ANZUS Free Trade Agreements:
Results from a Global Model

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Introduction

When President George W. Bush received 'fast-track' trade promotion authority (TPA) in 2002 which, in essence, gives him much greater power to pursue trade negotiations, many economists looked with interest to see where this power would be applied. One optimistic perspective on recent US trade policy is that TPA was purchased at the considerable cost of US steel tariffs and the bloated Farm Bill – necessary *quos* for the *quid* of domestic political support for TPA – so it must be highly valued by the Bush administration and therefore would be used extensively and wisely to promote trade agreements. The particular hope of many economists was that it would signal a renewed US commitment to multilateralism and decreased emphasis on preferential trading deals. This was especially the hope in New Zealand (NZ), an exporter of products in the world's most protected sector, agriculture, and a miniscule one at that, with little power in bilateral settings.

While it is perhaps too early to assess the US commitment to multilateralism – a less optimistic view of the steel tariffs and Farm Bill is that they represent a total capitulation of US international economic interests to domestic political interests – it does seem that the TPA has triggered a rash of negotiations for bilateral preferential trading arrangements. So the US is in the final stages of preparing a deal with Singapore, another with Chile is the first of a planned series of dominoes in South America. The US Trade Representative (USTR) has also notified Congress of its intentions to open negotiations with the countries of the South African Customs Union (Botswana, Lesotho, Namibia, South Africa and Swaziland), with those of the

Central American Integration System (Costa Rico, El Salvador, Nicaragua, Honduras and Guatemala) and with Morocco.

From a NZ perspective perhaps the most significant deal the US has indicated it will start to negotiate is that with Australia. The significance of this lies not just in its immediate impact on NZ, as an exporter competing with Australia in many markets and product lines, but also in its impacts on the dynamic political economy of NZ's own trade relations. Given the close economic relations between Australia and NZ, as represented by the eponymous free trade area Closer Economic Relations, would a US-Australia deal make the addition of NZ a fairly straightforward step? Would it be easier, in fact, than creating a US-NZ deal directly in that the major barrier to such a deal is very likely the US farm lobby and that would have to have been overcome for a US-Australia deal to go ahead? Or would it make a US-NZ deal more difficult – would the US farm lobby draw the line at favourable treatment for even more efficient farmers or would Australian interests oppose the inclusion of competing NZ farmers in a deal giving preferential access to US markets?

Great interest was stimulated in NZ in November 2002 when the US Trade Representative, Robert Zoellick, notified Congress of his office's intention to initiate negotiations with Australia, as required by the US Trade Act. The interest came from the following two sentences at the close of the 7-page letter: "Given the integration of the economies of Australia and New Zealand, New Zealand has been advocating its case to the Administration, as well as to Congress, that an FTA with New Zealand would complement our FTAs with Singapore and Australia. We will be soliciting the views of the Congress on this matter as we move forward with the Australia FTA." (USTR 2002, p.7.) While one can hardly conclude from this that a US-NZ FTA is imminent, nevertheless the possibility has at least been raised and it reinforces the potential significance of the questions raised above.

While we do not purport to answer these questions in this paper, they do provide some of the rationale for the exercises we do conduct here. We evaluate US-Australia, US-New Zealand and US-Australia-New Zealand free trade agreements using computable general equilibrium modelling. The comparative statics exercise we consider involves removing import tariffs, export subsidies (both positive and negative) and transport costs on trade in all commodities between nations in the free trade area. Hence our calculations are likely to represent the upper limit of changes due to the proposed trade agreements.

Model structure and data source

We use Version 5 of the Global Trade Analysis Project (GTAP) Data Base (Betina and McDougall, 2002), which is a representation of the world economy in 1997. The data base, "combines detailed bilateral trade, transport and protection data characterising economic linkages among regions, together with individual country input-output data bases which account for inter-sectoral linkages within regions" (Hertel 2002, p.1-2). Five primary factors, 57 sectors and 66 regions are identified. We operationalise the data base using the *GTAP5inGAMS* model. *GTAP5inGAMS* is a static, multi-regional CGE model that determines the production and allocation of goods. Rutherford and Paltsev (2000) outline the model in detail. We confine our discussion of *GTAP5inGAMS* to its salient features, which are listed in Table 1.

Table 1
Model structure

Imports
Using the Armington assumption (Armington, 1969), imports are differentiated by source and composite imports are differentiated from domestic production. The regional composition of imports is the same in public, private and intermediate demand, but the aggregate share of imports may differ across demands. Following Scollay and Gilbert (2000) we double all Armington elasticities generated from the GTAP Data Base, so as to focus on long-run changes.
Production
Goods and services are produced by perfectly competitive firms under constant returns to scale technologies. Leontief nests of value added and a composite of intermediate inputs produce outputs. At a lower level of the production nest, a Cobb-Douglas aggregation of primary factors produces value added in each sector, and a further Leontief nest of intermediate inputs by product type produces an intermediate composite for each sector.
Expenditure on final goods
A utility maximising representative agent determines private, public and investment demand in each region. Public and investment expenditures are fixed in absolute value, so only the value of private expenditure changes with income. Private and public expenditures are Cobb-Douglas functions of domestic-import composites by product category.
Primary Factors
Factors are perfectly mobile intersectorally but immobile internationally. Land and natural resources are specific to agriculture and mining respectively.

Our aggregation of the GTAP Data Base, for most of our simulations, is displayed in Table 2. The US, Australia and New Zealand enter as separate regions, while all other nations enter in a composite region. We identify 15 regions and five factors of production.

Table 2
Model aggregation

REGIONS	SECTORS
New Zealand (NZ)	Livestock
Australia (AUS)	Wool
United States (US)	Forestry and fishing
Rest of World (ROW)	Other agriculture
	Dairy products
FACTORS	Meat products
Land	Other food products
Skilled labour	Minerals and energy
Unskilled Labour	Textiles and wearing apparel
Capital	Wood and paper
Natural resources	Chemicals and plastics
	Transport equipment
	Electronic and machinery equipment
	Other manufacturing
	Services

To give some idea of the regions we are modelling here, Table 3 shows each region's share of global trade and the importance of trade in the region (as a percentage of regional GDP.) As is common, the smaller the country or region, the more significant is trade as a proportion of national income.

Table 3
Global trade share and trade as a percentage of GDP

Region	New Zealand	Australia	United States	Rest of World
Global trade share	0.29	1.18	14.66	83.88
Trade/GDP	0.67	0.45	0.25	0.62

Source: GTAP Version 5 Data base (Betina and McDougall, 2002).

Further details of the regions are provided in Appendix Tables A1-A4 which detail NZ exports, Australian exports, NZ imports and US imports respectively, all by sector

and trading partner as described in Table 2. The most notable features are how much more important a market is Australia for NZ than vice versa; the much greater importance of agricultural exports to NZ than to Australia (the latter dominated, unsurprisingly, by mineral exports); and the utter insignificance of both Australia and New Zealand as sources of imports into the US, except in the sectors of meat products (where Australia and NZ combined provide about a third of US imports), dairy products (about a fifth) and wool (almost all). In all of these tables it is well to remember that Australia has a population some five times that of NZ and a GDP some seven times greater.

Table 4 presents the GTAP Data Base's *ad valorem* tariff equivalents of tariff and non-tariff barriers to trade amongst the countries of interest.

Table 4
Ad valorem tariff equivalents of tariff and non-tariff barriers in US-New Zealand and US Australia trade, 1997, percent

Sector	NZ-US trade, tariff imposed by:		AUS-US trade, tariff imposed by:	
	NZ	**US**	**Australia**	**US**
Livestock	0.17	0.62	0.66	0.63
Wool	-	0.92	3.17	0.92
Forestry & fishing	0.36	0.33	0.21	1.19
Other agriculture	2.56	7.61	2.10	9.50
Dairy products	11.25	42.49	7.35	42.49
Meat products	9.77	5.21	3.18	5.24
Other food products	9.08	10.83	5.85	18.66
Minerals & energy	0.77	0.00	0.07	0.28
Textiles & wearing apparel	8.15	4.24	14.41	9.00
Wood & paper	6.29	0.25	3.20	0.88
Chemicals & plastics	3.52	2.55	3.40	3.17
Transport equipment	2.10	1.26	4.24	1.69
Electronic & machinery equip.	4.04	1.96	2.98	2.53
Other manufacturing	5.42	3.32	4.56	0.92
Services	-	-	-	-

Source: GTAP Version 5 Data base (Betina and McDougall, 2002).

Notable features here[1] are the surprisingly high implicit tariffs on US primary exports to NZ, the lack of data on services protection and the differences between US tariffs

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[1] Since 1997, perhaps the most significant trade policy reform in NZ has been the abolition in 1998 of auto tariffs (previously at 22.5%) and the consequent disappearance of the auto assembly industry.

on both 'other food products' and 'forestry and fishing imports' from Australia and NZ. So Australian forestry and fishing exports to the US face nearly four times the implicit tariff faced by NZ exports, and 'other food' exports face almost double the tariff facing their NZ counterparts. Much of this is likely due to the aggregation used – 'other food' includes rice, wheat, sugar, some cereals, grains and other crops etc. and if it includes products that Australia exports to the US but NZ does not then that could explain this difference. Regarding services, the current version of the GTAP Data Base has little data on services protection, a restriction that is unavoidable but that might be quite significant in the context of these simulations, as a large part of the FTA negotiations between Australia and the US involves services.

The simulations

We now turn to our simulations. The basic exercise we consider is to abolish all trade interventions amongst FTA members, while maintaining barriers against non-members at their initial levels. However, as FTAs invariably involve more than simple trade barrier reductions, frequently introducing standards harmonisation and the like, we attempt to capture these gains by abolishing transport costs between participating countries as well.

Table 5 presents the basic welfare consequences of assorted ANZUS FTAs in our simulations. From a NZ perspective, a FTA excluding NZ is (very slightly) harmful, a three-way FTA is beneficial but an exclusive FTA between the US and NZ is the best possible outcome. None of the effects are particularly massive, however, with the annual benefit of a US-NZ deal adding only three quarters of a percentage point to GDP, or less than US$0.5b. The same qualitative results hold for Australia – it would prefer an exclusive FTA with the US to a three-way arrangement but that is preferred to a US-NZ FTA and none of them are a particularly big deal. The US gains from any FTA with the three-way being most attractive, a deal with NZ alone next most appealing and an exclusive deal with Australia being only barely profitable.

Scollay (2002) allows for this by recalibrating the baseline with zero auto tariffs. This adjustment makes no significant difference to our results, however, and is not done here. Other differences between our approach and Scollay's include our adjustment of the GTAP elasticities to better approximate long run effects and the fact that we abolish all trade restrictions, including export subsidies and transport costs, in contrast to Scollay's exercise of removing only tariffs.

Finally, the rest of the world loses most from a three-way deal and least from a US-Australia deal.

Table 5
Welfare effects under alternative FTAs (equivalent variation as a percentage of GDP and US$, 97 millions)

FTA	New Zealand		Australia		United States		Rest of World	
	%	$	%	$	%	$	%	$
US-AUS	-0.015	-8.7	0.146	516.0	0.007	592.7	-0.003	-524.4
US-NZ	0.751	429.8	-0.011	-38.2	0.021	1691.0	-0.010	-1886.0
US-AUS-NZ	0.707	404.9	0.128	453.8	0.029	2280.3	-0.013	-2324.9

Note: Shock removes import tariffs, export subsidies and transport costs on trade in all commodities amongst FTA members.

What to make of these results? First, the losses to the non-member country in the two-country FTAs are for standard trade diversion reasons, as the US switches its import source towards its partner country. Indeed, this mitigates some of the negative effects on the non-member country as shown in Appendix Table A5 where the consequences for NZ exports of a US-Australia and three-way FTA are shown. In a US-Australia FTA, NZ exports to the rest of the world increase in most significant sectors but in a three-way FTA those exports to non-members decrease. Also, in a US-Australia FTA, NZ agricultural exports to Australia increase significantly, presumably replacing Australian products now sold into the US: NZ exports to the US of dairy and wool decline significantly in such a FTA.

In a three-way FTA NZ exports to the US of dairy products and 'other food products' increase very dramatically (as do Australian exports in those categories, as shown in Appendix Table A6) although wool exports decline, more than replaced by Australian export increases. In the domestic market, a US-Australia FTA has very little impact on NZ imports (see Appendix Table A7), with a slight decline in some agricultural imports from Australia. In the three-way FTA, however, there are substantial increases in imports from the US in many sectors (and overall) and a slight decrease in imports from Australia (driven largely by decreased imports of transport equipment and other equipment, all more than replaced by imports from the US.) Not surprisingly, overall NZ imports of *all* agricultural products increase in the three-way FTA, presumably as NZ domestic sales are diverted to the more lucrative US market and replaced by imports from other sources. Finally, Appendix Table A8 shows that,

from a NZ perspective, a US-Australia FTA leads to a very small decline in every product price (relative to the model's numeraire, the price of services in the US) and small, mostly negative, output effects whereas a three-way deal increases all prices and has large positive effects on dairy and 'other agricultural' outputs and significant negative effects on most manufacturing output levels.

We turn next to the consequences of these FTAs for real factor returns in our countries of interest. Table 6 shows the consequences for factor owners of a US-Australia FTA. The general effect in NZ is a small decline in factor returns, corresponding to the small negative effect on NZ welfare of such a deal. The greatest beneficiaries in Australia of such a deal are landowners – land is specific to agriculture in this model, recall, and the biggest impact of such a deal is on Australian agricultural exports. One curious result here is that the returns to Australian natural resources – specific to mining in the model – decline following a US-Australia FTA, despite the increased volume of Australian exports to the US in minerals and energy. However, as shown in Table A6, overall Australian exports in these sectors decline in the two-way FTA. The US tariff against Australia on this sector is very low and the formation of a FTA consequently has little trade creation effect. But the expansion of other sectors comes at the overall expense of this sector; hence the declining return to its specific factor.

Table 6
Simulated changes in real unit factor returns under a US-Australia free trade agreement, percent

Factor	New Zealand	Australia	United States	Rest of World
Land	-0.020	2.441	-0.215	0.004
Skilled labour	-0.011	0.266	0.020	-0.002
Unskilled labour	-0.021	0.418	0.018	-0.003
Capital	-0.010	0.312	0.008	-0.002
Natural Resources	0.123	-0.835	-0.133	0.026

Note: Shock removes import tariffs, export subsidies and transport costs on trade in all commodities amongst FTA members.

Turning to the three-way FTA, Table 7 shows the consequences for factor returns here. Little is affected in the initial FTA members (except that the negative consequences for US landowners increase to half a percentage point or so) but there is

a very significant increase in the return to NZ landowners (and a less significant increase in return to unskilled labour.[2])

Table 7
Simulated changes in real unit factor returns under a US-Australia-New Zealand free trade agreement, percent

Factor	New Zealand	Australia	United States	Rest of World
Land	10.799	2.310	-0.526	0.003
Skilled labour	0.098	0.260	0.035	-0.004
Unskilled labour	1.026	0.404	0.026	-0.004
Capital	0.370	0.294	0.015	-0.004
Natural Resources	-3.427	-0.746	-0.148	0.028

Note: Shock removes import tariffs, export subsidies and transport costs on trade in all commodities amongst FTA members.

Sensitivity analysis

We double elasticity parameters governing substitution possibilities between imports by source and between composite imports and domestic production to examine the sensitivity of our results to the assigned values of these parameters. Table 8 reports welfare changes for such an experiment. Our results are qualitatively similar under the two import specifications, although gains to the US and New Zealand from trade liberalisation involving the two countries are significantly larger when substitution possibilities in the import specification are increased, particularly so for New Zealand. For instance, comparing Tables 5 and 8 shows that the gain to NZ from a three-way FTA in the latter case is over double that in the former. Additionally, welfare reductions in the rest of the world from all of the FTAs are roughly twice as large when Armington elasticity parameters are increased. The change in Australian welfare is not significantly affected by changes in import specification.

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[2] This is an interesting feature of NZ trade that has shown up elsewhere – that, for Stolper-Samuelson reasons, trade liberalisation benefits unskilled labour. See Cagatay, S. and R. Lattimore (1999).

Table 8
Welfare effects under alternative liberalisation scenarios when Armington elasticities are doubled (EVs as a percentage of GDP and in US$, 97 millions)

FTA	New Zealand		Australia		United States		Rest of World	
	%	**$**	**%**	**$**	**%**	**$**	**%**	**$**
US-AUS	-0.024	-13.7	0.173	613.7	0.007	558.7	-0.007	-1363.4
US-NZ	1.808	1035.4	-0.011	-39.6	0.039	3097.9	-0.020	-3607.3
US-AUS-NZ	1.624	929.6	0.127	451.1	0.045	3604.7	-0.025	-4641.4

Note: Shock removes import tariffs, export subsidies and transport costs on trade in all commodities amongst FTA members.

Alternative trade liberalisation shocks

We conclude our analysis by considering a number of alternative scenarios for trade liberalisation that might occur under the aegis of a free trade area. First we turn to scenarios involving less liberalisation than that considered so far. Suppose we simply abolished tariffs alone, leaving export interventions and transport costs unaffected. Table 9 shows the effects of this shock. Interestingly, the negative consequences of being left out of a FTA are greater in this case than in the more extensive liberalisation summarised in Table 5. Of course, the gains from membership are reduced in this exercise; so much so, in fact, that Australia actually loses from a three-way FTA. Presumably these are the standard losses from trade diversion.

Table 9
Welfare effects under alternative liberalisation scenarios when only tariffs are removed (EVs as a percentage of GDP and US$, 97 millions)

FTA	New Zealand		Australia		United States		Rest of World	
	%	**$**	**%**	**$**	**%**	**$**	**%**	**$**
US-AUS	-0.042	-23.8	0.013	44.6	0.002	179.0	-0.003	-491.3
US-NZ	0.586	335.5	-0.014	-48.5	0.019	1499.2	-0.01	-1845.5
US-AUS-NZ	0.507	290.4	-0.008	-27.3	0.021	1652.3	-0.012	-2224.0

If we consider a more intermediate case in which both import restrictions and export interventions are removed then Australian losses from exclusion or a three-way deal are even greater (and Australian gains from an exclusive deal even smaller) as shown in Table 10.

Table 10
Welfare effects under alternative liberalisation scenarios when tariffs and export subsidies are removed (EVs as a percentage of GDP and US$, 97 millions)

FTA	New Zealand		Australia		United States		Rest of World	
	%	$	%	$	%	$	%	$
US-AUS	-0.042	-24.0	0.006	19.6	0.003	238.8	-0.003	-557.0
US-NZ	0.581	332.4	-0.014	-49.9	0.020	1585.1	-0.011	-1943.9
US-AUS-NZ	0.505	280.0	-0.016	-56.7	0.023	1802.4	-0.013	-2397.8

Two possible reasons for this are that Australia benefits either from importing goods subsidised through US export subsidies or from any terms of trade effects of its own export taxes. The data base reveals that US export subsidies on trade with Australia are negligible, however, so the first of these explanations is unlikely. But Australia does impose export taxes on some of its trade with the US – most notably in wool (9.4%) – so one explanation for this observation is that Australia derives terms of trade benefits from those export restrictions which are lost under complete liberalisation. To investigate this we consider a number of exercises in which we remove Australian export interventions one at a time. Appendix Table A9 shows one of these – all subsidies and taxes are removed except the Australian tax on wool exports (to the relevant FTA partners). Comparing the results of these exercises to those in Tables 9 and 10 reveals that these taxes are, indeed, the source of some of Australia's gains from trade. Compared to the status quo benchmark, for instance, Table 9 shows that Australia gains US$44.6m from an exclusive deal with the US when only tariffs are removed but, from Table 10, gains only US$19.6m when import and export interventions are removed. If Australia retained its wool tax, however, its gain would be US$25.67m (from Table A9); other exercises (not shown) demonstrate that if Australia also retained its tax in the 'other food' category its gain would be US$31.55m; if it retained the tax on lumber its gain would be US$31.77m and so on.

One other point that arises from these alternative simulations is that the effects of transport costs are quite asymmetric across countries here, impinging most severely on Australian gains from trade. Recall that our argument for including their reduction in our initial scenario was that FTAs frequently cover more than simply trade barriers and, to the extent that they ease trade between member countries in other ways, that could be best captured by a reduction in non-trade-barrier trade costs. The

asymmetric significance of those costs in this context, however, suggests perhaps that reducing transport costs is not the best way to capture those effects here.

A further issue we can consider is to ask what might happen if the US agricultural lobby were to assert itself and get special treatment for agriculture in a FTA. We consider first the most extreme case in which they are completely successful and agricultural trade restrictions post-FTA are maintained at their pre-FTA levels. Table 11 shows the welfare results here and comparison with Table 5 shows, unsurprisingly, dramatically lower gains for all countries – particularly New Zealand – from any FTA. We also see that the US actually loses from a FTA with NZ in such a setting, emphasizing that the gains to the US from a full FTA with NZ are largely from consumption and production efficiencies in the agricultural sector.

Table 11
Welfare effects under alternative liberalisation scenarios with agriculture excluded (EVs as a percentage of GDP and US$, 97 millions)

FTA	New Zealand		Australia		United States		Rest of World	
	%	$	%	$	%	$	%	$
US-AUS	-0.011	-6.4	0.072	256.4	0.007	531.6	-0.002	-300.4
US-NZ	0.077	44.0	-0.002	-8.1	-0.001	-81.1	0.001	154.8
US-AUS-NZ	0.067	38.4	0.070	249.2	0.006	451.8	-0.001	-147.5

Note: Shock removes import tariffs, export subsidies and transport costs on trade in all commodities amongst FTA members.

A more limited restriction on agricultural exemptions is modelled in Table 12 wherein only meat and dairy products – two of the most important of NZ's export sectors in its trade with the US – are exempted.

Table 12
Welfare effects under alternative liberalisation scenarios with dairy products and meat products excluded (EVs as a percentage of GDP and US$, 97 millions)

FTA	New Zealand		Australia		United States		Rest of World	
	%	$	%	$	%	$	%	$
US-AUS	-0.012	-6.9	0.120	425.4	0.007	584.2	-0.003	-473.0
US-NZ	0.161	92.1	-0.004	-13.4	0.002	186.0	-0.001	-128.08
US-AUS-NZ	0.148	85.0	0.116	0	0.010	767.0	-0.003	-594.4

Note: Shock removes import tariffs, export subsidies and transport costs on trade in all commodities amongst FTA members.

A convex combination of the liberalisations in Tables 5 and 11, the results are a convex combination of the results in those Tables too.

A further exercise we consider is shown in Table 13 and involves only the dairy sector being exempted from any FTA. The gains to the US from a US-NZ deal are still substantially lower here than in a full FTA (at around US$441m versus US$1,691m) but its gains from a FTA with Australia are actually higher than in the full FTA case. Indeed, aggregate world welfare increases by more in a US-Australia FTA that excludes dairy (a gain of around US$585m) than in a comprehensive one (around US$576m). The reason for this is presumably the trade diversion effect of a FTA that includes dairy but excludes the world's lowest-cost producer, NZ, an interpretation that is reinforced by observing the substantial increase in gains to the importing country (the US) when a three-way FTA is comprehensive (giving a US gain from the FTA of US$2,280m) versus one that excludes dairy products (giving a US gain from the FTA of only US$1,112m.)

Table 13
Welfare effects under alternative liberalisation scenarios when dairy products are excluded (equivalent variation as a percentage of GDP and US$, 97 millions)

FTA	New Zealand		Australia		United States		Rest of World	
	%	$	%	$	%	$	%	$
US-AUS	-0.006	-3.5	0.128	454.4	0.008	657.8	-0.003	-523.6
US-NZ	0.232	133.1	-0.004	-15.2	0.006	440.9	-0.002	-376.9
US-AUS-NZ	0.229	131.2	0.124	440.0	0.014	1112.2	-0.005	-908.1

Note: Shock removes import tariffs, export subsidies and transport costs on trade in all commodities amongst FTA members.

We also determine the consequences of these assorted FTAs on the assumption that the US' other negotiations were to proceed successfully and result in FTAs with Chile, Singapore, Morocco and the South African CU. The results are reported in Appendix Table A10 and are broadly as one would expect: exclusion from a deal with the US is now more costly (NZ would lose US$37.2m from being left out, versus US$24.0m in Table 10) and inclusion more valuable, particularly for NZ who would gain US$415.4m from inclusion in such a deal, versus US$280.0m in Table 10.

Nevertheless, the numbers here are still not particularly large and we have run another simulation exercise to consider an alternative benchmark: global free trade.

Table 14 shows the results of this and demonstrates the far more substantial gains to be had, to all participating countries, from such a global deal.

Table 14
Welfare effects under global trade liberalisation (equivalent variation as a percentage of GDP and US$, 97 millions))

FTA	New Zealand		Australia		United States		Rest of World	
	%	$	%	$	%	$	%	$
Global	6.922	3963.4	1.473	5219.5	0.497	39385.4	0.305	55592.2

Note: Shock removes import tariffs and export subsidies on trade in all commodities between all regions and should be compared to Table 10.

One final exercise we consider follows from the discussion, at least in Australia, of the consequences of a FTA with the US for relationships with Asia. Accordingly, we have looked at the consequences of a US-Australia FTA with East Asian countries separated out so that we can observe the effects on Australian trade with these countries. Appendix Table A11 shows the welfare effects of our assorted FTAs on NZ, Australia, the US, East Asia and the rest of the world (with only tariffs and export subsidies removed so the results are directly comparable with those in Table 10.) Appendix Table A12 shows the effects of a US-Australia FTA on Australian exports to these groups of countries. Interestingly, both tables show that the effects on East Asian countries (China, Hong Kong, Japan, South Korea, Taiwan, Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam) are broadly similar to those on the rest of the world in our other simulations. While East Asia is more sensitive than the rest of the world to all of the ANZUS FTAs we consider, the most notable impacts are those of a US-NZ FTA and a three-way deal which both have a substantially larger negative welfare effect on East Asia than on the rest of the world as a whole. As far as Australian trade is concerned, Table A12 does not suggest that East Asian trade would be affected particularly unusually compared to that of other non-members of a US-Australia FTA (across all sectors we find a 2.09% fall in Australian exports to East Asia versus a 2.35% fall in exports to the rest of the world, and remarkably little difference sector by sector.) All in all, we do not find much evidence to support the notion that a US-Australia FTA, in particular, would have substantial negative consequences in East Asia. The political signal sent by signing such an agreement is another matter entirely, however.

Summary and conclusion

In this paper we have considered a number of FTA permutations involving Australia, NZ and the US using the GTAP Data Base and static computable general equilibrium model *GTAP5inGAMS*. One of the most obvious features of the results is that the welfare consequences are not particularly large, even for a small country such as NZ in an extensive three-way FTA – an extra three-quarters of a percentage point on national income is not trivial, but it is still only a little over NZ$200 per capita. It might be argued that the downside of this is that these FTAs have little to offer; the upside that exclusion from them is not costly – even if the alternative for NZ is to be left out of a bilateral US-Australia deal that only adds less than an extra two hundredths of a percentage point of national income to the cost.

A recent CIE paper (CIE 2001) also analyses the impact of an Australian-US free trade area using two models: the Asia Pacific G-Cubed model and the GEMPACK version of the GTAP model. Its simulated increases in real GDP for included countries are greater than ours using both models and, using the Asia Pacific G-Cubed model, it finds that New Zealand gains (marginally) from a US-Australia free trade area, an effect we do not reproduce. Using the Asia Pacific G-Cubed model, the authors observe increases in real GDP of 0.33 percent, 0.02 percent, and 0.03 percent in Australia, the US, and New Zealand respectively. They attribute the gain to New Zealand to a larger Australian economy and the diversion of Australian dairy products from East Asia to the US, although our results suggest that East Asia is not atypical vis-à-vis the rest of the world in this respect. There are many differences between the Asia-Pacific G-Cubed and *GTAP5inGAMS* models. Most significantly, the former is dynamic and the latter is static. There are, however, also dissimilarities between these authors' GTAP simulations and ours: (a) they use Version 4 of the GTAP Data Base, updated to 1998-99 using their own adjustments, while we use Version 5 of the data base; (b) they employ the GEMPACK version of the GTAP model, while we employ the GAMS version, and (c) aggregations differ in the two models. While our results and theirs do differ, nevertheless both studies indicate that the formation of an US-Australia free trade area will only marginally influence national welfare in the three countries of concern.

What does this paper imply for our earlier questions concerning the dynamics of trade negotiations? Our numbers do suggest that the addition of NZ to a US-

Australia deal should meet with relatively strong support from the US and little opposition from Australia but, of course, they must be read subject to the vital caveat that the political economy of trade policy often has little to do with national welfare as economists usually measure it. Reading the USTR's letter to the Senate notifying of the intention to negotiate with Australia (USTR 2002) it is difficult to find much discussion of the gains to US consumers from lower import prices in their trade with Australia.[3] And nor do the press in Australia and NZ typically trumpet the potential of a deal with the US as lying in the wealth of cheap imports that will follow. While trade policy has always been a strict subset of foreign policy, it does appear that this is more explicitly the case with the US under the current Bush administration than it has been in the past (not explicitly in terms of stated policy, where the separation of 'pure' foreign policy and trade policy is still insisted upon, but *de facto*, it seems, in the practice of trade policy where the choice of trading partners is clearly not independent of foreign policy goals.[4])

Our own conclusion drawn from this exercise is that our priors are confirmed: the best hope for NZ and Australia is multilateralism and negotiation capital is probably best devoted to the pursuit of trade efforts through the WTO.

Finally, it should be stressed that our results are subject to all of the usual caveats surrounding CGE modelling and to the particular caveats that follow from our use of the GTAP Data Base. As noted earlier, the absence of comprehensive data on services protection is a significant shortcoming of the data base, especially in the context of analysing FTAs in which services feature prominently. Furthermore, we have noted that our baseline simulations, using transport cost reductions as a proxy for non-trade-barrier-related liberalisations associated with an FTA, perhaps do not capture this perfectly and it would be an interesting topic for future study to find a more suitable means of representing such effects in a static model such as that used here.

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[3] Actually, it is impossible.

[4] Indeed, many NZ commentators have suggested that NZ's anti-nuclear stance has been an albatross around the neck of any aspirations to entering serious negotiations with the US towards forming a FTA, as has its non-committal position on the war in Iraq.

References

Armington, P.S. (1969), 'A theory of demand for products distinguished by place of production', IMF Staff Papers, 16, 159-76.

Betina, D.V. and R.A. McDougall (2002), Global Trade Assistance and Protection: The GTAP 5 Data Base, Purdue University: Center for Global Trade Analysis.

Cagatay, S. and R. Lattimore (1999), 'NZ trade liberalisation, unemployment and real wages', mimeo, Lincoln University.

CIE (2001), Economic impacts of an Australia-United States Free Trade Area, Canberra and Sydney: Centre for International Economics.

Hertel, T.W. (2002), 'Introduction to the GTAP Data Base' in D.V. Betina and R.A. McDougall (eds) Global Trade Assistance and Protection: the GTAP 5 Data Base, Purdue University, Center for Global Trade Analysis: Chapter 1.

Rutherford, T.F., and S.V. Paltsev (2000), 'GTAPinGAMS and GTAP-EG: Global Datasets for Economic Research and Illustrative Models, The Dataset and Static Model', University of Colorado.

Scollay, R. (2002), 'The impact on New Zealand of a FTA between Australia and the United States', mimeo, APEC Study Centre, University of Auckland.

Scollay, R., and J. Gilbert (2000), 'Measuring the gains from APEC trade liberalisation: an overview of CGE assessments', The World Economy, 23 (2) 175-97.

USTR (2002), Notification to Congress of intent to initiate FTA negotiations with Australia. Available at http://www.ustr.gov/releases/2002/11/2002-11-13-australia-byrd.PDF.

Appendix: Tables of further results

Table A1
New Zealand exports by sector and trading partner (expressed as a proportion of total exports), 1997

Sector	Australia	US	ROW	All Regions
Livestock	0.31	0.18	2.24	2.72
Wool	0.02	0.09	0.80	0.90
Forestry & fishing	0.09	0.08	2.97	3.13
Other agriculture	0.19	0.38	3.00	3.57
Dairy products	0.47	1.24	18.33	20.04
Meat products	0.07	2.24	12.44	14.75
Other food products	0.93	0.88	4.29	6.10
Minerals & energy	1.02	0.03	0.52	1.56
Textiles & wearing apparel	1.46	0.22	3.12	4.80
Wood & paper	2.20	0.55	3.46	6.21
Chemicals & plastics	1.52	0.53	3.05	5.10
Transport equipment	0.22	0.17	0.32	0.71
Electronic & machinery equip.	2.22	0.61	2.56	5.39
Other manufacturing	2.27	0.54	3.97	6.77
Services	0.25	3.22	14.77	18.24
All Sectors	13.24	10.95	75.81	100.00

Source: GTAP Version 5 Data base (Betina and McDougall, 2002).

Table A2
Australian exports by sector and trading partner (expressed as a proportion of total exports), 1997

Sector	NZ	US	ROW	All Regions
Livestock	0.02	0.03	1.58	1.62
Wool	0.00	0.11	2.35	2.46
Forestry & fishing	0.00	0.01	0.54	0.55
Other agriculture	0.04	0.08	7.83	7.95
Dairy products	0.02	0.08	2.98	3.08
Meat products	0.02	0.63	4.05	4.70
Other food products	0.38	0.48	4.44	5.30
Minerals & energy	0.13	0.56	16.41	17.09
Textiles & wearing apparel	0.25	0.32	2.59	3.16
Wood & paper	0.39	0.11	1.29	1.78
Chemicals & plastics	0.66	0.38	2.72	3.76
Transport equipment	0.83	0.80	2.20	3.83
Electronic & machinery equip.	0.62	0.72	5.07	6.40
Other manufacturing	0.82	1.41	14.10	16.33
Services	0.08	4.74	17.17	21.99
All Sectors	4.27	10.44	85.29	100.00

Source: GTAP Version 5 Data base (Betina and McDougall, 2002).

Table A3
New Zealand imports by sector and trading partner (expressed as a proportion
of total imports), 1997

Sector	Australia	US	ROW	All Regions
Livestock	0.08	0.11	0.04	0.23
Wool	-	-	-	-
Forestry & fishing	-	0.01	0.03	0.04
Other agriculture	0.21	0.21	0.54	0.95
Dairy products	0.13	0.01	0.04	0.17
Meat products	0.08	0.02	0.10	0.20
Other food products	1.78	0.47	1.37	3.61
Minerals & energy	0.61	0.01	2.98	3.59
Textiles & wearing apparel	1.15	0.31	4.51	5.98
Wood & paper	1.78	0.61	2.27	4.66
Chemicals & plastics	3.00	1.78	6.34	11.11
Transport equipment	3.76	2.57	7.38	13.71
Electronic & machinery equip.	2.81	4.54	14.38	21.73
Other manufacturing	3.80	1.00	5.54	10.34
Services	0.37	5.00	18.31	23.68
All Sectors	19.55	16.62	63.83	100.00

Source: GTAP Version 5 Data base (Betina and McDougall, 2002).

Table A4
US imports by sector and trading partner (expressed as a proportion of total imports), 1997

Sector	NZ	Australia	ROW	All Regions
Livestock	0.004	0.002	0.244	0.25
Wool	0.002	0.008	0.002	0.01
Forestry & fishing	0.002	0.001	0.162	0.16
Other agriculture	0.009	0.007	1.511	1.53
Dairy products	0.025	0.006	0.117	0.15
Meat products	0.049	0.052	0.205	0.31
Other food products	0.018	0.038	2.545	2.60
Minerals & energy	0.001	0.044	6.643	6.69
Textiles & wearing apparel	0.004	0.025	8.641	8.67
Wood & paper	0.012	0.008	4.183	4.20
Chemicals & plastics	0.011	0.029	6.701	6.74
Transport equipment	0.003	0.060	12.388	12.45
Electronic & machinery equip.	0.012	0.054	29.645	29.71
Other manufacturing	0.011	0.109	11.401	11.52
Services	0.062	0.346	14.591	15.00
All Sectors	0.22	0.79	98.98	99.99

Source: GTAP Version 5 Data base (Betina and McDougall, 2002).

Table A5
Simulated changes in New Zealand exports, percent, in baseline simulation (Table 5)

Sector	US-Australia FTA					US-Australia-New Zealand FTA			
	Australia	**US**	**ROW**	**All**		**Australia**	**US**	**ROW**	**All**
Livestock	9.41	0.23	0.42	1.42		-2.72	-9.81	-15.16	-13.41
Wool	4.79	-29.44	2.11	-0.83		-3.11	-32.86	-10.67	-12.61
Forestry & fishing	3.10	0.44	0.08	0.18		-2.10	-1.46	-5.19	-5.01
Other agriculture	12.19	-0.05	0.21	0.81		-4.33	62.15	-11.17	-3.02
Dairy products	6.70	-19.34	0.25	-0.82		-2.84	878.76	-9.67	45.58
Meat products	2.42	5.01	0.25	0.98		-7.02	55.45	-8.89	0.89
Other food products	2.36	-2.20	0.16	0.16		-6.27	184.04	-8.19	19.80
Minerals & energy	-0.17	0.21	0.06	-0.09		-3.59	1.33	-3.11	-3.35
Textiles & wearing apparel	-11.79	0.19	0.26	-3.41		-23.57	51.77	-12.96	-13.21
Wood & paper	2.19	0.27	0.15	0.88		-5.27	-5.74	-6.92	-6.23
Chemicals & plastics	-1.39	0.23	0.13	-0.32		-6.45	14.90	-4.82	-3.27
Transport equipment	-19.75	0.31	0.35	-5.97		-26.46	19.27	-7.89	-7.18
Electronic & machinery equip.	-5.95	0.28	0.23	-2.31		-13.56	14.44	-7.82	-7.65
Other manufacturing	0.32	0.37	0.13	0.21		-6.85	30.49	-7.04	-4.00
Services	1.37	0.23	0.19	0.21		-6.41	-3.00	-7.41	-6.62
All Sectors	-1.52	-1.44	0.23	-0.18		-9.23	130.77	-8.64	6.55

Note: Shock removes import tariffs, export subsidies and transport costs on trade in all commodities amongst FTA members.

Table A6
Simulated changes in Australian exports, percent, in baseline simulation (Table 5)

Sector	US-Australia FTA				US-Australia-New Zealand FTA			
	NZ	US	ROW	All	NZ	US	ROW	All
Livestock	-4.38	7.29	-4.81	-4.62	14.43	8.01	-4.28	-3.90
Wool	-0.96	60.75	-2.24	0.58	8.62	63.44	-1.54	1.37
Forestry & fishing	0.31	19.54	0.03	0.38	11.48	20.82	0.20	0.58
Other agriculture	-3.68	115.97	-3.88	-2.64	28.25	116.74	-3.63	-2.23
Dairy products	-1.73	1436.25	-2.79	32.26	13.46	835.55	-1.94	18.58
Meat products	-2.56	66.57	-3.03	6.29	-0.24	76.39	-2.63	7.96
Other food products	-1.44	464.58	-1.83	40.58	0.26	463.37	-1.65	40.75
Minerals & energy	-0.79	3.16	-0.79	-0.66	-2.40	3.28	-0.72	-0.60
Textiles & wearing apparel	0.01	225.21	0.52	23.30	-1.43	225.86	0.68	23.38
Wood & paper	-1.06	17.97	-1.03	0.11	0.84	18.32	-0.91	0.63
Chemicals & plastics	0.22	29.98	0.38	3.37	1.51	30.16	0.49	3.69
Transport equipment	0.11	36.60	0.31	7.82	-7.06	37.16	0.71	6.60
Electronic & machinery equip.	0.24	52.35	0.36	6.16	-5.56	52.66	0.53	5.77
Other manufacturing	-1.14	15.29	-1.39	0.06	-0.23	15.52	-1.24	0.26
Services	-2.25	4.48	-2.15	-0.72	2.44	4.70	-1.97	-0.52
All Sectors	-0.49	56.21	-1.62	4.47	-1.60	52.70	-1.40	4.24

Note: Shock removes import tariffs, export subsidies and transport costs on trade in all commodities amongst FTA members.

Table A7
Simulated changes in New Zealand imports, percent, in baseline simulation (Table 5)

Sector	US-Australia FTA				US-Australia-New Zealand FTA			
	Australia	US	ROW	All	Australia	US	ROW	All
Livestock	-4.38	0.80	0.71	-1.03	14.43	22.70	20.07	19.31
Wool	-0.96	0.00	3.20	3.20	8.62	0.00	12.83	12.83
Forestry & fishing	0.31	0.14	0.25	0.24	11.48	15.32	11.33	11.90
Other agriculture	-3.68	0.19	0.17	-0.66	28.25	62.48	32.99	38.32
Dairy products	-1.73	1.11	1.00	-0.97	13.46	-28.64	16.41	11.42
Meat products	-2.56	0.91	0.74	-0.56	-0.24	113.65	2.94	12.14
Other food products	-1.44	0.32	0.43	-0.50	0.26	115.14	1.96	15.76
Minerals & energy	-0.79	0.14	0.13	-0.02	-2.40	6.41	-1.59	-1.71
Textiles & wearing apparel	0.01	-0.83	-0.59	-0.49	-1.43	161.77	-2.18	6.55
Wood & paper	-1.06	0.06	0.30	-0.25	0.84	65.78	2.06	9.87
Chemicals & plastics	0.22	-0.37	-0.19	-0.11	1.51	26.60	0.98	5.22
Transport equipment	0.11	-0.66	-0.18	-0.19	-7.06	38.36	-7.68	1.12
Electronic & machinery equip.	0.24	-0.41	-0.12	-0.14	-5.56	40.22	-6.06	3.68
Other manufacturing	-1.14	0.08	0.25	-0.28	-0.23	65.46	1.01	6.77
Services	-2.25	-0.32	-0.08	-0.17	2.44	4.21	4.52	4.42
All Sectors	-0.50	-0.34	-0.08	-0.21	-1.54	34.67	-0.57	5.10

Note: Shock removes import tariffs, export subsidies and transport costs on trade in all commodities amongst FTA members.

Table A8
Changes in NZ product prices and output under alternative liberalisation scenarios, percent

	US-AUS FTA		US-AUS-NZ FTA	
	Price	**Output**	**Price**	**Output**
Livestock	-0.06	0.27	1.69	-2.72
Wool	-0.06	-0.18	1.79	-1.77
Forestry & fishing	-0.05	0.15	0.60	-1.81
Other agriculture	-0.07	-0.07	2.03	14.24
Dairy products	-0.06	-0.64	1.51	38.14
Meat products	-0.06	0.73	1.35	1.87
Other food products	-0.06	0.11	1.03	4.32
Minerals & energy	-0.04	0.06	0.34	-3.70
Textiles & wearing apparel	-0.06	-1.40	1.13	-9.30
Wood & paper	-0.06	0.26	1.01	-2.52
Chemicals & plastics	-0.06	-0.08	0.77	-3.25
Transport equipment	-0.05	-0.50	0.39	-3.86
Electronic & machinery equip.	-0.06	-0.73	0.79	-8.11
Other manufacturing	-0.05	0.11	0.77	-4.34
Services	-0.06	0.02	1.13	-0.32

Note: Shock removes import tariffs, export subsidies and transport costs on trade in all commodities amongst FTA members. All price changes are relative to the model's numeraire, the price of services in the US.

Table A9
Welfare effects under alternative liberalisation scenarios when tariffs and export subsidies are removed except for the Australian export tax on wool
(EVs as a percentage of GDP and US$, 97 millions)

FTA	New Zealand		Australia		United States		Rest of World	
	%	**$**	**%**	**$**	**%**	**$**	**%**	**$**
US-AUS	-0.041	-23.5	0.007	25.7	0.003	234.4	-0.003	-556.8
US-NZ	0.581	332.4	-0.014	-49.9	0.020	1585.1	-0.011	-1943.9
US-AUS-NZ	0.506	289.5	-0.014	-50.6	0.023	1797.6	-0.013	-2397.3

Table A10
Welfare effects under alternative liberalisation scenarios when tariffs and export subsidies are removed, all countries currently considered by the USTR (equivalent variation as a percentage of GDP and US$, 97 millions)

FTA	New Zealand		Australia		United States		Other USTR		Rest of World	
	%	$	%	$	%	$	%	$	%	$
US-AUS	-0.042	-24.0	0.006	19.6	0.003	238.5	-0.009	27.3	-0.003	-532.6
US-NZ	0.581	332.5	-0.014	-49.8	0.020	1585.4	0.011	32.2	-0.011	-1978.5
US-OTH	-0.015	-8.5	-0.006	-19.8	0.007	547.1	0.112	335.5	-0.007	-1310.0
US-AUS-NZ	0.505	289.1	-0.016	-56.6	0.023	1802.3	0.001	3.1	-0.013	-2406.0
US-AUS-OTH	-0.065	-37.2	0.074	263.1	0.009	748.7	0.144	433.1	-0.012	-2184.4
US-NZ-OTH	0.878	502.7	-0.026	-93.0	0.038	2998.7	0.142	427.2	-0.024	-4339.4
US-AUS-NZ-OTH	0.762	415.4	0.041	144.3	0.038	2987.0	0.179	438.1	-0.029	-4861.1

Note: "OTH" refers to countries other than Australia and New Zealand that the USTR has indicated it will negotiate preferential trading agreements with (Chile, Singapore, Morocco, and the South African Customs Union) Countries in the Central American Integration System are not included as the GTAP 5 Data base includes these nations in a composite region with other nations. Shock removes import tariffs and export subsidies on trade in all commodities between all regions.

Table A11

Welfare effects under alternative liberalisation scenarios when tariffs and export subsidies are removed and East Asia enters as separate region (equivalent variation as a percentage of GDP and US$, 97 millions)

FTA	New Zealand		Australia		United States		East Asia		Rest of World	
	%	**$**	**%**	**$**	**%**	**$**	**%**	**$**	**%**	**$**
US-AUS	-00.41	-23.3	0.006	22.0	0.003	249.4	-0.005	-272.79	-0.002	-239.3
US-NZ	0.583	334.0	-0.014	-48.4	0.020	1597.6	-0.026	-1485.6	-0.003	-367.0
US-AUS-NZ	0.508	291.1	-0.015	-53.1	0.023	1824.5	-0.029	-1663.2	-0.005	-605.2

Note: East Asia includes China, Hong Kong, Japan, South Korea, Taiwan, Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam.

Table A12
Simulated changes in Australian exports, percent, US-AUS FTA

	New Zealand	United States	East Asia	Rest of World	All Nations
Livestock	-5.21	6.80	-5.03	-5.31	-4.99
Wool	-1.76	47.89	-2.13	-2.51	-0.11
Forestry and fishing	-0.87	17.38	-0.86	-0.91	-0.53
Other agriculture	-4.09	115.78	-3.93	-4.32	-2.82
Dairy products	-2.23	1415.96	-2.94	-3.33	31.50
Meat products	-3.33	50.83	-3.10	-3.44	4.02
Other food products	-2.28	452.15	-2.61	-2.69	38.72
Minerals and energy	-1.30	2.68	-1.07	-1.13	-0.96
Textiles and wearing apparel	-1.05	221.62	-0.49	-0.43	22.04
Wood and paper	-1.94	16.44	-1.57	-2.18	-0.66
Chemicals and plastics	-1.07	27.98	-1.04	-1.04	1.91
Transport equipment	-2.03	32.85	-2.48	-2.48	4.97
Electronic and machinery Equip.	-1.40	49.19	-1.36	-1.32	4.30
Other manufacturing	-1.93	13.89	-2.18	-2.17	-0.78
Services	-2.68	4.25	-2.39	-2.37	-0.95
All Sectors	-1.75	53.38	-2.09	-2.35	3.63

Note: Shock removes import tariffs and export subsidies on trade in all commodities. East Asia includes China, Hong Kong, Japan, South Korea, Taiwan, Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam.