

THE PACIFIC FIVE FREE TRADE AREA: IMPACTS ON AGRICULTURE IN NEW ZEALAND

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ABSTRACT

Recent attention has been paid to the possible expansion of the CER agreement between New Zealand and Australia. One possibility for an expanded CER is the creation of the Pacific Five, a free trade arrangement between New Zealand, Australia, Singapore, Chile, and the United States. This study provides a general equilibrium analysis of the creation of the Pacific Five, focusing on the implications for New Zealand's agricultural sectors. The results show that while some of these sectors might benefit, New Zealand should be careful when considering its future trade policy direction.

Key words: Pacific 5, agriculture, trade barriers, CER.

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1. INTRODUCTION

In recent years, many nations have shifted their trade policy focus away from multilateral efforts to reduce trade barriers, and have instead moved towards regional free trade arrangements. New Zealand is one such nation. As well as pursuing trade liberalisation on a global basis via the World Trade Organisation (WTO) and its predecessor the General Agreement on Tariffs and Trade (GATT), New Zealand entered into a bilateral arrangement with Australia in 1983 – the Closer Economic Relations (CER) trade agreement – and has also looked towards other regional free trade agreements. In January 2001, New Zealand entered into a bilateral Closer Economic Partnership (CEP) free trade deal with Singapore, and is currently exploring the possibility of similar arrangements with Korea and Hong Kong.

The CER agreement is now well established, has been reviewed and changed frequently since its inception, and is currently entering a new phase. Satisfied with the format and results of the CER, the governments of New Zealand and Australia are now directing their attentions to expanding the CER. One option for an expanded CER that has been raised is the creation of the Pacific Five (P5) free trade agreement. This arrangement would involve New Zealand, Australia, Singapore, Chile, and the United States. A number of ministerial level discussions have taken place between government representatives from these five countries, albeit mainly on a bilateral basis. Most recently, the Singapore Trade Minister George Yeo urged the United States to build on its separate free trade talks with Chile and Singapore to craft a P5 including Australia and New Zealand (Palmer, 2001).

While a detailed discussion of the probability of a P5 agreement being implemented in the near future is beyond the scope of this paper, one problematic issue that would undoubtedly arise, should serious negotiations commence, is the high level of agricultural protection afforded to American agricultural producers. Being a relatively efficient producer of agricultural products, New Zealand would expect to become more competitive if these tariffs, quotas, and subsidies were removed. This study aims to determine the economic impacts of the creation of a P5 free trade area, with a focus on the effects on New Zealand agricultural producers. A computable

general equilibrium analysis, using the GTAP model, is employed to model the formation of the P5 under two alternative liberalisation scenarios.

2. MULTILATERAL VS REGIONAL TRADE LIBERALISATION: A BRIEF HISTORY

The recent expansion in the number of free trade areas (FTAs) observed globally – there are now around 220 FTAs worldwide (Yarwood, 2001) – may have given some people the impression that this is a new phenomenon. This, however, is not the case. Moves away from the multilateral approach to the reduction of trade barriers towards more localised trade negotiations, or regionalism, have a long history.

The ‘First Regionalism’, as Bhagwati (1993) names it, stemmed from the formation of the European Community (EC) in 1958. Despite the fact that the EC proposal did not comply fully with the GATT legislation, the United States helped push the proposal through to gain GATT approval. Whilst the United States had long been suspicious of FTAs, it saw that there could be possible political benefits that would accrue to them from the creation of a trade bloc in Europe (Bhagwati, 1993, p. 28). Naturally, with the world’s largest trading nation backing the concept of regionalism, a proliferation of FTA proposals appeared, including an early suggestion for a Pacific Free Trade Area. Many developing nations also entered into discussions on FTAs, but bureaucratic inefficiency caused the downfall of most of these proposals, and the first wave of regionalism had virtually disappeared by the end of the decade, the EC notwithstanding.

Multilateral trade negotiations via the GATT forum became very much the vogue in the 1970s and early 1980s, and trade barriers were reduced substantially during this period. This successful period of multilateralism then encountered a number of problems. Since the end of the Tokyo Round of the GATT negotiations in 1979, increasingly complex trade issues such as intellectual property rights have stalled the GATT’s ability to curb rising protectionist measures. As membership of the GATT and its successor the WTO has widened – over 140 nations are now WTO members, compared to just 23 in 1947 – reaching a consensus on future action has proved to be difficult. Nations have become frustrated with the slow progress made in multilateral

trade negotiations, and have sought an alternative mode of trade liberalisation. This frustration, along with the conversion of the United States from being the staunchest defender of multilateralism into an aggressive follower of regionalism, has led to the recent trend towards regional FTAs – Bhagwati’s ‘Second Regionalism’.

The introduction and subsequent success of FTAs involving major industrialised nations, such as the North American Free Trade Agreement (NAFTA), the Australia-New Zealand CER, and the EU, have created an impression that such arrangements are here to stay (Schultz, 1996, p. 30; Bhagwati, 1993, p. 31). A further important reason behind the shift away from multilateralism towards regionalism is the possibility that world trade may be polarising into three main centres, namely the EU, North America, and East Asia (Chatterjee, 1999, p. 2). In view of this, many nations wish to form strategic alliances with one or more of the major trading partners in these blocs in order to avoid being ‘left in the cold’ in future trade negotiations.

Only history will tell if this second wave of regionalism is destined to head in the same direction as the ‘First Regionalism’. What is clear is that the new batch of FTAs appears to be more permanent in nature than those of the 1960s. New Zealand at least appears keen to continue liberalisation negotiations at a regional level. It must be noted, however, that New Zealand continues to support multilateral, WTO-style, trade talks. In the presence of slow progress on that front, however, New Zealand’s focus has turned to regional FTAs as a method of reducing trade barriers. Therefore, interest in the formation of the P5 has remained high.

3. METHODOLOGY

3.1 Computable General Equilibrium Models

The method used here to analyse the effects of expanding the CER to include Singapore, Chile and the United States is an applied Computable General Equilibrium (CGE) model. General Equilibrium (GE) models are commonly used tools in economic analysis, and in contrast to partial equilibrium techniques, GE models are able to capture many features of interdependent markets. The effects of shocks to one single market – the removal of trade barriers in this study – are usually

felt in many other, related markets, and “general equilibrium is perhaps the only method capable of capturing the relevant feedback and flow-through effects” (Scollay and Gilbert, 2000, p. 177).

The use of CGE models in trade analysis commonly involves multi-regional, multi-sectoral frameworks. Under utility and profit-maximising behavioural assumptions, the models are initially assumed to be in a state of general equilibrium. In order to examine the effects of a change in trade policy, “experiments are conducted by shocking the initial equilibrium, introducing distortions or removing existing ones, and observing the new equilibrium that results” (Scollay and Gilbert, 2000, p. 177). Whilst there are some common criticisms directed at CGE models – mainly with reference to a lack of parameter specification – they remain popular in the analysis of trade policy as “there are no clearly superior alternative models available” (Shoven and Whalley, 1992, p. 5).

3.2 The GTAP Model and Database

The CGE model used in this study is the Global Trade Analysis Project (GTAP) developed by Thomas Hertel of Purdue University in 1992. GTAP is a relatively standard multi-commodity, multi-region trade model which can be shocked from an initial baseline situation to show the effects of a policy change. It is solved using the GEMPACK software (Harrison and Pearson, 1996). The recently developed version 4 of the GTAP database comprises of a complete set of economic accounts and detailed inter-industry linkages for 45 countries and regions, and for a total of 50 sectors. Through the aggregation of both countries and sectors, GTAP allows researchers to manipulate the database according to specific theoretical models in order to isolate the effects of a policy change on a particular region or commodity grouping.

In this study, the database was aggregated into a fourteen region, seventeen commodity model. Since the main focus is on Australia, New Zealand, Chile, Singapore and the United States, these nations were not aggregated into any composite regions. The 50 commodities in the database were aggregated into seventeen groups, six of which are agricultural sectors. The agricultural commodities

were intentionally left at a fairly detailed level of aggregation due to their importance in contributing to welfare gains from trade liberalisation.¹

One issue that must be addressed before using the GTAP version 4 database to make conclusions and policy recommendations is that the protection levels on bilateral trade flows are from 1995. As such, they may not be an accurate representation of current international trade policies. This poses a problem because when these tariffs are reduced or eliminated in an experiment creating an FTA, any welfare gains may be inaccurate. To address this issue, a comparison was made between the tariffs used in the GTAP database and current tariff levels.² This comparison was used to compare the GTAP and actual tariffs in New Zealand, Australia, Chile, Singapore and the United States. When significant differences between the GTAP and actual tariffs were found, changes were made to the GTAP database using the ALTERTAX tool in the RunGTAP program.

3.3 Liberalisation Scenarios

In modelling the formation of the P5 FTA, the liberalisation strategy involves the removal of the tariff equivalents in the GTAP database, and also the removal of export subsidies on the agricultural sectors. This liberalisation is *not* on a Most Favoured Nation (MFN) basis: the trade barriers are only removed on trade between the regions in the FTA. Protection levels of the FTA members with respect to the rest of the world are unaltered. Domestic production subsidies are also left at their pre-FTA levels in the regions forming the FTA. This is because the formation of FTAs, at least in the initial stages, often leaves domestic production subsidies unchanged. Such subsidies tend to be addressed and sometimes reduced or removed at a later date, when the FTA becomes more deeply integrated. Since this experiment examines the short-run impacts of the P5 immediately after it is formed – a momentary ‘snap-shot’ of each economy after the policy shock – it is unlikely that any domestic subsidies would be eliminated.

¹ As explained in Scollay and Gilbert (2000, p. 183), the elimination of trade barriers in agricultural sectors contributes between 50-70% of all gains from liberalisation in studies of the creation of an APEC FTA.

² Current tariff levels were sourced from www.apectariff.org

The majority of FTAs phase in their trade barrier reductions over a specified time frame. The reasons behind the gradual abolition of barriers are that the abrupt adoption of completely free trade could potentially have a severe destabilising influence on the members' economies, and also that trade in some commodities is politically sensitive. As explained by Chatterjee, Rae and Shakur (2000, p. 4), “[a]gricultural markets have traditionally been ruled by a different set of regulations, institutions and political considerations than have those in manufactured goods”. These agricultural sectors are particularly important to New Zealand, due to their importance in its external trade, but they are politically sensitive due to the high levels of protection adopted by other governments.

Therefore, two alternative liberalisation scenarios for the creation of the P5 are explored:

- Scenario A: Tariffs are completely removed on all sectors, except for agricultural and food commodities. The protection levels in these latter sectors are left unaltered.³
- Scenario B: Tariffs are completely removed on *all* sectors, and export subsidies are removed in the agricultural sectors. This would be the full FTA, and would be the ultimate goal of forming a FTA. This gives a benchmark against which to compare the results from Option A.

4. GENERAL RESULTS

4.1 Scenario A: No Agricultural Liberalisation

Table 1 shows the key results from scenario A. In this first scenario, where agricultural subsidies and tariffs are not removed, global welfare increases substantially, by US\$400 million.⁴

³ These GTAP aggregations are:

- (i) Unprocessed meats and wools
- (ii) Meat products
- (iii) The dairy sector
- (iv) Raw and processed crops, sugar, oils and fats
- (v) Vegetables, fruits and nuts
- (vi) Food products not elsewhere classified

⁴ The welfare measure employed in GTAP is that of Equivalent Variation. For further details, see Bowen, Hollander and Viaene (1998, pp. 211-213)

The distribution of this welfare improvement, however, is very uneven. The United States is the main benefactor, its welfare improving by over US\$750 million, and Singapore's welfare increases by US\$73 million. The welfare gain to the United States is composed almost equally of benefits from an improved terms of trade (TOT) and from allocative efficiency gains. Allocative efficiency gains are achieved from the removal of trade barriers when resources are removed from the previously protected sectors in the importing region, and switched into more efficient sectors. Efficiency gains are also made in the exporting region, as more resources are transferred to the sector which has been liberalised (Chatterjee *et al*, 2000).

Australia, on the other hand, suffers considerably from the P5 formation, as its welfare decreases by nearly US\$700 million – mainly due to a significant deterioration in its TOT of over 1%. Chile also suffers greatly, with its EV showing a welfare loss of over US\$400 million. This loss can mainly be accounted for by a 1.95% decrease in its TOT. Compared to these two nations' losses, New Zealand's loss of US\$67 million is relatively small.

Table 1: The P5 with no agricultural liberalisation – key results

Region	EV (1995 US\$ million)	Terms of trade effects on EV	Allocative efficiency effects on EV	% change in GDP	Change in trade balance (1995 US\$ million)	% change in terms of trade
NZ	-67.27	-74.76	-7.59	-0.79	-9.29	-0.38
Australia	-776.51	-658.18	-33.87	-1.31	72.41	-1.01
Singapore	72.88	60.19	13.33	0.07	27.48	0.05
Chile	-409.11	-369.82	-47.45	-2.64	-59.47	-1.95
USA	769.78	396.28	320.45	0.05	-15.80	0.05
World	398.86	-7.537	406.73			

4.2 Scenario B: Full liberalisation

The elimination of tariffs and export subsidies on agricultural products results in a less bleak outlook for New Zealand. As shown in Table 2, its welfare loss falls to US\$13.6 million, indicating that there are important benefits to be gained through the continuation of lobbying to reduce trade barriers in these sectors. New Zealand's welfare loss in this scenario consists almost entirely of TOT effects – there are only very minimal negative resource allocation effects after the formation of the P5.

Australia's loss is also significantly smaller, falling by US\$115 million from US\$-776 million to US\$-661 million. As would be expected, the liberalisation of agricultural products in the United States leads to New Zealand and Australia gaining in welfare (relative to scenario A) at the expense of the United States. The welfare gains experienced by Singapore and the United States decrease, although the benefits are still large at US\$48 million and US\$662 million respectively. Around half of the United States' total welfare gain is due to a more efficient allocation of resources after tariffs are removed. This may be explained by the fact that of the five nations examined, agricultural protection is only significant in the United States, and when it is removed, there are major efficiency gains.

Table 2: The P5 with full liberalisation – key results

Region	EV (1995 US\$ million)	Terms of trade effects on EV	Allocative efficiency effects on EV	% change in GDP	Change in trade balance (1995 US\$ million)	% change in terms of trade
NZ	-13.57	-25.93	-0.24	-0.53	2.67	-0.12
Australia	-660.89	-564.65	-17.03	-1.19	79.09	-0.86
Singapore	48.38	35.87	12.97	0.08	26.88	0.03
Chile	-413.14	-381.15	-40.23	-2.70	-63.30	-2.01
USA	662.45	290.64	329.73	0.04	-22.73	0.04
World	432.60	-6.787	439.67			

5. A FOCUS ON NEW ZEALAND

The over-riding contributing factor to New Zealand's welfare losses is the deterioration in its terms of trade. Falling export and world prices and rising import prices lead to New Zealanders receiving less for the products that they sell in foreign markets, and spending more on goods purchased overseas. This has a detrimental effect on New Zealand's welfare. The terms of trade change can be broken down into three components in order to analyse their respective importance, and these three variables – the contributions to the change in the terms of trade due to world prices, export prices and import prices – are shown in Table 3.

Table 3: The contribution to New Zealand's change in terms of trade due to changes in World, export, and import prices

	No agricultural liberalisation	Full liberalisation
Change in TOT (%) ^a	-0.384	-0.121
Contribution of World prices	-0.031	-0.01
Contribution of export prices	-0.577	-0.316
Contribution of import prices	-0.225	-0.205

^a The change in the terms of trade is calculated from its three components using the following formula:

$$\Delta \text{TOT} = \text{Contribution of World prices} + \text{Contribution of export prices} - \text{Contribution of import prices}$$

This table shows that changes to the world price in each sector have little effect on New Zealand's terms of trade. World prices fall in the vast majority of sectors – although by near negligible amounts – and this has a small detrimental effect on New Zealand's terms of trade because New Zealand's exporters receive a lower price for their goods overseas.

A more important factor in explaining the welfare losses experienced by New Zealand is the decrease in New Zealand's export prices that occur after the P5 is

formed. Prices fall in every sector in New Zealand, in both scenarios. This can be explained by the increases in supply in the majority of sectors in New Zealand after protection is removed. The lower export prices received by New Zealand's exporters reduce New Zealand's welfare. Prices fall by around 0.3% - 0.6% in all sectors, with these falls being larger when agricultural products are not liberalised. These decreased export prices have a significant negative effect on sectoral producer surpluses (the sum of the differences between the market price and the price at which producers would be willing to supply the commodity). This fall in producer welfare contributes to the decrease in equivalent variation experienced by New Zealand in both scenarios.

The third factor that must be examined when attempting to explain New Zealand's deteriorating terms of trade after the CER is expanded is the change in its import prices. Since New Zealand is reliant on imports for a great deal of its intermediate inputs to production, it is necessary to compare the changes in export prices with those of imported goods. Whilst import prices fall in every sector in both scenarios, they fall by *less* than the decrease in export prices in the vast majority of cases. Exceptions to this observation include the beverages, wood, transport and manufacturing sectors, but in general, import prices fall by less than export prices. This fact explains why New Zealand's terms of trade deteriorates in each experiment, and this deterioration in turn accounts for the majority of the welfare losses experienced by New Zealand.

6. IMPACTS ON NEW ZEALAND AGRICULTURE

The creation of the P5 leads to increased domestic output in the six agricultural sectors examined. This is due to a reallocation of resources after tariffs are removed. Trade theory suggests that when a tariff is removed on a commodity, output of that commodity rises in the countries which are relatively efficient at producing in that sector. Since New Zealand is generally recognised as an efficient producer of agricultural products, we would expect output in these sectors to increase after liberalisation, as resources are switched from other, less efficient sectors. Table 4 overleaf shows the change in agricultural outputs in each scenario.

Table 4: The percentage change in New Zealand's agricultural output

Sector	No agricultural liberalisation	Full liberalisation
Unprocessed meats and wools	0.35	0.09
Meat products	0.31	0.60
Dairy	0.32	1.14
Crops, sugar, oils and fats	0.05	0.16
Vegetables, fruits and nuts	0.20	0.16
Food products nec	0.19	0.19

Since it is unlikely that there would be any significant change in domestic demand for agricultural products, it is reasonable to suggest that the majority of this increased output would be exported. That is, there will be some export volume growth. One particularly interesting result is that output in the dairy sector increases by 1.14% after a fully liberalised P5 FTA is implemented. This is due to New Zealand's comparative advantage in dairy production, and also due to the removal of the relatively high level of protection afforded to United States' dairy producers.

So what are the impacts of the FTA on New Zealand's agricultural exports? Table 5 below shows the percentage change in New Zealand's export prices after liberalisation. The results are perhaps not quite what we would have expected. Trade theory tells us that after a tariff on a commodity is removed, prices will rise in the countries which produce that good relatively efficiently. This is not the case for New Zealand's agricultural goods.

Table 5: Percentage change in New Zealand's export prices

Sector	No agricultural liberalisation	Full liberalisation
Unprocessed meats and wools	-0.58	-0.38
Meat products	-0.61	-0.41
Dairy	-0.59	-0.39
Crops, sugar, oils and fats	-0.59	-0.42
Vegetables, fruits and nuts	-0.58	-0.37
Food products nec	-0.60	-0.44

One possible explanation for these results is that in terms of opening up new markets for New Zealand's agricultural exports, the creation of the P5 may not be particularly effective. We must remember that large proportions of New Zealand's agricultural exports are destined for key markets in Asia (for example, Korea and Japan). Since the reduction of trade barriers in this research is not on an MFN basis, protection levels in these destinations remain relatively high. That is, markets are not opened up in the destinations for most of New Zealand exports.

Looking at the effect of the reduction in trade barriers within the P5, while New Zealand exports large amounts of agricultural goods to Australia and – to a lesser degree – Singapore, neither destination places any tariffs on these goods. Chile places a 10% tariff on New Zealand's exports, but Chile isn't a major export destination for New Zealand. This means that when the P5 is created, the only significant expansion in the markets for New Zealand's agricultural exports is in the United States. This will lead to increased demand for New Zealand's agricultural goods from the United States. This increased demand may not be large enough, however, to offset the effect on export prices from the increased production of New Zealand agricultural producers. That is, the supply side effects of the allocation of more resources to agriculture in New Zealand (increased supply causing a fall in prices) outweighs the demand effects from the United States (increasing prices).

Despite these export price falls, the changes in value of New Zealand's agricultural exports are still positive in the majority of sectors. Table 6 below shows the change in export values by FTA destination in the two liberalisation scenarios.

Table 6: Percentage change in New Zealand's agricultural export values by destination

	No Agricultural Liberalisation				Full Liberalisation			
	<i>Export Destination</i>				<i>Export Destination</i>			
Sector	AUS	CHL	SING	USA	AUS	CHL	SING	USA
Unprocessed meats and wools	-0.05	-1.67	0.64	0.61	-0.04	-23.31	-7.47	-11.87
Meat products	-0.63	-1.83	0.62	0.59	-0.68	7.66	-1.46	3.42
Dairy	-0.60	-1.79	0.65	0.62	-0.75	7.78	0.47	52.40
Crops, sugar, oils and fats	1.22	-1.56	0.66	0.60	1.21	8.11	0.52	5.61
Vegetables, fruits and nuts	-0.02	-1.62	0.59	0.54	-0.07	7.96	0.43	0.67
Food products n.e.c	-0.68	-1.65	0.66	0.64	-0.71	7.99	0.53	0.73

These results show that some agricultural exporters will make significant gains from the removal of agricultural trade barriers in a P5 FTA. Not surprisingly, there are few gains to be made when agricultural sectors are not liberalised in the first scenario examined. Since agricultural export prices fall in both scenarios, these increased values must be due to stronger volume growth. The result for the dairy sector under the full liberalisation scenario is an increase in export values to the United States of over 50%. This suggests that there will be very strong volume growth of dairy exports to the United States, reflecting the reallocation of resources following the removal of trade barriers in this sector in the United States. This result, however, may also reflect that fact that the tariff equivalent used in the GTAP database for New Zealand's dairy exports to the United States was very high.

If this level of protection has been overstated, this would cause gains to New Zealand dairy exporters to also be over-inflated once protection was removed in the FTA.⁵

These results suggest that should negotiations come into fruition regarding the formation of the P5 FTA, New Zealand should certainly push for a significant reduction in the level of protection afforded to United States agricultural producers, as this would result in more favourable outcomes for New Zealand as a whole, and in particular for New Zealand's agricultural producers.

7. SUMMARY AND CONCLUSIONS

Due to the multitude of difficulties being experienced by many nations when trying to conduct multilateral trade liberalisation negotiations via the WTO, many countries are turning towards smaller, regional FTAs in order to reduce trade barriers. New Zealand has been an active participant in such trade agreements. There has been some recent attention paid to expanding the CER agreement beyond Australia. One expansion possibility that has been proposed is the Pacific 5 – a FTA involving New Zealand, Australia, Singapore, Chile, and the United States. This paper examines the likely outcomes of such an agreement, using the GTAP general equilibrium model, with a focus on implications for New Zealand agriculture.

Contrary to many studies of trade liberalisation including New Zealand, the model shows that welfare decreases in New Zealand by US\$67 million when agricultural trade barriers are left unchanged, and by US\$14 million when there is liberalisation in all sectors. This clearly demonstrates the importance of these sectors to New Zealand. The majority of the welfare losses can be attributed to a worsening in New Zealand's terms of trade, caused by export prices falling by more than import prices.

The impacts of the P5 on New Zealand's agricultural producers are increased output and decreased export prices. With the majority of the increased output heading

⁵ For dairy products entering the United States, the *ad valorem* tariff on imports beneath the quota is 11%, and for those imports over and above the quota level, the tariff is levied at 70% (Rae, 2000). Thus if the United States receives dairy products well in excess of its set quotas, then an overall tariff on this sector could be close to the GTAP database tariff of 51.77%. However, if this was not the case, then the database's tariff may be higher than the true level of protection.

overseas, the strong volume increases dominate the weaker prices, leading to higher export sales values for New Zealand's agricultural producers.

Overall, the welfare losses experienced by New Zealand in this study suggest that that New Zealand should be careful when considering its future trade policy direction, and that it may need to re-evaluate its attitude towards regional trade agreements. It also indicates that New Zealand should continue to push for liberalisation in the agricultural sectors in any future trade negotiations.

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