



LONGRUN TRENDS IN NEW ZEALAND INDUSTRY ASSISTANCE

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ABSTRACT

New Zealand has had a complex process of adjusting commercial policy since the economic reforms began in 1984. This paper reports on the results of a research project to estimate the trends in industry assistance over this period and the variance of assistance within 2-digit industry groupings.

JEL Classification: F13

Keywords: commercial policy, industry assistance, tariffs, New Zealand

1 INTRODUCTION

This study of trends in industry assistance in New Zealand is designed as an input into a major study of firm and industry adjustment at the regional level over the period from the 1984 economic reforms till the present. The objective of this study is to make estimates of trends in rates of industry protection over that twenty-year period.

Given the limited resources available for this part of the project, it has been necessary to largely use secondary sources of information as the basis for the trend estimates. Fortunately, a number of studies are available to provide this basis. These studies provide seven point estimates of manufacturing industry protection between 1982 and 2001. Protection estimates for the agricultural sector are available from two sources with one available on an annual basis over the whole period.

The import protection estimates in this study are to be used to code data at the firm level. This presents a challenge because tariff rates, for example, are set at the 8-digit level, WTO (2003). This is far beyond the level of disaggregation of official industry statistics. It is accordingly not possible to use official data to quantitatively estimate the degree of protection accorded by the tariff directly. An indirect approach is required. The approach taken here is to use information on the 10-digit tariff for the year 2000 (when a tariff freeze was introduced) to position firms within the distribution of protection rates for particular industries. Then more aggregate data available on the variance of protection rates can be used to estimate the trend in protection that has been applicable to particular firms, since 1982.

This paper begins with a review of changes in New Zealand trade policy over the last 20 years or so. This includes a literature review of industry assistance studies. The third section outlines the methodology used to estimate the mean and standard deviations of industry protection at the 2 digit level and some guidelines on how this can be used to code firm level data.

2 RECENT HISTORY OF INDUSTRY PROTECTION

The period of concern here encompasses major changes in NZ commercial policy. These changes have been summarised by Rayner and Lattimore (1991), Duncan et al (1992) and Lattimore and Wooding (1996). Briefly, from 1938, New Zealand commercial policy turned sharply inwards and essentially prohibited imports of goods

which were substitutes for goods produced (or likely to be produced) in New Zealand. This policy was in place for nearly 50 years and indeed even today, the impact of this policy can be seen in the distribution of high tariffs in the schedule. In other words, with some exceptions, firms that were highly protected before 1984 are still highly protected in relative terms.

The 1938 policy also sought to bolster the net profits of import competing firms through a system of tariff concessions (the so-called part 2 of the tariff). These concessions are designed to increase the level of effective assistance² by decreasing the cost of imported inputs that would otherwise be subject to import licensing restrictions and/or tariffs in other uses. These tariff concessions remain in place at the present time though their focus has widened to include humanitarian aims and other objectives.

There is a wide variety of industry assistance measures. Many of these measures are explained in detail in Syntec (1984). Two measures will be referred to here. Import protection on products that substitute for New Zealand made goods tend to raise the price that manufacturing firms can charge domestically. One measure of the extent to which protection has this price (and gross firm revenue) raising effect is called the nominal rate of assistance on outputs (NRO). Import protection on input items that firms use in the production process has the effect of raising costs and reducing net profits and value-added. An assistance measure that encompasses both output price and input cost effects is called the effective rate of assistance (ERA).

Industry protection was enacted through a complex system of import licensing, ad valorem tariffs, specific tariffs, tariff concessions and anti-dumping or other special duties. At their historic peaks, these industry protection policies resulted in some nominal rates of assistance on output (NRO) in excess of 100 percent and some effective rates of assistance in excess of 1000 percent, EMG (1984).

For a variety of reasons, government greatly extended industry assistance from the late 1970s to include key export industries including farming using production and export incentives. In part, this policy vis-à-vis the exportable sector was motivated by the perceived need to compensate for tariff protection or the cost excess caused by import protection.

² That is, the change in net profit resulting from changes in revenue (influenced by tariff protection) and costs (influenced by tariffs on inputs).

The reform of this whole system of industry protection began in the mid 1970s and was beginning to accelerate in the early 1980s just prior to the election of the Fourth Labour Government and the commencement of the economic reform process. The advent of CER was a key instrument in this process. Immediately prior to the CER reforms (1982), the average nominal (effective) rate of manufacturing assistance was 20 (39) percent with a standard deviation of 19 (122) percent. The equivalent assistance rates in (pastoral) agriculture were 13 and 82 percent, in nominal and effective terms respectively. The standard deviations were much lower in agriculture, Syntec (1988).

From these levels, the process of commercial policy reform began by quickly removing production and export incentives in agriculture and implementing the removal of the import licensing system. Export sector assistance was largely removed by 1986 and completely removed by 1990. The timing of import license removal was similar, with most removed by the late 1980s and the last licences (on selected clothing and footwear items) gone by 1992. Tariffs have been significantly reduced but not completely removed. A moratorium on tariff reductions was introduced in 1999.

The foregoing illustrates the variance in protection levels that were in place prior to 1984. Historically, selected clothing, footwear, chemical products (rubber and plastics), electrical goods and transport equipment had the highest levels of industry assistance. To a large extent, these products are still the most heavily protected – the major exception being cars.

The variance in protection levels in 1982, within industries, also remains high. In short New Zealand protection remains very patchy and spiky – and the tariff spikes may have actually increased slightly in recent years (WTO (2003)). It is impossible to measure directly for specific firms using official data sources because tariffs are set at the 10-digit level. The process of lowering industry protection has involved concentrating higher tariffs in selected categories at the 8-digit level. At this level of disaggregation, basic statistics required to measure nominal and effective rates of protection (like output) are not in the public domain, as has been already noted. This has important implications for firm level analysis using industry level protection estimates.

3 PREVIOUS STUDIES

3.1 Manufacturing sector

Past estimates of 2-digit assistance levels to manufacturing industries are given in Table 1. They are derived from a number of sources.

The studies of industry protection used in this study make use of some variant of the rate of assistance methodology described in Syntec (1984).

Estimates of manufacturing industry assistance for the post-reform period in New Zealand are encompassed by three studies and one new set of estimates. Syntec (1988) contains nominal and effective rates of assistance for all manufacturing industries at the 2, 3 and 5-digit NZSIC level for the fiscal years 1982, 1986 and 1988. This study also calculates the standard deviation on assistance at the 2-digit level. These standard deviations also appear in the table in brackets. Since we are confining ourselves to nominal assistance rates, effective rates computed by Syntec are not reported in the Table.

The Syntec estimates include estimates of industry assistance accorded by the import licensing system that was in the process of being dismantled over the period. However, it is my understanding that tariff concessions were not evaluated from 1982 to 1988. Indeed, none of the estimates shown in Table 1 include the effects of tariff concessions or anti-dumping and related duties. [However, these is a review of anti-dumping measures in WTO (1996 and 2003).] There is also some doubt as to whether these studies fully assessed specific tariffs and mixed specific-ad valorem tariffs.

BERL (undated) provides the same type of NRA and ERA estimate at the 2-digit level for selected manufacturing industries but on a slightly different basis from Syntec. The BERL study focuses on 1990 and 1993. In a recent unpublished study, Stroombergen has computed 2-digit manufacturing sector estimates for 1996 and 2001 using slightly different methodology than was used in the 1990 and 1993 BERL study (that he also conducted).

All Syntec, BERL and Stroombergen estimates are production weighted.

Over the period since 1982, New Zealand has had a number of tariff regimes based upon various bilateral and multilateral trade arrangements. CER was introduced

in 1983 and quickly became a free trade agreement (FTA) with zero tariffs between Australia and New Zealand. Other older bilateral arrangements with the United Kingdom and Canada have selected preferential tariff arrangements. New FTAs are now in force with Singapore and the Forum countries. New Zealand operates its Generalised System of Preferences for imports from developing and least developed nations. However, it is assumed that the tariffs (and other trade policy instruments) that currently act as binding constraints on domestic prices are, for the most part, the MFN tariffs applied under WTO rules. Accordingly, while past studies might have accounted for preferential tariffs to some degree, the focus on industry assistance in 2001 is on MFN tariff levels.

A number of adjustments have been made to the original estimates of BERL and Stroombergen. The nominal rates of manufacturing assistance at the 2 and 3 digit levels from these studies are given in Table 1. The rates for 1990 and 1993 (BERL) have been re-calculated to make them more consistent with Syntec (1988) and Stroombergen (2002). Some 2 digit aggregates were not originally estimated for 1990, 1993, 1996 and 2001. However, in some cases it is possible to derive 2 digit figures from the selected 3 digit estimates that were made. These are given in italics in Table 1.

I was unable to find the original paper detailing the BERL 1990 estimates (a summary is reproduced in their 1993 report) and hence it is not clear whether tariff equivalents of remaining import license protection were included in that analysis or not. However, tariff concessions and anti-dumping duties are not thought to have been evaluated in the 1990, 1993, 1996 and 2001 nominal estimates.

A new set of nominal assistance rates has been made for 2000 based upon 10 digit Harmonised System data supplied by NZ Customs. These estimates are unweighted means, standard deviations and maximum applied rates of ad valorem tariff lines (only) using the NZSIC-NZHS concordance given the data appendix (see Table 6 in Appendix). The NZHS based estimates of NRO means, standard deviations and maximum tariffs are given in Table 1. Specific tariffs were excluded from this analysis to reduce the computational burden given expert advice (Webb [2003]) that the ad valorem equivalent of specific duties in 2000 was roughly comparable to the other rates.

Table 1 Part estimates of nominal rates of assistance on outputs in manufacturing Means, production weighted (and Standard Deviations in brackets)

NZSIC		1982	1986	1988	1990	1993	1996	2000	2001
	Manufacturing								
311-312	Food Manufacturing	9	7	5					
313-314	Beverages and Tobacco	30	28	28	19	0			
31	Mean: Food..Tobacco	11	9	6				1.6	
31	SD:Food...Tobacco	[14]	[11]	[10]				[2.7]	
31	Maximum Tariff							9.5	
321	Textiles	26	42	20	17	34	11		6
322	Clothing	65	63	54	27	35	22		13
323	Leather except Footwear	22	19	9			3		2
324	Footwear	48	215	37	27	35	16		10
32	Mean: Textiles...Footwear	37	60	29	23	35	13	6.4	8
32	SD: Textiles...Footwear	[24]	[60]	[20]				[7.9]	
32	Maximum Tariff							19	
331	Wood Products	14	9	8					
332	Furniture	71	40	27					
33	Mean: Wood.Furniture	24	14	11	9	14	6	4.4	4
33	SD: Wood.Furniture	[27]	[14]	[10]				[3.7]	
33	Maximum Tariff							17.5	
341	Paper	17	16	14	12	13	8		4
342	Printing and Publishing	19	11	10	11	17	12		6
34	Mean:Paper.Publishing	18	14	12	12	15	10	5.6	5
34	SD:Paper.Publishing	[16]	[12]	[10]				[2.6]	
34	Maximum Tariff							7.5	
351	Industrial Chemicals	7	8	7	16	13	8		5
352	Other Chemicals	23	20	17	20	15			
353	Petroleum Refining	8	8	7	7	0	0		0
354	Petroleum and Coal products	11	11	11	14	13			
355	Rubber	31	35	27	12	26			

NZSIC		1982	1986	1988	1990	1993	1996	2000	2001
356	Plastics	24	21	19	16	17			
35	Mean:Chemicals..Plastics	17	17	14	14	14		2.3	
35	SD:Chemicals..Plastics	[11]	[10]	[8]				[3.7]	
35	Maximum Tariff							19	
361	Pottery, China	26	26	30					
362	Glass	16	16	14					
369	Other Non-Metallic	9	10	8					
36	Mean: Non-Metallic Minerals	12	12	11	13	17	11	2.9	6
36	SD: Non-Metallic Minerals	[8]	[8]	[8]				[3.6]	
36	Maximum Tariff							17.5	
371	Iron and Steel	7	6	6	3	12			
372	Non-Ferrous Metals	7	7	6	10	14			
37	Mean: Basic Metals	7	7	6	6	13	6	3.7	4
37	SD: Basic Metals	[5]	[5]	[4]				[3.2]	
37	Maximum Tariff							17.5	
381	Fabricated Metals	29	28	23	24	15	9		5
382	Machinery	22	22	19	24	16	15		
383	Electrical Machinery	33	29	26	31	19	15		
384	Transport Equipment	41	32	31	33	35	15		
385	Scientific, prof. Equipment	11	11	10	8	14	15		
38	Mean: Fab. Metals and Equipment	31	28	25	27	22	14	4	5
38	SD: Fab. Metals and Equipment	[16]	[12]	[12]				[4.2]	
38	Maximum Tariff							17.5	
390	Other Manufacturing	31	31	24	16	17	10		5
39	Mean: Other Manufacturing	31	31	24	16	17	10	3.3	5
39	SD: Other Manufacturing	[8]	[7]	[4]				[3.5]	
39	Maximum Tariff							7.5	
3	Total: Manufacturing	20	19	14					
3	SD: Manufacturing	[19]	[24]	[14]					

Source: Syntec (1988), BERL (1993), Stroombergen (2002) and NZIER estimates

This is largely confirmed by the WTO (2003) report. They found, for example, that imports currently subject to a 17.5% ad valorem tariff and an alternative specific tariff, the ad valorem equivalents of these specifics was around 21.6%. Most ad valorem equivalents (AVE's) of specific tariffs are between 19 and 21% - with one outstanding current exception relating to plastic articles of apparel and clothing accessories that is 135.7%, reducing to 31% if tariff concessions are allowed for. In 2000, the maximum ad valorem tariffs are 19% so the fact that AVE's on specific tariffs are higher than that does mean that the results here based on ad valorem tariffs alone are somewhat biased (downwards).

The simple (unweighted) estimates for 2000 are also given in Table 1 along with the results of the earlier studies. As in the other studies anti-dumping duties were not evaluated for the year 2000 and tariff concessions are not highly relevant here given that they tend to be aimed at increasing effective rates of industry assistance (via inputs) rather than reductions in consumer prices. [However, it is worth bearing in mind that 20% of all imports enter under tariff concessions.]

The nominal assistance estimates do not always show a smooth decreasing trend for, at least, a couple of reasons. Prior to 1993, import-licensing arrangements were operating in parallel with tariffs. In this environment, NZ markets could be isolated from world price movements and this could lead to volatility in nominal rates of assistance (NRO). The NRO for footwear in 1986 may be reflecting some of this effect. Further, in the early 1990s, the final cessation of import licensing on footwear was accompanied by increased ad valorem tariff rates that may have resulted in increases in the NRO even though this was not the policy intention. Finally, all the NRO estimates are subject to error. The data weights are problematic in this regard and there are always coding errors to contend with in such large data sets.

3.2 Primary sector

Estimates of industry assistance in the primary sector are largely confined to farming (agriculture). However, aside from tax expenditures that are not included in these nominal rates of assistance on outputs, assistance to the horticulture, forestry, fishing and mining industries in New Zealand is thought to have been very low over the period 1982-2001..

Table 2 Nominal rates of assistance on outputs, primary sector Percent

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991-2001
INDUSTRIES										
Nominal Rates of Assistance										
Sheepmeat	2				2	6	3			
Wool	1				9	0	0			
Beef	8	1			2	2	1			
Manufacturing Milk	6	1			1	1	1			
Town Milk		1			1	2	7			
Total Pastoral Agriculture	6	1			9	6	2			
	3				4	2	1			
Producer Subsidy Equivalents										
Primary										
Sheepmeat	3	8	9	8	7	1	1	8	5	1
Wool	6	4	0	0	5	6	4	1	3	1
Beef	6	2	0	9	4	1	1	1	5	3
Dairy Farming	4	2	9	1	6	3	2	1	5	3
	7	1	8	1	6	4	2	5	3	1

Source: Syntec (1988), Tyler and Lattimore (1990) and MAF, various issues.

There are two main measures of the NRO in farming. Syntec (1988) contained estimates of agricultural assistance using the same methodology as was used for the manufacturing sector. These estimates cover the period 1982-1988. An alternative measure is the producer subsidy equivalent (PSE), which is closely related to NRO methodology. The PSE (on outputs) measures the extent to which border and domestic output related policies increase gross income to firms. Estimates of the NRO based on this PSE approach are available for the period 1978-2002. Estimates using both approaches are given in

Two studies are used here to present PSE estimates over the period 1982-2001. The period 1982-89 is covered by estimates by Tyler and Lattimore (1990). These estimates pay particular attention to the way in which deficiency payments (supplementary minimum prices) were paid out to farmers and hence influenced production decisions by firms. Alternative PSE estimates for New Zealand produced by the OECD are constructed from government's fiscal viewpoint – that is, subsidies were taken to have been paid out when commodity account debt assumed by the government was written off. In the New Zealand case, debt write-off in funds used to pay the subsidies occurred some years after subsidy payments to farmers stopped. In other words, the changes in agricultural policy adopted in NZ mean that this later approach results in considerable lags in apparent subsidy impact.

As a result of this, OECD estimates of New Zealand PSEs are only reproduced here from 1990 onwards. The PSEs in NZ farming have been no greater than 1 percent each year since 1991.

The PSE estimates are preferred to the intermittent Syntec results because they are continuous. They are also arguably more accurate.

4 TREND ESTIMATES AND INTERPRETATION

4.1 Manufacturing sector

A number of observations have been excluded as outliers on the grounds that they may contain larger than normal errors or methodological inconsistencies across studies, for example unweighted versus weighted approaches. Tariff changes from the late 1990's were always monotonically decreasing and they generally were from 1982 as well. The outliers are in bold type in Table 1.

Forecasts of the NRO for each 2 digit (NZSIC) manufacturing sector were made by interpolating between the estimates not treated as outliers (not bolded). The interpolation was carried out using a cubic spline, Hultquist (1988). These estimates of the trend mean NROs are given in Table 3. The standard deviations and maximum tariffs are added to this table unaltered from Table 1.

Only one alteration was made to the estimated spline values and that is for the fabricated metals, machinery and equipment industry (38). In 1998, government abruptly removed the 25 percent ad valorem MFN tariff on imported motor vehicles. Motor vehicle assembly was a large component of this industry (38). It is therefore likely that the mean NRO of 14 percent estimated for 1996 immediately fell to around its estimated 2000 and 2001 values of 5 percent. The product-weighted estimate for 2001 is taken as the more reliable estimate for 1998 and subsequent years.

There are a few cases, like industry 32 from 1982 to 1986, where the cubic spline increases the NRO beyond actual estimated values. Such estimates are left unaltered on the assumption that such values are likely to be within the implicit standard errors of the original estimates.

NZSIC		1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Fabricated Metals, Machinery and Equipment																					
38	Mean	31	31	30	29	28	26	25	26	27	27	25	22	19	17	14	14	5	5	5	5
38	SD	[16]				[12]		[12]												[4.2]	
38	Maximum Tariff	17.5																		[12]	
Other Manufacturing																					
39	Mean	31	32	33	32	31	28	24	19	16	15	16	17	16	13	10	8	6	6	5	5
39	SD	[8]				[7]		[4]												[3.5]	
39	Maximum Tariff																				7.5

Notes:

1 Estimated using a cubic spline function, truncated in some cases to keep estimates within actual bounds

2 The NRO for industry 38 was estimated to be 14 percent in 1997 and 5 percent thereafter to reflect the abrupt reduction in the car tariff from 25 percent to zero in 1998.

Source: NZIER

The various estimates of NRO dispersion tend to be large in relation to their means and this dispersion appears to be as large in 2000 than it was in the 1980's. The high dispersion rate is also illustrated by the maximum tariff rates. The highest ad valorem tariff applied in NZ is 19 percent (though, as previously mentioned, the AVEs of some specific tariffs are higher than 19%). Of the 9 categories of industries, 2 industries have maximum ad valorem tariff lines of 19 percent and 4 industries have maximum ad valorem tariff lines of 17.5 percent.

Maximum tariffs are very high relative to their means, in (nearly) 6 out of 9 industries the maximum tariff is more than three standard deviations above the mean tariff. The incidence of relatively high tariffs varies widely from just a few in industries 33, 35, 36 and 37 to a large proportion of tariff lines in industries 32, 34 and 39. Industry 38 is an intermediate case.

The suggested approach to coding firms for levels of assistance in the project is as follows:

- Assess the degree of export-import competing nature of the firm. There are wide variations in the degree of import protection afforded even in protected industries like textiles, clothing and footwear. Largely export oriented firms may be receiving little assistance from the tariff.
- Assess the current level of assistance using the 10 digit tariff data for 2000. Caution: many plants in manufacturing and in the primary sector produce multiple products.
- Position the firm within the distribution of tariffs for the industry that refers (number of standard deviations below or above the mean for the industry). For example, a clothing factory producing only highly protected import substitutes are likely to be receiving protection 3 or more standard deviations above the trend means.
- Use the mean trend and beginning period standard deviations (1982-88) to construct a firm specific assistance trend from 1982–2001.

4.2 Primary sector

NRO estimates are commodity specific and available over the whole period. Accordingly no forecasts or interpolations are required. The estimates can be used to

code farming firms directly once the joint product nature of dairy and sheep farming enterprises has been assessed.

Table 4 Manufacturing Tariff Dispersion and Incidence, 2000

Industry NZSIC	Max. Tariff Dispersion		Higher Tariff Incidence Within 1 SD of Max. Tariff	
	No. SD above mean	No. Tariff Lines	No. Tariff Lines	% of Tariff Lines
31	2.9	195	195	1
32	1.6	568	568	31
33	3.5	4	4	0.1
34	0.7	423	423	83
35	4.5	19	19	0.1
36	4.1	3	3	0.1
37	4.3	4	4	0.1
38	3.2	64	64	2
39	1.2	177	177	45

Source: NZIER

APPENDIX 1 UNWEIGHTED AD VALOREM TARIFF RATES, HARMONISED CLASSIFICATION, 2000

Table 5 Unweighted Mean Ad Valorem Tariff Rates and Standard Deviations, 2000

HS2	Description	Unweighted Ad Valorem Tariffs (1)		
		Mean	STDEV (2)	Maximum Applied
1	Animals; live	0	0	0
2	Meat and edible meat offal	1.07	2.22	6.5
3	Fish and crustaceans	0.08	0.67	6.5
4	Dairy produce;eggs;honey	1.9	2.7	9.5
5	Other animal products; nes	0	0	0
6	Trees, plants, live;cut flowers	0.33	1.26	5
7	Vegetables and certain roots and tubers; edible	0.87	2.18	7
8	Fruit and nuts, edible; peel of citrus fruit or melons	0.81	1.95	6.5
9	Coffee, tea, mate and spices	2.11	2.61	6.5
10	Cereals	0	0	0
11	Milling industry products; malt; starches	3.65	2.85	7
12	Oil seeds; miscellaneous grains, seeds and fruit,	0.09	0.79	7
13	Lac; gums, resins and other vegetable saps and extracts	0	0	0
14	Vegetable products nes	0	0	0
15	Animal or vegetable fats and oils	1.52	2.74	7
16	Meat, fish or crustaceans	1.51	2.63	7
17	Sugars and sugar confectionery	1.03	2.18	6.5
18	Cocoa and cocoa preparations	4.64	3.01	6.5
19	Preparations of cereals, flour, starch or milk	6.73	1.15	7
20	Preparations of vegetables, fruit, nuts	4.5	2.62	7
21	Miscellaneous edible preparations	4.38	3.27	7
22	Beverages, spirits and vinegar	2.17	3.12	9

HS2	Description	Unweighted Ad Valorem Tariffs (1)		
		Mean	STDEV (2)	Maximum Applied
23	Food industries, residues; prepared animal fodder	4.01	3.31	7
24	Tobacco and manufactured tobacco substitutes	0.23	1.07	5
25	Salt; sulphur; earths,stone; plastering materials,lime and cement	0.07	0.66	6.5
26	Ores, slag and ash	0	0	0
27	Mineral fuels, mineral oils and products; bituminous	0.81	2.18	7
28	Inorganic chemicals	0.11	0.75	6.5
29	Organic chemicals	0.16	1.02	7
30	Pharmaceutical products	0	0	0
31	Fertilizers	0	0	0
32	Tanning or dyeing extracts	2.55	2.82	13.5
33	Essential oils and resinoids; perfumery	3.79	3.32	7
34	Soap; washing, lubricating, polishing, scouring	4.91	3.09	7
35	Albuminoidal substances; modified starches; glues; enzymes	2.69	2.59	6.5
36	Explosives; pyrotechnic products; matches; pyrophoric alloys	1.5	2.73	7
37	Photographic or cinematographic goods	0.77	1.98	6.5
38	Chemical products n.e.s.	1.07	2.32	7
39	Plastics and articles thereof	5.05	3.49	19
40	Rubber and articles thereof	5.17	6	17.5
41	Raw hides and skins (other than furskins) and leather	0.98	2.42	7
42	Articles of leather; saddlery and harness; travel goods	6.4	3.85	17.5
43	Furskins and artificial fur; manufactures thereof	4.65	2.72	7
44	Wood and articles of wood; wood charcoal	3.43	3.27	7
45	Cork and articles of cork	0.96	2.45	6.5
46	Manufactures of straw, esparto or other plaiting materials	2.36	3.28	6.5
47	Pulp of wood ; waste and scrap of paper	0	0	0
48	Paper and paperboard; articles of pulp,paper or paperboard	6.26	1.73	7

HS2	Description	Unweighted Ad Valorem Tariffs (1)		
		Mean	STDEV (2)	Maximum Applied
49	Printed books, newspapers, pictures	2.14	3.24	7
50	Silk	0	0	0
51	Wool, animal hair; horsehair yarn and woven fabric	3.89	5.08	12.5
52	Cotton	0	0	0
53	Vegetable textile fibres; paper yarn and fabrics of paper yarn	0	0	0
54	Man-made filaments	1.81	4.24	12.5
55	Man-made staple fibres	0.88	2.49	12.5
56	Wadding, felt and nonwovens; twine, cordage, ropes and cables	5.91	4.15	12.5
57	Carpets and other textile floor coverings	16.07	3.49	17.5
58	Fabrics; special woven fabrics, tufted textile fabrics, lace, tapestries,	3.02	4.52	12.5
59	Textile fabrics; impregnated, coated, covered or laminated	2.79	3.4	7.5
60	Fabrics; knitted or crocheted	7.12	5.97	12.5
61	Apparel and clothing accessories; knitted or crocheted	17.41	4.47	19
62	Apparel and clothing accessories; not knitted or crocheted	17.85	4.07	19
63	Textiles, made up articles; sets; worn clothing and worn textile articles; rags	5.58	4.62	12.5
64	Footwear; gaiters and the like; parts of such articles	13.9	7.01	19
65	Headgear and parts thereof	13.2	7.02	17
66	Umbrellas, sun umbrellas, walking-sticks, seatsticks, whips, riding crops	3.22	3.83	7.5
67	Feathers and down, prepared; and articles of feather or of down	4.38	3.62	7
68	Stone, plaster, cement, asbestos, mica or similar materials	3.6	3.19	10
69	Ceramic products	6.1	2.15	7.5
70	Glass and glassware	1.67	3.5	17.5
71	Natural or cultured pearls, precious, semi-precious stones, precious metals,	1.57	2.93	7
72	Iron and steel	3.28	2.78	6.5
73	Iron or steel articles	5.16	3.19	17.5
74	Copper and articles thereof	2.89	3.56	17.5
75	Nickel and articles thereof	0	0	0

HS2	Description	Unweighted Ad Valorem Tariffs (1)		
		Mean	STDEV (2)	Maximum Applied
76	Aluminium and articles thereof	5.27	2.83	7
78	Lead and articles thereof	2	2.97	7
79	Zinc and articles thereof	1	2.54	7
80	Tin; articles thereof	0.45	1.51	5
81	Metals; n.e.s., cermets and articles thereof	0	0	0
82	Tools, implements, cutlery, spoons and forks, of base metal	3.37	3.41	7
83	Metal; miscellaneous products of base metal	5.31	2.89	10
84	Nuclear reactors, boilers, machinery and mechanical appliances	4.33	3.57	10
85	Electrical machinery and equipment; sound recorders	3.59	3.73	17.5
86	Railway, tramway locomotives, rolling stock, parts thereof; railway, tramway,	4.5	3.42	7
87	Vehicles; other than railway or tramway rolling stock, and parts and	5.79	6.37	17.5
88	Aircraft, spacecraft and parts thereof	0	0	0
89	Ships, boats and floating structures	4.4	3.14	7.5
90	Optical, photographic, cinematographic, measuring, checking, medical or	1.32	2.6	7
91	Clocks and watches and parts thereof	0.08	0.76	7
92	Musical instruments; parts and accessories of such articles	0	0	0
93	Arms and ammunition; parts and accessories thereof	2.13	3.19	7
94	Furniture; bedding, mattresses, mattress supports, cushions etc.	7.31	2.88	12
95	Toys, games and sports requisites; parts and accessories thereof	5.98	2.48	7.5
HS2	Description			
96	Miscellaneous manufactured articles	4.45	3.31	7.5
97	Works of art; collectors' pieces and antiques	0	0	0
98	New Zealand miscellaneous provisions	0	0	0
99				

Notes: (1) By 10 digit tariff item

(2) Standard deviation based on the 10 digit tariffs

Source: NZIER

APPENDIX 2 CONCORDANCE, NZSIC-NZHS

Table 6 Concordance NZSIC-NZHS

NZSIC	Manufacturing	NZ Harmonised System (Chapters)
311-312	Food Manufacturing	2-23, plus 33, 35, 41 except 21-22
313-314	Beverages and Tobacco	21-22, plus 24
31	Mean:Food...Tobacco	2-24, plus 33,35,41
321	Textiles	50-60
322	Clothing	61-62
323	Leather except Footwear	42-43
324	Footwear	64
32	Total: Textiles...Footwear	42-43, plus 50-62
331	Wood Products	44-46
332	Furniture	94
33	Total: Wood ..Furniture	44-46, plus 94
341	Paper	47-48
342	Printing and Publishing	49
34	Total:Paper..Publishing	47-49
351	Industrial Chemicals	25-32
352	Other Chemicals	34-38, except 35
353	Petroleum Refining	27
354	Petroleum and Coal products	27
355	Rubber	40
356	Plastics	39
35	Total:Chemicals..Plastics	25-34, plus 37-40
361	Pottery, China	69
362	Glass	70
369	Other Non-Metallic	68, 71
36	Total: Non-Metallic Minerals	68-71

NZSIC	Manufacturing	NZ Harmonised System (Chapters)
371	Iron and Steel	72-73
372	Non-Ferrous Metals	74-81
37	Total: Basic Metals	72-81
381	Fabricated Metals	82-83
382	Machinery	84, 86-89
383	Electrical Machinery	85
384	Transport Equipment	86-89
385	Scientific, prof. Equipment	90
38	Total: Fab. Metal Products, Mach., Equip.	82-90
390	Other Manufacturing	91-93, plus 95-96
39	Total: Other Manufacturing	91-93, plus 95-96

Source: NZIER

5 REFERENCES

- BERL (undated). *Estimates of Rates of Assistance to Manufacturing*. Report prepared for the Ministry of Commerce by Business and Economic Research Limited, Wellington.
- BERL (1990). *Estimates of Rates of Tariff Assistance to Manufacturing - 1990*. Report prepared for the Ministry of Commerce by Business and Economic Research Limited, July, Wellington.
- Duncan, Ian, Alan Bollard and Ralph Lattimore (1992), *Dismantling the Barriers: Tariff Policy in New Zealand*. Research Monograph 57, NZIER: Wellington.
- EMG (1984), *Strategy for Growth*. Wellington: Economic Monitoring Group.
- Hultquist, Paul F. (1988), *Numerical Methods for Engineers and Computer Scientists*. Menlo Park, California: Benjamin/Cummings Publishing.
- Lattimore, Ralph and Paul Wooding (1996), *International Trade*. In *A Study of Economic Reform: The Case of New Zealand*, Brian Silverstone, Alan Bollard and Ralph Lattimore (eds.). North Holland: Amsterdam.
- MAF (annual), *Situation and Outlook for New Zealand Agriculture*. Wellington: Ministry of Agriculture and Forestry.
- Rayner, Anthony C. and Ralph Lattimore (1991), *Liberalising foreign trade: The experience of New Zealand*. Volume 6 of *Liberalising Foreign Trade*, D Papageorgiou, M Michaely and A. Choksi (eds.). Basil Blackwell: Oxford.
- Stroombergen, Adolf (2002). Personal communication, Infometrics, Wellington.
- SYNTEC (1984), *The Structure of Industry Assistance in New Zealand: An Exploratory Analysis*. Report prepared for the Treasury and various Ministries by Syntec Economic Services, Wellington.
- SYNTEC (1988), *Industry Assistance Reform in New Zealand*. Report prepared for the Treasury and various Ministries by Syntec Economic Services, Wellington.
- Tyler, Lawrence and Ralph Lattimore (1990). "Assistance to Agriculture", chapter 4 in *Farming Without Subsidies*, Ron Sandrey and Russell Reynolds eds. Wellington: GP Books.
- WTO (1996), *Trade Policy Review: New Zealand*. Geneva: World Trade Organisation.
- WTO (2003), *Trade Policy Review: New Zealand*. Geneva: World Trade Organisation.