THE ECONOMIC IMPACTS OF RETAINING TARIFFS IN NEW ZEALAND: A DYNAMIC CGE ANALYSIS

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Abstract

The government announced in late 2009 that it would freeze tariffs at current levels until 2015 at the earliest. We examine the potential costs and benefits to the New Zealand economy of this policy decision using a recently-developed dynamic computable general equilibrium (CGE) model of the New Zealand economy. We find that the elimination of tariffs in New Zealand delivers a very small increase in GDP as allocative efficiency improves. However, the terms of trade effects associated with the tariff removal generate a very small welfare loss. We assess the sensitivity of the welfare results to key elasticity parameters.

Tariff policy: a paradigm shift?

New Zealand has pursued a policy of unilateral tariff reductions over the past two decades. Simple average manufacturing tariffs have been reduced from 6.9% in 1987 to around 2.3% in 2009 (Infometrics, 2003, p.21; WTO 2009).

The decision in late 2009 to maintain MFN tariffs[1] at their current levels until 2015 at the earliest, may therefore surprise some commentators. While these tariffs may still be reduced as a result of multilateral, regional or bilateral trade agreements, there will be no change to non-preferential tariffs over the next five years at least.

The economic justification from Ministers for this decision is vague. The media statement[2] accompanying the decision suggests that:

- Increased market access in key export markets, achieved through free trade agreements (FTAs), can be expected to provide significant benefit to the New Zealand economy, companies, and consumers, and in turn support employment.
- New Zealand is firmly committed to the WTO Doha Round process for reducing tariffs and other barriers to trade, and is pursuing an extensive FTA agenda.
- New Zealand is increasingly opening itself up to international trade and has no plans to increase its tariffs, which would increase prices for consumers.

The argument seems to be that New Zealand is already a very open economy and that any further tariff reductions will come about through New Zealand's active participation in trade agreements. But there is no discussion on the potential costs and benefits of the tariff freeze or what the implications might be for New Zealand firms and households.

Perhaps as a consequence of this lack of analysis, there has been little public debate over the decision to retain non-preferential tariffs.[3] This is somewhat surprising, given that most New Zealanders understand the importance of free(r) trade in improving their welfare.

This paper examines the potential costs and benefits to the New Zealand economy of the decision to retain non-preferential tariffs using a recently-developed dynamic computable general equilibrium (CGE) model of the New Zealand economy.

New Zealand's tariffs: an overview

Despite a succession of multilateral trade rounds under the GATT and WTO, and unilateral efforts to reduce trade barriers, most countries retain tariffs and other trade policy measures. New Zealand has reduced its tariffs since the reforms[4] of the mid-1980s but it continues to retain tariffs on some domestically sensitive sectors. New Zealand currently has an average weighted tariff rate of around 2.2% (WTO, 2009), with MFN tariff peaks of up to 10% on some textiles, clothing and footwear (TCF), carpets, auto parts and machinery.

The distribution of these tariffs across the primary and manufacturing sectors can be seen in Figure 8.[5]

The last changes to New Zealand's non-preferential tariffs occurred on 1 July 2009, and had been planned since 2003, as per the reduction schedule in Table 3 below. All tariffs over 10% were reduced to 10%, and all other remaining tariffs were held at 5%.

Tariff revenue in CY2009 was $217 million[6]; around 0.39% of total government revenue.

Given the downward trajectory of New Zealand's non-preferential tariffs over the past two decades, the recent decision to hold tariffs steady at 2009 levels for at least the next six years is a change in policy direction.

We now move on to briefly discuss the theoretical implications of the tariff freeze, before simulating the effects of the policy using our dynamic CGE model.

Theory of unilateral tariff reductions

What do tariffs do?

Tariffs on imported goods impose a wedge between the world price when goods arrive at the New Zealand border and the price paid by importing firms or consumers. A partial equilibrium depiction of the effects of a tariff on a small country such as New Zealand is shown in Figure 7.[7]

In the absence of any tariff, the world price is P_W with domestic demand at D_W and domestic supply is S_W. The difference ($D_W - S_W$) is imported. When a small country imposes a tariff (t), the domestic price rises by the full amount of the tariff to P_M, causing domestic demand to fall to D_M and domestic supply to increase to S_M. Imports fall correspondingly.

The tariff has a number of immediate effects:

- It makes the imported good, and that of domestically-produced substitutes, more expensive. Domestic consumer surplus decreases by (A+B+C+D) in Figure 7.
- New Zealand producers of goods that face import tariffs gain domestic market share as a result. Their producer surplus increases by A.
- It generates revenue (C) for the New Zealand government which can be used for public policy purposes.
- The higher prices faced by New Zealand consumers effectively cause a reduction their in real disposable income, relative to a scenario where no tariffs are imposed. This causes a consumption efficiency loss (D).
- Tariffs distort relative prices and allow relatively more inefficient import-competing producers to use scarce resources (labour, capital, land, etc) that might generate better economy-wide returns if employed in more efficient sectors. This production efficiency loss is (B).

The net effect on national welfare of imposing the tariff is the sum of the components above: -(**B+D**). These are referred to as 'deadweight losses'.

There are other costs associated with tariffs. Whenever New Zealand imposes a tariff, it always runs the risk of retaliatory action from the import source, who may impose its own tariffs or other trade barriers on New Zealand's exports. This type of retaliation has been seen recently in US-China trade in particular.

Maintaining tariffs can stifle capital accumulation, economies of scale and longer term dynamic gains through technology transfer (Sally, 2009, p.30). Finally, there is a resource burden associated with monitoring, administering and collecting tariff duties.

Effect of tariff reductions on allocative efficiency

With these costs in mind, it could be expected that removing tariffs in New Zealand would generate gains in economic efficiency. Resources would be allocated to the areas in which New Zealand has a genuine comparative or competitive advantage, and less efficient (protected) industries would contract. Such a pattern occurred when tariffs and other trade restrictions were removed in the late 1980s and early 1990s. An oft-used example is the New Zealand car assemby sector. It was protected for many years behind tariffs and import-licensing barriers. After these barriers were unilaterally removed, New Zealand-assembled cars become increasingly uncompetitive relative to imported cars (from Japan in particular) and the sector largely disappeared.

The extent of these potential efficiency gains has most recently been examined by Infometrics (2003) as part of the post-2005 Tariff Review. Using a comparative static general equilibrium model[8], they consider the economic impacts of removing existing tariffs (at 2003 levels) in 2010. Two closures with respect to the labour market are analysed (employment being fixed, or real wages being fixed). The key macroeconomic results are shown below in Table 1 and show that the welfare effects of tariff removal (proxied by private consumption) are small but positive.

Table 1 Infometrics' modelling of tariff reductions

% change relative to business as usual (BAU) scenario with no tariff changes

	With fixed employment	With fixed real wages
Private Consumption	0.01	0.07
Exports	0.69	0.76
Imports	0.44	0.48
Gross Domestic Product	0.08	0.14
Employment (000 FTE)	0.00	0.20
Real Wage (Index)	0.35	0.00

Source: Infometrics (2003)

At the industry level, Infometrics found that the largest impact is on the TCF sector, where output is around 8% lower than in the BAU scenario and employment around 4% lower (when real wages are fixed). Wood products and paper products experience a decline in domestic market share as import penetration lifts after the removal of the tariff, although output rises very slightly in both sectors. No other sector in New Zealand experiences a fall (or rise) of more than 1% in output.

Infometrics (2003) conclude that "moving from the current tariff regime to free trade generates only a small gain in welfare, as measured by changes in private consumption or gross domestic product (GDP). Thus it is reasonable to infer that partial reductions in tariffs would yield even smaller effects. Even on the assumption that there would be some dynamic

efficiency gains, the macroeconomic gains from free trade are unlikely to exceed 0.1% of GDP". Our modelling supports this conclusion.

Effect of tariff reductions on terms of trade

In addition to the allocative efficiency effects of removing tariffs, there is also a terms of trade (ToT) effect that needs to be considered. The ToT effect refers to changes in New Zealand consumers' purchasing power resulting from changes in the relative prices of FOB exports and CIF imports[9] following tariff reductions (Dixon and Rimmer, 2008, p. 3).

In models of the global economy (e.g. GTAP) or the domestic economy (e.g. MONASH-NZ), the Armington assumption is often employed. This assumption differentiates commodities by their country of origin, so like goods produced by different countries are imperfect substitutes (Zhang, 2006, pIX). Importantly, this allows intra-industry trade to occur, as is observed in international trade statistics.

However, one of the implications of the Armington structure is that all exporters, no matter how small, face downward sloping export demand curves – they cannot sell more exports without reducing the export price. Assuming that New Zealand's export demand curve is downward sloping and its export supply curve upward sloping this implies that following a unilateral tariff reduction in New Zealand, the domestic price of imports falls and the volume of imports rises. Provided the import price elasticity is greater than -1, this pushes the New Zealand balance of trade towards deficit.

Assuming the balance of trade holds constant, this induces an increase in export volumes. The only way New Zealand can export more is to move down its export demand curve, reducing its export prices. If export prices fall by more than import prices, New Zealand's ToT deteriorate, which reduces New Zealand's welfare.

The net welfare impact of a unilateral tariff reduction is the sum of the efficiency and ToT effects. At low tariff rates, and depending on the import and export price elasticities used, the negative ToT effect may dominate the positive allocative efficiency effect. This is discussed in more detail later.

We now turn to examining the allocative efficiency and ToT effects of the recent policy decision to maintain New Zealand's remaining non-preferential tariffs at current rates to 2015 at the earliest.

Modelling framework

The NZIER CGE model

We evaluate the economic consequences of maintaining existing non-preferential tariffs using MONASH-NZ, a dynamic CGE model of the New Zealand economy. MONASH-NZ is a New Zealand implementation of the well-known MONASH model (Dixon and Rimmer 2002).

MONASH-NZ has 131 industries and 210 commodities. An initial (2003) solution to the model is calibrated from 1995/96 input output data (Statistics New Zealand, 2002). The model identifies three primary factors: labour, capital and land. The model has one representative household and one central government. Optimising behaviour governs decision-making by firms and households. Each industry minimises unit costs subject to given input prices and a constant returns to scale (CRS) output function. Household demands are modelled via a representative utility-maximising household. Units of new industry-specific capital are cost minimising combinations of New Zealand and foreign commodities. Imperfect substitutability between imported and domestic varieties of each commodity is modelled using the Armington CES assumption. The export demand for any given New Zealand commodity is inversely related to its foreign-currency price.[10] The model recognises consumption of commodities by government, and the details of direct and indirect taxation instruments. It is assumed that all sectors are competitive and all markets clear. Purchasers' prices differ from producer prices by the value of indirect taxes and trade and transport margins.

MONASH-NZ recognises three types of dynamic adjustment: capital accumulation, net liability accumulation and lagged adjustments. Capital accumulation is industry-specific, and linked to industry-specific net investment. Annual changes in the national net foreign liability position are related to the annual national investment/savings imbalance. In policy simulations, the labour market follows a lagged adjustment path. In the short-run, real consumer wages are sticky. Hence short-run labour market pressures mostly manifest as changes in employment. In the long-run, employment returns to basecase, with labour market pressures reflected in changes in real wages.

Basecase forecasts and experiment design

Basecase

All results in this research are compared against a basecase (or business as usual) scenario in which we assume no new policy changes. We project the New Zealand macroeconomy out to 2025 using NZIER's *Quarterly Predictions* publication and assumptions regarding labour force participation and productivity growth. Basecase tariff rates are included in the projections by holding 2009 rates constant over the forecast period.[11]

These rates are simple MFN averages across the HS lines that concord with our industry classifications. They are not trade weighted, and nor do they consider the effects of past or future trade agreements. As such, they are an upper bound of the rates that actually apply once preferential tariffs are taken into account.

Policy shock

The counterfactual policy shock that enables us to examine the economic effects of maintaining tariffs at current levels to 2015 is eliminating all of New

Zealand's MFN tariffs fully in 2010 and holding them at zero for the remainder of the time period.

We do not consider the reduction in administrative burden that would be associated with the removal of all remaining tariffs.[12] The tariff revenue foregone is replaced via higher levels of general taxation. We also leave aside the 'cold shower hypothesis' that posits that import-competing industries use inputs more efficiently if tariffs are low than if they are high (Dixon and Rimmer, 2008, p16). This is an avenue for further work.

Model closure

Short run closure

The key features of our short run closure are summarised in Table 2.

Long run closure

The long-run description of MONASH-NZ's operation differs in two respects from the short-run closure in Table 2;

i. The policy-case level of employment in MONASH-NZ eventually returns to its basecase level via real wage adjustment. Employment in exogenous in the long run and real wages are endogenous.

ii. Rates of return gradually revert towards basecase via the adjustment of capital stocks. The rate of return is exogenous and capital becomes endogenous.

Results

Variables to examine

We focus our results analysis on three main variables that will be of most interest to policy makers:

- GDP
- Welfare – as measured by private consumption
- Employment

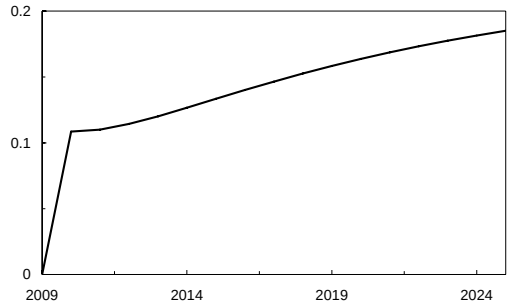
The differences between GDP and welfare are crucial in this analysis. A commonly used measure of 'welfare' in CGE models is private consumption (see Coleman, 2008).

Macroeconomic results

GDP increases after tariffs are removed…

As expected, the removal of New Zealand's remaining tariffs leads to an improvement in allocative efficiency. Labour and capital flow away from previously protected sectors (such as TCF, furniture and auto parts) and into those in which New Zealand has comparative advantage. This results in New Zealand's GDP being 0.11% above baseline in 2010, rising to 0.19% above baseline by 2025 (see **Figure 1**)

Figure 1 Change in GDP
% deviation from baseline



Source: NZIER

…as does employment

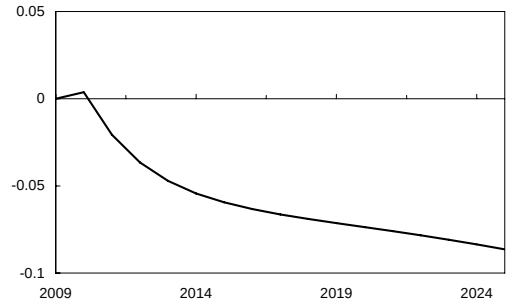
Employment rises by 0.24% above baseline in 2010, and remains above baseline for the forecast period (+0.019% in 2025). However, it will return towards the baseline over time as the real wage adjusts upward.

These results appear to confirm the view that removing New Zealand's remaining tariffs would benefit the New Zealand economy, albeit by relatively small amounts. In a partial equilibrium setting, the analysis would stop here. In a CGE framework, we can examine some additional, possibly unexpected, impacts of the tariff removal.

But New Zealand households are worse off

Our modelling indicates that this increase in GDP and employment does not necessarily mean that New Zealand consumers are "better off". As shown in **Figure 2** New Zealand households initially see a very small welfare improvement as the removal of tariffs lowers import prices. However, further out, the change in welfare becomes negative: the tariff removal leads to a welfare *decline*.

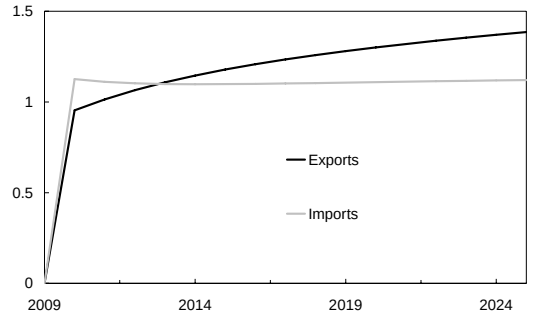
Figure 2 Change in welfare
% deviation from baseline



Source: NZIER

This welfare decline will seem counter-intuitive to many. However, it can be explained relatively simply. The tariff elimination reduces the prices of imported goods. This causes New Zealand households to suck in additional import volumes, forcing a depreciation of the exchange rate. In order to fund the additional imports, New Zealand has to export more (see **Figure 3**). Given that New Zealand faces downward sloping export demand curves, the only way it can export more is to reduce export prices.

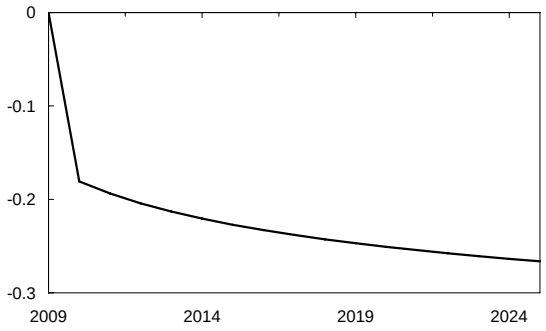
Figure 3 Change in trade volumes
% deviation from baseline



Source: NZIER

As a result, export prices fall by more than import prices, which results in a terms of trade deterioration (see Figure 4). This reduces New Zealand households' purchasing power, and over time this more than offsets the improved household incomes that result from improved allocative efficiency. The net result is a slight welfare loss.

Figure 4 Change in terms of trade
% deviation from baseline



Source: NZIER

Industry effects[13]

The tariff removal leads to a shift in production patterns in the New Zealand economy. Output and employment rise in the sectors in which New Zealand has a comparative advantage, such as primary production and its associated processing activities. Services, mining and construction employment also increase.

Employment and output contract in previously protected sectors such as prefabricated buildings, furniture and TCF, which all experience employment falls of 1% to 2.5% below baseline. Smaller declines are seen in the plastics, cosmetics and small goods sectors.

GTAP modelling

As well as using our MONASH-NZ model, we also looked at the effects of unilateral tariff reform in New Zealand using the well-known GTAP model of global trade (see Hertel, 1997 for an overview of the GTAP model). The GTAP version 7 database is a representation of the global economy in 2004 (see Narayanan and Walmsley, 2008).

The results from the GTAP comparative static model, which does not allow for examining how outcomes change intertemporally, show a similar story to that reported above.

After tariff elimination, allocative efficiency improves by US$85 million, with the largest efficiency gains coming in the previously relatively highly protected sectors: TCF, food products, transport equipment and 'other' manufactured goods (including furniture and whiteware). However, the tariff reductions also cause a large ToT effect, which causes aggregate welfare to drop by US$122 million. This more than offsets the efficiency gain, resulting in a net welfare loss of around 0.03% of GDP (or 0.05% of private consumption).

Discussion

Negotiating coin vs. signalling effects

Our modelling results suggest that a unilateral elimination of New Zealand's remaining tariffs would generate a small improvement in allocative efficiency. If we look at GDP, removing tariffs results in allocative efficiency gains of 0.19% by 2025. This translates into GDP being some $550 million higher in 2025 than under a scenario where tariffs are retained. This provides some support to the view that retaining tariffs imposes non-trivial costs on the New Zealand economy.

However, similar to Dixon and Rimmer (2008), we also find that the associated terms of trade effect from tariff removal would be negative and large enough to more than offset these efficiency gains, resulting in a very small aggregate welfare loss. This provides some analytical support to the political economy view that there is little – if anything – to be gained from further unilateral reform, and that the tariffs should be retained as negotiating coin.

To take this argument further, it is possible that if New Zealand removed all of its merchandise tariffs, no potential FTA partner would be interested in entering formal negotiations, unless it had very strong offensive interests in New Zealand's services sector or investment provisions, or had an eye on third country effects (i.e. using New Zealand as an export base). The losses (gains foregone) from *not* signing any future FTAs are likely to be substantial, if the results of ex-ante modelling estimates of the gains from FTAs are to be believed.

On the other hand, it might be argued that there are positive reputational benefits to New Zealand of unilaterally removing tariffs. By doing so, New Zealand would be able to claim the "moral high ground" in multilateral or regional trade negotiations and have a stronger case for demonstrating that economies can flourish without any tariff protection whatsoever. Perhaps more importantly, it would send a clear signal to potential overseas investors that New Zealand is "open for business" and does not suffer from distorting political interventions (at least not in the tradables sector). Such an approach has worked for

Hong Kong and Singapore in the past, who have long had zero MFN tariffs. Our modelling framework cannot easily capture these reputational benefits.

In short, given that the overall economic benefit (as modelled here) of unilaterally removing tariffs is close to zero, the policy decision regarding the future direction of New Zealand's border protection needs to consider the trade off between the value of retaining the tariffs as negotiating coin (in terms of the benefits of subsequent FTAs that might not eventuate without such coin), and the value of these reputation or signalling effects. Without empirical evidence on the latter, it is not unreasonable to suggest that retaining New Zealand's current tariffs may be the preferred policy option, at least in the short term.

Sensitivity analysis: terms of trade effects

The Armington assumptions outlined above suggest that there is an 'optimal tariff' rate at which small reductions generate efficiency gains that exactly offset the ToT losses (Dixon and Rimmer, 2008, p.3; Broda, Limao and Weinstein, 2008).

This long-established optimal tariff theory (originating from Torrens, 1844 and Bickerdike, 1907) suggests that for countries with some degree of monopoly power in its export markets (usually large countries), there is a positive tariff that maximises national welfare. This is because – in theory at least – the country with market power can 'manipulate' its terms of trade using a tariff to generate a terms of trade gain that more than offsets the efficiency losses from a relatively inefficient allocation of resources. Therefore, according to theory, an economy may be better off retaining a small but positive tariff than it would be if it eliminated it entirely.

This is what our CGE modelling results indicate: the efficiency gains from removing New Zealand's remaining tariffs are more than offset by a terms of trade deterioration, leading to an overall decrease in national welfare.

Such results are not uncommon in the literature. Zhang (2006, p1) suggests that Armington models often generate large terms of trade effects from even relatively small changes in the tariff settings of small countries and that "in some cases, expected allocative efficiency gains can be wiped out by strong terms of trade losses". Recent Australian research examines the welfare gains from unilateral reductions in automotive tariffs using CGE modelling. Productivity Commission (2008) analysis concludes that reducing these tariffs would deliver welfare gains of around 0.06% of real Gross National Expenditure per year. Dixon (2008) contends that this modelling is incorrect due to export demand elasticities and capital-labour substitution elasticities that are both too high. Dixon's own modelling suggests that removing automotive tariffs would result in a small welfare loss for Australia.

There is considerable uncertainty about the validity of optimal tariffs in practice (and hence the magnitude of the terms of trade effects generated by tariff reduction). Sally, (2009, p.30) suggests that an optimal tariff is interesting in theory, but has limited practical relevance as very few countries have such market power in the long run, and because retaliatory actions by other governments could make any terms of trade gains negligible. Broda et al (2008) agree that there has been almost no empirical evidence at all of governments setting optimal tariffs to affect their terms of trade, with most economists generally asserting that small country assumptions are appropriate.

Nevertheless, the magnitude of the terms of trade effects in our CGE modelling exercise are crucially dependent on the export elasticity parameters used (Zhang, 2006). There is a lack of New Zealand-specific empirical estimates of these parameters. The question then becomes, what magnitude does the export elasticity have to be in our scenario in order for the terms of trade losses to be lower than the efficiency gains (i.e. for a tariff reduction to be welfare-enhancing)?

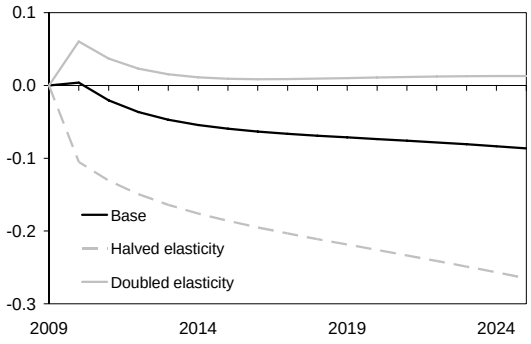
We investigate this by re-running the simulation with the elasticities of export demand quartered, halved, doubled and tripled.

Figure 5 shows the effect on private consumption of doubling, or halving, all Armington elasticities. As expected, lower price elasticities of export demand result in lower welfare. That is because the export price drops further in response to changes in export volumes with a lower elasticity, which causes the terms of trade to fall further and, in turn, decreases consumption.

The results indicate that achieving positive private consumption requires nearly doubling the elasticities of export demand.

Figure 5 Variation in welfare

% deviation from baseline



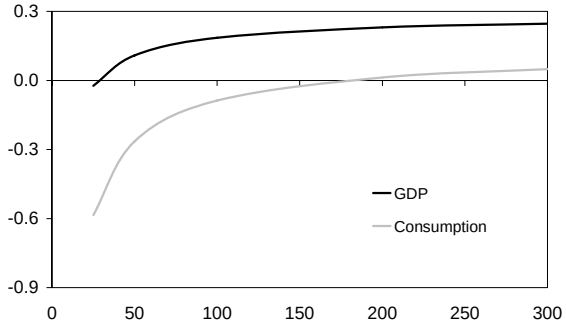
Source: NZIER

Examination of the previous figure also suggests that halving the elasticity affects consumption more than doubling the elasticity. That raises an interesting question: what is the rate of change of consumption with respect to elasticity?

To answer that we plot the values of GDP and consumption in 2025 against an index of elasticity. The index is simply the sum of all individual export elasticities, normalised such that our default levels have a value of 100. The result is shown in Figure 6.

Figure 6 Welfare vs elasticity of demand

% deviation from baseline vs index of export demand elasticity



Source: NZIER

As illustrated, increasing the elasticity of export demand causes a decreasing marginal change in the deviation from baseline. The implication is that extremely low elasticities may cause a large loss of welfare, but extremely high elasticities do not cause a correspondingly large increase in welfare.

This means that the key conclusions of our simulation are not highly sensitive to the parameter estimates used.

Conclusions

Using a newly-developed dynamic CGE model of the New Zealand economy, we have shown that due to the low level of New Zealand's remaining tariffs, removing them may make consumers marginally *worse* off, despite delivering allocative efficiency gains.

This may be a controversial result. Most analysts will point to the benefits of New Zealand's previous unilateral reductions as evidence to indicate that further gains will accrue if further reductions take place. And there is little empirical support behind optimal tariff theory.

It is unlikely that the New Zealand government has the ability to estimate and manipulate its optimal tariff. Rather, the recent government decision to retain tariffs is based implicitly on the belief that the potential gains from future FTAs (that may not occur if New Zealand had no tariffs) outweigh any welfare costs from holding MFN tariffs at their current levels.

Confirming this hypothesis is difficult. Our analysis contributes to the debate by suggesting that terms of trade effects matter, and that these effects need to be considered in evaluating the potential gains from tariff removal, especially when tariffs are already at low levels. The precise magnitude of these effects depends crucially on the export demand elasticities used in any CGE modelling framework. This suggests there may be value in further research to estimate New Zealand's export demand elasticities.

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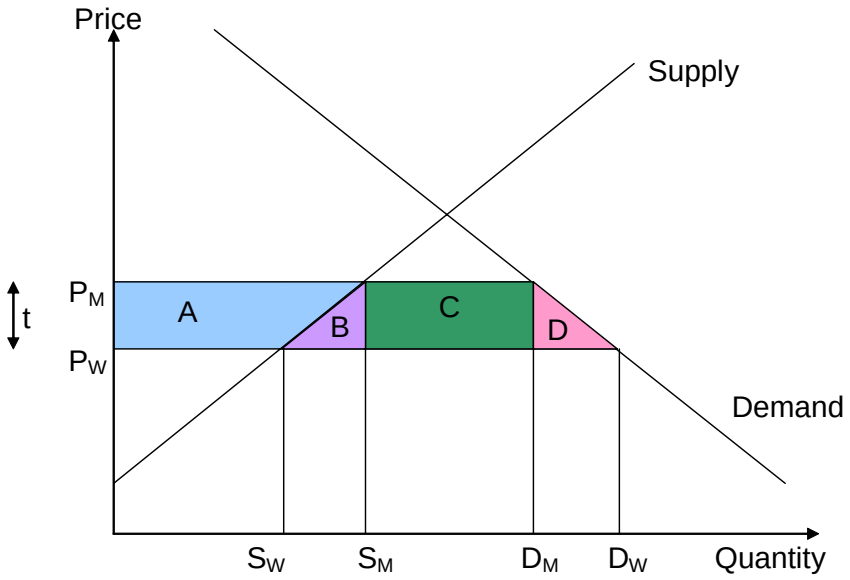
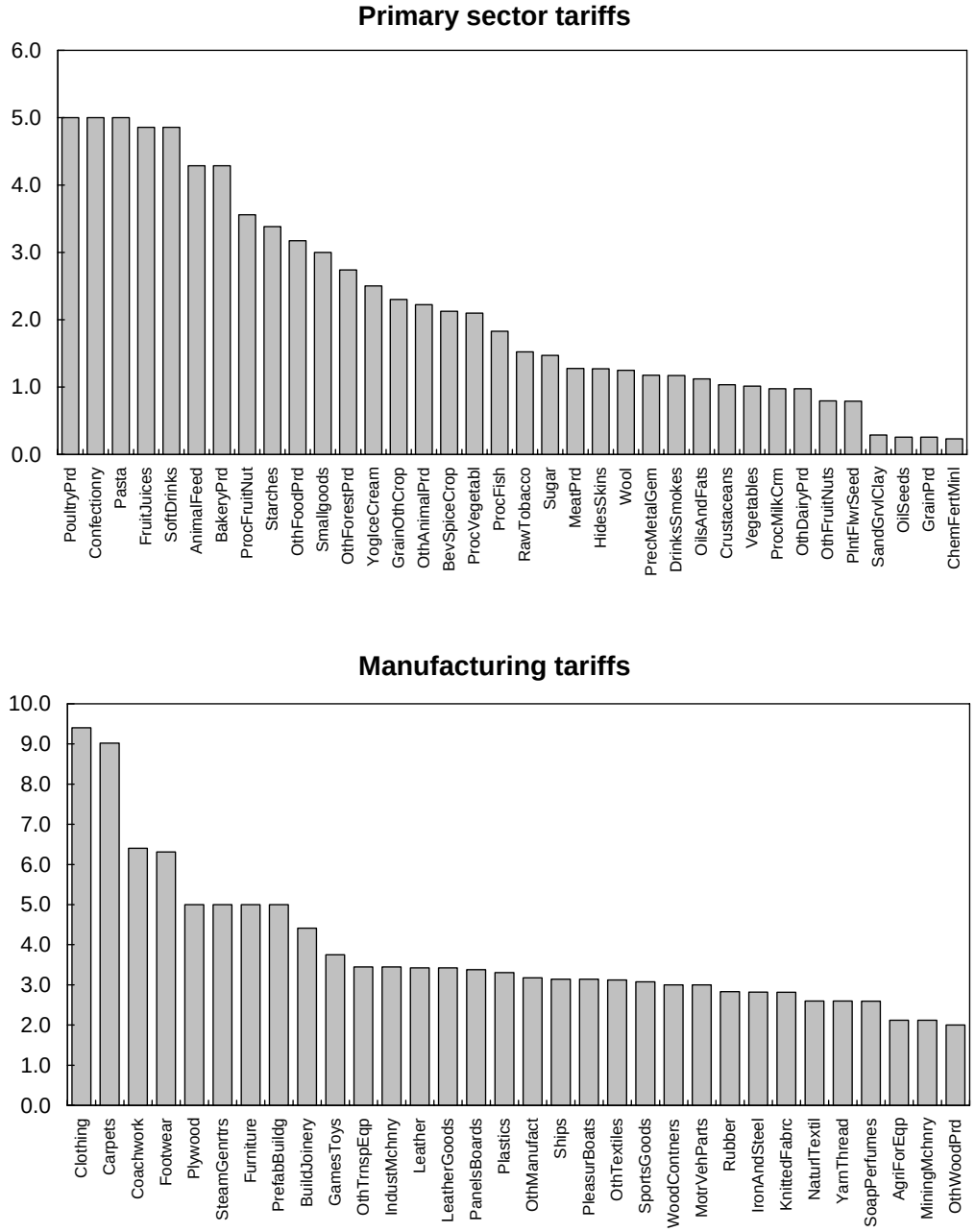
Figure 7 Effects of a tariff in a small country



Source: NZIER, adapted from Suranovic (2007)

Figure 8 Primary and manufacturing sector tariffs

%, simple average, MFN rates, 2009



Source: NZIER

Table 2 Short run closure assumptions

Exogenous (outside model)	Endogenous (within model)
Primary factor augmenting technical change	GDP
Average propensity to consume	Exports
Public consumption	Private consumption
Capital stock	Household income
Government net foreign liabilities	Government income
Household net foreign liabilities	Gross National Disposable Income
Import prices	Import volumes
Interest rate on foreign liabilities	Export prices
Direct tax rate	Investment
Labour tax rate	Investment /capital ratio
Production tax rate	Rate of return on capital
Shift in export demand schedule	Employment
Real wage	Terms of Trade
Shift in investment/rate of return schedule	

Source: NZIER

Table 3 Tariff reduction schedule

2003 tariff	July 2006	July 2007	July 2008	July 2009
17-19%	17%	15%	12.5%	10%
10-12.5%	10%	7.5%	5%	5%
5-7.5%	5-7.5%	5-7.5%	5%	5%

Source: Dalziel (2003)

End notes

[1] Most Favoured Nation (MFN) tariffs apply to imports from all countries, apart from those with whom New Zealand has a preferential trade agreement and those to whom it grants an exemption (mainly least developed countries). We shall refer to MFN and non-preferential tariffs interchangeably in this paper.

[2] See Power and Groser (2009).

[3] The only significant response to the decision to date has been from trade unions, which have welcomed the tariff freeze. Dissenting views were presented in online forums such as Kiwiblog. Some international media outlets (e.g. Earth Times, 2009) suggested that this decision represents a clear move away from New Zealand's commitment to the Bogor Goals, although this is simplistic and erroneous, as outlined by Hawke (2009).

[4] See Silverstone et al (1996) for a summary of the reforms.

[5] It is important to note that lower preferential tariffs apply to imports from countries with whom New Zealand has negotiated bilateral or regional trade agreements. A key trading partner is this regard is China, New Zealand's third most important source of imports, and our largest source of textiles and clothing imports.

[6] Treasury (2010).

[7] Note that in this setting, a 'small' country cannot influence world prices through changes in domestic policy settings. It has no market power in any good. This assumption will be explored in greater depth when we consider the terms of trade effects in a general equilibrium framework.

[8] A comparative static model compares a pre-shock representation of the economy with how the economy would look after a shock is introduced. It cannot tell us about the adjustment path between the two timeframes.

[9] FOB refers to free on board; CIF refers to cost including insurance and freight.

[10] This is a key assumption for this modelling scenario (and indeed most CGE modelling exercises). Its implications are discussed further later in this paper.

[11] Another option would have been to gradually reduce tariffs to zero from 2016 to (say) 2025. However, this would be purely speculative, and as we see later on, would have very little impact on the macroeconomic results.

[12] This is because irrespective of our tariff levels, New Zealand would still need Customs New Zealand to inspect imported goods, collect GST, alcohol excise, etc.

[13] Detailed industry results are available upon request from the authors.