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**New Zealand's Preferential Trading
Arrangements: Implications for the New
Zealand Dairy Industry**

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New Zealand's preferential trading arrangements: Implications for the New Zealand dairy industry.

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This paper discusses the economic implications of the preferential trade agreements that New Zealand is currently negotiating, using a computable general equilibrium modelling framework. The New Zealand dairy industry is a particular focus in the results, which come from the GTAP model produced by Purdue University. Results are discussed from the independent simulations of preferential trade agreements between New Zealand and Korea, New Zealand and India, New Zealand and Russia, Belarus and Kazakhstan, New Zealand and the Gulf Cooperation Council, and expansion of the Trans-Pacific Partnership to include Australia, Peru, Viet Nam, Malaysia, and the United States of America.

Key words: New Zealand, dairy industry, preferential trade agreements.

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1. Introduction

The global movement towards trade liberalisation has increasingly focused on the negotiation of bilateral and regional trade agreements among two or more countries. New Zealand, as a small open economy that is heavily dependent on international trade, is particularly active in conducting such negotiations. Preferential trading arrangements may have both positive and negative effects, depending on the perspective of those viewing such an agreement.

The aim of this study is to analyse the economic effects of the preferential trade agreements that New Zealand is currently negotiating, from the perspective of New Zealand's dairy industry. Five agreements are examined: New Zealand's negotiations with Russia, Belarus and Kazakhstan; Korea; India; and the Gulf Cooperation Council; as well as the possible expansion of the Trans-Pacific Partnership. This study makes use of the GTAP computable general equilibrium model to estimate the effects of these agreements. The implications of each agreement on prices, output, and the volume and value of exports of the New Zealand dairy industry are discussed, as well as the overall effects on welfare for New Zealand. From the simulation results, it can be seen that positive overall welfare results will be seen for New Zealand from all of the preferential trade agreements under negotiation, while the largest benefit for New Zealand's dairy industry will come from the expansion of the Trans-Pacific Partnership, so long as the expansion includes the United States of America.

The paper is structured as follows: A brief discussion of trade policy, both of a theoretical nature and specific to New Zealand, provides the context for this study. The GTAP model is then introduced, followed by a fairly detailed description of the methodology employed in this study. Both the construction of the baseline and the simulations are covered so that readers may have the information needed to replicate the results. Limitations are then discussed, before an exploration of the simulation results. The listing of aggregations used in the GTAP model rounds out the information needed to replicate this study.

2. Trade Policy

There is wide support for the notion that universally free trade is the first best Pareto outcome in trade policy (Bhagwati, 2008; Koo & Lynn Kennedy, 2005; Rae, Chatterjee, & Shakur, 2001).

Empirical research shows that an open domestic market (i.e. one with few or no impediments to trade) focuses individuals and businesses into areas of specialisation and exchange where they have a comparative advantage (Bagrie, Goh, Williams, Croy, Zollner, Edwards, Smith, et al., 2011, p. 2).

If individuals and businesses operate in the areas in which they hold comparative advantage, that is, where theirs is the lowest opportunity cost of production, allocative efficiency is maximised. Improvements in allocative efficiency result in economic growth, since resources are being used more efficiently. Free trade will thus, in theory, maximise economic growth in comparison to other trade policy agendas.

McConnell et al. (2009) describe how trade barriers lessen or eliminate gains from specialisation. Due to the diverse wants of consumers, countries that uphold trade barriers must shift resources from efficient to inefficient production, thus reducing the benefits from specialisation and trade. LeClair (1997) points out that the costs of trade protection exceed the benefits of that protection to domestic producers. An additional benefit of free trade is the tendency to promote competition and innovation amongst producers, thus increasing efficiency and promoting economic growth (McConnell et al., 2009).

All nations accept the importance of free trade to improve production efficiency and consumer utility, and to obtain benefits from free trade by increasing their exports (Koo & Lynn Kennedy, 2005, p. 96).

Nations looking to generate trade growth through the liberalisation of international trade are presented with two main options. Much importance is placed on multilateral negotiations under the World Trade Organisation, while many countries are increasingly negotiating towards implementing bilateral and regional free trade agreements. A bilateral free trade agreement is an agreement between two nations that improves their ability to trade with each other, through breaking down the barriers involved in such transactions. As such, a free trade agreement improves market access and strengthens trade flows (Siriwardana & Yang, 2008), and may eventually lead to closer economic integration between the two nations² (Ministry of Foreign Affairs and Trade, 2009). A regional trade agreement is a similar concept, although may include more than two countries. There is the possibility that a free trade agreement may include more than two countries who are not strictly regional partners, or that, at least in the short-term, trade is not totally free of duties, so preferential trade agreement (PTA) is perhaps a more suitable term to describe these policies.

It should be noted at this stage that Bhagwati (2008) is unwavering in the distinction he draws between universal free trade as desired in WTO multilateral negotiations, and the version of free(r) trade that PTAs offer. Bhagwati does not believe that PTAs offer a movement towards free trade, he rather believes that PTAs have a distortionary effect on world trade, and are therefore undesirable. Rae, Chatterjee and Shakur (2001, p. 305) highlight that assessing the impacts of discriminatory trade liberalisation “is an exercise in the theory of the second best as it is only universal free trade that offers the first best Pareto optimum”.

New Zealand actively seeks to progress its trade agenda through the negotiation of preferential trade agreements, while still placing great importance on multilateral WTO negotiations. New Zealand currently has eight bilateral and regional free trade agreements in place (Ministry of Foreign Affairs and Trade, 2011). These agreements are championed as the success story of New Zealand’s trade policy:

² An example is provided by Australia and New Zealand’s Closer Economic Relations, where the two countries have moved from liberalising trade in goods and services towards deeper cooperation in policies, laws and regulatory regimes (Ministry of Foreign Affairs and Trade, 2005).

The recent brokering of new free trade deals with a number of fast-growing emerging economies in the Asia-Pacific basin portend of new and exciting opportunities in terms of access and entry. This is especially so with China, the biggest and fastest growing of them all (Bagrie, Goh, Williams, Croy, Zollner, Edwards, Smith, et al., 2011, p. 2).

The five³ agreements that New Zealand has under negotiation also have significant potential for contributing to dairy sector earnings and New Zealand's economic growth:

What lies ahead, if all of the current bilateral negotiations are successful, is free access to over half the world's population, accounting for close to half of global GDP (Bagrie, Goh, Williams, Croy, Zollner, Edwards, Smith, et al., 2011, p. 2).

The Asia Pacific region is seen as particularly important, due to the rapid economic growth witnessed in this region over the last decade, and New Zealand's relatively close proximity to these markets.

FTAs with countries in the Asia-Pacific region offer access to some of the fastest-growing markets that will demand more luxury food items as disposable income grows. New Zealand is well-placed to help deliver all they can eat (Bagrie, Goh, Williams, Croy, Zollner, Edwards, Smith, et al., 2011, p. 15).

The five agreements that are of importance in this study are as follows: New Zealand's negotiations with Russia, Belarus and Kazakhstan; Korea; India; and the Gulf Cooperation Council; as well as the possible expansion of the Trans-Pacific Partnership.

3. Global Trade Analysis Project

The aim of this study is to use computable general equilibrium modelling, in particular the GTAP model developed by Purdue University (Hertel, 1997), to assess the benefits offered by these potential preferential trade agreements for the New Zealand dairy industry. GTAP is a multi-sector, multi-country general equilibrium model of the global economy (Australian Productivity Commission, 2010), established in 1992 (Hertel, 1997). The advantage of general equilibrium models lies in their ability to include linkages between all agents, sectors, and economies within the one model (Brockmeier, 2001). The latest version of the GTAP database on which the model is constructed, Version 7, was released in 2008, and is based on 2004 data.

GTAP has been widely used as an analysis tool for changing trade policies (Australian Productivity Commission, 2010; Devarajan & Robinson, 2005; DiCaprio, 2010; Hertel, 1997; Kim et al., 2007). It allows the modeller to investigate the economic effects of a shock to a variable or set of variables, so is ideal for examining the effect of a reduction in import barriers due to, for example, a particular free trade agreement. The general equilibrium nature of the model allows changes in one sector, or one region, to have flow-on effects in other sectors and other regions, an important consideration when conducting international trade analysis (Ballingall, 2000). This is the major advantage of general equilibrium over partial

³ Not including the Anti-Counterfeiting Trade Agreement or the Hong Kong Investment Protocol.

equilibrium analysis, which will only consider effects in the one sector or region, and ignore the linkages to other sectors and regions (Anderson, 2005).

Computable general equilibrium models are of course just a stylised model of the global economy, a simplification of reality. They rely upon assumptions about economic parameters, behaviour, and relationships. While CGE models can quantitatively indicate whether a PTA will have a positive or negative outcome, and the magnitude of such an outcome, there are also numerous other considerations, qualitative and geopolitical, that are important in determining whether a PTA will be suitable for the countries involved (Kim et al., 2007).

A brief report on the GTAP analysis conducted for the possible New Zealand – India Free Trade Agreement is published in the joint feasibility study of the respective governments, released in 2009 (Government of India & New Zealand Government, 2009). Likewise, a joint research report on the feasibility of the New Zealand – Korea Free Trade Agreement includes a brief analysis of the results of a GTAP simulation of that agreement (Kim et al., 2007), although the main modelling focus in that report seems to be the Centre for International Economics' dynamic GCubed model. Where this study differs is the attempt to bring together all of New Zealand's potential preferential trade agreements in one study, while providing a more in-depth analysis of the implications for the New Zealand dairy industry.

4. Methodology

Due to the age of the seventh version of the GTAP database, this study follows the approach set out by Anderson, Hoekman and Strutt (2001). Their study of the potential benefits existing from further trade liberalisation following the implementation of Uruguay Round commitments took place before these commitments were fully implemented. The study, undertaken in 2001, simulated further trade liberalisation taking place in 2005. Further, the study used version 3 of the GTAP database, which was based upon 1992 data. In order to overcome these difficulties, the modellers sourced both historical data and projections on the growth rates of factors of production and real GDP, and used these to update the version 3 database. Thus, the database was projected forward from 1992 to 2005, assuming no changes to existing trade and other policies. From this 2005 base, adjustments were made representing the full implementation of Uruguay Round commitments, providing a baseline for their simulations of further trade liberalisation occurring post Uruguay Round.

In this study, 2004 data will be used to simulate the effects of changes in trade policy occurring in the years following 2011. Thus, the database should be updated according to the growth rates of factors of production and real GDP between 2004 and 2010 (the most recently available data), and import protection data updated to 2010. Then, since New Zealand has existing PTAs for which tariff reduction and elimination commitments are not fully completed, these tariffs must be removed to provide a baseline for the simulation of New Zealand's PTAs under negotiation. This suggests that some point in the future will be a better base for simulations than the current year. A future year baseline is reinforced when

considering that in New Zealand's negotiations with potential PTA partners immediate protection elimination is not likely, phase in periods are more common, particularly in the typically sensitive dairy sector.

Of course, the further one projects into the future, the greater potential for inaccuracy. The year chosen for this study is 2017, a significant year as commitments for dairy trade liberalisation will be fully realised for all of New Zealand's existing PTAs with the exception of AANZFTA, Thailand and China, all of which will have made significant reductions by this time. Further, in the six years from when negotiations are currently taking place and 2017, it is likely that a great deal of tariff reduction will have taken place for New Zealand's potential PTA partners (the simulation targets). This means that the assumption made in the simulations, that tariffs between New Zealand and the relevant countries are eliminated, will not be unsuitable. Of course, effects of the likely phase in periods will not be captured in these simulations. An added benefit of using 2017 as a projected baseline is that the 13 years between the baseline and the 2004 version 7 database is matched by the Anderson et al. (2001) study, where 13 years separated the 1992 version 3 database and the 2005 projected baseline⁴.

In projecting the baseline for simulations forward to 2017 and then estimating the economic gains from further trade liberalisation in the form of PTAs, the inherent assumption is that no other trade policies change in this time. A significant danger in this assumption is presented by the Doha Round of WTO negotiations, which although not concluded by the time of this study, have the potential to be concluded by 2017. If this is the case, and significant MFN protection reductions are undertaken by 2017, the effects of merchandise trade liberalisation under New Zealand's PTAs will be less significant than estimated in this study. This is of course due to the erosion of the preferences given by the PTAs, and should be viewed as positive, particularly for a country such as New Zealand that heavily supports multilateral negotiations. Due to the impossibility in predicting if and when Doha negotiations will conclude, and the timing and magnitude of protection reductions, it has been necessary in this study to assume no changes to MFN protection levels from 2010 to 2017. PTAs formed by New Zealand's dairy producing competitors will also affect the assumption made here, and further research could investigate these threats in a GTAP framework. Another assumption inherent in the projection of the GTAP Version 7 database is that the structure of the economies and the trade relationships between countries do not change between 2004 and 2017, so presents a significant limitation. For example, where exports have grown by more than what is predicted under the growth rates used for the projections, such as the value of dairy exports from New Zealand between 2004 and 2010, inaccuracies will be present in the projected database.

It should be noted at this stage that the Raw Milk sector is not subject to tariffs in the GTAP version 7 database, and the value of international trade in this sector is negligible in comparison to the other sectors. This is in accordance with the structure of this sector in New Zealand, where the vast majority of output from the Raw Milk sector is used as an input in the Processed Dairy Products sector, rather than consumed or exported directly. Thus, the

⁴ Thus, the time period for projections is not too long.

Raw Milk sector does not play a direct part in the trade liberalisation simulations of this study, rather acting as an input for the Processed Dairy Products sector.

In order to project the GTAP version 7 database forward to 2017, various assumptions are of course necessary. It is vital for the levels of the endowment commodities (land, natural resources⁵, skilled and unskilled labour, and capital) to change at a reasonable rate, as with total factor productivity (TFP). Production, and therefore output, in the GTAP model depends upon these assumptions. This study draws on the growth rates developed by Valenzuela and Anderson (2011), in their projection of the world economy to 2050 using the GTAP model.

Any CGE simulation of trade liberalisation relies upon the accuracy of tariff levels found in the underlying database. This study has used three steps to ensure the accuracy of those tariff levels. Firstly, 2004 tariffs⁶ can be found from UNCTAD's TRAINS database using the WITS software (The World Bank, 2011), and any significant discrepancies corrected⁷ using the AlterTax tool in RunGTAP. Fortunately, it is possible to generate trade weighted tariffs that match up to the GTAP aggregations used in this study, since WITS includes a country and product group generator (according to HS code). A projection to 2010 can then be formed using both the WITS software for 2010 tariff levels, and the growth rates as discussed above from Valenzuela and Anderson (2011). From 2010, Valenzuela and Anderson's projections for population, skilled and unskilled labour, capital and TFP growth can again be used to shock the model, this time for seven years (2010 to 2017). Any additional trade liberalisation that should occur as a part of one of New Zealand's existing PTAs, where phase-ins have meant that elimination of tariffs was not complete in 2010, should also be conducted in the projection to 2017. Thus, all tariffs between New Zealand and its current PTA partners will be zero following this projection.

As well as the tariff levels relating to New Zealand trade being reduced where a preferential trade agreement exists, this step has also been taken for PTAs external to New Zealand. This includes both trade between other members of New Zealand's PTAs (such as between Australia and Malaysia under AANZFTA), and trade under PTAs that do not include New Zealand (such as Australia and the United States).

Following the projection to 2017, the appropriate baseline for the simulations of the preferential trade agreements that New Zealand has under negotiation is reached. Independent simulations for each of these agreements have then been formulated, removing tariffs on all trade⁸ between New Zealand and Russia, Belarus and Kazakhstan; New Zealand and Korea;

⁵ Land and natural resources are here assumed not to change over time.

⁶ Ad valorem equivalent tariffs.

⁷ Significant is defined here as greater than 1 percentage point.

⁸ Since tariff rates are calculated in the GTAP model using a ratio of the value of imports at market prices in comparison to the value of imports at world prices, their elimination also represents the removal of non-tariff barriers that drive a wedge between the world price and the market price in the importing country, such as quotas. No relevant export subsidies existed in the agricultural and food sectors in the projected GTAP

New Zealand and India; and New Zealand and the Gulf Cooperation Council⁹. Four possible scenarios are simulated for the expansion of the Trans-Pacific Partnership, with tariffs eliminated based on: exclusion of the United States; inclusion of the United States but without its agricultural and food sectors (both imports and exports); full inclusion of the United States; and full inclusion of the United States with its export subsidies on processed dairy products removed on trade with expanded TPP members. These different scenarios are generated due to the political sensitivity faced with regard to the United States' agricultural sectors, particularly dairy, that is seen in negotiations with New Zealand. An additional simulation has been undertaken representing simultaneous implementation of all the agreements that New Zealand currently has under negotiation¹⁰.

5. Limitations

The most important limitation of this study is the age of the GTAP Version 7 database, which is based on 2004 data. This issue has been discussed above, and the only solution is to use a more recent database, which should be released in the near future. In setting up the projected 2017 baseline, the removal of tariffs for all existing PTAs, both New Zealand's and among other countries, is done in the projection from 2010 to 2017. While this may be reasonably accurate for New Zealand as discussed above, the phase-in periods of PTAs external to New Zealand have not been investigated in depth.

A limitation of the simulation of a free trade agreement between New Zealand and the Gulf Cooperation Council is provided by the level of regional disaggregation in the GTAP Version 7 database. The countries involved in the GCC are all part of the Rest of Western Asia aggregation in the database, which also includes Iraq, Israel, Jordan, Lebanon, Occupied Palestinian Territory, Syrian Arab Republic, and Yemen (Center for Global Trade Analysis, 2011). The only way to simulate the New Zealand – GCC Free Trade Agreement with the time and resources available for this study has been to use the entire Rest of Western Asia region as a proxy for the GCC. A similar problem, yet less serious, arises since Brunei Darussalam is aggregated with Timor-Leste. This study aggregates the Russia, Belarus and Kazakhstan economies into one region, which may cause aggregation bias where these economies are structurally different. A recent speech by New Zealand's Trade Minister, Tim Groser (2011), highlights that Belarus' dairy industry is becoming more important globally, and thus these GTAP simulations may be more accurate if each country was included separately.

The TRAINS database does have some missing data for the tariff levels needed, although fortunately where missing data existed for one year, data for an adjacent year was always available. Thus the adjacent year has been used as a proxy for the missing data. This problem is not expected to affect the results.

database, apart from dairy exports from the United States, as discussed. Export taxes and subsidies in non-agricultural sectors have not been altered.

⁹ See Limitations.

¹⁰ The third scenario for expansion of the TPP is included here.

6. Results

It is important that it is recognised that these results reflect economic effects in the long-run, once adjustment processes have been allowed to move through the economy. They do not represent over-night changes. The movement from baseline to simulated data shows how the economy would be different in 2017, had the specific trade liberalisation policies been enforced by that date, relative to if they had not been implemented (while ignoring phase-in periods). This is the reason behind the baseline chosen in this study being the year 2017. Of course, a *ceteris paribus* assumption is implicit, so that any changes outside of the adjustments to trade policy modelled will have influences on the accuracy of these results. As discussed in the Methodology section, the database on which this study's projected baseline is constructed is now seven years old, and as a result dollar figures should not be considered totally accurate. Proportionate changes are more relevant, after considering the importance of the various industries and trade linkages as a part of the overall economic system. Also, services and the dynamic nature of gains from investment are not modelled well in the standard GTAP model, and also any strategic benefits from an agreement outside of the gains from liberalised merchandise trade are not recognised. The results presented here should thus be viewed as an understatement of the effects of any preferential trade agreement.

Overall

- The preferential trade agreements that New Zealand has under negotiation show significant potential benefit for New Zealand, the welfare gain of implementing all potential PTAs estimated to be US\$366 million using the equivalent variation measure. GDP is estimated to increase by 1.2%.
- Implementing all of New Zealand's currently under negotiation potential PTAs drives an almost 4% growth in output of the dairy sectors in New Zealand, with the value of processed dairy exports increasing by US\$284 million (7.6%). The price received by farmers for their milk increases by almost 3%, while the price of processed dairy products increases by almost 2%.
- The independent implementation of each of New Zealand's potential PTAs is estimated to have positive welfare effects on New Zealand, with the only negative effects for New Zealand's dairy industry seen in the TPP expansion with the United States' agricultural sectors excluded and the agreement between New Zealand and India.
- The largest positive effect on the New Zealand dairy industry comes from expansion of the Trans-Pacific Partnership when the United States' agricultural sectors are included in tariff elimination and its dairy export subsidies to the TPP partners are removed. Even if the United States' dairy export subsidies are not removed this agreement still has the greatest benefit for the New Zealand dairy industry. The value of New Zealand's exports of processed dairy products increases by US\$111 million in this case, or US\$123 million if the United States' export subsidies on processed dairy are removed as well.
- Prices in both the raw milk and processed dairy sectors increase in every simulation, with the largest increases seen in TPP expansion with the United States' agricultural

sectors included in tariff eliminations, and in the agreement between New Zealand and Korea.

- The greatest overall welfare gain for New Zealand comes from the New Zealand – Korea Free Trade Agreement (US\$148 million), closely followed by expansion of the TPP when the United States removes its tariffs in all sectors and export subsidies for processed dairy with regard to the expanded TPP partners (US\$139 million).
- Global welfare declines in all of the simulations with the only exceptions being the free trade agreements between New Zealand and Russia, Belarus and Kazakhstan, New Zealand and Korea, and the expansion of the TPP without the United States' involvement.

Expansion of the Trans-Pacific Partnership

- The expansion of the TPP without the United States' involvement has a negligible impact on New Zealand's dairy industry and on total welfare.
- When tariffs on exports to the United States are removed for just non-agricultural sectors, New Zealand slightly shifts its production focus towards forestry and manufacturing, so that the dairy industry sees a small decline in output and export volumes. This form of 'trade liberalisation' therefore slightly moves New Zealand's production away from the areas where it has natural advantage and is an illustration of the theory of the second best at work. A small welfare gain is however seen from the agreement.
- When the United States' agricultural and food sectors are also included in tariff removal, the welfare gain to New Zealand is over ten times as large, with a US\$135 million welfare gain shown. GDP increases by almost half a percent.
- The welfare loss experienced by the United States declines by almost half as a result of including its agricultural and food sectors in tariff eliminations (to US\$219 million).
- Output in the dairy sector in New Zealand increases by over one and a half percent when tariffs are removed on exports to the United States. Exports to the United States increase by 49%, while the value of New Zealand's exports of processed dairy products increases by almost 3%, or around US\$111 million.
- The global welfare effect of the expanded TPP when the United States is fully included in tariff elimination is negative, resulting from a significant allocative efficiency loss. There is an overall welfare gain amongst the countries involved, but losses to China and the highly aggregated Rest of World region outweigh this. Preferences given to TPP partners when large import barriers still exist for these other regions may therefore lead to trade diversion. If more countries were to join, this external welfare loss would likely become smaller and the agreement would likely become more beneficial.
- When the United States also removes its export subsidy on processed dairy products exported to the expanded TPP members, New Zealand's dairy industry benefits more, with an almost 2% rise in production and 3.3% rise in the value of its exports (US\$123 million).
- The greatest gain for New Zealand from the expansion of the TPP is seen in scenario 4, when the United States removes all its tariffs and export subsidies on processed dairy. Conversely, the only positive effect on global welfare from expansion of the TPP comes when the United States is excluded from the agreement.
- In all of the simulations of the expanded TPP including the United States, all countries included in the agreement have experienced an allocative efficiency gain,

with the exception of Singapore which suffers a small loss in each. This provides evidence that the creation of a free trade ‘region’ or trading bloc such as the expanded TPP would provide has benefits for the allocation of resources within the economies involved. As expected, these countries largely gain from the increased production specialisation and international trade that such arrangements encourage.

- It is interesting to note that Singapore has suffered a welfare loss in all four of the TPP expansion scenarios. While this may initially appear to be concerning, the reason for this must be considered. Singapore is a member of the existing Trans-Pacific Partnership, and as such has a preferential trade agreement in place with New Zealand (as well as a separate agreement between the two nations), Chile, and Brunei Darussalam. Negotiations to expand the TPP include the United States, Australia, Peru, Viet Nam, and Malaysia. Singapore has a bilateral free trade agreement in place with both the United States and Peru (Ministry of Foreign Affairs Singapore, 2011), is a part of the ASEAN free trade area with Viet Nam and Malaysia, and its trade with Australia is covered under AANZFTA. This means that in the simulations of the expanded TPP scenarios above, the tariffs faced by Singaporean exports are not affected¹¹. Thus, the only effects on Singapore come when its trade with certain partners is influenced by the erosion of the trade preferences established under its existing trade policy agenda. However, since Singapore is a small, open economy that thrives on international trade and as such heavily supports free trade, the strategic benefits for Singapore of establishing an expanded TPP must surely outweigh the welfare losses seen in the GTAP simulations above.

New Zealand – Russia – Belarus – Kazakhstan Free Trade Agreement

- New Zealand experiences a small welfare gain of US\$12 million from the implementation of a free trade agreement with Russia and its Customs Union partners Belarus and Kazakhstan.
- Following this agreement, the value of New Zealand’s exports of processed dairy to Russia, Belarus and Kazakhstan increases by approximately US\$52 million (262%). Output and price increase in the dairy sectors in New Zealand, making dairy farming in New Zealand more profitable. The total value of New Zealand’s exports of processed dairy products increases by US\$37 million (1%).

New Zealand – Korea Free Trade Agreement

- A free trade agreement with Korea is estimated to result in a US\$148 million increase in welfare for New Zealand, with GDP expected to increase by around half a percent.
- Price and output in the dairy sectors in New Zealand increase by around 1% as a result of the agreement. The value of New Zealand’s exports of processed dairy to Korea increases by US\$219 million (545%), and by around US\$84 million overall (2.3%).

New Zealand – India Free Trade Agreement

- A welfare gain for New Zealand of US\$50 million is seen from a free trade agreement with India, although the estimated effect for India is negative.
- Interestingly, output and export volumes in the dairy sectors decline with this agreement, with production increasing in the cropping, forestry and light

¹¹ Singapore does not practice import protection, as seen in the data collected from the TRAINS database using WITS software.

manufacturing sectors instead. New Zealand's cropping exports to India show the greatest gain in value of the agricultural sectors, while forestry and light manufacturing are New Zealand's two most important exports to India in the projected GTAP database¹².

New Zealand – Gulf Cooperation Council Free Trade Agreement

- A free trade agreement with the Gulf Cooperation Council¹³ results in a US\$29 million welfare gain for New Zealand. The GCC sees a welfare loss, since the influx of processed dairy products from New Zealand drives down domestic production while tariffs still remain in New Zealand's other export markets, where production could perhaps be more efficiently reduced (such as Russia, Belarus, Kazakhstan, India, Korea, or the United States).
- Output increases in the New Zealand dairy sectors by over 1%, while the value of exports to the GCC increases by almost US\$100 million (427%). Total growth in the value of New Zealand's dairy exports is around US\$67 million (1.8%).

7. Conclusions

The implementation of the preferential trade agreements that New Zealand has under negotiation is likely to bring significant benefits to the New Zealand economy and the New Zealand dairy industry. The implementation of all these agreements together sees a US\$366 million welfare gain, and a 1.2% higher GDP, in 2017 compared to if the agreements were not implemented. An estimated 4% larger output in the dairy sectors (both on-farm and in processed products) and higher prices contribute to a higher export volume and a value for New Zealand's processed dairy exports that is 7.6% higher than without the agreements.

Individually, each of the agreements results in an overall welfare gain for New Zealand. However, negative effects are seen for the New Zealand dairy industry in the implementation of a preferential trade agreement with India, and in the expansion of the Trans-Pacific Partnership if the United States' agricultural sectors are excluded from the terms of the agreement. Due to the limitations of the methods used in this study, these negative effects do not take into account any possible gains from liberalisation of services trade, investment rules, or any dynamic effects of such an agreement, while ignoring any changes to the trade relationships between New Zealand and its relevant trading partners that have occurred since 2004. The largest benefits for the New Zealand dairy industry are seen in the expansion of the Trans-Pacific Partnership when the United States' agricultural sectors are included in tariff elimination, whether or not its export subsidies to the TPP partners are removed. New Zealand's 2017 export value for processed dairy products is expected to be 3% higher in the former case, and 3.3% higher in the latter.

¹² This seems to be backed up by the profile of New Zealand's exports to India (Government of India & New Zealand Government, 2009).

¹³ See Limitations.

Generally, the preferential trade agreements that New Zealand is currently negotiating are expected to be beneficial for both New Zealand as a nation, and the New Zealand dairy industry. The very small negative effects seen for the dairy industry of the New Zealand – India free trade agreement are likely to be more than outweighed by dynamic gains resulting from the agreement, particularly as the Indian economy continues to develop. Further research in this area could be targeted at resolving the regional aggregation issues discussed, and at disaggregating the dairy sector and accounting for joint production possibilities in the CGE methodology (see Charteris & Winchester, 2010).

GTAP Sectoral Aggregations

Sector	GTAP Notation	Commodities Covered
Raw Milk	RawMilk	RMK Raw Milk.
Processed Dairy Products	DairyProc	MIL Dairy Products.
Drystock Farming	Lvstock_Wool	CTL Bovine cattle, sheep and goats, horses; OAP Animal products nec; WOL Wool, silk-worm cocoons.
Meat Products	MeatProducts	CMT Bovine meat products; OMT Meat products nec.
Cropping	Cropping	PDR Paddy rice; WHT Wheat; GRO Cereal grains nec; V_F Vegetables, fruit, nuts; OSD Oil seeds; C_B Sugar cane, sugar beet; PFB Plant-based fibres; OCR Crops nec.
Other Food	OtherFood	FSH Fishing; VOL Vegetable oils and fats; PCR Processed rice; SGR Sugar; OFD Food products nec; B_T Beverages and tobacco products.
Forestry	Forestry	FRS Forestry.
Mining and Extraction	Extraction	COA Coal; OIL Oil; GAS Gas; OMN Minerals nec.
Light Manufacturing	LightMnfc	TEX Textiles; WAP Wearing apparel; LEA Leather products; LUM Wood products; PPP Paper products, publishing; OMF Manufactures nec.
Heavy Manufacturing	HeavyMnfc	P_C Petroleum, coal products; CRP Chemical, rubber, plastic products; NMM Mineral products nec; I_S Ferrous metals; NFM Metals nec; FMP Metal products; MVH Motor vehicles and parts; OTN Transport equipment nec; ELE Electronic equipment; OME Machinery and equipment nec.
Services	Services	ELY Electricity; GDT Gas manufacture, distribution; WTR Water; CNS Construction; TRD Trade; OTP Transport nec; WTP Water transport; ATP Air transport; CMN Communication; OFI Financial services nec; ISR Insurance; OBS Business services nec; ROS Recreational and other services; OSG Public administration, defense, education, health; DWE Dwellings.

GTAP Regional Aggregations

Region	GTAP Notation	Countries Included
New Zealand	NewZealand	New Zealand.
Russian Federation and its Customs Union partners	RussiaBK	Russia, Belarus, and Kazakhstan.
Republic of Korea	Korea	Republic of Korea.
India	India	India.
Gulf Cooperation Council (Rest of Western Asia)	RestWestAsia	Bahrain, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Occupied Palestinian Territory, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates, Yemen.
Australia	Australia	Australia.
China	China	People's Republic of China.
Hong Kong	HongKong	Hong Kong, China.
Malaysia	Malaysia	Malaysia.
Singapore	Singapore	Singapore.
Thailand	Thailand	Thailand.
Viet Nam	VietNam	Viet Nam.
Other ASEAN (not elsewhere classified)	OtherASEAN	Cambodia, Indonesia, Lao People's Democratic Republic, Myanmar (Burma), Philippines.
Rest of Southeast Asia (Brunei Darussalam)	RestSEAsia	Brunei Darussalam, Timor-Leste.
USA	USA	United States of America.
Chile	Chile	Chile.
Peru	Peru	Peru.
Rest of the World	RestofWorld	All countries not specified above.

HS Code Aggregations

The HS codes have been allocated to the GTAP groups as defined by the product concordance reference within the WITS software: <https://wits.worldbank.org/WITS/>

GTAP Sector	HS Codes
RawMilk	According to WITS product concordance, there are no HS codes corresponding to the Raw Milk sector in GTAP
DairyProc	0401-0406, 170210-170211, 170219, 2105, 350110
Lvstock_Wool	0101-0106, 020820, 030760, 0407, 0409-0410, 0502-0507, 0510, 051110, 051199, 152190, 4101-4103, 4301, 5001, 510111, 510119, 5102
MeatProducts	0201-0207, 020810, 020830, 020840, 020850, 020890, 0209-0210, 1501-1506, 160100, 160220, 160231-160232, 160239, 160241-160242, 160249-160250, 160290, 1603, 230110
Cropping	0601-0603, 0701-0709, 0713-0714, 0801-0810, 0813, 090111, 090220, 090240, 0903-0910, 1001-1005, 100610, 100620, 1007-1008, 1201-1207, 1209-1211, 121210, 121291-121292, 121299, 1213-1214, 140310, 140390, 1801, 2308, 2401, 5201, 530110, 530210, 530310, 530410, 530511, 530521, 530591
OtherFood	0301-0306, 030710-030759, 030791, 030799, 0408, 0508-0509, 051191, 0710-0712, 0811-0812, 0814, 090112-090190, 090210, 090230, 100630, 100640, 1101-1109, 1208, 121220, 121230, 1302, 140420, 1507-1517, 152110, 152200, 160210, 1604-1605, 1701, 170220-170290, 1703-1704, 1802-1806, 19-20, 2101-2104, 2106, 22, 230120, 2302-2307, 2309, 2402-2403, 350210-350211, 350219, 350510, 710110, 710121
Forestry	0604, 1301, 1401-1402, 140300, 140390, 140410, 140490, 400130, 440110, 440320-440399, 4404, 450110
Extraction	2501-2517, 251810, 2519, 252010, 252100, 2524-2530, 260111-260112, 2602-2617, 2621, 2701-2703, 2709, 271111, 271121, 2714, 310410, 710210, 710221, 710231, 710310
LightMnfc	0501, 3406, 3605-3606, 3704-3706, 3804, 4104-4115, 42, 4302-4304, 440121-440122, 440130, 440310, 4405-4421, 450190, 4502-4504, 46-49, 5002-5007, 510121, 510129-510130, 5103-5113, 5202-5212, 530121, 530129-530130, 530290, 530390, 530490, 530519, 530529, 530590, 530599, 5306-5311, 54-58, 5901-5903, 5904-5905, 590699, 5907-5911, 60-62, 630120-630190, 6302-6310, 64, 6501-6505, 650692, 650699-650700, 66-67, 710122, 710229, 710239, 710391, 710399, 710490, 7105, 7113-7114, 711590, 7116-7118, 844250, 871500, 8804, 902300, 911390, 9401, 9403-9404, 95-96, 9701-9703, 9705-9706
HeavyMnfc	1518-1520, 251820, 251830, 252020, 2522-2523, 260120, 2618-2620, 2704, 2706-2708, 2710, 271112-271114, 271119, 271129, 2712-2713, 2715, 28-30, 3101-3103, 310420, 310430, 310490, 3105, 32-33, 3401-3405, 3407, 350190, 350220, 350290, 3503-3504, 350520, 3506-3507, 3601-3604, 3701-3703, 3707, 3801-3803, 3805-3825, 39, 400110, 400121-400122, 400129, 4002-4017, 440200, 590610, 590691, 590699, 630110, 650610, 650691, 68-70, 710410, 710420, 7106-7112, 711510, 72-76, 78-83, 8401-8441, 844210-844240, 8443-

	8485, 85-86, 8701-8714, 8716, 8801-8803, 8805, 89, 9001-9022, 9024-9033, 9101-9112, 911310, 911320, 9114, 92-93, 9402, 9405-9406, 9704
Services	Nil

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