

PAPERS PRESENTED
AT THE
NEW ZEALAND BRANCH
AUSTRALIAN AGRICULTURAL ECONOMICS
SOCIETY CONFERENCE

Flock House, Bulls
(July 1989)

Volume II

Published on behalf of the
New Zealand Branch
Australian Agricultural Economics Society

by

Agribusiness and Economics Research Unit
Lincoln College
Canterbury

Discussion Paper No. 125

October 1989

ISSN 0113-4507

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SPEECH PREPARED FOR 1989 CONFERENCE OF THE NEW ZEALAND BRANCH OF
THE AUSTRALIAN AGRICULTURAL ECONOMICS SOCIETY JULY 1989

NEW ZEALAND IN THE AFTERMATH OF GATT by LARRY STENSWICK, Manager
- Commercial Division, Auckland Farmers Freezing Co-operative
Limited

INTRODUCTION

Freer trade when viewed from the perspective of in having to meet the monthly profit expectations of a large New Zealand meat company appears frankly esoteric. However, there are factors that are impacting on our agriculturally based exports, and these factors, I believe, must be considered.

The benefits of freer world trade in agricultural products will likely benefit New Zealand. However those benefits may be mitigated by other developments. The gold at the end of the free trade rainbow which is currently fashionable in Wellington may prove to be 9 carat, not 24 carat and weigh grams instead.

Emerging trade blocks, the role of increased capital flows, the power of large retailers, the strength of multi-national organisations, are all affecting international competitiveness and comparative advantage.

EMERGING TRADE BLOCS

In the last couple of years that we have seen an apparent burst of activity in this area. Increasingly three major blocs will come to dominate our thinking to the turn of the century.

In the EEC the movement toward a single market by 1992 has been well documented and out of this will emerge a massive market. The events being set in train will be a spur to efficiency and some fundamental re-arranging of agricultural production and food processing internally within this powerful group will now take place. Changes in retailing can also be expected, particularly the emergence of larger supermarket chains which have become dominant in the UK market. These can be expected to increasingly influence the way that food is sold in the other parts of the EEC, a subject I will return to later.

The rather provincial EEC meat processing industry is changing with the emergence of trans-national groups which will be jostling to establish sufficient size to be competitive, not only in the EEC but to have an influence on the international meat trade.

While it is accepted that the movement away from large meat mountains and mind boggling levels of subsidies will fade, the

reality of the increased efficiency of production in Europe will present a very different picture than is the case today.

A second major trading bloc will be North America. The free trade agreement recently signed between the USA and Canada certainly is a fundamental change in the trading relationship between those two countries. It seems likely in time that one way or another Mexico will be wrapped up in that trading bloc, Again the changes there will have an impact on the opportunities for accessing that market.

The third major bloc, is in fact one country, and that is Japan. By the year 2000 Japan will be the largest single import market for meat. Given their capital base we could well see the emergence of production colonies, owned and controlled by Japan, supplying the market.

Greater access for these trading blocs will come about. However the value of that access may well be changed by the dynamic developments within those blocks. One cannot take the present day situation and say with the abolishment of tariffs and even all of the technical restraints on trade that "X" amount of additional income will flow through to the New Zealand producer.

INCREASED CAPITAL FLOWS AND MORE SOPHISTICATED DECISION MAKING

Whether we like it or not investments are made are increasingly being made by large companies. Private capital flows are based on a myriad of factors and a decision process which may not well be understood here in New Zealand. This is understandable in that New Zealand does not have the management experience in making those decisions. A couple of years ago it did look like many N Z companies were going to very cleverly figure out how to build enormous firms with simultaneous investments in Australia, Europe, North America. The investment in production per se will of course still be driven by the overall desire to maximise returns, but will also be dictated by the opportunities in downstream activities. Total costs will be minimised. That is, the total costs of the full chain through to the end consumer. Production will be just one of the costs to be taken into account.

THE POWER OF LARGE RETAILERS

The emergence of very large food retailing companies, Tesco and Sainsbury's in the UK, Coles Myer and Woolworths in Australia, and even Foodstuffs, Foodtown and Woolworths here in N Z will be mirrored by the growth of very large manufacturing companies, although less easily seen, the growth of very large distribution companies.

ten or so years ago was a situation with quite a number of large retailers, but none of whom held a dominant market share.

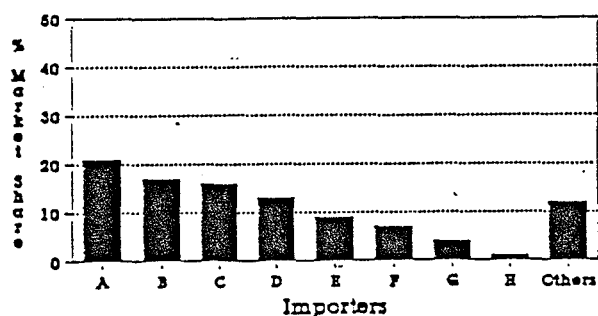
The situation today. Three companies have found the wherewithal to be able to emerge as dominant factors in the food retailing business.

The implication of this from a N Z meat sellers point of view is

the requirement that that purchasing power be matched by an organisational structure which will have the size to be able to foot it and attempt to hold the balance of power so that the profitability can be shared.

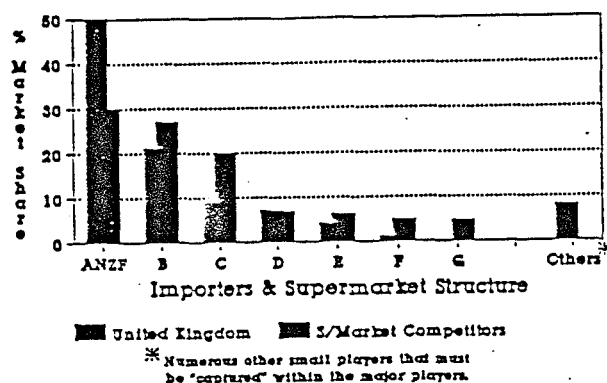
THE FORMER 'UNPROFITABLE' MARKET SHARE

LI U.K. Competitor Market Share



THE NEW 'PROFITABLE' OLIGOPOLY STRUCTURE

LI U.K. Competitor Market Share



We believe this is now being achieved by the ANZF Group.

While trade may be increasingly freed up, size and size alone, becomes a factor which must be considered. Because of its size New Zealand may find it difficult to reach the scale of operations required. While our products may be able to be landed into the country at a cheaper price New Zealand may be unable to deliver the full range of capability that retailers are demanding in the market place.

One area that does affect international competitiveness is the ownership and nurturing ability of brands.

I know from our own experience that we are fortunate in having a brand which carries AFFCO into a very small niche market, ie; the Polynesian immigrant population. We are able to command a retail price two and a half times our competitors. The product is corned beef, which is basically a commodity. It has taken immense efforts to convince the supermarket chains in Hawaii to stock our product which retails around US\$3.29 per can when they can buy unlimited quantities of South American product at \$1.19 per can. However, our sales to this market is growing. The growth is related to a brand that was not dreamed up in a yuppie Auckland advertising agency, but rather is one that goes back nearly 100 years in history and was being enjoyed by the great great grandparents of todays consumers.

The importance of that brand is that it provides an identification with all its complex meanings to the consumer. They know that the purchase of that product is of a specific type, it has consistency, and they know exactly what they get when they purchase it. Unfortunately, in New Zealand agricultural trade there are very very few products that can achieve a sustainable brand presence in the market. There is an immense barrier to entry which is probably beyond the financial resources of even the largest of the NZ companies.

THE STRENGTH OF MULTI-NATIONALS

In many ways this is linked to the question of capital flows, but goes beyond that. The large food multi-nationals have global strategies which are continuously being honed and freer trade will be taken into account as just one of several factors. Large multi-national companies take the given situation and adapt it to their own strategy.

At this point I would like to outline one recent "incident", which although an extreme one, perhaps exemplifies how these international strategies can work against NZ.

Many of you will have read of the dumping investigation which has been carried out by the Ministry of Commerce. It was alleged that Effem, which is part of the Mars Group and the largest pet food manufacturer in the world was dumping canned cat food into the N Z market.

Watties has a dominant market share in this sector, somewhere around 75%. Effem has a dominant market share in the Australian market and a very large plant which can generate immense economies of scale.

The basic argument was that Effem was using a low real price to put product into this market. The traditional approach would be to lower the price to the importing country below that prevailing in the exporting country in order to gain market share.

However, multi-national companies are much more sophisticated than that now days as that would be grossly viewable as dumping according to Stage I economics. Watties contention was that what they were doing was putting massive amounts of money into the modern key factor for success, ie; advertising and promotion. The amounts went well beyond normal commercial investment. By doing this they were building market share even though their internal transfer price may not have reflected that dumping. The Commerce Department found that to be indeed just the case.

However, one very important factor, I believe, was overlooked. The dumping case failed to examine the global context and the policies being pursued by an international firm. Australia and New Zealand are important sources of raw meat material supplies which is a base in higher quality canned pet food for cats and dogs. Not only are large quantities produced in New Zealand based on that material, but indeed the raw materials are shipped to Europe to meet the high consumption levels in markets such as the UK.

The worlds fastest growing pet food market is Japan - approximately 20% per annum. It is probably the fastest growing grocery item in any major market in the world. Effem is dominant with perhaps 85% market share of the meat based pet foods. One can assume that it is a lucrative and important business for Effem.

In working out their international strategy they would want to

protect that cash cow, and the only real perceived threat was another major pet food manufacture located in Australia or New Zealand. That was identified as Best Friend Pet Food Company. Because of the costs of advertising and promotion and maintaining market share, the biggest "bang for the buck" could be achieved by in effect crippling a perceived competitor in the Japanese market through attacking its home market. The best investment would be advertising and promotion and building market share in New Zealand and thus putting Best Friend at a real disadvantage in being able to move against them in the Japanese market.

The canned food pet food business is extremely volume related. Lower volumes out of Gisborne would not only affect the cost of production, but at the same time would also free up raw materials which would increase the opportunities for Effem to ship material to its plants in other parts of the world, especially the United Kingdom.

Admittedly, this is hypothesis on my part, but I am tossing it out as an example of relatively free trade being affected by forces which may not be correctly measured in an economic study.

It is interesting to note that this investigation has been abandoned by the Minister of Commerce and no action will result.

I must at this stage also confess that we are particularly interested in this whole area as last year we formed a joint venture with Ajinomoto General Foods of Japan to produce meat based canned pet foods, for the Japanese market. So we are very much down wind of these machinations. Ironically, being fairly ambitious ourselves, we believe that it is possible that our firm, International Pet Foods will emerge as the second largest supplier of meat based canned pet food to the Japanese market by the end of this year.

However, the investment made by the Japanese brings up another area that will affect the freeing up of trade, and that is the requirement to lock in the sources of supply in order to underpin the massive investments that are required for penetrating and maintaining market share.

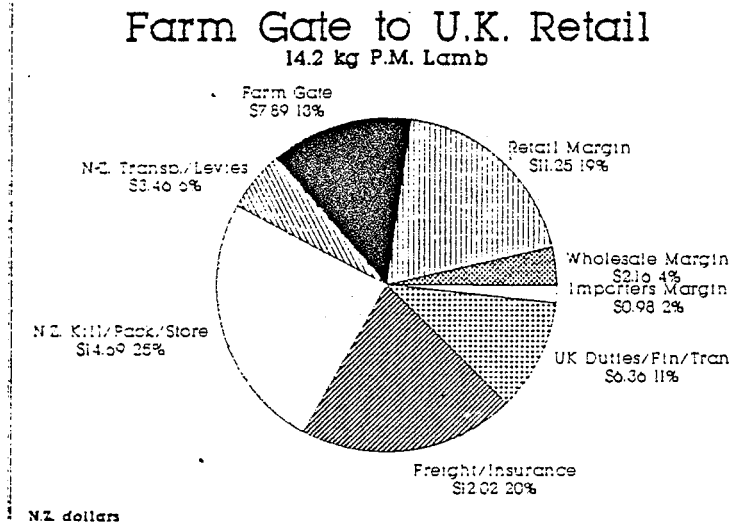
Traditionally investment in manufacturing plant is dictated by the returns of the manufacturing unit and its ability to have a competitive advantage in the cost of production in a particular market. However, today the cost of setting up the manufacturing or increasing production is often a small portion of the total overall costs involved. At times the cost of investment in advertising, promotion and obtaining market share will be several times higher. It is that cost that may well determine how and where investment decisions are made.

Therefore security of supply becomes important and the risk factor involved in sourcing from a particular location will be weighed up. The cheapest supplier may not necessarily win at the end of the day. At risk suppliers may have to sell at hefty discounts.

RE-EVALUATION OF INTERNATIONAL COMPETITIVENESS AND COMPARATIVE ADVANTAGE

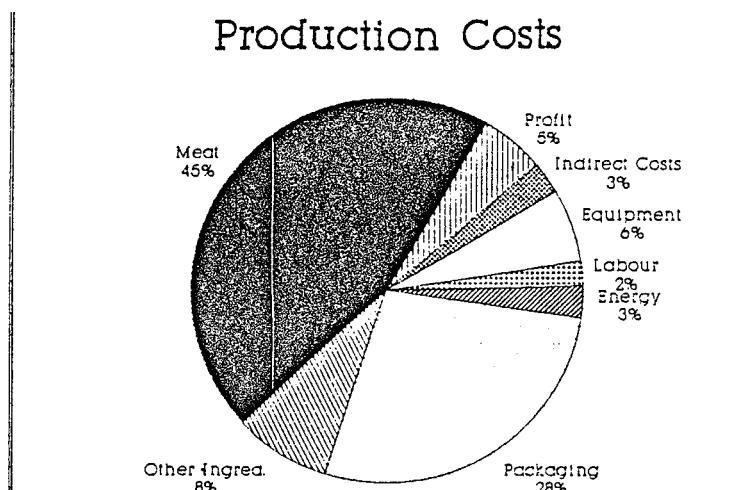
One of the things that troubles me is perhaps the inability to use sufficiently sophisticated models to explain why production is growing and expanding in one area and not in others.

It might be useful to look at the cost of getting a 14.2 kg of lamb from Poverty Bay to the consumer in the United Kingdom. Fortunately, these figures are from last year and returns have improved.



It is interesting to note that duties and levies account for only 4.40 cents per carcass or approximately 7.5% of the total retail price. The focus on trade barriers between nations maybe overstated if we fail to look intensely at each of the stages and the associated costs.

We have recently been involved in doing a number of evaluations of capital investments looking at increasing the production of further processed products in NZ.



This chart shows the break up of those costs in a product that is actually quite sophisticated and for export to the Japanese market.

The reason for focusing on the Japanese market is that it is one

market where the ability to perform consistently and provide a very specific quality profile may overcome some of the inherent cost disadvantages in producing in New Zealand. While the raw material may have some cost advantage that is only part of the total make up of costs. If we look at each of these sections we have to ask ourselves, how does New Zealand stack up internationally? How competitive is it in each of these sectors?

Unfortunately, we have found for many products New Zealand is just a little bit more expensive. But all those little bits knock you out of contention. Packaging, cost of capital and shipping costs are three real barriers to expansion.

In an April article by Des Trigg (NZ Business) he started off with the belief that with the new taxation formula New Zealand must be in a better position to provide after tax profits to an investor than would be the case in Australia. However, if we look at the example that he has generated this turns out not to be the case.

Transtasman manufacturing — a comparison

	Australia \$10,000,000	New Zealand \$10,000,000
Sales		
Less		
Research and Development expenditure	250,000	250,000
Export Market Development Grant		
Eligible expenditure	500,000	—
Export Market Development Grant (Provided by government)	*(343,000)	—
Other expenditure	9,393,000	9,550,000
Operating profit before tax	200,000	200,000
Less		
Deduction for Research and Development Expenditure	*125,000	—
Taxable income	75,000	200,000
Tax @ 39%	29,250	—
Tax @ 28%	—	56,000
Income after tax	45,750	144,000
Operating profit after tax	170,750	144,000
Add		
Cash grant (export market)	343,000	—
Net tax paid cash return	\$513,750	\$144,000

* 150% deduction available on R&D expenditure greater than \$50,000 — R&D incentives available until 30/6/1991.

** This grant is determined according to the amount of the "eligible expenditure" made by Australian residents principally for the purpose of creating, seeking, promoting or increasing export sales.

Again, this is the result of Government programmes which may or may not get caught up in the more uniform trading practices.

It is interesting in this case that the focus is on research and development. A recent survey of the US food processing industry concluded that the average investment was 1.78% of turnover per annum. Although this may not sound like a very large amount, I can assure anyone in the room that many New Zealand companies faced with their level of profitability would find 1.78% a large amount. A fundamental problem that must be addressed is that R & D is expensed not capitalised. It certainly would get the attention of the accountants who now have disproportionate power within corporate New Zealand.

Other investments such as education which will provide the foundation for future growth must be calculated into future competitive advantage. The NBR of 23 June reports that N Z ranked 16th out of 19 OECD countries in the percentage of 16 year olds still receiving education and for the 17 - 18 age group ranked next to last!!

In New Zealand over the past couple of years we had a real roller coaster with regard to investment - innovation - risk - payback. The bubble of enthusiasm which reigned supreme and had everyone almost convinced that bold innovative manoeuvring could win the day has now burst. Those companies that are going to survive and prosper are those that are going to get their risk profile right. This could well mean that innovation lags behind and perhaps in looking at future trade we must take into account the overall psychology which drives the decision making process.

THEORY VERSUS PRACTICE

Which should happen and what does happen are often two quite different things. For example, there is a nearly universal belief that quotas by importers bad for exporters.

There are examples where this is not the case. One example is the US meat import law.

A complete evaluation does depend on a close analysis of the supply and demand elasticities for beef. One argument can go something like this:

The US imports a small quantity of its beef. Quotas have protected the US market and this has had the impact of raising prices in the US market. That increase in price has been also captured by the farmers of Australia and New Zealand who, because of health restrictions have access to the market. Because the quotas have been set very closely to the level that would achieve equilibrium, most of the product out of these two countries has gone to the US market, and little of it has had to be put to other lower paying markets. Because of this the average overall return (price in the market times the volume shipped), has been higher than would have been the case in the absence of quotas.

In other words, most of the revenue generated by the quotas has been captured by the supplying countries. If import duties or levies instead of quotas had operated, prices would have been lowered in the NZ market, and the revenue would have been captured by the US Federal Government rather than the producer in N Z.

Admittedly, this is perhaps a special case but my contention would be that quotas have benefited in New Zealand.

Another example which is perhaps an exception is the quota on further processed product into the Japanese market. I am sure that everyone in this room is familiar with the very restrictive quotas which has made beef in Japan, in particular a product much like cocaine in the United States. It has generated untold windfall profits for particular classes and groups of people who are now protecting that trade with enormous might.

Beef is a product which can be relatively inexpensively produced, and yet sells for a huge amount in the retail market in Japan. However, the quota regime is broken down into a number of quotas. For example, the school lunch programme quota, the boiled beef

quota, the processed beef quota, etc.

In the case of at least one New Zealand company they very early on figured out ways to ensure their place within those quotas and thus gained some of the windfall profits provided by quotas. On this base they built their processing facility and indeed, even now, their bottom line has been reinforced by their early work in defining the courier route and the specific technology of production to utilise quotas.

However, now trade is to be liberalised and levies and duties will replace most of the quotas. While the exact outcome is uncertain one possible scenario is that the change in the import regimes will tend to favour raw meat versus processed product.

It will be in fact cheaper to utilise the capacity that already exists for processing in the Japanese market than to produce in New Zealand.

At least for some companies, if not necessarily for the country, restrictive trade may in fact be better than free trade. They took their product from a commodity and made it into a specialist non commodity.

CONCLUSION

About a week ago I was discussing this topic with an accountant who I have recently employed to be Financial Controller for one of our operating units and I said, "What about Gatt and all this free trade? What are your views?" He gave me a reply quoting Utopia by Thomas Moore.

"The purpose of evil is not to create despair, but action". He then posed the question, "Was Gatt an action to conquer an evil?" The future of New Zealand after Gatt will be determined by actions taken before today, actions being taken currently, and actions being taken in the future.

For New Zealand to win and take full advantage of the freeing up of world trade it will take investment, education and co-operation. It will take a winning team of academia, companies and the Government working together.

Currently there seems to be some discordant views amongst the parties. I believe the focus should be on determining what makes New Zealand competitive and taking the required actions so that everyone can take advantage of free trade rather than expecting free trade to make New Zealand competitive.

Thank you.

NEW ZEALAND IN THE POST MID-TERM REVIEW
STAGE OF THE GATT URUGUAY ROUND

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I was somewhat intrigued by the suggested theme for this part of the conference: "New Zealand in the aftermath of GATT". It brings to mind the provocative statement by Lester Thurow at the World Economic Forum in Davos last January that "GATT is dead" and that the Uruguay Round should be abandoned.

As far as New Zealand is concerned, the GATT is in fact more alive than it has ever been before. Not only is agriculture finally being tackled as a discrete issue, and a priority issue at that, in the Uruguay Round. On top of this, a series of GATT rulings on recent disputes has demonstrated the continuing strength of the GATT as a positive force in world trade.

This is not to say that the GATT is free from threat. On one hand, unilateral trade retaliation such as the United States is heading towards taking against Japan, Brazil and India under its Super 301 mechanism undermines the established GATT dispute settlement procedures. On the other hand, many perceive the trend towards regional trading arrangements as a threat to the multilateral principles on which the GATT rests.

The Uruguay Round mid-term agreement finally reached in April this year indicates however that a strong commitment still exists to maintain and improve the GATT system. The political and diplomatic effort that was required to mould this agreement was considerable, and it is pretty clear that no-one wants the Round to fail.

Before outlining the contents of the agriculture section of the April agreement, I will try to give you a bit of the flavour of the negotiating buildup to the agreement. As you will be aware, the original Mid-term Review meeting in Montreal at the end of 1988 was a failure as far as agriculture was concerned. The United States simply held on for too long to its zero option proposal which left no room for negotiation. The European Community was thus put in the unusual position of not being the fly in the ointment.

The tables turned to some extent in the new year, after the United States indicated that it was prepared to be more flexible. Intensive discussions took place, both bilaterally between the EC, the US, and Australia in particular, and between the GATT Director-General, Arthur Dunkel, and a large number of participants in the agriculture negotiations. The meeting of Cairns Group Ministers at Waitangi in March provided an opportunity for the Group to consolidate its own position and to send a firm message to the majors that the future of the Round would be in jeopardy without a satisfactory agreement on agriculture.

By the time the Trade Negotiations Committee of the Uruguay Round met in Geneva in early April to complete the Mid-term Review process, the scene was well set for substantive negotiations. These negotiations were tough. However, they were distinguished by the fact that the crucial deals were cut, not between the US and the EC, but between these two major powers and the Cairns Group, representing fourteen countries ranging from Fiji to Canada.

The outcome on agriculture obviously entailed some compromises on all sides, but I believe it represents a sound basis on which to pursue our goals for agricultural trade liberalisation.

The agreement reached has four main elements:

First

A clear framework has been established for a long term process of reform of agricultural policies.

The planned outcome of the negotiations is set out as "a fair and market-oriented agricultural trading system". This is described also as making "agricultural policies more responsive to international market signals ..."

The processes through which the outcome is to be achieved are "substantial progressive reductions in agricultural support and protection sustained over an agreed period of time" and "liberalisation of international trade".

These will be achieved through:

- negotiation of commitments on support and protection;
- establishment of strengthened and more operationally effective GATT rules and disciplines;

More specifically these commitments on support and protection will be realised through:

- negotiations on specific policies and measures;
- negotiation of commitments on an aggregate measure of support (the terms of which will be negotiated); or
- through a combination of these approaches.

The negotiations on policies and measures and on rules will encompass all measures affecting directly or indirectly import access and export competition. Particularly identified are quantitative and other non-tariff access restrictions; tariffs; internal support measures; direct budgetary assistance to exporters, other export support, and export prohibitions and restrictions. This is clearly a comprehensive brief, it goes to the heart of our problems, it leaves no room for side-stepping or ignoring the fundamental issues.

Second

The agreement provides that implementation of the first tranche of agreed commitments on the long term reform programme shall take place in 1991. The programme and the period of time for its implementation will be agreed upon not later than the end of 1990. To resolve the many outstanding issues relating to how reforms might be implemented and measured, a detailed work programme has been laid down for 1989. This covers: the terms and use of an aggregate measure of support; strengthened and more operationally effective GATT rules and disciplines; special and differential treatment for developing countries; sanitary and phytosanitary regulations; tariffication, decoupled income support, and other ways to adapt support and protection; and ways to take account of the possible negative effects of the reform process on net food-importing developing countries.

Third

Since 8 April 1989 a freeze on existing domestic and export support and protection levels in the agricultural sector has been in place. This means that the existing levels are not to be exceeded between that date and December 1990. The agreement specifically sets out that tariff and non-tariff market access barriers are not to be intensified in relation to imports of agriculture products nor extended to additional products, including processed agricultural products.

Fourth

Participants have stated their intention to reduce support and protection levels for 1990. This is a commitment to make a "down payment" on the long-term reform programme.

Provided these commitments are honoured, we should see during the 1990s a steady improvement in the agricultural trading environment. No-one is suggesting that radical change will occur overnight. However, the prospects are exciting.

I was interested to read this week of predictions by Professor Allan Rae that liberalised beef access to Japan, Korea and the United States could allow New Zealand to increase beef exports by 75 per cent by 1995, bringing in an extra \$750 million (provided of course that the product is available). Japan's agreement last year to progressively open up its beef market, the recent GATT panel report obliging Korea to take similar steps, and the reasonable prospect that the US Meat Import Law will be eliminated during the Uruguay Round are all signs of the liberalising impetus now operating.

Without wishing to dampen expectations (and we have every right to entertain some after so many years of suffering the effects of protectionism and unfair competition), I would like to outline some of the technical difficulties we face translating reform commitments into practice. As you heard in my description of the work programme for 1989, a large number of very complex issues remain to be resolved before there is any chance of countries putting forward concrete reform proposals.

One of these is the concept of tariffication. It is latecomer to the negotiations, having been introduced as late as last November by the Americans. But tariffication has an immediate appeal. It provides for all non-tariff access barriers to be converted to an equivalent tariff, which would then be progressively reduced. It has the potential to exert considerable pressure not only on access barriers, but also on internal support measures and export subsidisation as these would rapidly become unsustainable in the face of competition from imports.

However, precisely because of its wideranging effect, and the fact that it strikes deeply at the mechanisms of the CAP (in particular the variable levy), it is being treated very warily by the European Community. It is also fraught with technical difficulties, which should eventually be resolvable, but which at present hamper the use of tariffication as a negotiating instrument - right now, no-one knows exactly how it would affect them.

One such problem relates to situations where existing access commitments are in place, and access would actually be reduced in the short term by a straightforward conversion to a tariff. Options for dealing with this problem include some form of global minimum access arrangement or tariff quotas in a transitional period.

The basis for calculating the initial tariff would be the difference between the world price at the border and the domestic price. However complications arise where there is no world price at the border because access restrictions have prevented imports occurring. There are also a number of options for which base years to use in calculating the tariff, and the choice of years could significantly affect the result of the calculation, and thus the liberalising effect of tariffication.

On top of these technical problems, the negotiations are constantly under the influence of domestic sectoral and political influences. One of the outcomes of the April mid-term agreement on agriculture was that people finally realised that the Uruguay Round was going to deliver some results - which might not be palatable for many farmers in the US and the EC in particular. This has increased the pressure on negotiators from sectoral interests.

Likewise, political imperatives such as the need for Congress to pass a new Farm Bill next year will undoubtedly have an influence on the American negotiating position. The European Community is hardly ever without elections in one member state or another, and these are an unfortunate reality which GATT negotiators have to bear in mind. The federal elections in West Germany at the end of next year, just when the Round is due to finish, are already being seen as a strong influence on the German position, with concomitant effects on the EC position as a whole.

The Uruguay Round negotiations are clearly not taking place in a vacuum, and theorists and negotiators do not have free play. However if we are to have any influence on the real problems facing agricultural trade, we have to work within the system and seek as much reform as possible within the bounds defined by political realities.

(NOT FOR PUBLICATION)

A New Role for the Cairns Group

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Canterbury

(Text of paper to be delivered at 1989 Annual Conference of New Zealand Branch of Australian Agricultural Economics Society at Flock House, Bulls, 1 July 1989.)

In August 1986 an important event in international agricultural economics occurred in Cairns, Australia. It was the first Ministerial Meeting of the so-called 'Fair Traders in Agriculture'. Ministers, senior officials and farm industry leaders from Argentina, Australia, Brazil, Canada, Chile, Colombia, Fiji, Hungary, Indonesia, Malaysia, Philippines, New Zealand, Thailand and Uruguay attended the meeting.

The keynote address was given by the Prime Minister of Australia, Mr Bob Hawke. He emphasised the destruction in agricultural markets and the hardships caused to many agricultural exporting nations by the production and trade policies of the European Community, the United States and Japan. He went on to assert that the welfare of the trading nations represented at the meeting was being jeopardised further by the trade war between the USA and the European Community and that the credibility of the multilateral trading system itself was in danger. He concluded his address by a call for concerted action by the 'fair trading' nations to ensure that the liberalisation of agricultural trade was high on the agenda for the new round of

multilateral trade negotiations expected to be launched at Punta del Este, Uruguay, a month later, in September 1986.

The decisions taken in Cairns are now history. The meeting resolved at the outset to fight to ensure that agriculture was accorded a high priority in the new GATT agenda. The Ministers agreed to aim to seek the removal of market access barriers, substantial reductions in agricultural subsidies and the elimination within an agreed period, of subsidies affecting agricultural trade. These were the broad aims adopted.

But there were other resolutions.

For instance the meeting agreed to meet regularly following the launch of the GATT negotiations, to oversee their progress and to ensure that the problems of world agricultural trade continued to remain high on the agenda for international action. They also resolved to expand their contact with developing country economic and regional groups, especially those with a focus on agricultural issues. In addition they agreed that while the GATT negotiations were underway the causes of and solutions to, the crises in agricultural trade should be at the forefront of consideration in all relevant international fora such as the IMF, World Bank, OECD, FAO, UNCTAD and UNGA. The Ministers said that such wide-ranging efforts were essential in view of the 'misery and destruction being caused to efficient farmers around the world'.

The 'Cairns Group' as the participants have since been labelled, have, I believe already made a significant contribution to the work of committee 5 - the one responsible for agriculture in the current GATT Round. They have acted as a 'ginger group' they have been able to put with more force the viewpoint of agricultural exporting countries such as Australia and New Zealand. Yet at the

same time they have been able to advocate the cause of the seriously harmed developing nations whose economic future also rests largely on agricultural exporting.

It is too soon to make a final judgement on the efficacy of the Cairns Group - we shall have to await the final discussions of the negotiations in GATT, and perhaps the years that follow. But at least agriculture is firmly on the agenda, all the contracting parties have been made aware of this and that unless satisfactory progress is achieved in Committee 5, the decisions of the other 13 Committees will be in jeopardy. Also, I believe the Cairns Group has so far been able to influence the formulation of the agenda that holds hope for some real progress towards a better deal for agricultural exporters. In the months ahead I am confident the Cairns Group will not ease up on the achievement of its goals.

My purpose in this paper is to attempt to persuade you that the Cairns Group of countries should now be asked to assume a new responsibility. It should undertake an exercise aimed at making transparent to the consumers and taxpayers of the European Community the real costs to them of the Common Agricultural Policy.

To an audience of agricultural economists it would be arrogant on my part to devote valuable time to an exposition of the serious consequences of the CAP. I shall merely quote you some of the conclusions of some important authorities.

The BAE in its 'Little Red Book' said² that the CAP has had adverse effects on the agricultural sectors and economies of other agricultural exporting countries because it has:

1. Reduced the value of agricultural products they can sell in the EC.

2. Reduced world market prices.
3. Reduced the volumes that other countries can sell on world markets.
4. Destabilised international markets.

The study revealed that "Overall, the total estimated cost imposed on the Australian economy by the CAP for grains, sugar, dairy products, sheep meat and beef and veal is \$A905m a year in 1984-85 values (\$A670m if beef and veal is excluded). In addition there would be significant costs for other products, such as canning fruit, for which prices and exports are adversely affected as a result of the CAP".

At Lincoln we have attempted to make a similar type estimate in respect of the New Zealand economy. The estimate indicates that the total annual cost to the New Zealand economy is around \$NZ1.3 billion.

The influential Adam Smith Institute in London has undertaken considerable research into the CAP. It concluded as follows³:

"The CAP is in our opinion, contrary to the spirit of the founding fathers of the EEC, contrary to the rules of GATT, ineffective in helping those it is intended to help, expensive not only budgetarily but even more so in terms of total economic cost, regressive and inequitable in every aspect, unpopular except with farmers and bureaucrats, seemingly incapable of reform, endlessly time-consuming to the detriment of more important matters, and persistently undermined even by the French, its greatest supporters,... many people believe that it is time Britain took the lead in a campaign to 'scrap the CAP'.

My third authority is a Counsellor in the European Commission⁴. He states "When the Treaty of Rome was signed thirty years ago, its signatories could hardly have imagined

what fate had in store for the modest chapter dealing with agricultural policy. Articles 38 to 47, and in particular Article 39 which defines the objectives of the agricultural policy, were destined to preside over a large part of the activity of the EC in the coming years, and to govern between two-thirds and three-quarters of its budget. This cannot have been what the signatories intended as a long-term objective; and while the prominent role still taken by agriculture in the life of the Community is largely due to its failure to develop other balancing policies, it is also partly a result of the difficulties which Europe's policy makers have had in adapting the CAP to the changing reality of agriculture itself in the last decades of the twentieth century".

My fourth authority is a recent International Monetary Fund Occasional Paper entitled 'The Common Agricultural Policy of the European Community: Principles and Consequences'⁵. It concluded inter alia, that 'the CAP depresses world prices and that dismantling of the CAP would reduce consumer prices within the community, increase employment and spur economic growth'.

My fifth authority is the recent 300 page report of the UK National Consumer Council⁶. It concluded that the CAP acted against the interests of consumers in Britain and throughout the EC, grossly overcharging them for food and reducing choice. The system lowered the quantity of food, disregarded modern nutritional advice, and contributed to environmental damage. It also fuelled inflation and pushed up land values. Administering the pricing mechanism had led to a system of unbelievable complexity in which fraud was all too easy. The Consumer Council said CAP had produced these ill-effects without bringing appreciable benefits to any but the biggest farmers. It was extremely wasteful, with only two-thirds of the money paid by consumers and taxpayers actually reaching farmers. The average family of

four in Britain is paying around \$NZ40 extra each week for its food because of the CAP. The Report was the result of 18 months research and evidence submitted by more than 200 organisations and individuals in all 12 member states of the EC.

Last year at Lincoln we had numerous visitors from the EC - mainly members of the European Parliament. All were giving us soothing words about the CAP and how it was being reformed to meet today's needs. None really understood its workings and their concepts of reform were slight amendments at the margin. They were all supportive of the CAP - who wouldn't be? After all they are receiving annually a payment at least equal to \$NZ250,000 for burdening themselves with one of the world's sinecures.

One of the few really authoritative visitors on the CAP was the European Editor of the independent and influential journal 'Agra Europe', Brian Gardner. He confessed he saw no signs of European politicians agreeing to the basic reforms needed by the CAP. Most members of the European Parliament, in his view, thought all that was needed were peripheral changes; yes, many of these politicians might concede the CAP had grave shortcomings but in Brian Gardner's view, they lacked the will to change the CAP comprehensively. He agreed that agriculture's share of the community budget was excessive; he also added that the financial mismanagement of the CAP was serious - indeed scandalous. The UK Auditor-General had endeavoured to point out the urgent need for reform but his pleas were ignored by government.

Why is reform of the CAP difficult?

I have already hinted at some of the answers to this question. I shall attempt to summarise the situation as I perceive it.

1. The 'Constitutional' Factor.
The Treaty of Rome includes the CAP. It is the opinion of politicians - farming and government, that the CAP is 'embedded in concrete' and it must remain so.
2. Institutional Factors that inhibit change.
 - a) Externalities associated with the pooling of Community resources to finance agricultural support. Many member states do their utmost to maximise their drawings from Brussels. We have the absurd position of Denmark with one of the highest GDP's per capita being subsidised by British taxpayers whose income is almost 50% lower.
 - b) There is the political convenience of a subsidy system with built-in mechanisms.
 - c) Diverse objectives of member countries.
 - d) The sensitivity of the balance between national interests inherent in the CAP. There is tremendous opposition to suggestions that the Community Budget should be funded on 'an ability to pay' basis.
 - e) The inertia of large administrative systems which deliver support and once established are perceived to be indispensable to the operation of support arrangements which are themselves considered indispensable!
 - f) The fact that thousands of nationals from the member states become employees of the Commission. Their jobs depend on continuation of the CAP.
3. Farmers and their industry.
 - a) Almost 80% of support pay-outs go to only 20 percent of the EC farmers - the large and affluent ones. This is the group which controls and leads the farm organisations which are the training ground for rural M.P.'s. They are astute and powerful people. Obviously they will fight to defend a system which rewards them so munificently

and perpetuates their social status. Also, in many EC member countries electorate boundaries still favour rural areas.

- b) The agri-business sector is acutely aware of the source of their incomes and their support to the CAP.
4. Finally there is the sheer complexity of the CAP. This was a deliberate ploy on the part of European farming leaders and politicians. To prevent the CAP from being unscrambled they set out to make it so complex that few people in the community would understand it. Also, it is never the subject of annual review and debate in the Parliaments of member countries.

The Chances of Effecting Change

Many will be of the view that given the already-mentioned barriers to change, the Cairns Group of countries would have a high impossible task in any 'Transparency' exercise. I have given a great deal of thought to this over the years and have concluded that the forces of protectionism are not impregnable.

I recall on my first visit to FAO in the 1960's being told of 'BARTERS LAW' by the the Head of the Policy Analysis Division, Dr Phil Barter. The 'Law' was that 'the power of the farmer is inversely proportional to his numbers'.

With the dramatic exit from agriculture of so many people over the last 30 years in Europe one might say that Barter's Law has been verified. But it does not follow that it will continue to apply. Let me elaborate.

In the early 1970's I met a British Civil Servant who was senior advisor to a ministerial delegation that visited New Zealand on matters relating at that time to the likely British membership of the Community. His name was Michael Franklin. He was in my opinion one of the most acute observers of European politics and history I had ever encountered. It was clear that he was marked for rapid promotion. After the UK joined the Community Michael Franklin became the key British Civil Servant responsible for negotiations in Brussels. Subsequently he became a Permanent Head, with his last post (from which he recently retired) being that of Permanent Secretary of the Ministry of Agriculture and Food.

Last year he published a book entitled 'Rich Man's Farming - the Crisis in Agriculture'. As one intensely interested in agricultural policy issues I was impatient to get my eyes on the contents of the new book. I have not been disappointed. Michael has applied his brilliant intellect to the problems of agricultural policy both national and international.

I can't forebear quoting a very relevant paragraph from Michael Franklin's book.⁷ It refers to the power of the farmer:-

"Until recent years farmers have had few detractors, and certainly none who are as vocal or well organised. However, this has now changed. The environmental lobby has tended to be anti-farmer, criticising the ruthless grubbing-up of hedges, the indiscriminate effects of chemicals, the destruction of favoured habitats and the pollution of the water supply. Farming circles have rightly devoted efforts to mollifying the environmentalists and to stressing the positive role of farmers in conservation. But the environmentalists - now a powerful lobby in their own right - currently constitute the greatest threat to public support for farming, and have probably done more than the decline in

the agricultural population to weaken the political influence of the industry. Thus the farming industry is vulnerable the spell has been broken. Farmers have had, and will continue to have, a disproportionate influence on policy, but they can no longer assume the public will back them".

I have another conviction that the adverse impact of the CAP on the exporting industrial sectors of EC member countries will sooner or later be the subject of complaint. I was therefore delighted to receive from Sir Frank Holmes a copy of a 1988 pamphlet entitled 'Agricultural Policy - some thoughts on reform in a market economy'. It was written and issued by the Federation of German Industries⁸. I could summarise the conclusions thus:

1. An efficient and competitive agriculture is in industry's interest.
2. The international reactions to the European community's agricultural policy are harmful to the entire economy. The strains on world trade posed by growing agricultural protectionism world wide, not least in the EC, and by the race between countries in the granting of subsidies give cause for concern. It is certain that in the long run such a policy can only be detrimental to all international trading partners.
3. The dependence of farmers on administrative decisions is incompatible with the economic system in the Federal Republic of Germany which is a 'socially tempered market economy'.
4. The misallocation of resources under the CAP has adverse repercussions for the entire economy.

5. The chronic financial straits in the EC Budget are caused above all by the Agricultural Fund - it hampers progress in other fields. The EC is unable to forge ahead with other essential forward-looking tasks conducive to economic growth.
6. A large amount of the public payments do not even reach the farmers themselves.
7. It's imperative to separate the market and price policy from incomes policy.

It is relevant to mention that the Canberra Centre for International Economics has estimated that if farm protection in Western Germany was abolished, all the sectors of manufacturing (apart from food) would expand and that overall an estimated 850,000 new jobs would follow from a policy of liberalisation.

Why concentrate on the CAP?

This question can be answered thus:

1. New Zealand has long traded with Europe. In Protocol 18 to the Agreement relating to the U.K. entry to the EC specific undertakings were given to New Zealand. These assurances have not been honoured.
2. The U.K. market is very familiar to us and there are still some influential voices in that market who advocate liberalisation.
3. Apart from Japan, the EC with its CAP is the next worst sinner in the 'agricultural protection stakes'.
4. The other giant, the U.S., although a sinner in its own right, has been adversely affected by the CAP and is

one of its strongest critics. I am sure any transparency operation against the CAP would have the sympathetic support of the U.S.

5. In 1972 significant developments are planned for the EC. There is a grave fear amongst many authorities that agricultural policy in the EC will become even more inward-looking.
6. Any campaign should begin with a single target. Although it is agreed that if the CAP is to be reformed it will occur as a result of internal pressures, any external pressure that the Cairns Group of countries might apply could prove vital.
7. A breakthrough towards reform in the EC could lead to changes in other markets. For instance it is clear from negotiations so far in the GATT Round that Japan's reform stance will be influenced by discussions taken by the EC, as well as the U.S.
8. I know that some will say that the EC is virtually impervious to any criticisms based on arguments about equity, fair trade, interests of EC consumers, etc. It's my conviction that an effective transparency campaign could change this and as Michael Franklin has pointed out, the barrier has already been broken for us. I also believe that there is a latent but strong consumer and taxpayer lobby in the EC to whom food prices and massive hand-outs to farmers could prove very sensitive topics.
9. Our sheep-meat industry is being hurt seriously by the CAP. Urgent measures are needed if our sheep-meat sector is to avoid the fate of other agricultural sectors. If anyone thinks there's no problem, or that it's not urgent I would suggest they make a visit as

soon as possible to some of our rural areas to witness the ultimate consequences of (A) U.K. farmers receiving about \$NZ130 for each of their lambs and (B) The puny Irish sheep industry cuddling up to the French sheep producers in their determined efforts to draw the last drop from the subsidy trough in Brussels and as much as possible from the pockets of EC consumers.

10. I am aware that last year in Europe an EEC opinion survey⁹ stated that 51 percent of respondents said that European agriculture must be protected from imports. My responses is that this result shows how realistic it is to believe that if the real situation was revealed to consumers and taxpayers there would be a dramatic change in public attitudes especially when it was shown that needy farmers could be assisted by direct income support. Public opinion could I believe be changed relatively easily if details were revealed that the large and wealthy farmers were receiving 80 percent of the hand-outs. Achieving a change in these handouts to the landed and wealthy few would not be easy but given control of the high moral ground the power of public opinion could prove potent. The major problem is, as Michael Franklin has emphasised, with, rich men and their involvement in agriculture.

Finally, is Agricultural Protectionism still relevant to New Zealand's economic problems?

According to the recently issued 'Situation and Outlook for New Zealand Agriculture'¹⁰, the response to this question must still be in the affirmative. "Agricultural protectionism, however, remains a major concern and New Zealand faces increased access problems in traditional markets along with competition from dumped foodstuffs in third country markets. The current GATT round has not as

yet brought about the reforms necessary for improving the world trading environment for agricultural products."

Conclusion

In this paper I have suggested that even if the GATT Round is reasonably successful its achievements will have to be reinforced by other continuing efforts if we are to achieve a sustained break-through against the forces of agricultural protectionism. I believe the Cairns Group of countries should decide to arrange for a transparency exercise on the CAP. The task could be handed to private sector group at arms length from the governments of these 'Fair Trading' nations. I believe that if the EC consumers and taxpayers were given the facts on the operations of the CAP, politicians in the EC would have to effect the basic reforms such as those advocated by the Federation of German Industries, the OECD, the IMF, the Cairns Group and others.

If the EC persists in its view that the CAP is 'fixed in concrete' and that the interests of large and wealthy landowners must predominate, only public opinion within the EC will bring about change. The Cairns Group of countries could I believe, given the will to launch 'Operation Transparency', achieve dramatic success in influencing public opinion in the EC

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RESTRUCTURING IN THE KIWIFRUIT INDUSTRY

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JUNE 1989

SUMMARY

The financial downturn in the kiwifruit industry over the last 3 years has seen a major deterioration in growers' equity positions. It has resulted in a major change in the structure of the industry, with the introduction of a Statutory Marketing Board, which in turn has led to higher payouts. The cost-price squeeze has seen particular attention given to reducing industry costs and increasing efficiencies of production. There is tremendous scope for increasing orchard productivity, in terms of export trays produced per hectare, which is seen as being the main factor that can be used to improve orchard profitability.

INTRODUCTION

Over the last 20 years the kiwifruit industry has developed into New Zealand's major horticultural export earner, with \$443 million (fob) earnings in 1988.

The high profitability, and major tax concessions available, resulted in rapid development of kiwifruit orchards through the 1970's. Much of which was financed by debt. There are currently 18900 ha of kiwifruit in New Zealand, of which approximately 60% is situated in the Bay of Plenty. The distribution of kiwifruit plantings is shown in the following table.

Table 1 DISTRIBUTION OF KIWIFRUIT IN NEW ZEALAND

Region	Area (hectares)	% of total Area	Number of Properties
Northland	1663	8.8	367
Auckland	1380	7.3	360
Waikato	945	5.0	229
Bay of Plenty	11151	59.0	2293
Poverty Bay	1569	8.3	258
Hawkes Bay	529	2.8	169
West Coast North Is	586	3.1	254
Nelson/Marlborough	1039	5.5	338
Rest South Island	38	0.2	2
Total:	18900	100	4270
<i>Source:</i> Dept Statistics			

In the 1987/88 season, farm gate prices dropped dramatically, coupled with high inflation and interest rates, resulting in the majority of kiwifruit growers losing money on their kiwifruit operations.

In late 1987 the MAFTech Rural Policy Unit in conjunction with the (then) New Zealand Kiwifruit Authority carried out a major financial survey into the on-orchard financial situation facing kiwifruit growers.

The objective of this paper is to report on the findings of that survey and discuss the possible/probable on-orchard restructuring that is and will occur as a result of this financial downturn.

THE SURVEY

The following table gives an indication of the financial turn around suffered by Kiwifruit growers.

Table 2 COSTS AND RETURNS TO KIWIFRUIT GROWERS (NOMINAL TERMS \$/TRAY)				
Year	Average Export Payout	Cash Farm Expenditure ⁽¹⁾	Operating Margin ⁽²⁾	Disposable Profit ⁽³⁾
1983/84	\$7.15	\$4.03	\$3.12	\$0.97
84/85	8.70	5.07	3.63	0.71
85/86	7.07	4.74	2.33	0.55
86/87	9.79	5.27	4.52	2.44
87/88	5.40	4.70	0.70	-1.10
88/89	5.00	4.38	0.62	-1.22
89/90*	7.00	4.70	2.30	-0.10
* (Estimate)				
(1) From monitoring figures				
(2) Before drawings and debt servicing				
(3) After drawings and debt servicing				
These figures are based on the Rural Policy Units' Bay of Plenty Kiwifruit Monitoring Model.				

As a result of this cost/price squeeze in 1987, a number of interested parties expressed interest in determining the exact financial situation facing kiwifruit growers. This resulted in the Rural Policy Unit and the New Zealand Kiwifruit Authority undertaking a major financial survey of growers in September 1987.

It was decided to survey all growers with 2 or more hectares of kiwifruit in all regions outside the Bay of Plenty, and 30% of growers within the Bay of Plenty (again with 2 or more hectares). In addition, a small sample of 30 growers around Tauranga, each with less than 2 hectares, were also included.

This resulted in a total of 1774 questionnaires being sent out at the start of November 1987. A covering letter from the NZKA was included indicating the purpose of the survey and asking for the co-operation of the growers. Approximately 10 days after the questionnaire was posted a follow-up letter, also from the NZKA, was sent out as a reminder. In mid December MAFtech Consultants contacted by telephone all those growers who had not yet replied, as a further follow up procedure. The collection of questionnaires finished in late January 1988. A total of 685 questionnaires were returned, of which 659 were valid - a return rate of 37%.

The questionnaire was divided into 3 parts - Physical, Ownership, and Financial. Most of the income and expenditure questions related to the 1986/87 income year, which was the latest year for which growers would have complete financial records.

RESULTS

The following results are for the national situation and have been weighted to account for the relative sampling within each region. The results in many cases gave a very skewed distribution - in these cases the median figure gives a better picture of the "typical" grower than the mean. Unless stated otherwise, the figures given below are median figures.

1. Physical

(All areas are in hectares (ha))

Table 3	AREAS	
	Mean	Median
Total Area of Unit	25.2	10.1
Effective Area	20.9	8.0
Sheltered Area	8.0	6.0
Area in Kiwifruit	5.3	4.0

35% percent of growers also operated a pastoral unit, while 43% had one or more other horticultural crop on their property.

Mean area in pasture: 9.70 ha

Mean area in other horticultural crop: 1.03 ha

	Mean	Median
% total farm area in horticulture	53	57
% total horticultural area in kiwifruit	87	100

21% of growers had their own packhouse, and 8% had their own coolstore.

2. Ownership

The legal structure of the properties were:

Table 4 LEGAL STRUCTURE	
Individual owner/family partnership	69.0%
Syndicate type partnership and/or sharefarmer	19.0
Registered private company	10.0
Registered public company	0.2
Co-operative	0.2
Other	1.6
Number of owners per property : Mean 4.6 Median 2.0	

3. Financial

(i) *Financial Year*

Seventy percent of growers had a 1 April - 31 March financial year, while 17% had a 1 July - 30 June financial year. The remaining 13% had a considerable variation in their financial years.

(ii) *Income (1986/87 year)*

Table 5		
	Mean	Median
Kiwifruit	\$125,822	76,288
Other horticulture	6,465	0
Livestock	4,062	0
Interest etc	2,403	0
Grants	143	0
Other	12,936	0
Non farm income 1 - across all growers	13,023	0
Non farm income 2 - across all growers	4,262	0
Non farm income 3 - across all growers	3,226	0
Total farm income	151,170	99,666
Total gross income	166,702	114,542
Percent of farm income from kiwifruit	80.2	93.1
Percent of gross income from kiwifruit	70.1	77.0

Non farm income 1 = Wages/Salaries

22% of growers came into this category. Mean income within this group = \$20,000

Non farm income 2 = New borrowing

% of growers = 7.5% Mean within group = \$22,000

Non farm income 3 = Capital input (by partners/shareholders)

% of growers = 6.2%. Mean within group = \$44,404.

A further 2.4% of growers had investment income (mean = \$15,267) while 1.7% sold some asset(s) (mean = \$30,000)

(iii) *Expenditure*

For Kiwifruit unit only - mean values only		
Table 6		
	Total	Per Export Tray
Wages ⁽¹⁾	\$16,149	\$1.80
Weed & Pest Control	2,926	0.34
Fertiliser	2,460	0.28
Pollination	1,722	0.19
Grading and Packing	26,007	2.88
Coolstorage	8,675	0.85
Market Levies	4,692	0.44
Repairs and Maintenance	2,638	0.37
Vehicle Expenses	3,000	0.33
Administration	2,430	0.29
Cartage	521	0.07
Rates	1,340	0.15
Farm Insurance	960	0.10
Development	1,000	0.10
Interest ⁽²⁾	8,820	1.11
Depreciation	2,429	0.32
Total expenses per tray, excluding interest, depreciation, development, and "other expenses" = \$7.58.		
⁽¹⁾ Wages include payments to: working owners, permanent employees, casual employees		
⁽²⁾ Mean interest = \$4.30/tray		

(iv) *Assets*

Land values at 1986:	Government unimproved value:	\$165,000
	Government capital value:	\$335,000
		(\$38,700/ha)
Estimate by grower of market value of total property	=	\$400,000
Estimate by grower of market value of kiwifruit unit	=	\$240,000 (\$30,064/ha)
Total fixed assets		\$359,000
Value of non-land fixed assets		\$105,000

Table 7 NON LAND ASSETS		
	Mean	Median
Value of house	\$66,583	43,341
Value of other buildings	38,643	8,156
Value of vehicles	20,314	13,678
Value of plant and machinery	22,362	11,636
Sundry debtors	9,551	367
Value of cash on hand	9,377	663
Value of off farm investments	37,964	5,609

(v) *Liabilities*

Table 8			
	% Growers	Mean ⁽¹⁾	Median ⁽¹⁾
First Mortgage	72.7	\$134,745	63,421
Second Mortgage	44.5	53,120	30,309
Total other mortgages	29.3	67,523	25,000
First Term Loan	29.6	41,403	25,198
Total other Term Loans	13.7	36,902	22,000
Overdraft	41.7	36,219	18,332
Hire Purchase	10.8	31,471	8,327
Sundry Creditors	92.8	21,704	9,829
Other Liabilities	43.4	39,930	22,500
⁽¹⁾ The mean and median figures shown here are across the percent of growers indicated, not across all growers.			
Total Liabilities - across all growers:		mean:	\$171,374
		median:	\$93,000

The exposure of the financial Institutions to this debt is listed as follows:

Table 9 FINANCIAL INSTITUTION - DEBT EXPOSURE					
	No. Growers in Survey	% of Growers	Principal Mean \$000	Remaining Median \$000	National Total (est) ⁽¹⁾ \$M
Trading Banks	508	77.0	69	26	228.1
Government Agencies	463	70.0	68	40	203.4
Stock & Station Firms	20	3.0	194	45	24.9
Private	259	39.3	82	30	137.8
Insurance Cos.	62	9.4	81	35	32.6
Other	256	38.8	63	21	104.8
Total:					731.6
⁽¹⁾ This estimate is based on % of growers x total number of growers x mean principal.					

The security ranking of this debt is shown in the following table, giving the breakdown of loan types.

Table 10 LOAN TYPE AS A % OF ALL LOANS						
	Mortgages				Term Loan %	Overdraft %
	1st %	2nd %	3rd %	Other %		
Trading Banks	15	10	4	1	26	43
Govt. Agencies	47	30	11	3	6	0
Stock & Station Firms	10	14	0	5	38	19
Private	27	22	17	5	24	2
Insurance Cos.	49	16	11	1	3	0
Other	31	13	8	2	13	15

(vi) *Equity*

The equity position of growers was calculated from the sum of their assets less liabilities. The distribution of equity is shown as follows:

Table 11 EQUITY POSITION OF GROWERS IN 1986					
	Less than 0	0.25%	25-50%	50-75%	75-100%
% of growers	9.2	8.95	17.2	26.0	38.65
Number of growers	393	382	734	1110	1650

Given that upwards of 90% of kiwifruit growers have made a loss from their kiwifruit operations over the last 3 years, and that the value of their main asset, the orchard itself, has deteriorated markedly in that time, their equity position has also deteriorated.

Assuming that the capital value of the orchard is currently 50% of 1986 value, and the debt position is unchanged, the current equity position is shown in the following table.

Table 12 EQUITY POSITION OF GROWERS IN 1989					
	Less than 0	0-25%	25-50%	50-75%	75-100%
% of growers	39.7	9.6	15.5	19.4	15.7
Number of growers	1695	405	662	828	670

As can be seen from these tables, there has been a major deterioration in growers equity positions. Current orchard prices in the Bay of Plenty have averaged 50 - 60% of Government valuation, and with the indications of a much better payout for the 1989/90 season, prices are trending upwards. At the time of the survey, 56% of growers said they were in financial difficulty, 44% said they were not.

Despite this deterioration in growers equity, and essentially two years negative cash flow, there have been relatively few forced exits from the industry. The turn over of properties has actually dropped over the last two years to around 60 per year compared with the norm of around 80. The main reason for this however would be mostly lack of buyers. The financial institutions have generally adopted a cautious approach to forcing growers out, tending to give them a certain period in which to sell up rather than directly force a sale. A number of the institutions have actually taken direct control of the orchard, putting in a manager, or management company, with the intention of farming it until land prices improve.

RESTRUCTURING

Income

The main factor affecting kiwifruit orchard profitability, assuming an average level of production costs, is level of income (which is hopefully self evident). The two main factors affecting income is the payout per tray, and level of productivity (export trays/hectare).

Table 13 AFFECT OF PRODUCTIVITY AND PAYOUT ON PROFITABILITY (Gross Margin \$/ha)				
		Payout \$/tray		
		5.00	7.00	9.00
Yield trays/ha	3000	732	6732	12732
	5000	4832	14832	24832
	7000	8932	22932	36932

A study by Coopers and Lybrand into Kiwifruit Marketing indicated that the main cause of the drop in the on-orchard price for kiwifruit was inefficiencies in the marketing channel, and presented a number of proposed marketing changes. Following appeals by a majority of growers to the Government, the New Zealand Kiwifruit Marketing Board was set up in October 1988 with statutory powers to control the marketing of kiwifruit in all countries except Australia.

As a result of their efforts, the NZKMB is currently indicating a payout of around \$7.00/tray for the 1989/90 season. That level of payout would be sufficient, all other things being equal, to restore an estimated 80% of kiwifruit growers to profitability.

Unfortunately, the crop yield this season is down 20 - 30% on average in the top half of the North Island, particularly in the Bay of Plenty. Mainly as a result of poor climatic conditions over the flowering - pollination period. The resultant drop in yield has more than offset the increased payout, with the Bay of Plenty Kiwifruit Monitoring model, for example, making a disposable profit of -\$0.10/tray after all costs except depreciation are counted. If the drop in yield had not occurred, the disposable profit would be around \$0.60/tray.

Costs

On the orchard operating cost side there have also been some major changes.

Table 14			
	Comparison of Orchard Operating Costs in the Monitoring Model	Bay of Plenty Survey	\$/Tray Monitoring Model
	1986	1986	1989
Wages & Drawings	\$1.97	1.58	1.25
Chemicals	0.19	0.26	0.17
Fertiliser	0.14	0.22	0.11
Pollination	0.12	0.16	0.14
Grade & Packing	2.80	2.78	2.00
Coolstorage	0.80	0.85	-
Market Levy	0.37	0.37	-
Repairs & Maintenance	0.27	0.29	0.13
Vehicle Exp	0.27	0.29	0.15
Administration ⁽¹⁾	0.27	0.23	0.34
Cartage		0.04	
Rates		0.13	
Farm Insurance		0.08	
Interest	0.92	1.05	0.99
Total Cash Operating Expenses	8.12	8.33	5.28
⁽¹⁾ In the monitoring model, Administration includes cartage rates, and Farm insurance. It is suspected that some survey respondents have included rates and insurance in the administration figure and again as separate items.			

As can be seen there has been a major reduction in operating costs. However, as the cost of coolstorage and market levy are now absorbed within the operating costs of the KMB, it is difficult to compare the bottom lines directly.

The largest single drop has been in the area of grading and packing, mainly as a result of more bulk packaging, but also with a greater degree of competition between packhouses. For the first time, this season saw major price differences between packhouses as they competed for crop both within and between regions. It is felt that further major reductions in this cost are possible, down to around \$1.10/tray within 3 - 5 years.

The second largest cost, labour, has also seen some changes over the last 2 years. There has been a major trend away from paid labour (as compared with unpaid family labour) towards contractors. Within the Bay of Plenty there has been a drop of 419 full time labour units from 1986/87 to 1988/89, offset to some degree by an increase of 185 "contractor" labour units. Current technologies indicate a further 30% saving in labour costs over the next 3 - 5 years. Current technologies, and improvements in these, in the areas of nutrition management and pest control also indicate major cost savings are available.

In the off-orchard scene, there is currently a plethora of packhouses, most of which have limited capacity.

Table 15 PACKHOUSE NUMBERS AND CAPACITY

Under 100,000 trays:	400
100,000 - 250,000 trays	100
250,000 - 500,000 trays	28
over 500,000 trays	15

This is somewhat reminiscent of the dairy industry 20 - 30 years ago, and it is highly likely that a similar trend will be followed - to a few large units. Especially since they are currently only working 1 shift per day. This season saw 23 small packhouse close around Te Puke.

PRODUCTIVITY

As indicated earlier, the level of productivity has a major bearing on orchard profitability. The survey indicated a relatively low level of production per hectare, with the average yield from mature blocks in the Bay of Plenty around 4200 trays/ha in 1987. The distribution of yields were:

39%	less than 4000 trays/ha
43%	between 4000 - 6000
18%	above 6000 trays/ha

with the top 5 - 10% of growers in the 7000 - 10000 trays/ha category.

Using currently available technology and management skills it would be possible to lift production up to around 8000 trays/ha over a 3 year period. If this is applied to the Bay of Plenty Kiwifruit Monitoring Model, the model would break even, at full maintenance expenditure, plus debt servicing, plus allowing for depreciation, at a payout of \$5.35/tray, assuming current costs. It is considered that around 35% of growers could adopt this approach over the next 3 years.

Orchard amalgamation, in order to gain cost efficiencies of scale, is another possibility. If the Bay of Plenty Monitoring model is tripled in size, with direct working expenses increased pro rata, while management, administration, and plant/machinery levels are held constant, then the breakeven payout price required is \$5.63/tray. It is considered that amalgamation is not a likely option for many encumbant orchardists because of a lack of capital, while urban investment is also not likely in the short term due to the downturn in the kiwifruit industry and the perception of that, which is relatively widespread.

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RESULTS OF A SURVEY OF PLANNING AND FINANCIAL MANAGEMENT ON THREE FARM TYPES IN NEW ZEALAND.

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SUMMARY

A survey of farmers on three important farm types in New Zealand was completed to learn how farmers manage their farm finances. The survey was designed to learn of on farm financial management via the three management functions planning, implementation and control. The majority of farmers do not rely on formal financial management and in doing so maybe putting themselves at risk financially. Although the majority of farmers complete a cash flow forecast the lack of revision of this forecast reduces the value of this exercise. In most cases financial management only served to acquire seasonal funding.

Key words: Survey, planning, farm financial management.

INTRODUCTION

A number of surveys completed by MAF and others, (Hockey, 1963; Fitzharris, 1971; Leonard and Fraser, 1971; MacGillivray, 1973; Dale, 1973), have sought to learn from New Zealand farmers the different sources of information used for decision making. These surveys identified the information used by farmers when making decisions largely with respect to technological change, and detailed what information farmers supposedly received. However, they did not report, show or examine how the information was actually used. Further studies were completed by Kampanellas (1979), Greer (1971) and Phillips (1985) who all examined the roll of leading farmers within a district. These studies largely focused on technological change.

All of these studies, with the exception of that by Phillips, were made during the period of large scale umbrella support to the rural sector by Government. This support was in the form of free extension and agricultural research services, direct financial assistance, development encouragement and subsidized interest rates. None of these studies specifically addressed the topic of financial management. Presumably this reflected the focus then on production issues in all of New Zealand's agricultural industries.

This paper summarizes the principal results of a farmer survey completed with the objective of learning from farmers how they manage their farm's finances.

THE CASE FOR PLANNING AND FINANCIAL MANAGEMENT

Background

For a private sector business to survive it must be profitable over the long term. While acknowledging the existence of management objectives other than profit maximization on farms, farmers must still maintain their business in a profitable state to survive over the long term. The income security provided until recently to the nation's farmers by successive New Zealand governments ensured the continuance of farm business. New Zealand agriculture has undergone dramatic change during the last four years. Farming is no longer cosseted by Government, and farmers are now fully exposed to market forces. Profit in farming is now directly determined by the decisions and actions of farmers.

On the family farm the farmer is the owner, manager, labourer, spouse, father (and in some cases mother). The role is complex, but essentially little different from that of the owner-manager of other small business enterprises throughout New Zealand. Of all small businesses established in New Zealand in any one financial year, some 60-70% close within four years. Over half of these closures are the result of financial failure (Devlin, 1988). In New Zealand 7,000-8,000 small businesses close annually without attracting public attention. By contrast, mortgagee sales in the rural sector attract the attention of rural support groups, Federated Farmers, and the media. This reflects the shelter that the rural sector, in New Zealand, has enjoyed in the past.

The financial state of up to a third of New Zealand's farms has been described as 'critical'. Some farmers investment decisions, made prior to this recent period of change, will have contributed to their current poor financial situation. These farmers are, sadly, the victims of circumstance. Other farmers who have relied, albeit unwittingly, on Government to ensure the profitability of their business are now caught without the financial management skills necessary for the survival of their farm business.

The financial information which farmers request, receive and then use must be both timely and accurate to ensure that the best management decisions are made. Relying on outdated information, intuition, hearsay, or the Government, will not ensure the continuation of their business.

Financial planning, control, and profit evaluation are regarded by most farm management professionals (Guy, 1987) and academics as subjects that are generally well understood. McRae (1988) suggests that the theory and practice of farm financial planning, control and profit evaluation are in need of updating by both the farm management and farm accounting professions. However, farm financial management is currently considered primarily the function of the accounting profession. Lockhart et al (1988) showed that on farms where financial management is taking place, it is the result of the slow evolution of financial planning and control required for a specific enterprise. McRae (ibid) considers that the current low level of understanding of financial management displayed by farmers is a matter of some concern. This may be restricting the technological and economic changes required by farmers for their business to survive.

A farm financial management system is concerned with the planning, implementation and control of financial activities and accounting activities on the farm. A farm financial management system (based on Kirton, 1988) should incorporate;

- a clear statement of both personal and financial goals.
- an accurate statement of current position (cash, profit, solvency).
- a plan for the coming period translated into the expected effect on cash, profit and solvency, based on the farmer's goals and a statement of the farmer's current position
- a means of assessing progress against the plan.

A financial management system, whether recognized as being formal or informal must then attempt to achieve the farmer's goals. Alexander (1988), a regular commentator on New Zealand agriculture, reinforces the primary objective of any businessman from the farm accountant's viewpoint by claiming that the business must achieve fairly early on an adequate and consistent profitability. The profit level however, that satisfies the manager encompasses factors which may be tacitly understood but seldom identified or set as an objective in the business plan.

Little attempt has been made to learn from farmers either what they do with respect to financial management or what they are trying to achieve with respect to financial goals.

THE SURVEY

The Survey Areas

This study was undertaken as part of a larger ongoing study of financial management involving the Departments of Accounting and Agricultural and Horticultural Systems Management at Massey University. Farms were surveyed in three geographically distinct areas, each of which is recognized nationally as 'representative' of different and mature farming systems. The areas studied were; South Taranaki - for dairy farms; Taihape - for sheep and beef farms; and the Hawkes Bay - for orchardists. The primary objective was to learn from farmers how they plan and manage their farm finances. Key features of each of the three survey areas are outlined below.

South Taranaki Dairy Farms

There are 312 seasonal supply dairy farms in the Waimate West County of South Taranaki all supplying milkfat to Kiwi Cooperative Dairies Ltd in Hawera (NZDB 1986). The area is renowned for dairy farming with one of the highest County average figures in New Zealand for milkfat per cow and kg/milkfat per hectare. The County's average effective farm area of 57 ha is smaller, and the herd size of 165 cows is larger than national figures of 67 and 136 respectively. The higher stocking rates are sustained by higher than national average annual pasture production measured on dairy farms in this area.

Taihape Sheep and Beef Farms

Currently, there are 186 sheep and beef farms in the Taihape district. The district, bounded to the north by the Napier-Taihape road and the south by Ohingaiti and Rangiwahia is spared the extreme variations in rainfall encountered on sheep farms on the east coast and receives regular summer rainfall. Farmers in the district have more stable production systems than their counterparts in more variable climates.

Hawkes Bay orchardists

The Hastings Apple and Pear Board stores are supplied fruit from 578 orchards on the Heretaunga Plains (NZAPMB 1988). Approximately 50% of New Zealand's total apple and pear crop comes from this region, with 4.5 million cartons being exported annually from the port of Napier in Hawkes Bay. Orchards have been a feature in the region for many decades.

Survey Design, Implementation and Response

The questionnaire used in the survey was pilot tested with a range of farmers in the Manawatu. After revision it was then administered in each of the three areas. The questionnaire included questions on production over the last three years, introductory questions on minor aspects of financial management, such as GST and indepth questions on financial planning and control. The questionnaire took approximately 45 minutes for a farmer to complete and included both open and closed questions.

Names of farmers to be surveyed were drawn randomly from census lists of farmers in each area. Over 60 names were drawn by simple random sampling with half the farmers to be surveyed by mail and half by personal interview. A letter of intent, outlining the objectives of the survey, was mailed to all survey farmers one week prior to the dispatch of the mail questionnaire and the onset of the personal interviews. The mail survey was designed to supplement findings from the personal interviews. Thirty to 40 farmers in each area were approached for personal interviews. Questionnaires were mailed to 30 farmers in each of the three areas.

The mail questionnaire was dispatched at approximately the same time as the personal interviews were initiated in each area. A reminder notice was mailed to the mail survey recipients a fortnight after the dispatch of the questionnaire. Interviews were completed over a two week period. Two to four interviews were completed each day. Travelling time between interviews limited the maximum number of interviews which could be completed each day. However, at least two hours was set aside for each farmer interview.

The response rate to both the mail survey and the interviews in each district is presented in Table 1. The mail survey response rate is the percentage of questionnaires completed and returned. The personal interview response rate is the percentage of farmers contacted agreeing to take part in the survey. The striking difference in response to the interviews between the orchardists and the other two survey groups remains unexplained.

Table 1. Response Rates to the Mail and the Interview Surveys in Each of the Survey Districts.

Survey area Farm type	South Taranaki Dairy	Taihape Sheep and beef	Hastings Orchardists
Mail survey	55%	50%	47%
Personal interviews	90%	92%	56%

Principal Results

The principal results of the survey are presented below under the headings which correspond to the planning, implementation and control functions.

Financial Planning

Over half of the farmers (60%) surveyed had completed a cash forecast budget, in the form of a cash flow, prior to the start of the financial year. The cash flows were completed by farmers principally for three groups of users. The percentage of farmers completing cash flows for each user group is presented in Table 2.

Table 2. Principal Users of Farmer Prepared Cash Flow Forecasts.

Principal User	Percentage of Farmers
Farmer (for own use)	35
Seasonal financier	34
Both of the above	27
Other	4
Total	100

Only 77% of these prepared cash flows were updated during the financial year; 12% were updated once, 8% twice, 16% three times and 41% more often. With respect to this later group, 23% of all those farmers who prepared cash flow forecasts updated them monthly.

Although 60% of farmers completed a cash flow forecast, only two thirds of these farmers (46% of all farmers surveyed) regarded this as a planning exercise. Those farmers not completing a cash flow forecast either claimed to undertake no planning or to use less formal planning methods. For example, 21% of all farmers relied for planning on the experience gained from previous seasons, 11% consciously plan two to three months in advance, 8% use other methods (committing pen to paper) and 15% admit to doing no financial planning.

Despite the commonly held belief that farm accountants are actively involved in financial planning, only 14% of farmers involved their accountant in the preparation of cash flow forecasts. Persons other than the accountant were involved in ongoing financial matters on 25% of farms. These were farm consultants (11%), bank managers (7%), R.B.F.C. (1%), farm secretaries (3%), accountant (1%) and others (2%).

Financial Implementation

Bank account statements and cash books are the two most popular sources of keeping up to date with the current account balance. However, the accuracy of some cash books seen during the survey was such that an estimate of their effectiveness would be misleading. Approximately one third of the farmers interviewed completed a cash book of some kind. Some farmers (11%) rely solely on GST books as an alternative to cash books and a few (3%) rely solely on either stock firm or dairy company statements.

The frequency with which 'bank' statements were received varied across farm types. Most farmers receive statements monthly, however orchardists tend to receive them more often, either fortnightly or weekly.

GST returns were completed by 66% of the farmers surveyed. A further 11% initiated the process with the return being completed by the accountant. The other farmers had their returns completed by either the accountant (22%) or a consultant (1%). The two monthly return period was the most common (67% of farmers), followed by the six monthly return (31% of farmers). The balance (2%) was orchardists who completed their GST returns monthly.

The majority of farmers (77%) have separate personal and farm cheque books. Nearly all of this group (84%) have a monthly transfer of funds from the farm account to the personal account. Approximately 23% of farmers operate a single cheque book and monitor drawings by a variety of means.

Financial Control

The financial control function can be divided into two distinct components. Firstly, ongoing control in the form of updating and revising cash flow forecasts throughout the planning period. Secondly, end-of-year analysis of the farm's performance and results. This latter component has been traditionally recognized as the role of the farm accountant.

The content of end-of-year final accounts are presented in Table 3.

Table 3. The Content of End-of-Year Accounts and the Percentage of Farmers Receiving Each of these Formats.

Types of accounts provided	Percentage
Basic set of accounts ¹	39
Includes a taxation statement	24
Includes a Trend Statement	11
Includes a cash flow statement	8
Includes a cash flow and a trend statement ²	17
Accounts prepared by farmer	1
Total	100

¹ Livestock Account, Produce Account, Farm Working Account, Income Appropriation Account, Balance Sheet and Fixed Assets Schedule

² No orchardist's accounts included a trend statement).

Despite annual accounts being prepared for taxation purposes at least 39% of accounts did not include a statement of taxation. The majority of farmers (78%) had discussed the contents of their annual accounts with their accountant and over half (58%) of these were satisfied with the service provided.

The annual accounts were used for a variety of purposes by approximately two-thirds of the farmers surveyed. The remainder (36%) did not use their annual accounts. A summary of the use made of annual accounts by survey respondents is presented in Table 4.

Table 4. Use Made by Farmers of the Annual Accounts.

Use made of accounts	Percentage of farmers
Cursory look	16
Historical record	24
Source of information for the preparation of budgets and cash flows	24
Nil/no use	36
Total	100

The majority of farmers (60%) provide a copy of their accounts to their seasonal financiers and 13% of farmers provide accounts to their mortgagors.

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CONCLUSIONS

In most cases financial management comprises only the acquisition of current account funds. Cash flows are updated by only a minority of farmers. The majority of cash flows are not updated and their value, other than acquiring seasonal funding, is debatable. Most farmers ignore the control function of financial management. Current account statements from the bank, stock firm or dairy company, and lately GST books, are often the sole source of information considered when making financial decisions. Because 'financial management', on these farms is so limited in scope and impact it would appear then, that there is considerable opportunity for the design and implementation of improved financial management systems.

New Zealand farmers rarely use information provided by the formal accounting process, this supports the findings by Lockhart et al (1988). The formal accounting process appears to provide information to rural lenders yet farmers themselves find the state of this information of little value.

Since the initiation of this study some sectors of the rural economy have enjoyed a rapid improvement in their output prices, particularly the dairy sector. However, improved terms of trade may only serve to hide the lack of financial management in the rural sector. Improved product prices present opportunities for those farmers involved in financial management. In the majority of cases these opportunities will remain unexploited.

ACKNOWLEDGEMENTS

The farmers who gave their time and support to this survey.
The service industries who provided suppliers lists.
Professor Frank Anderson, Massey University for useful comments during the preparation of this paper.
Massey University Research Fund for their partial funding.

THE RISK ENVIRONMENT OF FARMING

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Summary

This paper is concerned with the analysis of the components of risk facing agricultural businesses. From the distinction of business and financial risk, a general framework is developed for strategies for buying and developing farms. The influence of collective risk amelioration measures on individual risk is examined and recent New Zealand policy history analysed. Changes in risk exposure and future attitudes to investment and diversification are discussed.

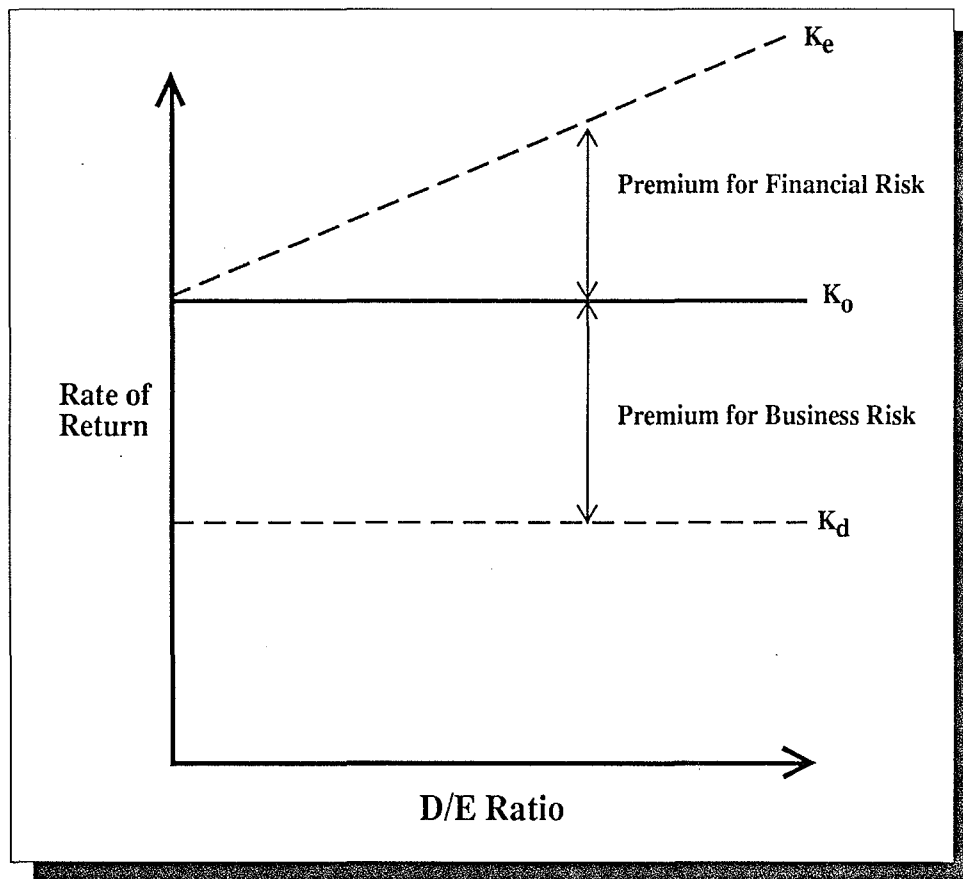
The Risk Environment

The separation of total risk into its business and financial components appears to add significant analytical insights into the current situation in New Zealand agriculture. By business risk we mean variations in operating performance over which the producer has little control. For our purposes it includes weather effects and market or commodity cycle effects. Business risk is measured as a margin over the normal rate of return on investment that would be expected in a risk-free environment. It is thought to be invariant to the level of debt.

Financial risk is the margin for debt protection. Financial risk increases with increased indebtedness. At the limit, financial risk rises to infinity with risk of bankruptcy. In a model of the firm, financial risk is the increased risk to shareholders (or equity owner) that arises with increased debt. Again, it is measured by a margin over the normal rate of return that would be required to cover business or operating risk (Pringle and Harris, 1987).

In Figure 1, the expected rates of return are plotted against the debt/equity ratio of the firm. K_D is the borrowing rate of interest and the entrepreneur should run his business so as to have an adequate margin or profit over the borrowing rate. K_E is the required return on equity when the business borrows money to develop or expand, etc. K_O is the weighted average cost of capital, which in this construction, happens to be invariant to the level of debt. It is important to note that the concept of required rate of return on equity is employed - this reflects

Figure 1



the incorporation of the entrepreneur's perceptions of risk as the debt/equity ratio rises. A risk-averse entrepreneur obviously has a more steeply rising K_e curve than a risk-neutral entrepreneur.

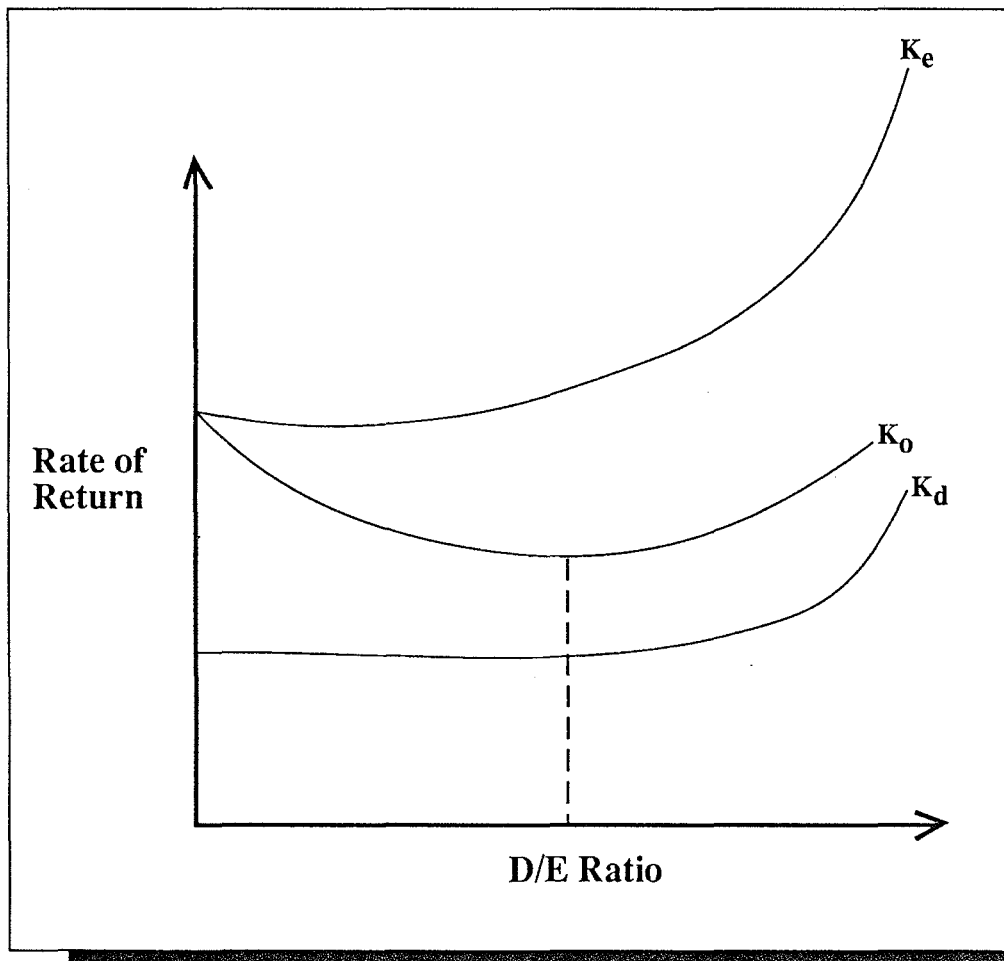
The situation for agricultural producers is generally thought of in terms of a changing weighted average cost of capital. This is shown in Figure 2. In this case, it is hypothesised that lenders to agricultural producers will tend to raise their rates of interest at the margin as the producer's debt/equity levels increase the lender's risk. Agricultural producers are viewed as highly risk-averse creatures and therefore they tend to have steeply rising required rates of return as debt/equity ratios rise. Under these circumstances, the weighted average cost of capital will at first tend to fall as debt is embarked on, but after some point it rises steeply as financial risk increases. At 100 per cent debt/equity, however, the K_O curve must meet the K_d curve as equity is eliminated (some texts show the two curves joining up). The K_O curve thus identifies an optimum debt/equity ratio.

A little field research shows that lenders do adjust their rates at the margin (Stuck, 1988). Trading Banks operate a base rate system whereby a common base applies for all lending, but various margins above this apply for different types of credit facility and client. These margins reflect the relative security of the loan in relation to the term of the loan with some flexibility as to the security and reliability of the client. Holders of first mortgages have clear ideas about the debt/equity ratio they will lend on, and subsequent lenders most often seek alternative security at higher interest rates. Stock firms have various methods to differentiate among their clients, including offering term loans instead of overdraft facilities. Some lenders use overdraft limits to trigger higher penalty rates of interest. Producers tend to be in a difficult position as they do not have full information on what the market has to offer. There is scope for rationalising this situation and some farm advisors are working in this area (R Stuck, pers.comm.)

The weighted average cost of capital is the appropriate criteria for capitalising the net income stream to obtain capital value of the asset. Statements of this formula need to be viewed carefully as to whether they refer to risk-free or risk-averse situations. The result is totally different in each. As will be shown below, only the required return on equity is relevant to the investment decision when discounting future net returns to evaluate a new enterprise.

In the economics literature, there is considerable variation of opinion on whether the weighted average cost of capital is invariant to the level of leverage. As pointed out by Modigliani and Miller (1958), corporate financial structures can only increase the use of debt funds by raising their equity capitalisation rate (lowering the price/earnings ratio) in proportion to the increase in the debt/equity ratio. These authors advanced considerable behavioural evidence for arbitraging of stock in such a way that the average cost of capital would remain

Figure 2



unchanged. In most financial management textbooks this position is still accepted (Van Horne, 1983).

In considering farm firms, the conditions assumed by Modigliani and Miller no longer apply. The structure of equity held by proprietors means that there is not an efficient market for equity where the equity capitalisation rate can freely compensate for increased debt (Collins, 1985). In this case, it can be hypothesised that the proprietor's views on financial risk will determine the shape of the K_e curve, and that the average cost of capital will vary according to the behaviour and weighting of the required return on equity of the proprietor and the cost of borrowing. In any case where such a proprietor is moderately risk-averse, the average cost of capital could fall slightly on taking on a small amount of debt but rise quite quickly as he sees the risks involved in taking on more. Thus the optimum debt/equity ratio is likely to be quite low for risk-averse proprietors/producers.

If the effect of the tax deduction due to interest servicing is included in the equation, the curve of rate of return on borrowing (K_d) is lowered throughout its length. The net cost to the proprietor is reduced. This lowers the weighted average cost of capital to the firm (as long as it is making profits) but is unlikely to influence the optimum debt/equity ratio very much. A lower post-tax cost of borrowing tends to pull the weighted average cost of capital down sharply at first but it would soon rise with increasing desired return on equity. In the financial management literature this effect is called the tax shield. It does not seem to have been important historically for New Zealand primary producers (Johnson, 1989).

Risk and Discounting Future Returns

In the light of this introduction, it is useful to examine the farm purchase decision and the farm investment decision from the risk-averse producer's point of view. In the case of a purchaser of a new farm, some estimate of the future net cash flow to the land asset is required. Recognition of business risk and lending risk needs to be incorporated in the purchaser's perception of required equity return and cost of debt. A highly leveraged purchaser is more likely to be guided by the cost of borrowing than by desired return on equity. In theory the future cash flow should be discounted by the weighted average cost of capital to obtain an appropriate offer sum for the value of the property. The required or risk-averse rate of return on equity should be used in the formula and not some proxy similar to the risk-free borrowing rate. This should produce a conservative valuation which he can service and live with.

Now in the market place, the value of the property is more likely to be set by competitive bidding and prices of other similar properties. The new purchaser has to adjust his evaluation

of future cash flow to a market determined price of land, or revise his expectations of what the property can produce. Alternatively, he may lower his required rate of return on equity in order to acquire a property. If he follows this route, he sacrifices his risk margin (both in the financial and business sense) and starts farming in a highly vulnerable risk-prone situation.

The new farmer's objective should be to lower his debt/equity ratio to a safe level as soon as possible. He can do so by development, diversification, and anticipated increases in productivity. In the longer run, he can capture gains from capital appreciation. This certainly seems to have been the New Zealand situation in the past. In the short term, however, his appropriate risk margins tend to be overlooked or down-played and for some years he remains vulnerable to changes in the physical or economic environment around him.

His situation is exacerbated by the funding requirements of development and/or diversification. He has to develop to get out of his initial debt/equity constraint. But quick development requires more external funds. This raises his debt/equity ratio and increases his exposure to financial risk. If he cannot borrow, or is unwilling to borrow further, he has to make improvements out of current income. This will then slow down the rate at which he can improve his debt/equity ratio and hence leave him exposed to higher financial risk for a longer period.

Given these observations, it is no wonder that starting farmers tend to be protected by the State. This is how the State Advances Corporation got started in 1894, and explains the plethora of concessional finance and tax saving schemes for young farmers. Some or all of the risk gets transferred to the State and institutions like the marketing boards and this enables the starting farmer to take on a higher level of financial risk than he otherwise should. When all these supports are removed the situation goes into reverse. Extremely conservative financing into farms must be followed, pressure on land values is taken off and far fewer young farmers have access to their own property.

The case of the developer is somewhat different. He may already have a reasonably safe debt/equity ratio. He may be moderately risk-averse in this situation and hence may not have an excessively high safety margin on future borrowing. In this case, we know investment opportunities can be ranked by their net present values, but we need to be clear about the discount rate. This should be based on his required rate of return on equity and not on his borrowing rate or the weighted average of the two. If he accepts anything lower than his equity rate of return, he is in fact accepting an investment prospect which did not maintain or improve his existing level of desired equity income, i.e., he would be worse off.

Thus the required equity rate of return incorporates margins for perceptions of risk he takes on by borrowing. With current changes in the risk environment, the application of such

a set of risk-averse rules would seem to place some restrictions on development and diversification. Investments which met such criteria would be fewer, and borrowing for development would be restricted. Opportunities for rationalisation would have to be sought in efficiency gains or diversification. But diversification under heavy borrowing also increases financial risk. A more conservative approach to farming and debt would be in the net result.

I find this analysis useful as it permits us to escape from capitalisation rates and discount rates based on risk-free borrowing rates of interest. It provides a useful framework for further development of risk-handling mechanisms in an uncertain environment and has considerable predictive power in analysing current financial decision-making in farm businesses.

The present situation in New Zealand is that financial leverage had been encouraged by Government action for two decades and then the measures supporting this situation were suddenly withdrawn. In effect, the previous policy allowed the safe margin of equity return over business risk to diminish. Farmers thus did not maintain a debt/equity stance that would allow survival in the face of all possible changes in cash flow. This view recognises that risk-averse farms would have to finance very conservatively to withstand drought, changes in product prices and changes in Government attitudes. Going back 50 years to 1939, this was exactly the situation as farmers came out of the debt reconstruction following the depression. Our theory suggests that farmers will now return to debt/equity structures similar to those prevailing in that far-off period.

Macroeconomic Policy and Risk

The other component of risk that I wish to address is the effect of macroeconomic policy and institutional arrangements on risk-averse producers. Such policies as price stabilisation arrangements are designed to reduce business risk as we have defined it. Such measures as insurance, Government income programmes, weather modification (e.g., irrigation) are all collective means of reducing risk to the individual. As well as these collective measures, individuals may take risk-averting actions such as disease prevention, or using income equalisation deposits.

There is a considerable literature on the effects of the transfer of risk away from the individual (Gabriel and Baker, 1980). This suggests that a decline in business risk will lead to an acceptance of greater financial risk. Farmers are encouraged to move out further along the debt/equity curve if they perceive that they have the back-up arrangements of collective stabilisation schemes and their individual risk prevention strategies. It is plausible that farmers will lower their required equity return that normally covers business risk before borrowing

commences. In the diagrams, this would bring the K_e curve somewhat closer to the K_d curve without altering their general shape.

In the 1960s and 1970s, such institutional arrangements were utilised to encourage investment in agriculture. Stabilisation policy was directly linked to an increased exports requirement and the method was one of ameliorating business risk facing producers.

This idea of a trade-off between business risk and financial risk can be expanded further. If agricultural policies are instituted that provide some form of future guarantee on farm incomes, then the business risk environment is changed (Collins, 1985). The effect could also be achieved by policies which underpin the land market or policies which manage interest rates. All such policies encourage increased financial leverage. A further argument has been advanced that commodity credit programmes can have an effect on financial leverage (Featherstone, Moss, Baker and Preckel, 1988). In the United States, the policy of providing loan rates and target prices for commodities can be viewed as income-augmenting and variance-reducing, thus encouraging increased financial leverage, and hence greater financial risk-taking.

The above authors (Featherstone et al) observe that this trade-off between financial risk and business risk has its own problems. I quote:

"It is a paradox that policies intended to make farming less risky may have led to more risk for farm proprietors. The likelihood of greater risk is enhanced by policies intended to make credit more readily available. Risk-reducing and income-augmenting farm policies may have unwittingly contributed to the fragility of agriculture."

The New Zealand experience certainly confirms these views. In the past, tax allowances were available to lower the cost of borrowing. Other tax shelters were created (depreciation and land development and livestock values). Buffer stock and buffer fund schemes were introduced and then gave way to guaranteed product prices for a period. Farm credit expansion was encouraged and subsidised. In the 1960s and 1970s, farmers' attitudes to increased debt, extremely conservative after the depression and World War II, were largely modified by propaganda and incentives, in aid of the export drive. Some of us took part in these decisions. However, when stabilisation policies were withdrawn, and other assistance removed, producer exposure to increased business risk was rapidly increased. The result has been an increased vulnerability to changes in business risk with consequent dire implications for their financial risk exposure.

I conclude that our current policy stance should be seeking to find ways whereby both individual and collective risk ameliorating mechanisms are explored and encouraged and provision made to find the appropriate balance in the future between business risk and financial risk. To this end, MAFTech will this year embark on a research programme into risk-reducing mechanisms operating in New Zealand agriculture at the technological, financial and macro levels. This seems to be the direction in which we should now move.

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**AGRICULTURAL TRADE LIBERALISATION INITIATIVES
UNDER GATT**

IMPLICATIONS FOR NEW ZEALAND

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Paper presented at the Annual Conference of the Australian Agricultural Economics Society
(New Zealand Branch), 30 June - 1 July 1989

INTRODUCTION

For over forty years, the General Agreement on Tariffs and Trade (GATT) has been the major instrument for the regulation of International trade. However, it was not until as recently as 1986, that agriculture was given priority as one of the negotiating issues in the Uruguay Round of Multilateral trade negotiations.

This paper reviews the circumstances leading to the Uruguay round and discusses the recent developments that have arisen out of this round. A welfare model is used to show that progress in freeing up world agricultural trade can indeed be quite slow. Given the importance of Agricultural exports to the New Zealand economy, the implications of the current state in trade talks for New Zealand are also assessed.

WHAT IS GATT?

Contrary to the general public's belief, the GATT is not an international organisation. Strictly speaking, the GATT (General Agreement on Tariffs and Trade) is nothing other than a legal document which contains a general code of conduct for international trade. The contents of this document are binding on all signatories to the general agreement. Contracting parties to the general agreement are expected to abide by the rules and regulations of the GATT.

The original document contains 38 Articles for the regulation of international trade. Over the years, various amendments to these Articles have added substantially to the GATT. Together these provisions aim at gradually liberalising world trade through the reduction of tariff and non-tariff barriers.

HISTORICAL DEVELOPMENT

The origins of the General Agreement on Tariffs and Trade (GATT) date back to the great depression of the 1930's. Economic difficulties following World War I prompted Western Countries to form an 'International Trade Organisation' (ITO) in order to regulate the international trading environment. It was strongly believed at that time that order in the international trading system would accelerate economic growth and would therefore be beneficial to the whole world. Unfortunately the formation of the ITO did not materialise.

Concurrently with the development of the ITO, however, a general agreement on tariffs and trade was also being negotiated among the industrial countries. The failure of the ITO to materialise in 1947 left the general agreement as the only comprehensive medium for the regulation of international trade. Since then, the GATT has become the major instrument for the discussion and settlement of international trade problems and disputes.

New Zealand was one of the 23 original signatories to the general agreement. Today a total of 96 countries (including all OECD member countries and about 70 developing countries) are contracting parties to the general agreement. The growth in the number of signatories to the GATT is mostly explained by its success over the years.

Substantial reductions in both tariff and non tariff barriers (NTB's) have been achieved under the GATT since 1947. Negotiations among countries have proceeded in several rounds, each lasting for about 4-5 years. The three most important rounds so far have been: (1) the pre-Kennedy Round (1947-1961); (2) the Kennedy Round (1964-1968), the Tokyo Round (1973-1980) and the on-going Uruguay Round (1986-1990).

Initially GATT talks focussed mainly on tariff measures. This is because non-tariff barriers were relatively unimportant in the early 50's. It has been estimated that tariff cuts in the Kennedy round of multilateral trade negotiations (MTN's) involved around US\$40 billion worth of trade (Greenaway, 1983). The same study estimated that tariff cuts in the Tokyo round of MTN's affected some

US\$112 billion of trade. In addition to the unprecedented success of the Tokyo round on tariff concessions, major gains were also achieved in the area of NTB's during that round. However, due to the diversity of forms that NTB's can take and the difficult task involved in assessing them, much work remains to be done within GATT on measures to control NTB's.

Interestingly, most of the gains made under GATT in terms of tariff and non-tariff concessions in the three rounds of MTN's mentioned earlier involved mostly manufactured goods. Although the general agreement at the time did have certain provisions for the conduct of agricultural trade, these provisions afforded agriculture a rather preferential status. The preferential treatment given to agriculture can possibly be explained by the fact that at the time the general agreement was being negotiated, there was a general feeling in the world that agriculture represents a special case. Food shortages in Europe and starvation in the world following the two world wars were experiences that are still fresh in the minds of many people.

The special treatment given to agriculture can best be illustrated by the provisions of Article XIX and XI of the GATT. Article XIX for instance provides a justification for quantitative import restrictions on all goods (including agricultural goods) if increasing imports are thought to harm domestic producers (Zietz and Valdes, 1988). Similarly, Article XI on 'General Elimination of Quantitative Restrictions' provides certain exemptions for primary products from the general prohibition of the use of quantitative import or export restrictions. The circumstances in which Article XI would apply include the prevention of or relief from shortages of food, the enforcement of domestic marketing or production control programmes, the removal of temporary domestic surpluses, the application of standards of commodity classification, grading or marketing (Zietz and Valdes, 1988). Other provisions of the GATT that shows preferential treatment to agriculture includes the subsidy issue - contained in Article XVI. Hathaway (1987) provides a clear discussion of this issue.

The two examples above show quite clearly that agriculture was originally given a special status in the general agreement. The special status was probably fully justified at the time the general agreement was negotiated by the political and economic conditions prevailing then. However, major political and economic developments over the years have resulted in the GATT to be unable to deal effectively with trade issues and disputes. In this respect, since the early 1980's contracting parties to the agreement have been calling for reforms of the GATT, particularly in its coverage of agricultural trade.

The international trading environment has changed quite dramatically over the last twenty years. The original six EC-member countries which used to be net importers of grain are now net exporters. The USSR and Eastern Europe shifted from net exporters to net importers of grain while Japan has increased its imports of cereals by about 20 million tons annually (Hathaway, 1987). Developing countries have also become more dependent on trade. Between 1970 and 1988, grain production (wheat and coarse grain) in the US has almost doubled. Similar trends exist for livestock and dairy production for both North American and the EEC. Table 1 shows the growth in the output of selected agricultural products between 1970 and 1987 in the major producing regions. The substantial

increases in output of wheat in both the EC and the US are particularly striking and are at the basis of the current problems in world agricultural trade. These increases have been partly possible through the use of generous price support and income transfer programmes in both the EC and the US.

The Common Agricultural Policy (CAP) contains the instruments for supporting European farmers. These instruments range from import restrictions to deficiency payment and minimum income support programmes. In the US too a number of government programmes exist. The ones that are most frequently used are the programmes that fall under the US Farm Bill for cereals, deficiency schemes for dairy and import restrictions for sugar.

One common aspect of support programmes in both the US and the EC is in their guaranteed price to the farmer for his products. Guaranteed prices in the US and the EC have generally been well above world prices for most agricultural products. As a natural response to higher prices, producers in both the US and EC have increased their output levels steadily. As a result, there has been a surplus situation for the major farm products in the world. The surplus situation has been particularly important for wheat, butter, dairy products, wine and coarse grain, to name a few examples.

The accumulation of surplus farm products in both the EC and the US over the last decade has led to the following developments:

1. In an attempt to dispose of the surplus production, both regions have made extensive use of export subsidies. The growth in the use of export subsidies in the EC is shown in table (2). Expenditures on export subsidies in the EC have more than doubled between 1974 and 1987. Export subsidies reached a peak of 50.6 percent of total government expenditure on agriculture in 1980. In 1987, the EC provided roughly ECU 9.2 billion in the form of export subsidies.

As far as export subsidies for farm products in the US are concerned, no breakdown is available on their exact amount. The US uses a maze of programmes that directly or indirectly have the same effects as export subsidies. The expenditures on these programmes have grown substantially over the last decade and is believed to have been competitively used in order to offset any competitive advantage of the EC as a result of the use of export subsidies.

2. The budgetary costs of agricultural support programmes and the export subsidy schemes have reached unprecedented levels in both the US and the EC and now represent a major burden on the treasuries of both regions. Tables (2) and (3) show the annual expenditures on agricultural price support and income transfer programmes for both regions over the period 1974 to 1987.

In the EC, total expenditures have more than doubled between 1980 and 1987 when a record ECU 23 billion was spent. Overall, expenditures on agricultural programmes in 1987 represented 0.62 percent of the EC GDP compared to only 0.34 percent in 1974. The same table also shows that the three products that received the most support include dairy products, beef and cereals. Over the last

decade, dairy products alone have accounted for an average of 30 percent of all expenditures. In 1988, about ECU 6 billion was spent on dairy programmes alone.¹

The information in table 3 shows the expenditures on price support and income transfer programmes for the US for the period 1974-1987. Expenditures have grown phenomenally to US\$22.4 billion in 1987 with a high of US\$26 billion in 1986. Total expenditures in 1987 represented 0.5 percent of the US GDP compared to only 0.07 percent in 1974. The two most important commodities that benefit from agricultural support programmes in the US are maize and wheat - together accounting for 67 percent of all expenditures in 1987. Expenditures on dairy in 1987 accounted for only 5.2 percent of the total US expenditures on agriculture, down from a high of about 70 percent in 1975. However, in monetary terms expenditures on dairy reached its peak in 1983 with US\$2.5 billion. In 1987 by comparison, expenditures on dairy totalled US\$1.1 billion.²

RECENT DEVELOPMENTS

The previous section has shown that the aggressive use of export subsidies by both the EC and the US have escalated in recent years. One result of the 'trade war' between the EC and the US has been the displacement of third exporters from their traditional markets. The countries mostly affected by the EC-US trade war are the smaller economies that are highly dependent on the exports of agricultural products. Given their smallness, it has become almost impossible for these economies to compete with the treasuries of the US and the EC in overseas markets over the recent years.

This situation led to a number of smaller agricultural exporting countries to join forces to form the Cairns Group in 1986.³ Together the Cairns group represents a total population of 550 million people. The Cairns group has the common interest of fighting the agricultural trade policies of the US and EC with the objective of gradually reforming world trade in agriculture.

¹Using an average exchange rate for 1987-88 of 1 ECU=NZ 1.88, expenditures on dairy programmes alone in 1988 amount to NZ\$11.3 billion.

²In 1987 expenditures on dairy was unusually low because of the Dairy Termination Programme (DTP) contained in the US Food Security Act of 1985. Under the DTP, dairy producers could voluntarily submit bids to terminate milk production over a period of 5 years by liquidating dairy cows. The DTP proposed to dispose of 897,266 dairy cows over the eighteen-month period (Marsh, 1988).

³The Cairns Group consists of Canada, Australia, New Zealand, Argentina, Brazil, Chile, Colombia, Hungary, Indonesia, Malaysia, Philippines, Thailand and Uruguay.

Prior to the formation of the Cairns group, however, a Committee on Trade in Agriculture was established for the first time at a GATT ministerial conference in 1982. The main task of this Committee included, among other things, an assessment of the situation in world agricultural trade. The establishment of this Committee itself indicates the willingness on behalf of Contracting Parties to do something about agriculture.

Increasing awareness among Signatories about the deterioration of the trade war between the EC and the US coupled with the pressures of budgetary outlays on agricultural support programmes in both the US and the EC paved the way for the inclusion of agriculture as one of the negotiating issues in the Uruguay Round of MTN's.

THE URUGUAY ROUND OF MTN'S

The Uruguay Round of MTN's was launched in September 1986 after a Special Session of the GATT Contracting Parties in Punta del Este, Uruguay. It is not surprising, after the turmoil that agriculture went through over the last decade, that agriculture became one of the negotiating items on the agenda for discussion at the Uruguay Round of MTN's. Other items for negotiation in the Uruguay round include textile and clothing, natural resource based products, tropical products and intellectual property rights among others.

The general objectives of the Uruguay round for agriculture can best be summarised by the following excerpt from the Ministerial Declaration on the Uruguay Round:

".....contracting parties agree that there is an urgent need to bring more discipline and predictability to world agricultural trade by correcting and preventing restrictions and distortions including those related to structural surpluses so as to reduce the uncertainty, imbalances and instability in world agricultural markets.

Negotiations shall aim to achieve greater liberalisation of trade in agriculture and bring all measures affecting import access and export competition under strengthened and more operationally effective GATT rules and disciplines, taking into account the general principles governing the negotiations, by:

- (i) improving market access through, inter alia, the reduction of import barriers;
- (ii) improving the competitive environment by increasing discipline on the use of all direct and indirect subsidies and other measures affecting directly or indirectly the phased reduction of their negative effects and dealing with their causes;

- (iii) minimising the adverse effects that sanitary and phytosanitary regulations and barriers can have on trade in agriculture, taking into account the relevant international agreements."
(Zietz and Valdes, p.109)

Proposals were requested from Contracting Parties on the ways that these objectives can best be achieved. Six major reform proposals were tabled in the negotiating group for agriculture. These include proposals from the US, the Cairns Group, Canada³, the Nordic Countries⁴, the EC and Japan.⁵ (Zietz and Valdes, 1988)

The US and EC proposals were diagonally opposed to each other. The US took a hard line position by calling for the elimination of all barriers to agricultural imports and of all subsidies that distort agricultural trade either directly or indirectly. By contrast, the EC proposal focussed on short term solution only by proposing a system of market management (Zietz and Valdes 1988). Although the EC foresees some longer term reduction in farm support programmes, it did not provide any guidance as to how the longer term objectives could be met given their short term strategies. Not surprisingly, the EC's proposal does not in any way, implicate changes in the Common Agricultural Policy.

Proposals from the Cairns group and Canada reflect more closely the US proposal in that they call for longer term solution and an end to subsidies. The proposals submitted by the Japanese and the Nordic countries, however, are closer to the EC in that they call for short term solutions rather than the immediate elimination of all trade distorting policies (Zietz and Valdes).

The polarised positions of the US and the EC on the reform proposals led to a deadlock in trade talks in December 1988 at the Ministerial meeting in Montreal during a mid-term review. The deadlock in the negotiations have prompted many observers at the time to conclude that the Uruguay Round of MTNs was over. Others even went further to conclude that indeed "GATT is dead".

The Current Situation

Since the Montreal meeting, several developments have taken place. Recent changes in the US and EC positions on reform procedures indicate that GATT is well and alive. It appears that both parties have found just enough ground to allow the Uruguay round of trade negotiations to continue (Schnittker and Van Stolk, 1988). Following a series of consultations led by GATT director general, Arthur Dunkel, between the Americans and the Europeans, there are indications that the US and the EC could come to some compromise and could eventually agree to some broad framework for agricultural negotiations.

⁴The Nordic countries represent Finland, Iceland, Norway and Sweden.

⁵Although Canada is a member of the Cairns Group, it tabled a separate comprehensive proposal by itself.

The Dunkel proposal recommends a freeze on support and production control measures which will include 1988 and 1989. In addition, Dunkel recommends that there should be a 'progressive' reduction in subsidies from those applied in the two most recent fiscal years. The overall Dunkel proposal closely resembles the Cairns Group proposal which to some extent includes elements of compromise between the EC and the US position.

The main recommendations of the Dunkel proposal (which at this moment is very likely to be accepted by contracting parties) are summarised below (Agra Europe, 1989):

1. Short term

- (i) a freeze on agricultural support measures; parties would agree "not to exceed current levels of support to reduce them on terms to be agreed and to make specific undertakings as regards a freeze";
- (ii) a standstill on tariff and non-tariff measures - including no extension to other products (including processed products); the amounts imported in 1989 and 1990 must not be less than in 1987 and 1988;
- (iii) there must be no increase in export subsidies or distribution of a greater total amount over a wider spread of products;
- (iv) no increase in officially supported prices and no decrease in production limitation measures;
- (v) the signatories are to report on their progress with these undertakings every six months, with the first report to be presented by December 1, 1989.

2. Long term

The aim is to arrive at "substantial, progressive reductions of agricultural support and protectionism":

- (i) measures taken since the Punta del Este declaration (September 1986) should be taken into account;
- (ii) long term measures should concern all direct and indirect subsidies and all obstacles to agricultural trade and should be subject to GATT supervision;
- (iii) market access: negotiations should aim at the lowering, the binding of and the conditions governing use of customs duties, quotas and non-tariff barriers;
- (iv) all subsidies supporting prices or incomes - should be subject to GATT disciplines with a view to reduction and elimination;

- (v) the negative effects of changes on less developed countries must be taken into account;
- (vi) there must be a long term harmonisation of animal health and plant health rules so as to achieve an internationally accepted standard - with a strengthening of the rules of Article XX so that protective measures can only be taken on 'solid scientific' grounds.

The Dunkel paper recommends that details on the short term measures should be agreed by December 31, 1989 and that the programme for the long term dismantling of agricultural support should also be set.

It has already been pointed out by the EC that the Dunkel proposal does not have any provision on monetary safeguard which would protect contracting parties from exchange rate fluctuations. Furthermore, the clause on export subsidies does not expressly cover the US deficiency payments schemes, which the EC believes are similar to export subsidies (Agra Europe, March 1989).

A closer look at the major objectives of the current round of MTNs and the Dunkel proposals indicate that:

1. although the GATT is attempting to increase market access, it does not call for the elimination of import barriers. Hence, there are reasons to believe that it is not likely to see an end in the use of subsidies in the foreseeable future. By implication then, both the US and the EC (and other countries) will continue to give assistance to agriculture (Schnittker and VanStolk, 1989).
2. the Dunkel proposal is essentially a compromise between the US and EC positions in order for trade talks to resume. These proposals call for the EC to slowly reduce their subsidies. The problem with this approach is that farm price guarantees in the EC have been so high recently that marginal subsidy cuts would not solve the surplus situation (Schnittker and VanStolk, 1989).
3. the use and propagation of non-tariff barriers can persist since no comprehensive rule has been set to control them. Only a 'strengthening' of Article XX is envisaged.

The situation which is likely to prevail in the foreseeable future therefore is not too different from what it is right now. To exemplify, the US Congress has set spending on the Export Enhancement Programme at US\$700 million for 1989 (Agra Europe, March 1989). The EC, on its side, has not announced any major changes in its programmes either (Agra Europe, June 1989).

Given the likelihood for the adoption of the Dunkel proposal, it is therefore very unlikely that any agreement will be reached between Contracting Parties that results in major cuts in support levels to farmers in the foreseeable future. Reductions in support levels will be marginal from year to year and the process can prove to be slow and tedious.

The more pessimistic observers have also pointed out that favourable market prices for primary commodities over the last two years might jeopardize the progress of the trade talks. Higher world prices for farm produce implies less burden on government programs in the exporting regions. As a result there is less pressure on the treasuries to ensure that progress is made within GATT on agricultural MTNs. If favourable prices prevail for the next few years, it is possible that negotiations within GATT will lose its momentum and trade talks on agriculture can eventually die.

Welfare Consideration of MTNs

Classical welfare economics theory postulates that any policy change necessarily results in losers and gainers. The overall effect of a change in policy is beneficial to a society whenever the resulting gains are large enough to compensate the losers. Whenever the magnitudes of the gains from the policy change exceeds the losses, the new policy is said to be desirable.

One of the objectives of the current GATT talks is to reform the world agricultural trading environment. Such reforms involve changes in the domestic agricultural policies of a number of countries. As argued above, the gainers will generally favour the policy change while the losers will likely oppose any policy reform.

In the case of agriculture, the two important regions which are at confrontation are the EC and the US. Although trade theory suggests that there are potential gains from free trade, these two regions have been slow in implementing policies that will eventually lead towards free agricultural trade. One reason for the slow responsiveness is probably explained by the fact that the potential losers in both regions can effectively block reform unless adequately compensated (Schmitz, 1988).

A case in example is the European Community. Since the early 1960's, farmers have earned substantial economic rent from price support programs and other forms of protectionism. As a result, the EC switched from being a major importer of some farm products (grain, butter) into a major exporter within less than two decades. Following Schmitz (1988), a simple partial equilibrium framework is used to illustrate why the EC is very slow in freeing up its agricultural trade.

Figure 1 shows the domestic demand and supply curves for grain in the EC as D and S respectively. By offering a guaranteed price of P_G , which is well above the world price P_W , domestic supply is Q_2 . Domestic demand is Q_1 . This leaves quantity $Q_1 - Q_2$ for exports. At the price P_G , EC restitution payments (export subsidies) on exports equal the area $a b c d$. The world price P_W represents the tariff and non-tariff distorted price.

Let's assume that in a situation of free trade, the world price increases to P_f . The conditions that would allow P_f to prevail would also call for the EC to do away with its programmes which guarantee the price P_G . Under these new conditions, EC producers lose the amount $P_f P_G$ ade. Consumers however, would

gain the amount $P_c P_g af$. In addition, the treasuries would save amount $abcd$ in export subsidies which would no longer be needed. The end result in this case is a net gain of the amount $abcd$ since consumer gains exactly offset producer losses (Schmitz, 1988).

The above analysis shows quite clearly that producers have vested interests to block any change in policy that would result in the dismantling of domestic support programs. Other interest groups that can potentially lose and therefore block the GATT initiatives to liberalise trade include suppliers of fertilizers and chemicals, grain companies and processors (Schmitz, 1988).

Several studies have shown that the potential gains from freeing world agricultural trade can be substantial. Tyers and Anderson (1987) for example have estimated that global liberalization would result in an annual gain of about US\$39 billion to the world. The same study has also shown that as a result of protectionism in agriculture, producers have earned some US\$20 billion a year in economic rent.

Hence, it is clear from the magnitude of the economic rent to producers who benefit from price and income support programmes that producers are likely to oppose any proposal for major reforms. In both the US and the EC, farm groups are highly organized and well represented on the political scene. Any attempts to implement programs that will deprive them from the current levels of economic rent will, without any doubt, be met by opposition. In this respect, trade reforms will likely progress at a very slow pace despite the conventional wisdom that trade liberalisation will result in substantial overall gains to society.

Implications for New Zealand

The major agricultural exports of New Zealand include meat and meat preparations, wool, dairy produce and fruit and vegetables. Table 4 shows the value of exports of each of these products for the period 1978-1988. The value of exports of most of the above products have increased steadily over the last decade. Of the commodities shown in Table 4, meat and meat preparations, wool and dairy products are by far the three single most important agricultural exports of the country. In 1988, these three commodities alone accounted for 73 percent of the total export earnings from agriculture.

Another interesting feature of New Zealand's trade lies in its concentration in four major markets. These are the United Kingdom, Australian, Japanese and American markets. These four markets have taken an annual average of 55 percent of the country's exports over the last 5 years. The value of exports to Japan and Australia has grown by about four fold between 1978 and 1988. The value of exports to the US and the UK has also grown but to a much lesser extent.

In order to analyse the implications of future developments in trade relations for New Zealand, this paper focusses on the main commodities exported and their destination. The breakdown of New Zealand's major agricultural exports by

major destination is summarised in Table 5 for 1979, 1983 and 1987. The following discussion will analyse each commodity separately:

Wool

The four major markets for New Zealand wool are the UK, the USSR, Japan and China. A recent development for this commodity has been the substantial increases in exports to China. The relative importance of the Japanese and UK markets have declined over the years. To the extent that the USSR and China do not belong to the GATT, export levels to these countries depend mostly on bilateral negotiations. It is therefore unlikely that New Zealand will derive any major benefit in its wool trade from the current GATT talks.

Beef and Veal

The US is the single most important market for NZ beef and veal. The US takes about 70 percent of New Zealand's beef annually. It is thought that reductions in export subsidies in beef production in both the EC and the US (and other countries, including Japan) would be highly beneficial to New Zealand. New Zealand has a comparative advantage in the production of beef and stands to be a major beneficiary of policies that call for the reduction or elimination of subsidies. Dewbre, Harris and Sheales (1986) have estimated that freeing up the US and Japanese beef markets can potentially result in net gains of around US\$50 million annually to New Zealand. Hence, liberalisation initiatives under GATT would be highly beneficial to New Zealand in this area. However, recent evidence suggests that the depletion of the NZ cattle stock as a result of the current drought would be a major constraint on the extent of the gains that NZ can reap from global beef market liberalisation.

Lamb and Mutton

The major market for New Zealand lamb used to be the UK. Today, the UK market share has dropped from 70 percent to around 26 percent. Iran constitute the next major market but exports to Iran are rather irregular.

The major markets for mutton are the USSR, and the UK. Again, exports to the USSR have been irregular and fluctuate from year to year. The Republic of South Korea has also been irregular in its purchases of New Zealand mutton.

For both lamb and mutton, the UK market remains the important market. The formation of the single market in Europe in 1992 poses some threat to the access of New Zealand lamb and mutton to that market. It is unlikely that any guaranteed access for New Zealand lamb and mutton to the UK will be provided under GATT given that the EC can still use quantitative restrictions under the Dunkel proposal as long as these restrictions are not any worse than what they were in 1988.

Of equally serious concerns for New Zealand, however, is the recent growth in the level of support provided by the EC for sheep and goat meat. In 1980 for the first time, the EC paid out ECU 53.5 million. In 1986, expenditures on sheep and goat meat programmes reached ECU 526 million; an increase of close to 900 percent in seven years! The current GATT negotiations could possibly restrict these subsidies but these would be achieved very slowly and would be a longer term solution. As pointed out earlier, marginal cuts in subsidies are unlikely to result in any significant change in the current situation. Hence, the immediate problems facing New Zealand's sheepmeat and mutton exports would be best solved through bilateral negotiations with our trade partners.

Dairy Products

By world standard New Zealand is not a major producer of dairy products. However the small size of the domestic market makes the dairy industry highly dependent on world markets. New Zealand exports roughly 73 percent of its butter, 81 percent of its cheese, and about 80 percent of its milk (dried and condensed).

The major market for New Zealand's butter is the UK. However the proportion of total exports that went to the UK in 1987 was almost half the amount the UK took in 1979. The New Zealand butter market is getting more diversified with important sales in recent years to countries like Algeria and Poland.

Most of New Zealand's cheese goes to Japan and the USA. Over the years both Japan and the USA have reduced their imports of cheese from New Zealand. The high levels of protection in the US dairy industry might explain some of the decline in market share in the US. Trade liberalisation initiatives might help ease the situation for cheese. New Zealand can capture substantial market share for cheese in both the US and Japan as a result of freer trade.

The market for condensed and dried milk is more diversified. New Zealand principal markets are the Philippines, Malaysia, Indonesia and Peru. However, the bulk of condensed and dried milk goes to a number of smaller markets. Most of these new Asian markets are highly regulated and any initiatives for trade liberalisation would likely benefit New Zealand's trade in condensed milk.

Hence, as far as any gains from global liberalisation are concerned, the dairy sector stands to gain substantially. Over the years, the EC has changed from being the world's largest importer to the World's largest exporter of dairy products. The US also emerged as an important exporter. All these changes are a direct result of the income and price support programmes for dairy in both regions. However, policies that call for the dismantling of these programmes are likely to be ignored by both the US and the EC. Therefore, the prospects for any immediate gains arising out of the Uruguay Round for dairy are remote.

Concluding Remarks

For forty years now, the GATT has acted as the major instrument for the settlement of international trade problems and disputes. However, most of GATT's achievements have been related to manufactured goods since agriculture enjoyed a preferential treatment in the was largely left out of the original agreement. Despite the relative ease of negotiations for manufactured goods, compared to agriculture, it has taken GATT nearly four decades to effectively reduce tariff and non-tariff barriers on manufactured goods.

Given the strategic nature of agricultural products, it is unlikely that the GATT will achieve any immediate substantial reductions in tariffs and non-tariff measures affecting agricultural trade under the Uruguay Round. The recent developments and the current situation show clearly that indeed agricultural trade liberalisations under the GATT will be slow and will take as much, if not more time as it took for manufactured goods, before any significant changes can be achieved.

Being a signatory to the General Agreement, New Zealand fully supports GATT's initiatives for agricultural trade liberalisation. The potential gains to New Zealand following global trade liberalisation can be substantial. However, the analysis in this paper has shown that global liberalisation is quite unlikely under the current condition. In this respect, New Zealand would be well advised to undertake bilateral negotiations with its trade partners in order to maintain and increase the access of its farm products to these markets. Since the bulk of New Zealand's agricultural products go to four major destinations, it is recommended that it focuses its energies in cultivating its trade relationship with these countries. This is specially relevant in the case of the Japanese market which despite its highly regulated nature offers important trade opportunities for New Zealand's agricultural exports.

To summarise, agriculture has come a long way under the GATT. Today there is wide support among Contracting Parties for agricultural trade reform. However, one has to be realistic about the speed at which reform can happen. Reforming world agriculture involves changes in institutions and these will prove to be difficult, slow and tedious. In this respect, the Uruguay Round of MTN's will not accomplish much in terms of reforms by the time it is over in 1990. However, the true value of the Uruguay Round has been in its explicit inclusion of agriculture as a negotiating issue. The process of agricultural trade negotiations started at the Uruguay Round will continue for many years to come. As far as the prospects for New Zealand agricultural trade are concerned, it has been pointed out that the bulk of our exports go to four major markets. Of these only the Australian market offers some guaranteed access through the Closer Economic Relations pact signed between the two countries. The other markets, however, are highly regulated and in the absence of agricultural trade reform will prove difficult to penetrate. This is especially true for the UK market, which by 1992 will be part of the single European market. In this connection, and since agricultural trade reform will most likely be very slow, NZ would be wise to diversify its exports into other markets. One attractive option would be for NZ to strengthen its trade ties with member countries of the Cairns group. Since these countries have the common objective of freeing up agricultural trade, it should not be difficult for NZ to penetrate these markets. The formation of a trading block among these countries would be ideal. However, the feeling among Cairns group is that such a realisation is remote at this stage.

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FIGURE 1: Welfare Implications of Trade Liberalisation

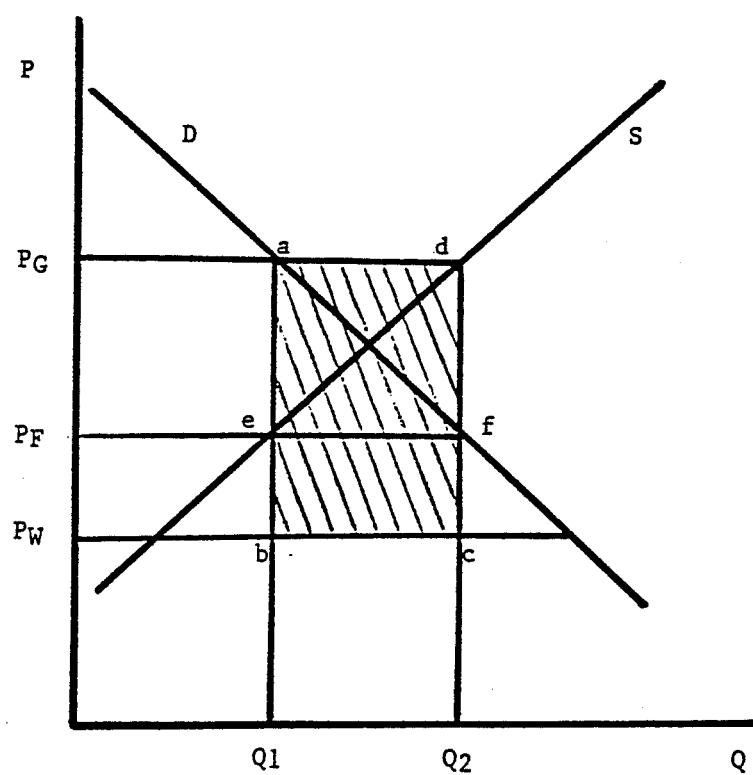


TABLE 1: Growth in Output of Selected Commodities : 1970-1986

	Beef and Veal	Wheat	Butter	Cheese	Cow Milk
	----- percent -----				
United States	11	83	3.8	136	24
EC 12	20	74	37.0	60	26
France	15.3	140	30.0	66	18
USSR	51.0	-21	69.0	72	21

Source: Computed from Hathaway, 1987.

TABLE 2: Gross expenditures by the EC for price support and income transfers, 1974-87

Type	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
	(EUA/ECU billion) ^a													
Outlays of EAGGF ^b	3.1	4.7	5.6	6.8	8.7	10.4	11.3	11.0	12.4	15.8	18.4	19.7	22.1	23.0
	(percent)													
As share of EC GDP	0.34	0.46	0.44	0.48	0.55	0.59	0.57	0.49	0.51	0.61	0.66	0.66	0.63	0.62
Share of—														
Restitutions ^c	19.0	20.5	26.2	37.5	40.8	47.7	50.6	46.8	40.8	33.8	34.5	33.8	33.5	39.8
Interventions ^d	81.0	79.5	73.8	62.5	59.2	52.3	49.7	53.2	59.2	66.2	65.5	66.2	66.5	60.2
Share of—														
Dairy products	39.4	24.3	40.8	42.8	46.3	43.4	42.0	30.0	26.8	27.6	29.6	29.9	24.4	26.6
Beef	10.5	20.7	11.0	6.8	7.4	7.2	12.0	12.9	9.3	10.9	13.9	13.8	15.7	10.2
Cereals	12.9	13.1	11.7	9.2	12.8	15.0	14.8	17.2	14.7	15.3	9.0	11.6	15.3	15.9

Source: Based on data from Commission of the European Communities, *The Agricultural Situation in the Community*, various issues (Brussels and Luxembourg: CEC, various years).

^a From 1974 to 1978, expenditures are given in European Units of Account; from 1979 to 1987, they are in European Currency Units. Figures do not include expenditures by national governments.

^b European Agricultural Guidance and Guarantee Fund; the figures exclude expenditures of the "guidance section."

^c Export subsidies.

^d Including stock holding, less production levies for milk.

TABLE 3: Net expenditures by the United States for price support and income transfers, 1974-87

Type	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
	(US\$ billion)													
Total expenditures ^a	1.0	0.6	1.0	3.8	5.6	3.6	2.7	4.0	11.6	18.8	7.2	17.6	25.8	22.4
	(percent)													
As share of U.S. GDP	0.07	0.04	0.06	0.19	0.25	0.15	0.10	0.13	0.37	0.56	0.19	0.44	0.61	0.50
Share of ^b —														
Maize	44.2	26.1	11.0	10.5	30.2	24.3	46.2	^c	36.9	30.5	...	25.1	40.7	55.1
Wheat	20.8	4.4	6.9	49.8	14.9	8.4	31.9	38.5	19.2	18.2	35.1	26.4	13.3	12.7
Dairy products	4.6	73.8	4.0	12.3	4.3	0.7	37.2	47.4	18.8	13.5	20.9	11.9	9.0	5.2
Cotton	72.2	40.5	0.8	2.7	4.0	4.0	2.4	8.4	10.3	7.3	3.4	8.8	8.3	8.0
Soybeans	2.6	0.1	0.6	0.1	4.3	2.2	1.5	1.5	...	4.0	6.2	...

Source: Selected data from Joachim Zietz, "Der Agrarsektor in den GATT-Verhandlungen," *Die Weltwirtschaft* 1 (June 1987): 200-211.

Note: Expenditures on PL480 food aid are excluded.

^a Gross expenditures minus repayments of credit.

^b Shares of the net expenditures do not sum to 100.

^c Receipts exceed expenditures because of repayment of credit.

TABLE 4: New Zealand Main Agricultural Exports : 1978-1988

	Total Meat & edible offal	Dairy Products	Total Fruits *&Veges	Casein & Caseinates	Wool	Forest Products	Total Ag'l Export	Total merchandise Export	Agriculture as percent of total
	-----\$ million/f.o.b.-----							----percent----	
1978	756.8	450.3	76.8	60.5	580.0	234.6	2159	3247.4	66.4
1979	1087.2	483.0	103.8	83.5	683.3	296.8	2738	3985.2	68.7
1980	1183.6	685.9	128.7	133.9	930.8	440.3	3503	5022.5	69.7
1981	1510.0	850.9	170.0	140.4	892.6	526.1	4090	5915.1	69.1
1982	1551.6	1146.4	215.1	176.4	918.8	534.0	4542	6940.3	65.4
1983	1855.4	1287.5	261.6	194.9	1017.1	495.1	5112	7935.4	64.4
1984	1704.9	1213.9	405.3	195.6	1113.3	533.4	5166	8623.9	59.9
1985	2208.2	1434.8	327.6	265.4	1475.4	771.2	6483	11315.8	57.3
1986	1716.5	1388.6	465.2	251.7	1281.4	730.1	5833	10571.7	55.2
1987	2245.7	1417.3	618.9	281.1	1566.9	754.2	6884	12107.2	56.8
1988	1999.8	1434.0	646.9	302.9	1621.8	956.2	6962	12451.5	55.9

Note: Dairy products include milk, cream and yoghurt, butter and cheese.
Fruit includes mainly kiwifruit and apples.

Source: Key Statistics, Department of Statistics, New Zealand (various issues).

TABLE 5: Destination of New Zealand's Major Agricultural Exports, 1979, 1983, 1987

Commodity		1979	1983	1987
		-----percent-----		
Wool	United Kingdom	14.6	12.9	11.2
	USSR	12.1	10.8	10.7
	Japan	12.0	10.5	9.2
	China	4.1	12.3	17.3
Beef and Veal	United States	73.2	73.7	79.2
	Canada	12.2	10.7	8.3
	Japan	2.3	2.9	3.0
Lamb	United Kingdom	62.3	43.3	26.9
	Iran	2.3	32.9	26.8
	Japan	6.6	3.6	5.0
	United States	4.5	1.7	1.0
Mutton	USSR	33.9	46.3	29.8
	Japan	32.3	16.5	12.3
	R.O. Korea	20.4	7.4	16.2
	United Kingdom	8.0	16.1	20.6
Butter	United Kingdom	65.1	45.4	34.3
	USSR	6.7	31.0	5.2
Cheese	Japan	41.6	30.0	31.4
	United States	27.1	23.3	17.4
	Australia	7.8	8.6	7.0
	United Kingdom	0.1	9.3	7.1
Condensed Evaporated and Dried Milk				
	Philippines	14.5	11.4	10.7
	Malaysia	15.2	13.4	12.6
	Indonesia	12.4	10.2	5.5
	Peru	8.2	4.2	7.7

Source: Data from "Report and Analysis of External Trade : 1982-83 and 1986-87"

**Paper Presented to the Annual Conference
of the New Zealand Branch of the Australian Agricultural
Economics Society; Flock House, Bulls, June 1989**

**MEASURES OF AND TRENDS IN
AGRICULTURAL COMPETITIVENESS
IN NEW ZEALAND**

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The views expressed in this paper are those of the authors and do not necessarily reflect the official view of the Ministry of Agriculture and Fisheries. Helpful suggestions and comments of Doug Galwey, Grant Scobie, Walter Moore, Wilhelmina Eveleens, Ron Sandrey and Robin Johnson are acknowledged. The authors also wish to thank Ralph Lattimore for making available data series derived for earlier work in this topic. Errors and omissions remain the responsibility of the authors.

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1 INTRODUCTION

1.1 Background and Key Definitions

The impetus for the work reported in this paper arose from two different components of Policy Services MAFCorp work programme. Firstly, a major study being undertaken to examine the impacts of the economic liberalisation on total New Zealand and agricultural sector growth identified real exchange rates as a variable of central importance. Corbo and de Melo (1987) in summarising the experiences of overseas countries concluded that "*successful liberalisation depends on credibility and on having a stable and competitive real exchange rate*", pg 117. Consequently, we have a need to determine appropriate measures of real exchange rates for New Zealand and to be able to examine and explain what causes changes in these rates and how these are related to competitiveness. Secondly, the ongoing commodities market and agricultural sector monitoring and analysis work programme requires commodity and industry specific measures of New Zealand's relative competitiveness in export and total domestic markets.

Competitiveness defined in broad terms is the ability of one industry or sector to attract a greater share of scarce resources from another with which it is in competition. In this study, it has been useful to distinguish between three related types of competitiveness. These are:

- (a) intrasectoral competitiveness - which is concerned with competition within and between industries. For example, we will consider competition between the wool and the lamb enterprises within the sheep industry, and also competition between the beef and the dairy industries;
- (b) intersectoral competitiveness - is concerned with competition between the agricultural and the manufacturing sectors, or between those industries producing tradeable commodities and those industries producing non-tradeable commodities; and
- (c) international competitiveness - is the ability of New Zealand to export commodities to our trading partners at a price lower than that of other countries. This will be shown to be related to the value of the New Zealand currency relative to the currency of our trading partners, and to relative costs in the production of those export commodities.

The following key points will be made:

- (a) a number of different measures of competitiveness exist, and researchers need to be careful that they choose the one appropriate to the issue being addressed. Key definitions used throughout the paper are summarised in Table 1 below; and
- (b) while there is a relationship between the measures, it is not necessary that trends over time will be similar and in fact they may be quite different.

Table 1: Definitions of Key Measures of Competitiveness

Terms of Exchange (TOE) is a comparison of the prices (at farmgate) a farmer (or industry) receives for their output with the prices they pay for their inputs.

Terms of Trade (TOT) is a comparison of the prices a country receives for its exports with the prices it pays for its imports.

Real Rate of Exchange (RRE) is defined as the prices received for a tradeable commodity expressed relative to the prices paid for non-tradeable inputs.

Nominal Bilateral Exchange Rate (NER) is the rate at which the monetary unit of one nation is exchanged with the monetary unit of its trading partners.

Real Exchange Rate (RER) is the nominal exchange rate adjusted for the inflation rate differential between the domestic economy and each of the trading partners.

Trade Weighted Real Exchange Rate is the real exchange rate weighted according to the importance of each of the foreign economies in the total trade of the domestic economy. (Note: this is sometimes known as the real effective exchange rate, which is misleading since effective usually means adjusted for assistance.)

1.2 Issues and Objectives

Much is heard about how we are going to be lead back to prosperity by a resurgence of the New Zealand rural sector with little direction as to how or why this might take place. Instead, we continue to hear discussion of how this or that industry has been hurt by increases in exchange rates, and how a fall in the exchange rate means more New Zealand dollars to our rural producers.

But it is not only the returns to New Zealand farm produce overseas which is of concern. Farmers also face economic pressures when the costs of inputs, most manufactured domestically, rise at a faster rate than returns on outputs. If such distortions continue for long enough, then rural capital and labour will shift out of the sector in order to gain the higher returns available in other sectors.

It is our view that competitiveness holds the key to medium and long-run prosperity in a relative sense, and hence the ability of two competing groups who utilise a common resource to bid against one and another. We will test whether nominal exchange rates are the key to competitiveness for the major export dominated New Zealand pastoral agricultural industries.

The measure which is available and commonly used to track international competitiveness is the Trade Weighted Index (TWI) calculated and published by the Reserve Bank. This index is a real exchange rate weighted by countries respective shares in New Zealand's total trade, both exports and imports. Because of this weighting practice, the index may fail to fully reflect changes in New Zealand's relative

competitiveness in specific export markets or for specific agricultural products. Policy Services MAFCorp requires commodity specific export weighted exchange rates and a composite pastoral products index. Moreover, researchers would find it useful to gain an understanding of how these specific indexes move relative to the TWI, and which key currencies need to be monitored. We need this information to provide better market intelligence and policy advice. Specifically we need:

- a clear understanding of what competitiveness is and what factors are involved;
- to be cognisant of differences between sectors and industries; and
- some idea of what has happened in the past (measures) to avoid mistakes and target the areas of greatest gain.

Accordingly, the objectives of this paper are to construct and evaluate measures for the 15 year period (1965-1990) and to identify trends and differences which exist between industries, sectors and internationally.

1.3 Outline of the Paper

Factors affecting intrasectoral competitiveness are outlined in Chapter 2 along with the theoretical framework enabling the calculation of indices. Measures of intersectoral competitiveness are presented and analysed in the following chapter. Following this, measures of international competitiveness are presented and discussed in Chapter 4. Principal findings and implications for further research are then highlighted in Chapter 5.

2 MEASURES AND TRENDS IN INTRASECTORAL COMPETITIVENESS

2.1 The Theoretical Basis

The ability of each industry to compete for a given stock of resources is dependent on the real return to the factors of production. This in turn is dependent on the price received for goods and the costs involved in producing them and is measured by the "terms of exchange". A change in this ratio will see a shift of resources away from the industry or sector that has experienced a relative decline in it's terms of exchange.

Producers in the sheep industry are affected adversely by a change in their terms of exchange if the price of their inputs increase (falls) at a faster (slower) rate than the producers input costs in another industry eg: beef. Similarly producers of sheep will be adversely affected if the price they receive for their output increases (falls) at a slower (faster) rate than the prices beef producers receive for their output. In industry's where the terms of exchange worsen, resources will tend to flow out of that industry, or as in the case of the competing enterprises of wool or lamb production, resources will be concentrated more towards the production of that product giving the greatest returns to sheep production. In summary, a shift in these relative returns or costs will entail a shift along the production possibilities frontier towards the industry the resources are attracted to.

2.2 Trends in Pastoral Industries Competitiveness

Competitiveness shifts between the major pastoral industries of wool, lamb, beef and dairy are analysed in this section. Relative output unit returns (at farmgate) for the period 1964/65 to 1988/89 are summarised in Table 2. Separate industry returns are shown, with the combined pastoral sector aggregate and for comparison, the returns to non-tradeable industries. This later series serves to highlight the dependence of New Zealand pastoral industries on export markets and hence producers inability to pass on cost increases. Pastoral product prices are determined on world markets and New Zealand has only limited ability to influence those prices, whereas non-tradeable prices are determined on home markets alone.

Table 2: Output Price¹ Indices for the Pastoral Industries

Year	Wool	Lamb	Beef	Dairy	Pastoral
1964/65	48.6	59.8	57.2	54.6	52.4
1965/66	48.0	55.7	59.8	57.7	52.5
1966/67	40.7	45.2	57.5	57.8	51.5
1967/68	33.8	54.8	67.5	53.1	50.9
1968/69	38.9	66.7	73.2	50.5	53.5
1969/70	35.5	60.4	89.8	51.6	62.4
1970/71	33.7	57.4	92.9	60.9	62.7
1971/72	41.9	52.1	90.2	85.8	70.0
1972/73	90.4	93.0	129.5	82.1	94.8
1973/74	87.4	95.4	103.1	90.6	96.8
1974/75	58.3	63.4	63.0	90.2	77.2
1975/76	100.0	100.0	100.0	100.0	100.0
1976/77	129.8	133.4	107.8	108.5	119.8
1977/78	119.6	125.0	113.1	118.8	120.5
1978/79	137.5	148.0	192.7	122.8	153.1
1979/80	166.5	160.8	207.6	147.7	175.4
1980/81	155.6	168.6	207.6	184.6	197.9
1981/82	201.0	224.3	247.0	213.1	245.9
1982/83	201.0	228.8	282.9	255.7	260.6
1983/84	201.0	240.0	313.0	248.6	283.7
1984/85	237.1	260.8	402.1	281.2	334.7
1985/86	216.0	147.5	298.8	282.7	280.3
1986/87	261.7	225.1	315.2	252.1	297.1
1987/88	284.7	169.7	277.2	289.0	299.2
1988/89(e)	317.8	197.8	293.3	378.5	347.7

¹ includes output assistance at farmgate

Prices for individual commodities have shown considerable fluctuations around a general stable trend. Beef prices exhibit a tendency to reflect more fully the gains of periods of commodity booms (1973, 1979) than other prices. Lamb prices which were relatively high in the 1960's and early 1970's have fallen significantly in the late 1980's, although this contrasts with gains from major assistance to output in the period 1982-1985. Beef prices on the other hand have shown apparent cyclical variation around a more or less stable trend, while dairy prices have also recovered from a recent period of depressed returns.

Relative prices paid (PPI - unit cost indices) for the pastoral industries are contrasted with movements in the consumer price index (CPI) in Table 3. With some minor differences, costs in the pastoral industries have risen at around similar rates, and a rate not very dissimilar to changes in the CPI.

Table 3: Input Price Indices for the Pastoral Industries

Year	Sheep	Beef	Dairy	Pastoral	CPI
1964/65	52.4	57.8	48.6	48.0	41.5
1965/66	53.9	53.2	49.9	51.0	42.9
1966/67	55.3	54.8	51.2	52.7	45.7
1967/68	57.1	56.8	58.5	55.8	47.3
1968/69	58.4	58.3	59.8	57.5	49.8
1969/70	59.5	59.9	61.6	59.3	52.5
1970/71	62.1	62.2	63.5	62.3	58.2
1971/72	65.9	59.5	67.9	66.4	62.6
1972/73	69.2	69.5	71.5	69.4	67.2
1973/74	78.9	79.2	80.5	79.5	74.0
1974/75	89.1	88.8	90.0	89.6	84.9
1975/76	100.0	100.0	100.0	100.0	100.0
1976/77	118.0	118.8	117.6	118.0	114.0
1977/78	135.8	136.8	135.3	136.4	127.9
1978/79	147.9	148.8	146.8	148.9	143.9
1979/80	179.9	183.0	178.9	182.1	169.7
1980/81	221.7	227.4	219.2	224.2	195.2
1981/82	254.3	260.7	251.1	262.2	228.3
1982/83	284.9	292.3	283.3	289.4	247.2
1983/84	287.3	294.8	285.8	290.4	259.0
1984/85	321.7	331.0	317.3	319.1	301.9
1985/86	361.8	373.4	357.6	361.8	332.0
1986/87	388.6	403.2	387.5	390.3	387.4
1987/88	412.3	428.1	412.2	418.7	427.2
1988/89(e)	432.9	450.4	435.0	440.5	448.1

¹ prices of farm inputs expenditure weighted

Rates of exchange for the pastoral industries are summarised in Table 4. Rates show that all the pastoral industries have faced considerable fluctuations around a general decline. Short-term differences in the relative competitiveness of different pastoral enterprises and industries has been the norm. A highlight of recent trends has been the reversal in the fortunes of the lamb industry over the 1980's. In the period to 1985, the industry was relatively attractive and benefitted from the assisted returns. Upon the removal of assistance, fortunes of lamb producers have declined rapidly and they are significantly below those for the other pastoral industries. The recent improvement in wool, beef and dairy returns are emphasised.

Table 4: Rates of Exchange Measures for the Pastoral Industries

Year	Wool	Lamb	Beef	Dairy	Pastoral
1964/65	0.93	1.14	1.10	1.12	1.09
1965/66	0.89	1.03	1.12	1.16	1.03
1966/67	0.74	0.82	1.05	1.13	0.98
1967/68	0.68	0.96	1.29	0.91	0.91
1968/69	0.67	1.14	1.26	0.84	0.93
1969/70	0.60	1.02	1.50	0.84	1.05
1970/71	0.54	0.92	1.49	0.96	1.01
1971/72	0.63	0.79	1.36	1.26	1.05
1972/73	1.30	1.34	1.86	1.15	1.37
1973/74	1.11	1.21	1.30	1.13	1.22
1974/75	0.65	0.71	0.71	1.00	0.86
1975/76	1.00	1.00	1.00	1.00	1.00
1976/77	1.10	1.13	0.91	0.92	1.02
1977/78	0.88	0.92	0.83	0.88	0.88
1978/79	0.93	1.00	1.30	0.84	1.03
1979/80	0.92	0.89	1.13	0.83	0.96
1980/81	0.70	0.76	0.91	0.84	0.88
1981/82	0.79	0.88	0.95	0.85	0.94
1982/83	0.70	0.80	0.97	0.90	0.90
1983/84	0.70	0.84	1.06	0.87	0.98
1984/85	0.74	0.81	0.21	0.87	1.05
1985/86	0.60	0.40	0.80	0.79	0.77
1986/87	0.67	0.58	0.78	0.65	0.76
1987/88	0.69	0.41	0.65	0.70	0.71
1988/89(e)	0.73	0.46	0.65	0.87	0.79

3 DISCUSSION OF RESULTS AND TRENDS IN INTERSECTORAL COMPETITIVENESS

3.1 Theoretical Models of Tradeable/Non-Tradeable Sectors Interaction

Using a simple two sector framework, we can examine intersectoral competitiveness while temporarily ignoring the external sector. For simplicity, we assume a closed economy which has an agriculture and a manufacturing sector. The terms of exchange is the same as defined for intrasectoral competitiveness, and changes in the prices of inputs and/or outputs between sectors will cause a flow of resources between sectors e.g. if the terms of exchange for agriculture worsens due to low prices for outputs and higher prices for inputs, while the manufacturing sector remains unchanged, then resources should flow from agriculture to manufacturing. Therefore, the terms of exchange is an important measure of an industry/sectors ability to provide an acceptable return to the producer and therefore to attract resources ie: it's competitiveness with other sectors.

Johnson (1988, 1989) details a number of the various measures of the real rates of exchange. That work extends the type of analysis outline above to explore disaggregation of the New Zealand economy in order to examine different sectors, specifically the agricultural export sector ie, appropriate real exchange rate measure. It considers competitiveness for pastoral and manufacturing exporters, specific commodities (beef, lamb, wool, butter) re, export values. A further view of disaggregation involved sub-dividing the pastoral sector into processing and farming components, and examining how these sectors have been specifically affected by changes in exchange rates.

The price ratios between agriculture and manufacturing have undergone a change, with the terms of exchange moving in manufacturings favour. This has arisen due to lower and more volatile world agriculture prices (both sectors should have experienced high costs, although farmers suffer more as they can't pass them on very easily as most of their production is exported, they are price takers). Notably, returns to non-tradeable producers have risen at a much greater and more consistent rate than for producers in the pastoral industries. This indicates a loss of competitiveness by the agriculture sector. This would tend to suggest a likely movement of resources from agriculture into manufacturing.

Analogous to the terms of exchange outlined above, the first measure of intersectoral competitiveness which arises is the Terms of Trade (TOT), defined as a comparison of the prices a country receives for its exports with the prices it pays for its imports. It is an aggregate measure of change over time of the quantity of imports which a given quantity of exports will buy. Other factors unchanged, an improvement in New Zealand's terms of trade will improve the balance of payments and aggregate welfare of the nation.

It is useful to now extend the framework by utilising the simple two sector tradable/non-tradable goods approach. A change in the prices of inputs and/or outputs in an open economy will result in a change from tradable to non-tradable goods or vice versa. This requires an extension of our earlier simple theoretical framework in the form of the introduction of an external sector and assumptions relating to the terms of trade. The Swan/Salter theoretical paradigm (Swan, 1955, 1960 and Salter 1959), summarises the relationship between the TOT and real exchange rate. This theory states that any change in domestic real expenditure will change domestic prices but not world prices, so that the relative price received for non-tradeable (domestic consumption) will

change relative to tradeables (export and imports), (because tradeables are price elastic in the world market but non-tradeables are not price elastic in the domestic market). A change in the relative prices of tradeables and non-tradeables is therefore tantamount to a change in the exchange rate, and thus has an effect on the competitiveness of each sector.

A change in the TOT will most likely be followed by a change in domestic demand affecting only the price of home goods, resulting in a relative price change between tradeables and non-tradeables, ie a change in the real exchange rate). If domestic demand does not adjust fully to the change in the terms of trade, a current account imbalance will result. Basically, there has been a greater change in the rate of inflation (or GDP price deflator) than in the "offsetting" change in the nominal exchange rate. So changes in costs within an economy are very important.

The role of the real exchange rate is not to equate the demand and supply of traded goods, (maintain equilibrium in the external accounts) but rather to ensure that the market for home (non-traded) goods is in equilibrium. This is intuitively plausible given that any excess in supply/demand of non-tradeables must be eliminated by switching between tradeables and non-tradeables. For this to occur, the relative price must change ie a change in the real exchange rate. However domestic demand for tradeables may be in disequilibrium, with the difference being tantamount to a balance of trade deficit or surplus.

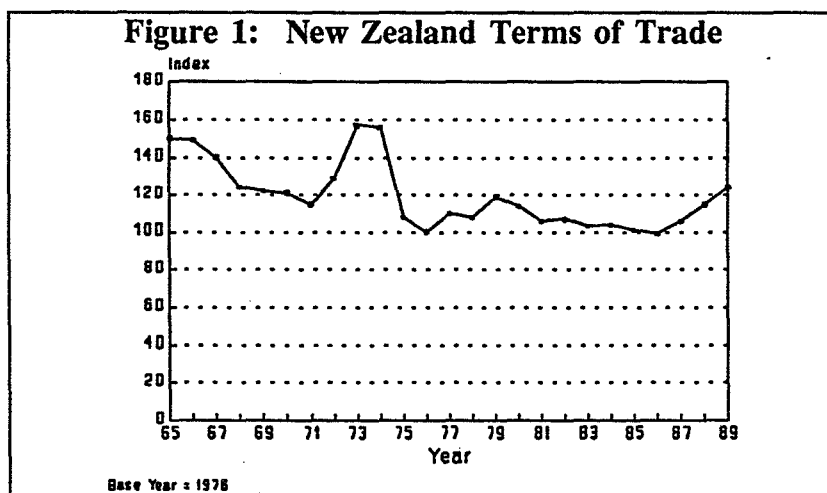
It is also worth noting that any imbalance in the tradable sector, given equilibrium in the non-tradable sector, implies that aggregate demand exceeds aggregate production, and vice versa. Thus, the existence of a trade deficit/surplus is not necessarily a result of the exchange rate alone. To correct for a persistent trade imbalance a change in fiscal policy is required. As the gap narrows, then and only then is a sustained change in the real exchange rate likely to occur. The importance of this relationship for policy will be developed further in a later section.

This division of tradeables and non-tradeables has been usefully restated in the Asset Theory of Real Exchange Rate Determination (Kreuger and Porter, 1983). This theory states that in a small, open, price taking economy such as New Zealand, an increase in the inflation rate eg due to excess demand for goods both tradable and non-tradable, as a result of an expansionary stimulus by government (monetary or fiscal), will cause the price of home goods to rise, but tradeables will stay the same because New Zealand is too small to affect the world market price. Home goods become dearer, encouraging a movement of resources from the tradeable sectors to the home goods sector. This has a twofold effect on the current account. Firstly, it is worsened due to a reduction in exports and an increase in imports which are now relatively cheaper. Secondly, increased inflation will increase the costs of production, lowering the competitiveness of the export/import substitute sectors, unless there is an accompanying devaluation to offset this. Under a floating exchange rate, this would occur automatically, but in a fixed exchange rate regime, if it was not adjusted, exporters would be detrimentally affected.

3.2 Trends in New Zealand's Terms of Trade

- A comparison of the prices New Zealand receives for its exports relative to the prices it pays for its imports is presented in Figure 1. This representation of the TOT indicates the marked commodity boom of the early 1970's, with the oil price increases of 1973 and of 1978 apparent. The 1980's period is highlighted by the gains from the twenty

percent depreciation of 1984 and the decline and the continuing volatility in the TOT since that period. It would appear that 1987 was the trough of the recent period of recession, and some improvement has occurred in 1988 and 1989.



3.3 Trends in Real Rates of Exchange

This section reports and analyses different measures of the RRE and its implications for domestic competitiveness for resources.

The pastoral measures were obtained by utilising the prices of non-tradeables deflated by the unit FOB export values (as published by the Department of Statistics). By representing the RRE as the ratio of non-tradeable to tradeable goods, it is assumed throughout that the non-tradeable sector is the principal competitor for resources. The denominator (prices of non-tradeable goods) was chosen so that a rise in the ratio indicates a fall in competitiveness and vice versa. Expressed in this way makes trends in the RRE compatible with recent Reserve Bank (1985) conventions of foreign currency/New Zealand dollar representation of international exchange rates. This can be confusing because most overseas authors choose to report currency exchange rates the reverse of this convention. The RRE for the major pastoral products and the aggregate RRE¹ are shown in Table 5.

Overall, the RRE measures varied considerably in response to changing world export prices and the degree of exchange rate overvaluation in relation to domestic costs. Wool has exhibited probably the greatest volatility in export returns - particularly marked being the rise from a trough in 1972 to a peak in 1974. Notably, the returns obtained in the 1974 year (1972 for dairy) have not been matched. Lamb and beef have shown similar trends, but lamb has remained depressed for longer. The dairy sector RER is the most stable of the commodities analysed, but it also was severely depressed in the late 1980's.

¹ The authors acknowledge the assistance received from Ralph Lattimore who supplied series on prices of tradeables and of non-tradeables as used in his earlier studies (see Lattimore, 1986).

Table 5: Real Rates of Exchange - Pastoral and Aggregate

PNT/FOB INDEX

	Beef	Lamb	Wool	Dairy	Pastoral	PNT/PT
1964/65	117	111	100	111	108	125
1965/66	100	122	103	117	111	125
1966/67	100	136	122	128	125	134
1967/68	86	131	172	136	131	137
1968/69	81	119	142	136	122	130
1969/70	75	111	153	139	117	125
1970/71	69	108	167	131	111	118
1971/72	69	125	153	83	94	110
1972/73	64	92	78	92	81	96
1973/74	58	78	69	97	75	99
1974/75	94	89	106	89	94	94
1975/76	100	100	100	100	100	100
1976/77	122	106	92	131	108	118
1977/78	117	114	108	131	119	116
1978/79	94	111	117	139	114	111
1979/80	92	114	111	136	114	113
1980/81	103	106	133	122	114	116
1981/82	111	108	147	103	111	120
1982/83	100	114	156	100	108	119
1983/84	94	122	144	111	114	117
1984/85	83	114	128	111	108	116
1985/86	114	142	150	142	139	129
1986/87	125	156	150	158	150	134
1987/88	142	175	142	175	161	140
1988/89	122	172	136	117	131	139

The combined pastoral products index displays considerably greater deviations around a similar trend as for the index for all exporters and importers. This reflects mainly the predominance of pastoral products in New Zealand's total exports. They also indicate the steady depreciation of the New Zealand currency over the longer period, as prices for the major pastoral commodities steadily declined from 1974, and fairly abruptly from 1981. The competitiveness of the non-tradeable sector vis a vis pastoral agriculture (and tradeables) improved generally in the period 1981 to 1987.

4 DISCUSSION OF MEASURES AND TRENDS IN INTERNATIONAL COMPETITIVENESS

4.1 Theoretical and General Methodology Considerations

An interesting comparison between the tradable/non tradable approach and the real currency exchange rate with implications for this analysis has been carried out by Omara (1989). Although in theory, the real rate of exchange can be defined as the relative price of traded and non-traded goods, the difficulty of obtaining price data for non-traded goods has meant that most often empirical measures need to be derived indirectly. (Generally, a real exchange rate derived from the movements in the nominal currency exchange rates against trading partners, weighted by trade shares and deflated, as in this section). Although the real rate of exchange and the real exchange rate measures are closely related, any breakdown in the assumptions that "the law of one price" holds re traded goods, and that relative prices of tradable and non-tradable goods do not change in any of the home country's trading partners, results in a divergence of these two measures. Indeed, the conventional relative currencies measure may not supply an accurate guide to the actual movements in the relative price of traded and non-traded goods. Omara concludes by stating that "it may be sensible to interpret the conventional measure of the real exchange rate as providing some indication of the change which might occur ultimately in the relative prices of traded and non-traded goods, after sufficient time has elapsed for the various lags and rigidities to have been worked out".

When exchange rates are mentioned, quoting the nominal exchange rate is most common. This may be unfortunate and misleading as it does not take into account of inflation/cost differentials between countries. Just as the nominal Terms of Exchange is the ratio of prices of one sector to another, the Nominal Exchange Rate between countries gives the ratio of prices of one currency over another at a point in time.

A useful way of distinguishing between nominal and real exchange rates is to consider the Purchasing Power Parity (PPP) Theory (Cassel 1916; 1918). It is based on the concept that a sum of money should purchase the same amount of goods in different countries ie: the same purchasing power. In the absence of transport costs and trade impediments, one would expect that countries with relatively high inflation rates will have a depreciating currency, and countries with low inflation an appreciating currency. On the whole, this tends to hold true in the longer run, although there are other factors eg: capital flows, that determine exchange rates rather than just inflation rates. It follows that when PPP holds over time, then the real exchange rate will be constant. Any variation in the real exchange rate reflects a divergence of the nominal exchange rate from PPP and therefore a change in the level of competitiveness. If the real exchange rate moves down, then New Zealand has become more competitive ie: the nominal exchange rate has depreciated at a faster rate than the increase in the price differential favouring our competitor(s).

To measure international competitiveness, a real trade weighted exchange rate was deemed to be an appropriate measure given its relatively simple approach and the ease of data collection. There are a number of alternative methods that can be used when defining the effective exchange rate. The appropriate trading partners must be determined, and weights assigned on the basis of their relative importance to New Zealand regarding trade and competitiveness. Additionally, there are various price deflators that can be applied. Possible variations include consumer price indices (CPI),

GDP deflators, bilateral and multilateral export or import weights, composite weights and global export weights.

To assess the change in New Zealand's competitive position we utilised an aggregate bilateral weighting system incorporating our main trading partners, US, Australia, UK, Japan, West Germany, who account for a large proportion of our exports. Each country will be assigned a weight, which will be incurred according to its volume of trade with New Zealand. The nominal exchange rates will be deflated using CPI deflators. An exchange rate series will be constructed for each of lamb, beef, dairy, wool, and a pastoral aggregate. These procedures have all been executed on a Lotus spreadsheet utilising macros.

Constructing a real index is simply a matter of deflating the nominal exchange rate indices by the relevant country's deflator. It should be noted that these indices are unlikely to be derived identically between countries and caution should be exercised when interpreting real exchange rate series.

Country x (x = 1....5)

$$RER_{x/NZ} = NER_{x/NZ} \cdot P_{NZ}/P_x$$

Aggregate

$$RER_{TW} = \sum_{i=1}^5 (RER_{xi/NZ} \cdot w_i)$$

NER = nominal exchange rate (normalised)

RER = real exchange rate (normalised)

W = grossed up weights of the major trading partners (E = 1)
ie: trade weight.

RER_{TW} = real exchange rate trade weighted

P_x = foreign CPI deflator

P_{NZ} = domestic CPI deflator

The methodology for trade weighted exchange rates on an individual product basis were that exchange rates for each of the main trading partners are elicited, and normalised so that the sum of weights must equal one. [Source: 1965-1984: New Zealand Year Book, 1984-1988: Department of Statistics.] The export weights for each of wool, lamb, beef, dairy and the aggregate pastoral measure are presented in Appendix Table 1 to 5. A composite pastoral rate was derived by weighting product exchange rates by the proportion of total value of pastoral exports each of by the respective products.

4.2 Trends in Nominal Exchange Rates

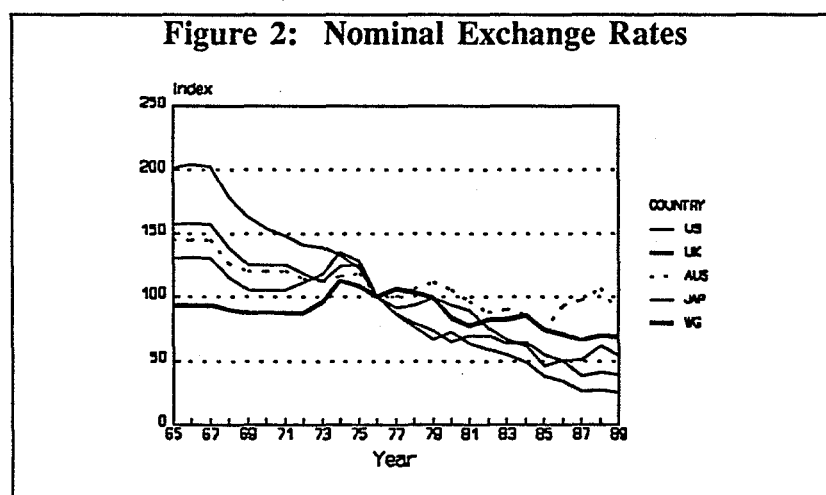
4.2.1 Bilateral Exchange Rates

The major trading partners bilateral nominal exchange rates (foreign currency to \$ New Zealand) have shown a similar broad trend over the 1965-1989 period (see Figure 2). There has been an overall gradual depreciation, with a sharp drop occurring in 1984/85 (Government 20% depreciation, July 1984). Since 1984/85, the nominal exchange rate has showed less uniform behaviour. While the nominal exchange rate has continued to depreciate, (notwithstanding the slight increase in 1988 against the Pound, Yen and DM), it has shown a considerable appreciation against the US and Australian dollar. Details of the bilateral exchange rate for New Zealand's trading partners are presented in Table 6.

Table 6: Nominal Exchange Rates

	CANADA	US	JAP	UK	BEL	FRAN	ITALY	NLND	W GERM	AUS
1964/65	142.61	130.07	156.37	93.01	166.15	141.94	110.01	175.68	201.52	145.00
1965/66	143.21	130.61	157.30	93.18	166.92	142.46	110.36	177.06	203.77	145.00
1966/67	142.61	130.07	156.91	93.01	166.41	141.87	109.93	176.42	201.64	145.00
1967/68	126.09	115.00	138.30	89.71	146.62	125.58	96.85	155.28	178.58	125.93
1968/69	114.88	104.78	124.87	87.33	135.06	115.63	88.45	142.49	162.90	119.57
1969/70	111.71	105.13	125.34	87.55	134.75	128.44	89.38	142.94	153.49	119.57
1970/71	107.67	105.13	125.14	87.27	134.19	129.20	88.76	141.65	147.88	119.57
1971/72	110.99	110.55	118.22	87.00	129.89	129.93	89.55	136.94	141.01	113.97
1972/73	119.26	117.58	112.17	96.21	127.40	125.85	92.83	135.99	138.49	112.10
1973/74	133.24	134.33	124.12	112.47	133.43	137.66	111.20	135.51	132.77	116.29
1974/75	131.29	127.26	125.29	108.14	119.78	126.13	111.23	120.63	121.81	117.89
1975/76	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
1976/77	98.18	91.02	86.70	105.99	87.12	100.36	106.77	86.79	85.87	100.25
1977/78	109.10	94.30	76.11	103.12	81.84	100.09	111.10	82.02	79.68	106.19
1978/79	117.93	99.26	66.21	99.05	77.05	95.71	112.64	76.90	73.60	110.78
1979/80	109.87	92.65	71.91	82.89	68.82	86.27	103.79	68.68	64.67	105.45
1980/81	108.07	88.88	63.28	77.54	74.03	92.69	116.22	73.15	69.29	96.56
1981/82	94.69	75.68	58.74	82.11	79.61	99.79	127.58	73.68	69.14	86.97
1982/83	83.10	66.48	54.91	82.19	82.49	104.84	128.16	68.08	63.87	89.75
1983/84	81.16	61.79	48.15	84.86	86.59	112.64	136.52	69.83	64.45	86.43
1984/85	62.82	45.36	37.62	74.15	72.24	94.99	117.57	59.08	54.29	73.83
1985/86	71.76	50.92	33.97	70.52	66.64	87.55	116.67	53.90	49.62	92.68
1986/87	67.94	50.52	25.65	66.03	51.90	71.52	92.59	41.26	37.93	96.90
1987/88	75.64	60.97	27.12	69.38	56.58	79.09	104.67	44.49	41.06	105.77
1988/89	66.50	53.60	25.00	68.00	52.00	75.00	99.00	41.50	39.00	87.10

Therefore, it is plausible to assume that different groups within the economy have been affected in various ways, depending on what country they export to (and to a lesser extent, the source of their imports). To set a more detailed picture of how these groups have been affected, a more detailed, product by product analysis, is deemed to be necessary.



4.2.2 Trade Weighted Nominal Exchange Rate

The nominal trade weighted exchange rate series reported below is weighted on the basis of shares of total exports (by FOB value).

The export proportions are then multiplied by the exchange rate indexes. Therefore more weight is given to a country's currency movement depending on the greater the proportion of total New Zealand exports it receives. These indices are detailed in Table 7.

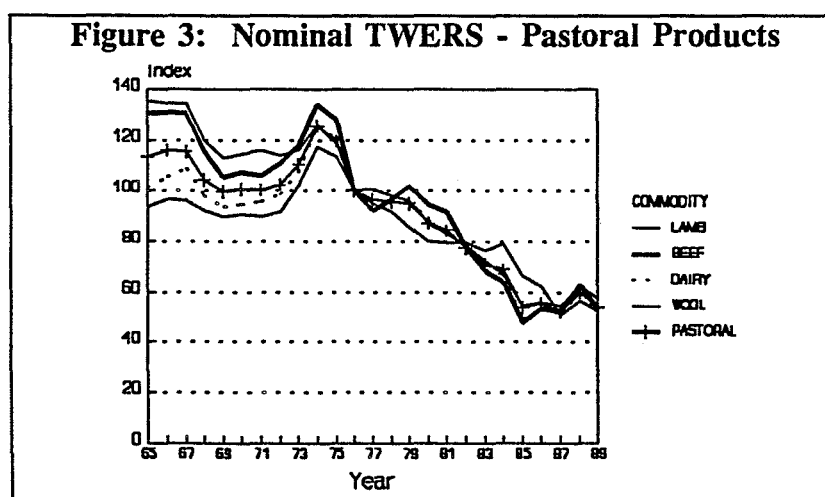
Table 7: Nominal Trade Weighted Exchange Rates - Pastoral Products

	<u>Beef</u>	<u>Lamb</u>	<u>Wool</u>	<u>Dairy</u>	<u>Pastoral</u>
1964/65	1,307.68	939.26	1,355.01	1,011.93	1,131.82
1965/66	1,319.70	977.34	1,347.41	1,053.31	1,161.81
1966/67	1,311.69	960.94	1,343.96	1,090.06	1,153.84
1967/68	1,159.64	922.37	1,197.89	982.81	1,043.06
1968/69	1,057.34	895.56	1,127.86	935.30	997.09
1969/70	1,074.25	903.65	1,141.51	946.61	1,007.81
1970/71	1,059.57	898.91	1,158.17	957.47	1,005.16
1971/72	1,108.13	918.12	1,137.91	985.37	1,024.88
1972/73	1,175.32	1,015.06	1,156.85	1,071.91	1,104.43
1973/74	1,337.19	1,172.49	1,257.91	1,255.17	1,256.94
1974/75	1,277.70	1,135.80	1,182.25	1,210.23	1,197.26

(Table 7 continued)

	<u>Beef</u>	<u>Lamb</u>	<u>Wool</u>	<u>Dairy</u>	<u>Pastoral</u>
1975/76	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
1976/77	920.20	1,009.27	950.66	965.99	965.95
1977/78	956.28	983.85	916.92	961.17	920.25
1978/79	1,008.79	963.46	859.44	960.20	844.85
1979/80	940.30	869.49	797.99	881.13	870.53
1980/81	904.92	830.25	796.67	842.27	827.27
1981/82	772.69	783.87	796.71	758.83	768.74
1982/83	680.50	725.87	767.98	691.26	679.80
1983/84	629.71	671.91	792.40	667.08	714.26
1984/85	470.87	544.67	664.99	493.02	505.11
1985/86	522.35	558.63	622.24	533.01	585.42
1986/87	509.50	542.64	508.76	512.11	483.45
1987/88	607.24	625.22	562.08	592.11	607.12
1988/89	531.46	573.52	521.73	527.58	534.64

This series can be disaggregated down to an individual product basis as shown in Figure 3 which reveals that the effective exchange rate has moved differently for the various commodities. As would be expected, beef has appreciated more due to it's high profile to the \$US (the \$US has appreciated further then any of the other currencies under consideration with the exception of Australia). It would be expected that a commodity such as wool would not have had as large an appreciation in it's trade weighted exchange rate index because most of the countries that New Zealand exports wool to have not depreciated against the \$NZ to as great an extent as the \$US or Australian dollar.



The pastoral rate is an aggregation of the four commodities. By definition, it will tend to be towards the "average level" of the four individual series.

4.3 Trends in Real Exchange Rates

4.3.1 Real Bilateral Exchange Rates

We now move on to report exchange rates which are adjusted for differences in costs, deflated to reals. Consumer Price Index deflators as used in this analysis are listed in Appendix Table 6. (Source: International Financial Statistics, IMF.) These have been converted to a usual base of 1975/76=100 and percentage changes were derived on a cumulative basis.

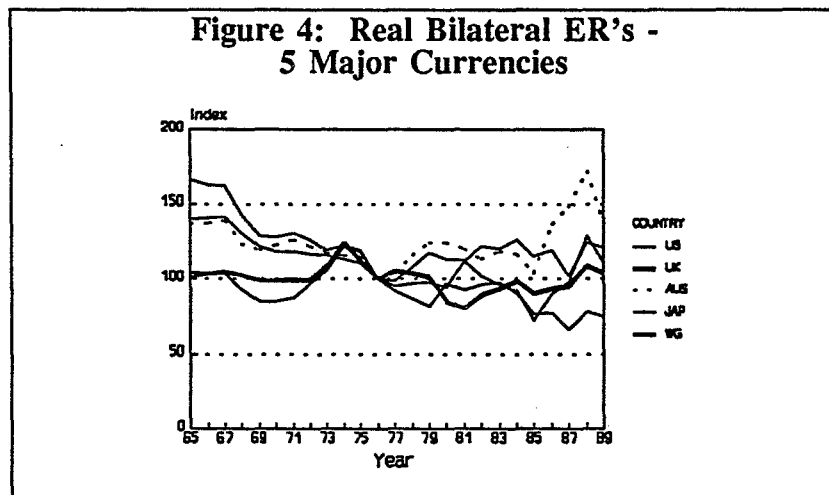
To allow comparable analysis and amalgamation of these exchange rates, the real exchange rates have been normalised. This involves dividing each number in a series by the first number in that respective series. This results in each series being based on a similar scale and facilitates any conjugated analysis. Real bilateral exchange rates are summarised in Table 8.

Table 8: Real Exchange Rates

	CANADA	US	JAP	UK	BEL	FRAN	ITALY	NLND	W GERM	AUS
1964/65	113.01	101.24	165.81	104.16	138.14	125.38	103.41	158.69	139.30	137.26
1965/66	113.81	102.54	162.68	103.46	137.48	126.29	103.72	155.74	140.50	137.34
1966/67	113.95	103.57	162.05	104.50	138.34	128.06	105.90	155.10	141.50	139.19
1967/68	102.27	93.12	143.49	102.47	124.60	115.17	97.04	138.58	130.00	123.63
1968/69	93.38	84.63	128.83	99.13	116.50	105.32	91.08	126.25	121.90	119.40
1969/70	92.25	84.78	128.13	99.08	118.20	116.38	93.46	126.59	118.10	122.64
1970/71	93.70	87.66	130.16	99.43	122.69	120.14	96.00	128.91	118.30	126.29
1971/72	101.03	96.56	126.40	99.58	122.88	124.01	100.03	125.89	116.40	121.51
1972/73	109.81	105.20	119.00	109.22	121.97	120.99	102.70	124.39	115.40	117.20
1973/74	123.25	121.47	122.68	124.33	127.59	131.31	117.34	125.05	113.60	115.82
1974/75	123.83	118.10	119.61	112.17	114.74	120.55	112.27	114.28	110.70	115.21
1975/76	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
1976/77	105.28	99.08	92.12	105.44	93.17	105.95	104.95	93.24	95.40	103.85
1977/78	122.07	108.48	86.26	103.92	93.66	109.46	107.48	94.78	97.10	115.47
1978/79	136.52	117.68	81.51	101.45	95.17	107.43	108.31	96.28	97.90	123.98
1979/80	133.99	112.84	96.69	84.68	93.05	99.79	97.45	94.20	94.80	124.06
1980/81	137.50	112.50	93.00	80.26	108.55	109.89	105.41	109.37	111.50	119.98
1981/82	124.93	102.50	96.27	89.32	124.94	121.65	113.65	119.98	121.80	112.79
1982/83	113.02	95.99	98.04	93.57	133.41	128.82	110.27	118.51	120.30	118.17
1983/84	112.20	91.74	89.88	98.38	139.66	136.14	111.35	125.87	126.00	116.26
1984/85	92.48	71.92	76.26	90.33	122.43	119.51	96.71	114.93	115.10	103.49
1985/86	115.95	89.79	77.63	93.72	125.25	120.91	102.06	118.41	119.00	136.51
1986/87	118.68	97.66	65.88	95.33	108.43	108.14	86.72	102.30	102.50	148.08
1987/88	143.35	128.46	78.54	108.91	131.90	131.47	105.73	125.07	124.70	172.03
1988/89	123.70	110.30	74.60	103.70	124.20	124.60	98.00	120.20	121.30	136.40

As mentioned earlier in the paper, if PPP holds the real exchange rate will be constant and movement away from this results in a change in competitiveness, with a decline ie a depreciation, representing an increase in competitiveness.

Figure 4 is a plot of the real exchange rates against the five major trading partners. Since 1985, New Zealand has lost ground re: competitiveness against the United States and Australia to a significant extent. This reflects the appreciation of the nominal exchange rate (x:NZ), with a price/cost differential in the foreign country's favour. Against the stronger currencies of UK, West Germany and Japan, we have lost a smaller margin of competitiveness, due to a nominal depreciation against what are very strong currencies, which has almost offset our higher inflation rate. Consequently, there is some evidence here to support the PPP theory outlined earlier.



Since June 1988, the nominal exchange rate has depreciated, particularly against the Australian and United States dollars. Given that our inflation rate is now lower than these countries New Zealand has experienced a large and real devaluation (increase in competitiveness) against the UK pound. The change in the level of competitiveness is less clear in the case of West Germany and Japan, because although there has been a nominal depreciation, the inflation differential has not been in New Zealand's favour.

4.3.2 Trade Weighted Real Exchange Rates

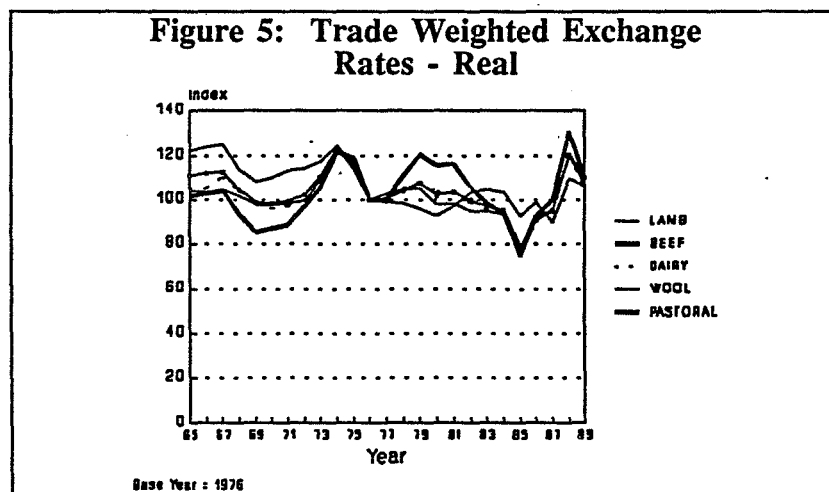
On a country by country basis the real exchange rate has appreciated by varying amounts since 1985. To get a true picture of how New Zealand, and in particular exporters have been affected, we must now look at the trade weighted real exchange rate.

The real effective exchange rate for pastoral products (see Figure 5) shows that there has not been as great a loss in competitiveness as is perceived when focusing on only the US and Australian exchange rates. Obviously, the effect of the appreciation is more detrimental for products that are sold primarily to the US eg, beef and Australia and less so for products to Japan and West Germany eg, wool, horticultural products. Details for the major pastoral products are given in Table 9.

Table 9: Real Trade Weighted Exchange Rates - Pastoral Products

	<u>Beef</u>	<u>Lamb</u>	<u>Wool</u>	<u>Dairy</u>	<u>Pastoral</u>
1964/65	1,023.42	1,042.25	1,209.97	1,048.84	1,105.94
1965/66	1,051.98	1,036.41	1,222.92	1,053.40	1,117.69
1966/67	1,054.30	1,046.60	1,239.15	1,100.83	1,126.26
1967/68	947.92	1,018.63	1,116.27	1,041.55	1,044.98
1968/69	858.65	978.64	1,058.42	976.60	989.48
1969/70	878.07	978.54	1,078.02	968.58	984.44
1970/71	895.27	984.08	1,108.53	971.54	991.68
1971/72	980.86	994.90	1,117.98	998.73	1,023.03
1972/73	1,063.48	1,086.02	1,148.20	1,083.95	1,104.35
1973/74	1,217.81	1,237.26	1,233.17	1,226.66	1,231.56
1974/75	1,189.50	1,139.27	1,146.70	1,164.23	1,159.79
1975/76	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
1976/77	997.92	1,030.72	993.92	1,009.96	1,006.90
1977/78	1,094.03	1,048.07	998.43	1,048.75	1,041.87
1978/79	1,192.21	1,050.61	980.95	1,081.60	1,075.03
1979/80	1,148.30	978.83	955.10	1,034.06	1,020.46
1980/81	1,151.82	981.69	1,007.75	1,039.15	1,033.42
1981/82	1,049.78	949.19	1,068.70	990.18	997.48
1982/83	982.70	950.81	1,082.11	956.32	972.38
1983/84	938.28	934.01	1,098.71	933.15	953.69
1984/85	747.52	781.12	971.29	751.96	792.50
1985/86	919.58	904.16	1,015.73	897.02	919.23
1986/87	980.86	952.72	920.91	950.18	951.52
1987/88	1,272.67	1,198.84	1,130.15	1,201.41	1,201.62
1988/89	1,094.08	1,066.28	1,058.55	1,053.17	1,097.58

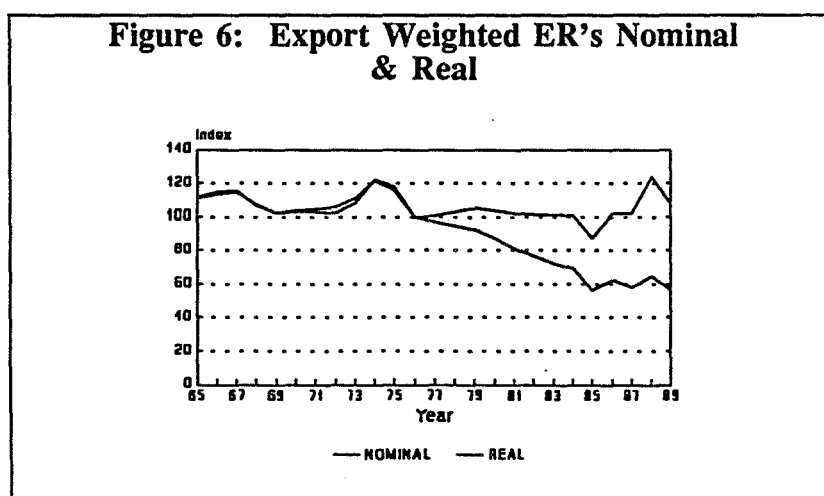
It is of interest to note that the real exchange rate was at a similar level in 1973/74 to what it is now. This is the case for some individual countries (except Japan which is lower and Australia which is higher now) and for the pastoral products trade weighted exchange rates (wool and beef are higher/lower respectively than in 1973/74, lamb and dairy are approximately the same).



4.4 Export Weighted Exchange Rates

A new exports only weighted index is presented which uses the Reserve Bank TWI methodology of five major trading currencies alone, but here weights these on the basis of exports alone. (Note: the Reserve Bank TWI uses combined export and import weights.)

It can be seen quite clearly that New Zealand competitiveness vis-a-vis exports with its five main trading partners, has declined markedly since the 1984 devaluation (Figure 6). The nominal exchange rate is considerably lower than the real exchange rate, giving the illusion of greater competitiveness than actually exists. This is to be expected without the inflation differential being incorporated ie: the gain in "competitiveness" is exaggerated. The appreciation of the nominal exchange rate since 1985 is also less than the real effective exchange rate.



The decline since the 1984 devaluation, also contrasts markedly with the nine year period of stable real exchange rates since 1976. This was the period when Muldoon had stated that the Government was prepared to make 'one sided' devaluations of the exchange rate so that it favoured New Zealand exporters. The results confirm that they were true to their word.

5 DISCUSSION AND CONCLUSIONS

5.1 Principal Findings

This section of the analysis aims to pull together some major threads of the analysis. As such, it will be necessary to draw on material presented earlier. However, it is also necessary to introduce some new figures and measures to highlight the findings. It was felt that to introduce this material earlier would have resulted in unnecessary complication of the analysis.

5.1.1 Indicator Currencies

The material presented earlier (section 4.2) has highlighted the major currencies of concern to individual pastoral products. Relative importance can be illustrated by reference to the percentage weights based on FOB value of New Zealand exports by market as given in the Appendix Tables. In this section we will extend this discussion by developing aggregate weight measures for the pastoral products and examining how these have moved over time. Aggregate pastoral weights were calculated by summing the individual product of each currency weight in each pastoral product index by individual product weights in the pastoral index. Weights for representative years are shown in Table 10.

Table 10: Relative Importance of Major Currencies for Pastoral Exports

	US	UK	CAN	JAP	WG	BEL	FRA	ITA	NLND
1964/65	0.19	0.61	0.00	0.03	0.04	0.04	0.06	0.02	0.01
1965/66	0.23	0.54	0.00	0.07	0.03	0.03	0.07	0.02	0.01
1966/67	0.26	0.54	0.00	0.09	0.02	0.01	0.04	0.02	0.01
1967/68	0.26	0.57	0.00	0.06	0.02	0.01	0.04	0.02	0.01
1968/69	0.27	0.53	0.01	0.06	0.03	0.02	0.05	0.02	0.01
1969/70	0.29	0.49	0.05	0.07	0.02	0.03	0.03	0.02	0.01
1970/71	0.34	0.47	0.03	0.06	0.02	0.03	0.02	0.01	0.01
1971/72	0.38	0.43	0.03	0.05	0.02	0.03	0.03	0.01	0.01
1972/73	0.37	0.38	0.02	0.10	0.03	0.03	0.03	0.02	0.02
1973/74	0.42	0.35	0.03	0.08	0.03	0.02	0.02	0.01	0.04
1974/75	0.43	0.36	0.02	0.08	0.03	0.01	0.02	0.01	0.03
1975/76	0.41	0.33	0.03	0.09	0.04	0.01	0.04	0.01	0.04
1976/77	0.37	0.38	0.02	0.08	0.04	0.02	0.03	0.02	0.04
1977/78	0.42	0.34	0.03	0.08	0.04	0.02	0.03	0.02	0.03
1978/79	0.44	0.30	0.03	0.11	0.03	0.01	0.03	0.02	0.02
1979/80	0.51	0.26	0.02	0.09	0.03	0.01	0.04	0.02	0.02
1980/81	0.57	0.23	0.03	0.08	0.02	0.01	0.02	0.02	0.02
1981/82	0.54	0.26	0.02	0.09	0.02	0.01	0.02	0.02	0.02
1982/83	0.59	0.23	0.02	0.08	0.01	0.01	0.01	0.01	0.02

(Table 10 continued)

	US	UK	CAN	JAP	WG.	BEL	FRA	ITA	NLND
1983/84	0.59	0.21	0.02	0.10	0.02	0.01	0.03	0.02	0.01
1984/85	0.61	0.18	0.02	0.10	0.02	0.02	0.02	0.02	0.01
1985/86	0.63	0.19	0.02	0.08	0.02	0.02	0.01	0.02	0.02
1986/87	0.64	0.18	0.02	0.09	0.02	0.02	0.01	0.01	0.02
1987/88	0.61	0.18	0.03	0.10	0.02	0.02	0.01	0.01	0.02
1988/89	0.62	0.10	0.02	0.10	0.02	0.02	0.01	0.01	0.02

The major conclusions to be drawn from this analysis is the importance of the United States dollar, and the growing importance of Japan which is acting to offset the decline in importance of United Kingdom. These weights have only changed slowly over time, and so use of only the five major currencies as in the Reserve Bank (TWI) does seem to have some basis as far as exports are concerned.

5.1.2 Situation and Outlook

Key measures calculated in early sections are compared in the following. The measures confirm that New Zealand competitiveness against other major currencies shows signs of stabilising over the last years, as the lagged results of inflation stabilisation in New Zealand seem to reap rewards.

Comparative trade weighted industry measures can be summarised as showing similar broad trends of changes in competitiveness over time. However, the levels of aggregation need to be chosen with the purpose in mind. The specific product indices do show differences in specific years and this may be important for commodity policy analyses and for projections. However, the differences between the aggregate indices of rates of exchange and exchange rates are not marked. More marked is the difference in the total trade vs export trade weighted measures. For rural sector analysis, the use of the Reserve Bank TWI may not be the most appropriate.

5.2 Directions for Further Work

An analysis of this type inevitably poses a number of issues which are left unanswered. During the progress of this study four issues arose which invite further analysis. However the literature is extensive and one is unable to fully do it justice. There is a wealth of further literature examined with linkages drawn between these studies, for those interested in pursuing this subject further. Particularly useful is Parris and Peters (1983) review of exchange rate literature. Of more direct relevance to the topic examined in this paper is the Reserve Bank Bulletin Vol. 48, No. 10 1985. For the interested reader, Johnson (1976) provides an interesting exposition of the various approaches to balance of payments theory.

The key issues arising are summarised below, and with the analysis reported in this paper provide a major research agenda to New Zealand agricultural sector analysts.

5.2.1 Bilateral vs Global Weights

There are three options for the choice of weights. A bilateral export weighted index, in which exchange rates are weighted according to the destination of exports was used in this analysis. A bilateral export weighted index has foreign currencies and price levels weighted according to the proportion of exports derived sold to each of those foreign countries. A global export weighted index has weights assigned depending on the particular country's share of world exports for a specific commodity. It is also possible and likely to be more accurate, to use a composite weighting system, as it can capture all three types of competition encountered, although the weight assigned each index is necessarily arbitrary.

Analysing more specifically the different exchange rate measures available with respect to agriculture, Dutton and Grennes (1987) examine various measures of the exchange rate based on total trade and agricultural trade, and expose the discrepancies between the various measures. They found that although there was a difference between indices using total trade weights and agricultural trade weights, the differences were not consistently greater than the differences among alternative agricultural trade weighted indices. Variation between the various measures may however be more significant for individual products, rather than for total agricultural trade.

The major point arising is that an implicit assumption in the choice of bilateral weights is that the main competitors are producers in the importing countries (Maciejewski 1983). Global weights on the other hand reflect the importance of all major market participants including the alternate suppliers. Thus, the bilateral and global weights are at opposite extremes in emphasising either customer or competitor behaviour, and may exhibit significantly different behaviour. An alternative is to combine both to a composite index. Further work is required to confirm and highlight the differences.

5.2.2 Price vs Profit Competitiveness

The standard price measures as used in this analysis are only part of the factors influencing producers' incentive environment and response. Price measures ignore the input and output volume responses which are involved in consideration of profits. Thus to overcome data deficiencies the standard measures are really a proxy for profit competitiveness measures. Johnson (1989) sums up this dilemma with the warning:

"In the longer run, absolute profit will also be determined by shifts in the average scale of operation and by changes in technology. It would therefore be misleading to base longer term competitiveness industry comparisons on the real rate of exchange alone" pg4.

It is the proposition of the authors that researchers need to be aware of these limitations, but that development of profit based measures is likely to encounter unmanageable data standardisation and collection difficulties. It may be better to accept the price measures as being most useful indicative measures and then to model the output and input volume responses directly.

5.2.3 Addition of Others Sectors and Industries

This analysis has concentrated on the major pastoral agricultural products and the aggregate New Zealand competitiveness. As such, it has not been possible to cover the arable and horticultural industries at this stage, but further work is proposed to be undertaken.

By concentrating on pastoral agriculture, it has also not been possible to do justice to the changes in detail within the manufacturing sector. Moreover, as highlighted in Lattimore (1986) there is likely to be significant difference between the 'import competing' and 'other' manufacturing competitiveness. In this analysis we have contented ourselves with contrasting with the non-tradeable sector to highlight the differences. It is proposed to better monitor the relative intersectoral competitiveness of New Zealand agriculture.

5.2.4 Implications for Liberalisation Policy

The analysis reported in this paper does provide useful input into an ongoing research programme directed by Policy Services MAFCorp into the effects of economic liberalisation policy for New Zealand agriculture. As highlighted in the introduction, the maintenance of a real rate of exchange has been found overseas to have been central to success of a liberalisation programme. The findings in this paper of a reversal in competitiveness, i.e. an appreciation in the four years following the depreciation of 1984; then point to further work to explain why this has occurred and where it may lead. Our earlier research (Reynolds, Chiao and Robinson, 1989) sheds some light on why events moved as they have. The implications of what the changes have meant is currently being undertaken in another research project MAF is co-operation with and being headed by Grant Scobie. We will report results of this at some future period.

Appendix 1: Wool Percentage Export Weights (FOB Value)

	BEL	FRAN	ITALY	JAP	NLND	UK	US	WGERM
1964/65	0.11	0.16	0.07	0.08	0.04	0.27	0.18	0.10
1965/66	0.09	0.18	0.07	0.14	0.02	0.26	0.17	0.07
1966/67	0.05	0.15	0.06	0.16	0.04	0.27	0.18	0.08
1967/68	0.06	0.16	0.08	0.09	0.05	0.28	0.19	0.09
1968/69	0.08	0.17	0.08	0.13	0.03	0.26	0.15	0.10
1969/70	0.11	0.12	0.08	0.16	0.03	0.26	0.15	0.10
1970/71	0.14	0.11	0.06	0.14	0.05	0.24	0.15	0.11
1971/72	0.15	0.12	0.05	0.11	0.06	0.28	0.13	0.11
1972/73	0.10	0.11	0.05	0.18	0.09	0.25	0.10	0.11
1973/74	0.10	0.09	0.06	0.13	0.15	0.28	0.08	0.11
1974/75	0.06	0.12	0.05	0.13	0.16	0.29	0.05	0.15
1975/76	0.05	0.15	0.06	0.16	0.15	0.23	0.06	0.15
1976/77	0.06	0.11	0.05	0.11	0.15	0.29	0.06	0.15
1977/78	0.06	0.11	0.07	0.13	0.14	0.29	0.06	0.14
1978/79	0.06	0.12	0.09	0.21	0.11	0.19	0.07	0.14
1979/80	0.05	0.16	0.11	0.19	0.11	0.19	0.07	0.13
1980/81	0.06	0.13	0.09	0.17	0.14	0.20	0.07	0.13
1981/82	0.06	0.11	0.09	0.25	0.12	0.20	0.06	0.10
1982/83	0.08	0.09	0.07	0.23	0.13	0.24	0.06	0.09
1983/84	0.07	0.14	0.08	0.23	0.07	0.20	0.10	0.10
1984/85	0.11	0.11	0.09	0.23	0.06	0.22	0.08	0.10
1985/86	0.10	0.07	0.09	0.19	0.10	0.24	0.09	0.12
1986/87	0.09	0.05	0.08	0.22	0.11	0.23	0.11	0.11
1987/88	0.14	0.07	0.07	0.19	0.09	0.21	0.11	0.12
1988/89	0.13	0.06	0.07	0.20	0.09	0.20	0.13	0.12

Appendix 2: Lamb Percentage Export Weights (FOB Value)

	JAP	UK	US
1964/65	0.00	0.98	0.02
1965/66	0.01	0.90	0.09
1966/67	0.00	0.92	0.08
1967/68	0.01	0.90	0.09
1968/69	0.01	0.88	0.11
1969/70	0.02	0.86	0.12
1970/71	0.01	0.87	0.12
1971/72	0.02	0.80	0.18
1972/73	0.03	0.75	0.23
1973/74	0.02	0.77	0.21
1974/75	0.03	0.71	0.26
1975/76	0.03	0.65	0.32
1976/77	0.04	0.67	0.28
1977/78	0.05	0.56	0.39
1978/79	0.08	0.59	0.33
1979/80	0.03	0.51	0.45
1980/81	0.04	0.42	0.54
1981/82	0.05	0.55	0.40
1982/83	0.03	0.41	0.55
1983/84	0.05	0.26	0.69
1984/85	0.04	0.33	0.64
1985/86	0.04	0.29	0.67
1986/87	0.05	0.32	0.62
1987/88	0.04	0.34	0.62
1988/89	0.04	0.34	0.62

Appendix 3: Beef Percentage Export Weights (FOB Value)

	US	CAN	JAP
1964/65	0.96	0.03	0.01
1965/66	0.94	0.02	0.04
1966/67	0.94	0.03	0.03
1967/68	0.94	0.03	0.03
1968/69	0.92	0.06	0.02
1969/70	0.69	0.29	0.02
1970/71	0.81	0.17	0.02
1971/72	0.79	0.18	0.02
1972/73	0.84	0.11	0.04
1973/74	0.81	0.14	0.04
1974/75	0.83	0.14	0.03
1975/76	0.76	0.20	0.04
1976/77	0.79	0.17	0.05
1977/78	0.79	0.16	0.05
1978/79	0.82	0.14	0.03
1979/80	0.85	0.12	0.03
1980/81	0.82	0.14	0.04
1981/82	0.83	0.12	0.04
1982/83	0.82	0.13	0.05
1983/84	0.83	0.11	0.07
1984/85	0.82	0.13	0.06
1985/86	0.83	0.11	0.06
1986/87	0.85	0.10	0.05
1987/88	0.82	0.12	0.06
1988/89	0.81	0.12	0.07

Appendix 4: Dairy Percentage Export Weights (FOB Value)

	JAP	UK	US
1964/65	0.02	0.79	0.19
1965/66	0.04	0.70	0.26
1966/67	0.10	0.64	0.26
1967/68	0.08	0.74	0.18
1968/69	0.06	0.71	0.23
1969/70	0.06	0.66	0.28
1970/71	0.06	0.59	0.35
1971/72	0.06	0.53	0.41
1972/73	0.09	0.46	0.44
1973/74	0.11	0.35	0.53
1974/75	0.10	0.32	0.58
1975/76	0.11	0.34	0.55
1976/77	0.09	0.40	0.51
1977/78	0.09	0.38	0.53
1978/79	0.10	0.37	0.53
1979/80	0.08	0.29	0.63
1980/81	0.09	0.21	0.70
1981/82	0.08	0.23	0.69
1982/83	0.08	0.23	0.70
1983/84	0.08	0.26	0.67
1984/85	0.08	0.16	0.76
1985/86	0.07	0.18	0.75
1986/87	0.07	0.16	0.77
1987/88	0.10	0.18	0.72
1988/89	0.11	0.16	0.73

Appendix 5: Pastoral Industries Weights

	(% of Total FOB Values)			
	Wool	Lamb	Beef	Dairy
1964/65	0.35	0.22	0.06	0.37
1965/66	0.38	0.20	0.06	0.36
1966/67	0.28	0.21	0.09	0.41
1967/68	0.24	0.24	0.13	0.39
1968/69	0.28	0.24	0.14	0.33
1969/70	0.24	0.24	0.19	0.33
1970/71	0.21	0.24	0.20	0.34
1971/72	0.20	0.19	0.18	0.43
1972/73	0.29	0.21	0.19	0.33
1973/74	0.24	0.21	0.21	0.35
1974/75	0.21	0.25	0.17	0.37
1975/76	0.25	0.24	0.16	0.35
1976/77	0.29	0.23	0.13	0.36
1977/78	0.25	0.24	0.16	0.35
1978/79	0.23	0.23	0.23	0.30
1979/80	0.22	0.22	0.20	0.36
1980/81	0.16	0.29	0.18	0.37
1981/82	0.16	0.24	0.17	0.43
1982/83	0.14	0.27	0.19	0.41
1983/84	0.18	0.26	0.15	0.41
1984/85	0.20	0.23	0.18	0.39
1985/86	0.18	0.22	0.16	0.44
1986/87	0.17	0.22	0.21	0.40
1987/88	0.18	0.19	0.21	0.42
1988/89	0.18	0.19	0.21	0.42

Appendix 6: Real Exchange Rates Deflators

	CANADA	US	JAP	UK	BEL	FRAN	ITALY	NLND	W GERM	AUS
1964/65	0.79	0.78	1.06	1.12	0.83	0.88	0.94	0.90	0.69	0.95
1965/66	0.79	0.79	1.03	1.11	0.82	0.89	0.94	0.88	0.69	0.95
1966/67	0.80	0.80	1.03	1.12	0.83	0.90	0.96	0.88	0.70	0.96
1967/68	0.81	0.81	1.04	1.14	0.85	0.92	1.00	0.89	0.73	0.98
1968/69	0.81	0.81	1.03	1.14	0.86	0.91	1.03	0.89	0.75	1.00
1969/70	0.83	0.81	1.02	1.13	0.88	0.91	1.05	0.89	0.77	1.03
1970/71	0.87	0.83	1.04	1.14	0.91	0.93	1.08	0.91	0.80	1.06
1971/72	0.91	0.87	1.07	1.14	0.95	0.95	1.12	0.92	0.83	1.07
1972/73	0.92	0.89	1.06	1.14	0.96	0.96	1.11	0.91	0.83	1.05
1973/74	0.93	0.90	0.99	1.11	0.96	0.95	1.06	0.92	0.86	1.00
1974/75	0.94	0.93	0.95	1.04	0.96	0.96	1.01	0.95	0.91	1.00
1975/76	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1976/77	1.07	1.09	1.06	0.99	1.07	1.06	0.98	1.07	1.11	1.04
1977/78	1.12	1.15	1.13	1.01	1.14	1.09	0.97	1.16	1.22	1.09
1978/79	1.16	1.19	1.23	1.02	1.24	1.12	0.96	1.25	1.33	1.12
1979/80	1.22	1.22	1.34	1.02	1.35	1.16	0.94	1.37	1.47	1.18
1980/81	1.27	1.27	1.47	1.04	1.47	1.19	0.91	1.50	1.61	1.24
1981/82	1.32	1.35	1.64	1.09	1.57	1.22	0.89	1.63	1.76	1.30
1982/83	1.36	1.44	1.79	1.14	1.62	1.23	0.86	1.74	1.88	1.32
1983/84	1.38	1.48	1.87	1.16	1.61	1.21	0.82	1.80	1.95	1.35
1984/85	1.47	1.59	2.03	1.22	1.69	1.26	0.82	1.95	2.12	1.40
1985/86	1.62	1.76	2.29	1.33	1.88	1.38	0.87	2.20	2.40	1.47
1986/87	1.75	1.93	2.57	1.44	2.09	1.51	0.94	2.48	2.70	1.53
1987/88	1.90	2.11	2.90	1.57	2.33	1.66	1.01	2.81	3.04	1.63
1988/89	1.86	2.06	2.98	1.53	2.39	1.66	0.99	2.90	3.11	1.57

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