inputs and a capital-labour aggregate in a top-level nest. Each aggregate nest is a separate CES nest of intermediate inputs and primary factors respectively. Elasticities of substitution between aggregate intermediate inputs and capital-labour are between zero and one. Elasticities of substitution between primary factors in the model are typically around one.

Figure B1. The production structure for other sectors



The production structure for agro-food sectors is depicted in Figure B2. For agro-food sectors, the production nest includes an additional top-level nest that combines land, and a nested aggregate of all other inputs. This production structure facilitates endogenous yield improvements by allowing farmers to use more inputs (e.g., fertilizer and tractors) to increase output from a given parcel of land.

Figure B2. The production structure agro-food sector and resource-based sectors.



The nesting structure for resource-based sector is the same as that for agro-food sectors, except that natural resources replace land in the top-level nest. In this structure, firms face rising marginal production costs, reflecting the extraction of more accessible resources first and then less accessible resources characterized by higher extraction costs.

B2. Final expenditure

Expenditure on final goods and services in each region is determined by a representative consumer who allocates spending to maximise utility across investment, government consumption, and private consumption. Government consumption, investment, and consumption are CES functions of goods and services.

B3. International trade

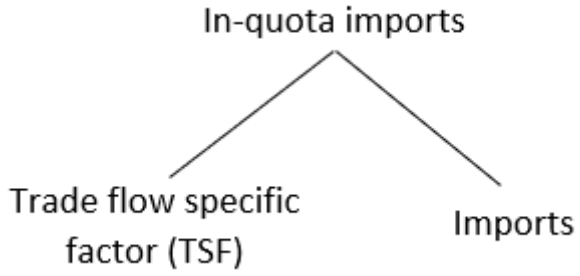
The model represents bilateral trade for each commodity. Within each region, imports are distinguished from domestic goods and by region of origin, following the Armington assumption (Armington, 1969). For each commodity, imports from different regions are combined in a CES

nest to form an import composite, which is then combined in a further CES nest with the domestic variety to create a composite purchased by firms, the government, and households. International trade also incorporates transportation costs. For a detailed description, see Winchester and White (2022, Section S2).

B4. Modelling of TRQs

The representation of TRQs leverages the formulation of the model as a mixed complementarity problem. For goods subject to TRQs, a certain quantity of imports is subject to a lower tariff, with a higher tariff charged on imports above the quota. This is captured by specifying an additional import function for in-quota exports. This import functions combines inputs of the good in question and a Trade-flow Specific Factor (TSF), see Figure B3. The availability/endowment of the TSF is set exogenously each year to reflect the quota amount subject to the lower tariff. Out-of-quota exports are captured by the standard import functions included in the trade specifications.

Figure B3. The import function for within-quota imports when there are TRQs



B5. Dynamics

Following Paltsev (2004), the model is recursive dynamic. The behaviour of agents is myopic in the sense that they make decisions based on current-period prices, policies, and constraints, without anticipating future changes. Following Winchester and White (2022), the model represents sector specific capital (that can only be used in the sector where it is currently employed) and mobile capital (that can be used in any sector). Both types of capital are subject to depreciation. The stock capital in sector *i*, K_{it}, is: $K_{it} = (1 - \delta_i)\varphi_i K_{it-1}$, where δ is the depreciation rate and φ is the

share of capital that is sector specific. The total amount of mobile capital is equal to investment in the current period plus the sum of undepreciated mobile capital across sectors.

B6. Closures

As in all CGE models, several relationships must be specified to 'close' the model. Closures in the model reflect long-run assumptions with policy changes signalled in advanced and (in some cases) gradually phased in. In the model, the total supply of each labour type in each year is fixed and wages adjusts to clear labour markets (i.e., there is full employment). Both labour types are perfectly mobile across sectors. The supplies of sector-specific and mobile capital are also fixed each year, with capital rental rates adjusting to ensure equilibrium in these markets. Land and natural resources are sector specific and exogenous in each year, again with endogenous rental rates so that supply equals demand. Government spending and net tax revenue are endogenous with government surpluses or deficits passed on to consumers as (implicit) lump sum transfers. Investment is a fixed share of GDP and is equal to domestic savings minus the current account balance.

Appendix C. Adjustments to the GTAP12 Database

Two adjustments were made to the aggregated GTAP12 Database for the modelling in this report. First, tariffs on New Zealand imports of clothing metal products were implausibly high in the raw data and were reduced to reflect New Zealand's tariff scheduled.

Second, the 2023 value of New Zealand exports of forestry and wood products in the database was adjusted to reflect the resumption of 'normal' forestry exports from New Zealand to India. Following the direction of the New Zealand Environmental Production Authority to restrict the use of methyl bromide – the only treatment accepted by India for ship-hold fumigation – New Zealand log exports to India decreased from a high of $243m in 2019 to $28m in 2023 (Wood Processors and Manufacturers Association & New Zealand Forest Owners Association, 2024). Following an arrangement that allowed fumigation on arrival into India and an agreement to investigate other treatment options, New Zealand exports have partially rebounded and resumption to normal levels is expected (Shama, 2024). Accordingly, the value of forestry and wood products exported from New Zealand to India in the base data is replaced with a value consistent with exports before the disruption. After implementing both adjustments, the global data was rebalanced to reflect a micro consistent dataset.

Appendix D: Tariffs by Year

Table D1. Indian tariffs on New Zealand exports by year, %

Sector	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
meat	33.0	4.0	3.6	3.1	2.7	2.2	1.8	1.3	0.9	0.4	0.0
dairy	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4
hort	40.0	16.4/ 35.6	16.2/ 35.5	16.1/ 35.3	15.9/ 35.2	15.8/ 35.0	15.6/ 34.9	15.5/ 34.7	15.3/ 34.6	15.234. 4	15.0/ 34.3
wol	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
wood	6.2	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0
bev	129.0	88.7	84.4	80.1	75.8	71.5	67.3	63.0	58.7	54.4	50.1
opp	28.2	27.3	26.4	25.6	24.7	23.9	23.4	22.9	22.7	22.5	22.4
coa	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
extr	5.5	4.1	3.8	3.4	3.1	2.7	2.4	2.1	1.7	1.4	1.0
tex	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
cloth	12.1	3.4	3.2	3.0	2.8	2.6	2.5	2.5	2.5	2.5	2.5
metal	1.3	1.1	0.9	0.7	0.6	0.4	0.2	0.0	0.0	0.0	0.0
chm	19.1	2.2/ 17.7	2.2 / 17.6	2.1/ 17.5	2.0/ 17.4	1.9/ 17.4	1.9/ 17.3	1.8/ 17.2	1.8/ 17.2	1.7/ 17.2	1.7/ 17.2
omf	9.6	7.2	6.6	5.9	5.3	4.7	3.9	3.0	2.6	2.5	2.3
meat	33.0	4.0	3.6	3.1	2.7	2.2	1.8	1.3	0.9	0.4	0.0

Note: [a] The first value is the tariff if all imports are at in-quota rates and the second number is the tariff if all imports are at out-of-quota rates.
Source: Author's calculations based on negotiated New Zealand-India FTA outcomes.

Appendix E: Trade Changes by Sector

Table E1. Changes in New Zealand annual exports to India in the FTA scenario relative to the baseline in selected years (NZD, million and %)

Sector	2027		2036		2050	
	$m	%	$m	%	$m	%
meat	$62.3	561.0%	$130.6	823.3%	$229.7	843.9%
dairy	$0.1	1.6%	$0.6	8.4%	$1.0	8.4%
hort	$27.7	39.2%	$70.3	67.4%	$47.3	25.6%
wol	$3.8	35.9%	$6.1	44.2%	$9.7	44.1%
wood	$164.4	34.6%	$282.7	39.9%	$486.5	38.8%
bev	$0.7	57.0%	$3.3	169.1%	$6.7	186.5%
opp	$1.0	6.6%	$10.8	52.0%	$18.3	51.9%
coa	$5.7	15.7%	$11.7	18.1%	$23.3	16.9%
extr	$1.1	15.6%	$7.5	65.1%	$12.5	64.8%
tex	$30.0	27.8%	$46.0	32.5%	$66.2	32.5%
cloth	$5.4	110.6%	$10.0	149.6%	$16.0	149.5%
metal	$5.0	3.3%	$44.2	19.9%	$68.4	19.8%
chm	$4.5	7.9%	$12.2	14.5%	$18.0	14.3%
omf	$20.1	23.5%	$113.7	98.8%	$156.8	98.5%
tran	$0.5	0.6%	$3.9	3.4%	$6.9	3.4%
afs	$0.7	0.2%	$6.7	1.6%	$10.4	1.5%
ict	$0.3	0.8%	$2.2	4.5%	$3.5	4.4%
bsr	$0.8	1.2%	$6.5	6.7%	$10.3	6.7%
health	$0.1	1.0%	$1.1	5.6%	$2.5	5.5%
ser	$5.8	1.0%	$47.2	5.6%	$77.6	5.5%

Table E2. Changes in New Zealand annual exports to ROW in the FTA scenario relative to the baseline in selected years (NZD, million and %)

Sector	2027		2036		2050	
	$m	%	$m	%	$m	%
meat	-$49.6	-0.4%	-$108.0	-0.8%	-$168.8	-1.1%
dairy	-$16.4	-0.1%	-$46.9	-0.2%	-$72.3	-0.2%
hort	-$15.8	-0.4%	-$41.2	-0.8%	-$32.7	-0.5%
wol	-$3.9	-1.9%	-$5.8	-2.6%	-$6.5	-2.8%
wood	-$66.4	-1.0%	-$126.3	-1.6%	-$222.8	-2.3%
bev	-$2.5	-0.1%	-$6.6	-0.2%	-$9.4	-0.2%
opp	-$8.1	-0.1%	-$26.6	-0.2%	-$40.6	-0.3%
coa	-$3.6	-1.3%	-$7.3	-2.1%	-$14.7	-3.1%
extr	-$1.7	-0.1%	-$7.5	-0.5%	-$11.2	-0.7%
tex	-$1.1	-0.3%	-$2.0	-0.4%	-$2.4	-0.4%
cloth	-$0.3	-0.1%	-$0.9	-0.3%	-$1.1	-0.3%
metal	-$10.1	-0.3%	-$25.3	-0.6%	-$34.2	-0.7%
chm	-$11.3	-0.3%	-$26.5	-0.6%	-$34.6	-0.7%
omf	-$20.8	-0.3%	-$53.1	-0.7%	-$71.6	-0.8%
tran	-$5.6	-0.1%	-$15.5	-0.3%	-$22.6	-0.3%
afs	-$14.7	-0.2%	-$38.7	-0.4%	-$56.7	-0.4%
ict	-$3.4	-0.2%	-$8.7	-0.4%	-$12.1	-0.5%
bsr	-$7.3	-0.2%	-$19.5	-0.4%	-$28.1	-0.5%
health	-$0.2	-0.2%	-$0.6	-0.4%	-$0.9	-0.5%
ser	-$12.8	-0.2%	-$33.8	-0.4%	-$49.3	-0.5%

Table E3. Changes in New Zealand annual imports from India in the FTA scenario relative to the baseline selected years (NZD, million and %)

Sector	2027		2036		2050	
	$m	%	$m	%	$m	%
meat	$0.0	0.3%	$0.08	0.7%	$0.11	0.8%
dairy	$0.2	2.4%	$0.46	4.1%	$0.51	4.2%
hort	$0.1	0.7%	$0.12	1.0%	$0.13	0.9%
wol	$0.0	1.8%	$0.00	2.7%	$0.00	2.8%
wood	$1.1	3.5%	$1.91	4.1%	$2.85	4.5%
bev	$0.1	3.0%	$0.07	3.1%	$0.09	3.2%
opp	$14.9	7.9%	$24.11	8.5%	$31.54	8.6%
coa	-	-	-	-	-	-
extr	$18.4	16.2%	$30.81	16.7%	$48.52	16.6%
tex	$34.1	24.9%	$59.26	24.2%	$97.41	22.7%
cloth	$68.8	60.5%	$118.72	62.8%	$66.24	62.3%
metal	$16.2	20.1%	$31.77	20.6%	$65.71	20.3%
chm	$5.4	8.8%	$12.61	11.5%	$24.70	11.5%
omf	$84.4	18.4%	$179.21	19.6%	$397.99	19.4%
tran	$0.2	0.3%	$0.95	1.4%	$1.21	1.5%
afs	$2.8	0.4%	$19.41	2.0%	$30.92	2.0%
ict	$1.1	0.5%	$8.04	2.2%	$14.08	2.2%
bsr	$1.1	0.5%	$8.39	2.2%	$15.07	2.3%
health	$0.0	0.6%	$0.10	2.6%	$0.08	2.7%
ser	$0.2	0.6%	$1.70	2.6%	$2.67	2.6%

Table E4. Changes in New Zealand annual imports from ROW in the FTA scenario relative to the baseline in selected years (NZD, million and %)

Sector	2027		2036		2050	
	$m	%	$m	%	$m	%
meat	$0.9	0.1%	$2.0	0.3%	$3.3	0.4%
dairy	$0.0	0.0%	$0.2	0.0%	$0.4	0.1%
hort	$0.7	0.1%	$2.0	0.3%	$1.6	0.2%
wol	$0.0	1.5%	$0.0	1.8%	$0.0	2.1%
wood	$9.9	0.5%	$18.6	0.8%	$33.5	1.2%
bev	$0.5	0.0%	$1.3	0.1%	$2.1	0.1%
opp	-$5.6	-0.1%	-$3.6	0.0%	-$0.8	0.0%
coa	$0.1	0.6%	$0.2	1.0%	$0.5	1.6%
extr	-$15.1	-0.2%	-$19.8	-0.2%	-$28.5	-0.2%
tex	-$19.1	-2.1%	-$30.4	-3.0%	-$47.1	-4.1%
cloth	-$48.4	-1.6%	-$76.3	-2.2%	-$101.7	-2.4%
metal	-$7.1	-0.2%	-$7.5	-0.2%	-$21.5	-0.4%
chm	$0.3	0.0%	$1.2	0.0%	-$1.4	0.0%
omf	-$25.4	-0.1%	-$23.9	-0.1%	-$114.8	-0.2%
tran	$2.6	0.1%	$7.1	0.2%	$11.3	0.2%
afs	$4.3	0.1%	$4.1	0.0%	$6.7	0.1%
ict	$4.2	0.1%	$8.1	0.1%	$11.3	0.2%
bsr	$7.7	0.1%	$17.7	0.2%	$25.3	0.2%
health	$0.4	0.1%	$1.2	0.2%	$2.0	0.3%
ser	$3.9	0.1%	$9.9	0.2%	$15.4	0.3%