

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

Blenheim
(June, 1986)

Volume 1

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

by

Agricultural Economics Research Unit
Lincoln College
Canterbury

Discussion Paper No. 106

December 1986

ISSN 0110 7720

VOLUME 1

TABLE OF CONTENTS

Page

Invited Papers on Economic Liberalisation and its Impact on Agriculture: An International Comparison

Policy Reforms and External Shocks in the Southern Cone: A reassessment Vittorio Corbo and Jaime de Melo	1
Economic Liberalisation and its Impact on Agriculture: The case of Australia R G Gregory	47
Economic Liberalisation and its Impact on Agriculture: The case of Chile Cristian Zegers Prado	65
Economic Liberalisation and its Impact on Agriculture: The case of New Zealand Ralph Lattimore	87

Invited Papers on Financial Markets

Interest Rates, Exchange Rates, and Government Policy Bryce Wilkinson and Peter Keenan	113
Risk Management in Financial Markets T W Stevenson	125
Wool Price and the Value of the New Zealand Dollar P A Conway	134

VOLUME 2

Invited Papers on the Effect of Economic Liberalisation Within Sectors

Economic Liberalisation and the Impact on Farming Neil W Taylor and Robert M Davison	153
Economic Liberalisation and Deregulation in the New Zealand Forestry Sector Joan R Smith	168
New Management Strategies for the Fishing Sector A J Duncan	183
Trade Barriers and International Trade in Forest Products I J Bourke	193

Contributed Papers

Dealing with the Financial Crisis in Mid Western U S Farming Douglas G Genereux	207
The effects of Government Production Control Programmes on Technical Efficiency of Egyptian Farmers Y-S Chiao	229
Optimal Promotion for Agricultural Marketing Agencies S K Martin, L Young, A C Zwart	245
Countervailing Power Revisited - Agricultural Bargaining Applied to the New Zealand Setting David J Schaffner	258
Assistance to the Tourist Industry Ron Sandrey and Susan Scanlan	265
Efficiency and Equity in Agricultural Research W M Eveleens and G M Scobie	282
The Agricultural Sector and the Free Market John Pryde	299
New Economics: Is This One Way Toward Economic Liberalisation for the Rural Sector? Jock Fletcher	307

FOREWARD

The theme for the 1986 Conference of the New Zealand Branch of the Australian Agricultural Economics Society was "Economic Liberalisation in Agriculture: An International Comparison." The Organising committee adopted this theme recognising the very significant changes in the economic environment which were being introduced. The removal of regulation, output and input subsidies, the floating of the exchange rate, the opening of the New Zealand economy to capital flows, the lowering of tariffs on manufactured goods - all these factors were leading to a new economic climate for the primary sector.

At the same time it was felt that we could benefit from the experiences of other countries which had implemented similar programmes. Conscious of the need for New Zealand to have as much professional contact with the rest of the world as possible it was decided to invite a number of distinguished overseas speakers. The society is grateful to the Reserve Bank of New Zealand, the Economics Division of the Ministry of Agriculture and Fisheries, the Treasury and to the Federal Council of the Australian Agricultural Economics Society for their support in this endeavour.

In addition, invitations were extended to a number of people to present papers which would complement the main theme of the conference, and I would personally like to express my thanks for their support.

In an effort to continue improving the professional image of the New Zealand Branch, we introduced a style guide for authors and have tried to establish consistent editorial presentation. However, these proceedings have been prepared with only limited editorial input; the papers were not subject to review and errors or omissions remain the responsibility of individual authors.

Finally I would like to thank the Director and staff of the Agricultural Economics Research Unit at Lincoln College for their collaboration in the publication of these Proceedings.

G. M. Scobie
President

Policy Reforms and External Shocks in the Southern Cone:
A Reassessment

by

Vittorio Corbo
and
Jaime de Melo

World Bank
Washington, D.C.

We thank Ricardo Caballero for his contribution to the analysis in Section 5, Gabriel Castillo for research assistance, and Myriam Bailey and Jackson Magargee for word-processing and Peter Bocock for editorial help.

The World Bank does not accept responsibility for the views expressed herein which are those of the authors and should not be attributed to the World Bank or to its affiliated organizations. The findings, interpretations, and conclusions are the results of research supported by the Bank; they do not necessarily represent official policy of the Bank. The designations employed, the presentation of material, and any maps used in this document are solely for the convenience of the reader and do not imply the expression of any opinion whatsoever on the part of the World Bank or its affiliates concerning the legal status of any country, territory, city, area, or of its authorities, or concerning the delimitation of its boundaries, or national affiliation.

The World Bank, 1818 H Street, N.W., Washington, D. C., 20433, USA

1. Introduction

Few reform packages have led to as much controversy as the Southern Cone reforms in Chile, Argentina and Uruguay. Carlos Diaz-Alejandro, a close observer, was well aware of this when he cautiously stated that ". . .it is often difficult to establish where scientific economics ends and political preference begins" (1981, p. 120). While not eschewing his centrist position, Diaz-Alejandro knew where to draw the line between scientific economics and political preferences and showed much foresight in his interpretations of Southern Cone reforms. In his early appraisal of Southern Cone stabilization plans, he foresaw, among other difficulties, the risks of using the exchange rate to bring down inflation (Diaz-Alejandro, 1981). Later on, he wrote on the moral hazard problem created by wholesale financial sector deregulation unaccompanied by banking sector supervision (Diaz-Alejandro, 1985).

Diaz-Alejandro's insights aside, currently received wisdom about the outcomes of Southern Cone reform sometimes gives the impression of a state of disarray analogous to the economic disorder in the three countries themselves, as their dismal record has unraveled during the early 1980s. Some observers, notably in the press, have concluded that the reform effort as a whole was a failure. Others, including the present authors (1985a) have suggested that the microeconomic reforms were successful and that most of the problems that emerged resulted from inadequate macroeconomic policies. Still others have blamed failure on unfavorable external shocks (Sjaastad, 1982). Finally, some have asked whether the sequence in which the reforms were implemented may have been the major cause of failure (Edwards, 1984; Frenkel, 1985).

Meanwhile, many countries now attempting to resume growth and maintain external balance are designing policy packages that invariably

include some if not most of the programs implemented by Southern Cone Governments. Because of apparent past failures, however, hesitation and doubt persist about the efficacy of these kinds of broad-based reform efforts. Thus, a better understanding of the proximate causes of their failure in the Southern Cone countries is not only of interest to the economic historian; it is also a matter of pressing practical importance to today's policymakers elsewhere in the developing world, who need a clear sense of what opportunities they should seize, what pitfalls they should avoid -- and perhaps above all, what their own rational expectations of success should be.

This paper uses the benefit of hindsight to examine these controversial reforms once more -- their pervasiveness, their implementation, and the contribution of external factors to their overall failure. The paper complements our earlier paper (Corbo, de Melo and Tybout, 1986), where we drew country-specific conclusions from what our research suggested were the major causes of ultimate failure in each country's reform package. Here we ask whether the reforms were undertaken in accordance with what seems to us to be the emerging consensus on how to implement stabilization and liberalization policies in developing countries. Elements of the consensus are summarized in Section 2. Next we briefly evaluate the reforms, mainly to dispel some misconceptions about the extent of liberalization (Section 3). We then use the framework suggested in Section 2 to draw lessons from the implementation of the reforms in each country, asking how far Southern Cone experience deviated from our view of what the consensus would suggest (Section 4). Finally in Section 5 we address the issue of external shocks and report on preliminary econometric results from a model that tries to assess the extent to which terms-of-trade and interest rate shocks contributed to the

difficulties the Southern Cone countries have faced since the early 1980s.

Conclusions follow in Section 6.

2. The Design of a Stabilization and Liberalization Program: What do we Know?

Take a country with macroeconomic imbalances and heavily regulated commodity and factor markets (including a highly protective trade regime and severe restrictions on foreign capital flows) where policymakers wish to implement an economic program aimed at reducing inflation and restoring growth. What would economists entrusted with the task of designing the program suggest?

2.1. Stabilization

For countries with inflation of about 50 percent or more a year, they would suggest a stabilization program up front before undertaking liberalization. This is because the inflation itself is usually the most important source of distortion in such a situation. Side effects of inflation that impede appropriate economic performance are well documented [Fischer (1968b), Yeager (1981)] and are of four main kinds: (1) high inflation makes relative prices very volatile, reducing their information content (this is because changes in the rate of inflation do not affect all prices and costs uniformly and at the same time); (2) the interest rate controls usually observed in countries with high inflation result in negative real rates that lead to credit rationing, distort investment decisions, and reduce the size of the formal financial system; (3) uncertainty about future inflation rates leads to financial transactions being concentrated in instruments with short rather than long term maturities, thus reducing the availability of funds for long-term investment; (4) high inflation is also associated with sharp changes in the prices of tradables relative to nontradables, as periodic attempts to

control inflation through the exchange rate result in protracted periods of real currency appreciation.

The recommendation for an up front stabilization program also stems from the fact that a successful liberalization depends on the credibility of the program, and on maintaining a fairly stable real exchange rate. High inflation makes both these objectives very difficult to attain. Not surprisingly, there are few historical examples of simultaneous achievement of stabilization and liberalization. Indeed, one of the most extensive studies of trade liberalization reforms has concluded that their failures have stemmed mainly from the failure of the accompanying anti-inflationary programs [Krueger (1978), (1981)]. Hence the prevailing view that stabilization should precede liberalization when inflation is over, say, 50 percent a year [Fischer (1986), Sachs (1986a)]. ^{1/}

For countries with "intermediate" annual inflation rates of, say, 20-50 percent, stabilization still remains a high priority but there is no absolute ban on introducing liberalization and stabilization programs simultaneously. Any stabilization program should, however, avoid introducing major distortions that could jeopardize successful liberalization. In particular, real exchange rate appreciation should not be used as a major stabilization device. ^{2/}

2.2. Liberalization

Turning to liberalization, there is also broad agreement on general principles that go a long way towards defining the final contents of any reform package. In highly regulated economies with widespread price controls, the suggestion would be to lift price controls so as to improve resource allocation, while simultaneously deregulating domestic factor markets.

Financial markets should be deregulated (subject only to appropriate banking supervision rules), so as to improve credit allocation and thus to distribute investment more efficiently. Similarly, labor market restrictions should be lifted, so as to promote reallocation of newly liberated resources.

On the foreign trade side, commercial policy should first replace QRs with equivalent tariffs. Then the variance of tariff rates and their average level should be reduced, with the objective of moving towards a low, uniform tariff. As a rule, incentives should avoid discrimination against export oriented activities, and lead to approximate, uniform, and effective across-the-board incentives for import competing activities (Balassa, 1976). ^{3/}

Once we get beyond agreement on general principles, however, there is much disagreement on implementation. Implementation raises questions of dynamics, about which we know little. Here the literature addresses three sets of issues: (1) the speed of the reforms; (2) the sequencing of the program (i.e., which markets to liberalize first); and (3) the appropriate macroeconomic policies to minimize difficulties that arise during the transition to a more liberalized economy. We now discuss each of these in turn.

Speed of reforms: The issue here is how fast one should implement a particular reform. Should one liberalize trade totally and instantly, or do it over 5 or 10 years? Should price controls be removed at a stroke or gradually? Should the interest rate ceiling be lifted at once or progressively?

In approaching these and other questions of implementation, it is essential to keep in mind the fact that liberalization is not an end in itself, but a means to achieving one or more underlying objectives in differ-

ent areas of economic policy. Reform initiatives thus need to be phased in terms of realistic timetables for reaching these objectives--which may differ from one policy area to another. A doctrinaire approach that ignores the pace at which adjustment to the reforms can take place runs the risk of the medicine killing the patient.

On the foreign trade side, for example, the main purpose of liberalization is to improve resource allocation and raise productivity by eliminating discrimination against export-oriented industries (and import-competing industries with low levels of protection). The speed of liberalization must therefore depend on the speed with which resources can realistically be expected to be reallocated to the sectors that have hitherto been discriminated against. Initial conditions, specific to each country, determine the speed at which redeployment can take place. For example, the smaller the investment/GNP ratio, the slower should be the speed of trade liberalization. Similarly, the greater the extent of labor mobility and the more competitive the labor market, the more quickly resources can be reallocated and thus the faster trade liberalization can proceed. 4/

Deregulation of financial markets can create several problems if initial conditions are overlooked. For example, if regulation has led to a substantial proportion of financial institutions' assets being held at below market rates, and real lending rates are substantially negative, then deregulation of interest rates will create difficulties for existing financial intermediaries. In particular, if deposit and lending rates are deregulated simultaneously and new entrants are allowed into the financial system, then existing banks will be forced to pay market rates. Existing banks may then experience substantial capital losses, in turn putting the banking system's

solvency in jeopardy. This implies that in the transition phase, lending rates should be deregulated first, and deposit rates gradually thereafter. In this way, the capital losses of existing banks are minimized; then, as existing preferential loans come to maturity, controls and deposit rates can be lifted over time.

Deregulation of controls on capital flows is another example of the importance of taking initial conditions into account. On the one hand, rapid liberalization of capital flows with deposit rates that are below free market levels, will result in capital outflows that could threaten the survival of the domestic financial system. On the other hand, if domestic interest rates are free and substantially above international levels, (when expressed in the same currency) decontrol of capital flows will result in large capital inflows that will create a real exchange rate appreciation which in turn will jeopardize the success of trade liberalization efforts (Bruno, 1983).

Sequencing of Reforms: here too, economic theory offers little guidance about an optimal sequence for removing distortions when many markets are initially regulated. Nevertheless, some broad recommendations can be derived from general principles that recognize that the objective of liberalization is to improve resource allocation. This objective suggests that domestic markets should be deregulated first, so as to ensure that resource reallocation will take place.

The second stage then involves liberalization of economic relations with the rest of the world. Here, it is usually argued that the current account of the balance of payments should be liberalized first with liberalization of the capital account later. Much has been written on this issue lately, (see McKinnon (1982), Frenkel (1982, 1983), Krueger (1984),

Edwards (1985)). Two arguments have been put forward for liberalizing domestic markets and the current account before the capital account. First, since asset prices are determined by the present value of income streams, income streams generated by distorted prices will result in distorted asset prices [Krueger (1984)]. Second, since asset markets in general adjust much faster than commodity markets, liberalization of the capital account could result in large capital flows with unwanted consequences for the real exchange rate. By the same argument, the overall balance of payments constraint requires that the current and capital accounts be brought into line with each other, and thus, even though the two accounts tend to respond at different speeds, the overall constraint implies that the two speeds of adjustment must be harmonized. It is much easier to achieve this by slowing down capital flows than by accelerating current account liberalization [Frenkel (1983), Edwards (1985)]. This point could be extended farther by arguing that, within the current account, import flows respond faster than export flows: thus, opening up the capital account first could jeopardize the overall process of trade liberalization.

Macroeconomic policies for successful liberalization: During a liberalization, macroeconomic policy should ensure an appropriate and stable real exchange rate, a low inflation rate, and a sustainable balance of payments position. This implies that countries starting a liberalization from high inflation will face complications. The first complication come from the simultaneous implementation of stabilization and liberalization policies. On the one hand, the success of stabilization depends on applying contractionary pressure to the economy as a whole, while, on the other, trade liberalization calls for the contraction of highly protected import competing firms and a

delayed expansion in export oriented firms and import competing ones with little protection. With simultaneous application of both programs, the net contractionary pressure on highly protected import competing activities might be too strong to withstand.

The second complication is downward price inflexibility. To overcome this phenomenon, trade liberalization has to be accompanied by a devaluation up front to achieve the desired improvement in the relative prices of exportables. However, the devaluation will also accelerate inflation or weaken the fight against it.

In countries with low or intermediate inflation rates (below 50 percent a year), macropolicies should be designed to maintain an "appropriate" and stable real exchange rate. For economies operating fixed or crawling peg exchange rate regimes, the initial tariff reduction should be accompanied by a devaluation that, while not restoring the pre-liberalization landed prices of imports, would permit an improvement in the relative prices of exportables [Mussa (1986)]. And for those countries that have discriminated against exportables for a long time, an up front improvement in the relevant incentives is also necessary to move resources toward exportables.

Besides exchange rate policy, other elements of macroeconomic policy should also be redesigned to support the liberalization effort. Thus, monetary expansion should be compatible with exchange rate pegging rules, so as to avoid a loss of confidence in the pegging rule that in turn might jeopardize the success of the overall reform package. Fiscal policy should try to ensure that the fiscal deficit is compatible with the domestic credit expansion resulting from a stable pegging rule [Buiter (1985)]. Also, the part of the deficit that is financed in the domestic capital market should not

crowd out the financing of the sectors that are meant to expand. Likewise, credit policy should ensure access to credit at competitive rates for the expanding sectors, while simultaneously denying cheap credit to previously heavily protected import competing sectors (because its availability could slow down their adjustment). Finally, labor market arrangements should be flexible enough to allow for a drop in the consumption wage in previously heavily protected sectors and/or to allow the reallocation of labor toward the sectors that were previously discriminated against. Otherwise, unemployment will result.

3. Southern Cone Reforms: A Synopsis ^{5/}

3.1 The Pre-reform Period

After three decades of import substitution, the economies of the three Southern Cone countries had by the early 1970s become among the most distorted in the developing world. Expansionary demand policies to promote output growth, combined with fixed exchange rates, pervasive price controls (over 90% of the CPI basket was controlled in each country) and restrictive trade regimes, resulted in an acceleration of inflation, bottlenecks in production, chronic balance of payment difficulties, and slow export growth. ^{6/}

During the pre-reform period, trade policies in the three countries were similarly and strongly biased in favor of import substituting industrialization (ISI) and against exports. All three countries had experienced mild trade liberalization experiments: Chile in the late 1960s, Argentina in the second half of the same decade, and Uruguay in 1959. In each case, there was a return to a very restrictive trade regime with widespread tariff and non-tariff barriers.

Table 1a:
Effective Protection and Trade Openness in Argentina

	Effective Protection to value added Domestic 1969			Legal tariff rates Dec 1977 (%)	Realized protection rates (%) Feb 1977
Primary activities	-8.0	321	Textiles	57.4	41.1
Processed foods	44.0	322	Clothing	95.0	79.2
Beverages and tobacco	95.0	341	Paper and paper products	29.0	30.8
Construction materials	31.0	351	Industrial chemicals	35.2	36.6
Intermediate products I	146.0	352	Other chemicals	17.0	0.0
Intermediate products II	9.0	355	Rubber products	45.0	29.6
Non-durable consumer goods	50.0	362	Glass	41.8	12.3
Consumer durables	145.0	369	Other non-metallic mineral products	11.0	0.0
Machinery	120.0	371	Basic ferrous metal products	48.2	60.7
Transport equipment	207.0	372	Basic non-ferrous metal products	44.5	47.0
Equally weighted arithmetic mean	83.9	381	Metal products	45.9	10.0
mean		382	Non-electrical machinery	65.5	19.7
Standard deviation	69.7	383	Electrical machinery	61.3	55.7
Variability coefficient	0.8	384	Transport equipment	87.2	29.7
Range	215.0	385	Scientific and other equipment	50.0	73.3
			Weighted average	52.7	37.1

2

	Trade as % of GDP					
Years	1929	1951-55	1965-70	1971-73	1974-79	1980-82
%	36.0	39.4	15.6	17.0	19.2	17.6**

NB: Both sets of estimates based on price comparisons; 1977 estimates are for 90 products and probably underestimate protection because of the prevailing high real exchange rate in 1977. (See Figure 1.)

Source: Berlinski and Sehydowsky (1982) for 1968 and Nogues (1985) for 1977.

**Does not include 1982.

Table 1b:
Effective Protection and Trade Openness in Chile

	Effective protection (%)		
	1967	Simple averages 1974	1979
Consumer goods	138.8	189.7	13.2
Intermediate goods	172.9	139.6	14.0
Machinery and transport equipment	265.3	96.0	13.0
Equally weighted arithmetic mean	176.7	151.4	13.61
Standard deviation	279	60.4	1.7
Variability coefficient	1.57	0.399	0.124
Range	1163	216	6

Openness: Foreign trade as % of GDP

Years	1929	1951-55	1965-70	1971-73	1974-79	1980-82
Average openness (%)	66.3	21.7	24.0	20.3	36.1	32.6

Sources: Corbo and Meller (1981).
Aedo and Lagos (1984).
IMF.

Table 1c:
Protection and Trade Openness in Uruguay

Nominal Protection and Redundant Protection

	1968	1978	1980	1981	1982
Nominal protection					
Domestic sales: formal	263	86 (72) <u>a/</u>	40	46 (39) <u>a/</u>	60
implicit	na	25	36	38 (1) <u>d/</u>	41
Export sales (NRP)	4	16	16	1 (-18) <u>d/</u>	22
Redundant protection <u>b/</u> on domestic sales	na	23	6	1	8

Effective Protection: 1968 and 1981

	1968	Weighted (1981)	(1981)	C.V. <u>e/</u>	Unweighted
Domestic sales (Potential) <u>c/</u>	384	75 (89)	(27) <u>d/</u> (37) <u>d/</u>	103	118 (107)
Export sales (Potential) <u>c/</u>	37	30 (20)	(-5) <u>d/</u> (-13) <u>d/</u>	184	39 (33)
Effective protection to domestic sales by major product categories (1981)	na				
Durables		317			
Non-durables		37			
Intermediates		101			
Machinery and transport equipment	na	286			

Openness: Foreign trade as % of GDP

Years	1951-55	1965-70	1971-73	1974-79	1980-82
Average openness (%)	19.6	27.3	25.1	36.2	33.9

NB: 1982 calculations with 1981 weights. All rates, unless otherwise noted, represent weighted averages: product weights at world prices.

a/ Without reference prices.

b/ Computed as the difference between the formal nominal rate of protection and the landed price (inclusive of customs duties) of corresponding imported goods.

c/ Potential effective protection computed using formal nominal rates of protection.

d/ Adjusted for exchange rate deviation from purchasing power parity.

e/ C.V. = coefficient of variation.

Sources: 1968 Bension and Caumont (1981).
1978-82 CLNVE (1983) and Mezzera and de Melo (1985).

Fragmentary evidence on effective protection (see Tables 1a, 1b and 1c) shows high effective rates of protection to domestic sales in each country: 84% in Argentina (1969); 151% in Chile (1974); 384% in Uruguay (1969). The variability of protection across sectors, an indicator of distortion in incentives, was also very high in the three countries, and for no good economic reason; rather, it was the piecemeal result of pressures imposed by different domestic interest groups.

As a result of increasing protectionism, the openness of the three economies had decreased steadily since the late 1920s. As shown in Tables 1a, 1b, and 1c, the total share of trade (exports plus imports) in GDP was only 25.1% for Uruguay, the smallest of the three countries, in the early 1970s. Chile's share was only 20.3% and Argentina's was only 17%. These percentages were well below the norm for countries of similar size and level of development (see Chenery and Stryquin, 1975).

In additions to distortions created by the prevailing price controls and commercial and fiscal incentives, all three countries were in severe macroeconomic disequilibrium (see Table 2). Both Chile (1973) and Argentina (1976) faced high fiscal deficits, severe deficit-induced inflation and balance of payments crises with acute foreign exchange shortages. Public sector deficits averaged 10 percent of GDP in Argentina and Chile during 1971-73 and 3 percent in Uruguay. ^{1/} Uruguay was the only country of the three not in deep crisis by the early 1970s and the only one to have some foreign exchange reserves; nonetheless, its economy had registered virtually zero per capita growth for 20 years.

3.2 Orthodox and Exchange-Rate-Based Stabilization

The first task facing the new economic teams in each country was to control galloping inflation. Programs to this end were implemented in two identifiable phases: first, an orthodox attempt to control the money supply, and to restrain or reduce public expenditures; and second, an exchange-rate-based stabilization starting in 1978 when money supply was believed to be endogenous because of high capital mobility.

During this first phase Chile's substantial and chronic fiscal deficit was eliminated by drastic across-the-board expenditure cuts (amounting to 15 percent in 1975 alone), followed by a tax reform. In Uruguay, the fiscal deficit was reduced yearly up to 1980. Here, much credit should be given to the rationalization of taxation, including the introduction of a value added tax (VAT) which improved fiscal performance compared to the poor record of the pre-reform period (see Harberger and Wisecarver 1977). In Argentina, on the other hand, the fiscal deficit was never really controlled (Cavallo and Pena 1983).

It was expected that these "orthodox" measures would be contractionary but it was thought that their potential benefits would easily outweigh the temporary costs of recession. Reducing absorption was much more important in Argentina and Chile than in Uruguay; hence, not surprisingly, the short run recession was most severe in Chile, the country where the most progress was made in controlling inflation (Table 2). In addition, the recessionary effects of the stabilization effort were compounded in Chile by a severe terms of trade loss in 1975. In Argentina, where inflation was more severe, intense concern about the political consequences of unemployment limited the stabilization effort [Fernandez (1985)].

Table 2:
Southern Cone Macro-economic Indicators by Subperiod: 1941-83

Average annual growth rate (percent)	Pre-reform					Reforms		Post-reform crisis	
	1941-50	1951-60	1961-70	1965-70	1971-73	1974-76	1977-78	1979-81	1982-83
Chile									
Gross domestic product	4.00	4.40	4.50	4.10	1.30	-1.80	7.80	6.90	-7.40
Expenditure	4.00	4.50	4.00	5.10	1.30	-8.20	11.90	10.20	-14.40
Exports	11.60	3.40	9.40	11.80	9.90	23.50	7.90	20.40	-0.10
Imports	12.30	8.80	6.50	8.10	5.60	22.30	35.20	28.70	-30.20
Gross fixed investment	na	41.80	1.70	5.30	-9.80	-7.80	16.70	17.80	-26.60
Consumer prices	na	37.60	27.20	23.30	149.70	358.00	79.00	30.20	11.70
Average (percent)									
Fiscal deficit/GDP	na	na	1.60	2.10	16.10	5.10	1.30	-2.10	3.10
Unemployment rate	na	na	na	6.00	4.60	14.20	13.60	12.20	22.20
Real wage	na	na	na	98.00	98.00	69.00	82.00	100.00	82.00
Gross investment/GDP	na	10.00	15.40	14.40	12.10	16.00	14.00	16.70	13.30
Terms of trade (1968 = 100)	63.30	73.40	89.40	101.40	92.70	79.00	60.30	56.10	42.50
Current account/GDP	na	1.10	2.40	1.40	2.90	2.60	5.60	9.10	7.40
Uruguay									
Gross domestic product	4.00	0.00	1.60	2.10	-0.40	4.30	3.20	4.70	-7.20
Expenditure	4.00	0.80	1.30	2.90	-0.20	1.90	3.60	5.60	-11.20
Exports	16.50	-3.70	6.50	3.90	16.80	21.40	10.20	21.80	-2.90
Imports	16.30	5.70	1.90	3.90	8.70	30.20	14.00	32.10	-30.70
Gross fixed investment	na	5.80	-1.50	7.30	-10.80	25.00	10.50	6.90	-24.80
Consumer prices	na	23.20	47.90	49.80	62.70	69.20	51.30	54.00	33.30
Average (percent)									
Fiscal deficit/GDP	na	na	na	1.90	3.20	3.80	1.90	0.00	6.40
Unemployment rate	na	na	na	8.20	8.10	9.70	12.40	8.40	13.70
Real wage	na	na	na	104.00	102.00	86.00	70.00	64.00	54.00
Gross investment	na	13.00	12.20	11.30	10.10	13.00	15.60	16.10	13.50
Terms of trade (1968 = 100)	114.50	115.60	109.50	107.20	134.90	76.00	90.70	89.00	78.70
Current account/GDP	na	na	3.50	0.05	-0.50	3.40	3.20	5.40	0.70
Argentina									
Gross domestic product	2.50	3.50	4.40	4.20	2.90	0.80		3.70	-3.00
Expenditure	na	6.50	3.10	4.20	3.30	-1.60		8.60	-6.10
Exports	13.00	2.20	5.70	11.50	21.30	29.90		12.70	0.10
Imports	20.10	5.60	4.30	9.00	29.60	2.10		41.40	-23.20
Gross fixed investment	na	13.50	30.60	2.60	7.60	-1.10		-0.90	-3.00
Consumer prices	15.30	30.50	21.50	29.90	138.70	225.50		118.10	188.50
Average (percent)									
Public sector deficit/GDP ^{1/}	5.90	6.00	4.40	3.70	10.10	11.60		10.10	17.80
Unemployment rate	na	na	na	5.70	2.40	3.40		2.20	4.70
Real wage	na	na	na	125.00	154.00	100.00		118.00	111.00
Gross investment/GDP	na	22.50	18.80	19.10	21.44	26.40		23.60	17.20
Terms of trade (1968 = 100)	124.60	100.80	103.00	120.10	133.40	89.00		86.50	88.20
Current account/GDP	na	1.90	-0.50	0.20	1.50	-2.10		0.50	3.80

Sources: National Accounts and Corbo, de Melo and Tybout (1986, Table 1) unless otherwise indicated.

^{1/} Cavallo and Pena (1984).

Anti-inflationary policy measures alone were considered insufficient for eliminating balance of payments difficulties. Hence, stabilization policies in each country also included major attempts to switch expenditures. In Chile, the switching was achieved through a large real devaluation and reduction of barriers to imports. In Argentina, switching efforts included a combination of real devaluation, reduction of taxes on exports, and some reduction of import barriers. In Uruguay, expenditure switching combined real devaluation, reduction of barriers to imports, and introduction of subsidies for non-traditional exports. To avoid a repetition of previous external crises, all three countries eliminated multiple exchange rates for commodity trade and, more importantly, complemented their initial parity changes with a passive crawling peg exchange rate regime aimed at maintaining purchasing power parity adjusted by changes in the terms of trade.

These initial efforts successfully eliminated the balance of payments crises. What was done during the first phase (i.e. until 1978), was certainly in line with the framework suggested in Section 2: reduction of inflation and up front devaluation to achieve expenditure switching. In the event, however, inflation remained disturbingly high several years after the contractionary policies had been implemented. ^{8/} Meanwhile Argentina's fiscal deficit still averaged over 11% of GDP during 1976-78, but Chile's and Uruguay's deficits averaged less than 2% of GDP during 1977-78 (see Table 2). The persisting pressure on prices prompted a major shift in tactics, towards a second phase of stabilization policy in which the exchange rate was used to reduce inflation. ^{8/}

Expectations about inflation and devaluation were recognized as important determinants of the dynamics of stabilization, and it was believed that exchange rate targets announced up to six months in advance and with forward devaluations at a decreasing rate would break inflationary expectations. In practice, the rate of devaluation, which was set in accordance with a preannounced schedule known as the tablita, was less than the existing difference between domestic and world inflation. This policy corresponded to an "active" crawling peg, and was clearly a departure from orthodoxy. ^{9/}

Proponents of the new approach thought that purchasing power (especially in Chile) and interest parity (in Uruguay and Argentina)--both resulting from the forces of competition in freely operating commodity and capital markets--would come fairly rapidly. In Argentina and Uruguay, the anti-inflationary policy took precedence over other economic objectives with the adoption of the tablita in December 1978. In Chile too, bringing down inflation became a main concern when the tablita was adopted in February 1978. All three countries also sometimes used tariff reductions to impose price discipline rather than to rationalize the trade regime (see Tables 3a, 3b, 3c below).

At the time, the exchange-rate-based approach to stabilization represented a departure from prevailing orthodoxy. The approach was a seductive novelty, and a number of other countries including Brazil, Portugal, Turkey and Sri Lanka flirted with it -- hoping, like the Southern Cone countries, to avoid the recessionary costs known to accompany orthodox stabilization efforts. In contrast to the Southern Cone, countries, however,

pragmatic attitudes prevailed elsewhere, and the exchange rate strategy was soon abandoned.

3.3 How Much Liberalization?

With different timing and intensity, all three countries removed price controls, liberalized interest rates, reduced restrictions on commodity trade and capital flows, and partly deregulated their labor markets. A chronological synopsis of reforms roughly classified by market for each country appears in Tables 3a, 3b and 3c. With the exception of domestic financial market deregulation, which proceeded rapidly in all cases, the sequencing of the reforms differed in each country. Uruguay removed all controls on capital flows and many commodity price controls early on, but progressed more slowly on the liberalization of foreign trade (Table 3c). Uruguay also rationalized its fiscal system the most, eliminating the income tax and moving to a VAT. Chile, on the other hand, went the furthest in eliminating domestic price controls and reducing trade barriers, but maintained controls on short-term capital flows for a long period (Table 3b). Chile also maintained important labor market regulations. Argentina eliminated price controls, and removed most restrictions on medium term (more than one year) capital flows, and quantitative import restrictions (with some important exceptions) before implementing some ad hoc tariff reductions (Table 3a). Uruguay virtually eliminated price controls by the end of 1979, but adopted only minimal commercial policy reforms to lower protection.

The evidence on persistently high effective protection to domestic sales in Argentina and Uruguay makes it clear that liberalization by no means affected all markets. In fact, contrary to popular belief, only Chile experienced pervasive and intensified foreign competition; in Argentina and

Table 3a
CHILE
Stabilization/Liberalization Measures:
1973 - 1982

Policies/Year	1973/74	1975	1976	1977	1978	1979	1980	1981	1982
A. <u>Stabilization</u>									
(I) Monetary Policy		Restrictive monetary policy to cope with 1975 BOP crisis							
(II) Fiscal and Public Expenditure Policy	Start of sale of publicly owned firms (500 sold by 1979)	(Early): Reduction of deficit from 10.5% of GDP to 2.6% of GDP in one year. Program involved an across the board cut of 19-20% in government spending on goods and services, sale of government assets, and improved tax collection							
(III) Exchange Rate Policy	(starting Oct 73) Multiple exchange rate reduced to three-rate systems; 300% devaluation and establishment of crawling peg	Unified exchange rate		Devaluation amounts linked to CPI: Inflation reduced to 3-4% a month	Feb: "tablita" introduced with devaluation rate above monthly CPI charge to compensate for tariff cuts and lower rates thereafter		Nominal rate fixed at mid 1977 level		Jan: Fixed rate abandoned; 1 devaluation. Aug: Initial "clean" but later "dirty" float. Sept: New rate based on high dirty float with monthly devaluation line with CPI
B. <u>Liberalization</u>									
(I) Domestic Product Markets	(starting Oct 73) Many product prices deregulated								
(II) Taxation		(Early In Year): extension of VAT coverage; one-year surcharge on personal income tax; & 10% consumption tax on luxury goods							
(III) Labour Markets						Labour union activity generally diminished since 1973. Collective bargaining now authorized at plant level only. Wage floor set at previous wage indexed for CPI increases	Legislation allowing workers to negotiate fringe benefits and employers to fire workers without giving cause. Minimum coverage wage limited to workers aged 21-65	Jun: Wage indexation suspended. Dec: Legislation to correct distorting effect of wage floor	
(IV) Domestic Financial Markets	May 74: Interest rates freed for capital market transactions by Financieras. Oct 74: Interest rates freed for commercial banks. (Since 1974 maximum debt/capital ratio for commercial banks set at 20)								
(V) External Financial Flows	Regulations governing inflows of external funds into Chilean banks liberalized			Sept: Commercial banks authorized to intermediate capital inflows, but monthly ceiling on inflows of 5% of each bank's capital and reserves		Global limits on external borrowing eliminated. Controls now only overall 20:1 ratio of borrowing to capital and reserves and 5% limit on monthly inflows	Apr: Limit on monthly inflows eliminated. Only 20:1 overall borrowing ceiling and applicable reserve requirements now retained		
(VI) Commercial Policy	Late 1973 to end of 1974: New government removes QRs reduces average tariff from 105% to 69%, maximum rate cut from 750% to 140%	New tariff structure proposed with rates of 25%, 30% & 35% for primary semi-manufactured and manufactured		Following Chile's withdrawal from the Andean Pact effective tariffs of 10-35% proposed; implementation by mid 1977		Uniform tariff of 10% (except for cars over 850 cc.)			

Table 2b
URUGUAY
Stabilization/Liberalization Measures:
1974 - 1982

Policies/Year	1974	1975	1976	1977	1978	1979	1980	1981	1982
A. Stabilization									
(i) Monetary Policy		May: Establishment of system of allocating credit. Central Bank to pay interest on reserve required by law.							
(ii) Fiscal and Public Expenditure Policy									
(iii) Exchange Rate Policy	Exchange rate for capital transactions freely determined: passive crawling peg for goods transactions				Oct: Effective 90 day predetermination of exchange rate by forward sale of 3 month Treasury bills redeemable in US\$. Official unification of formerly dual foreign exchange market	Oct: Capital and commercial market foreign exchange is unified			Jan: Imposition of 10% import surcharge and 10% increase in Reintegros
B. Liberalization									
(i) Domestic Product Markets	Jul: Liberalization of domestic prices of non-essential goods begins (94% of CPI hitherto controlled)	Jul-Dec: Liberalization of 13% of CPI goods	Feb: Liberalization of prices on non-CPI goods (except monopolies). Later in 1976, liberalization of another 25% of CPI prices		Jul: Replacement of official price-fixing agency by new agency to promote competition and price flexibility. Aug: Liberalization of another 13% of CPI goods	Mar: Reduction of list of goods/services with administratively fixed prices		Jun: Official fixing of car prices because of lack of foreign competition; only 29% of CPI prices and 14% of agricultural prices still fixed	
(ii) Taxation	Jul: Removal of personal income and inheritance taxes. Corporate profits tax (25% rate) established with remission for exporters' reinvested profits					Nov: Social security charges reduced; banking tax and tax concessions to exporters abolished (see above B(iii) and B(v)). 18% VAT imposed			
(iii) Labour Markets									
(iv) Domestic Financial Markets	Sept: Gradual lifting of interest ceiling on peso loans		Mid Sept: Domestic interest rates effectively freed; interest ceiling of 62%	(Mid year): Relaxation of banking law limiting number of financial intermediaries. Nov: Commercial banks permitted to pay interest on cash accounts	Oct: Introduction of nil marginal reserve requirement and 20% unified legal reserve requirement	May: Elimination of 8.4% banking tax and legal reserve requirement			
(v) External Financial Flows	Sept: Liberalization of capital market and regulations on foreign exchange holdings and transactions. De Facto convertibility of the Peso through unrestricted purchase or sale of assets denominated in foreign currency	May: Authorization of repatriation of earnings, profits and capital by foreigners	(Mid year): Authorization of foreign currency trading other than through commercial banks						
(vi) Commercial Policy	Jul: Removal of export taxes on beef and wool. Jul: Removal of some administrative and financial restrictions on imports	Jan: Removal of remaining QRs			Dec: Initiation of tariff reduction program aimed at a uniform 35% tariff by 1985	(Early in Year): Removal of interest subsidies for exports. Feb: Acceleration of tariff reductions. Sept: Further tariff cuts. Nov: Elimination of remission of profits tax for exports and of subsidized credit to exporters			

Table 3c

ARGENTINA

Stabilization/Liberalization Measures:

1976 - 1982

Policies/Year	1976	1977	1978	1979	1980	1981	1982
A. Stabilization							
(i) Monetary Policy (and Price Controls)		March: Imposition of 120 day price control period to reduce inflation.					July: Imposition of 100% reserve requirements for bank deposits and regulated credit allowances.
(ii) Fiscal and Public Expenditure Policy							
(iii) Exchange Rate Policy	Apr: Stabilization of exchange rates from multiple rate system to dual (commercial and financial) rate system with fixed but periodically adjustable parities. Dec: Convergence of financial and commercial exchange rates.		Dec: Preannouncement of Peso/US\$ exchange rates up to end-Aug 1979.	Jan: Preannouncement of Peso/US\$ exchange rates up to end-Dec 1979. Oct: Preannouncement of Peso/US\$ exchange rate for Jan 1980, and of formula for determining future month-by-month rates.	Sept: Announcement of 1% devaluation for October 1980 and following months. Dec: Announcement of Peso/US\$ buy-sell rates for Dec 1980-Mar 1981.		July: Reintroduction of dual exchange rate system.
B. Liberalization							
(i) Domestic Product Markets	Apr: Prices gradually liberalized.			Prices progressively decontrolled till 1982.			
(ii) Taxation							
(iii) Labor Markets	Arrangements made for periodic adjustment of nominal wages.			Wages progressively decontrolled till 1982.			July/Aug: Attempt to obtain voluntary prices/wages agreement.
(iv) Domestic Financial Markets	May: Preliminary attempt to correct negative real interest rates for borrowing through new tax on loans.	Jan: Repeal of earlier law that had nationalized bank deposits.	Oct: Authorization of use of gold coins in bureaux of exchange.	Feb: Introduction of fractional reserve requirements for financial institutions: extension of Central Bank guarantee of deposits to all authorized institutions.	Apr: Guarantee on deposits raised.		May/June: Guarantee on deposits lowered.
(v) External Financial Flows.	July: Liberalization of rules for negotiating foreign exchange loans.		Progressive removal of restrictions on foreign exchange transactions; from <US\$5,000 (June) to <US\$20,000 (Sept).				Sept: Authorization to sell foreign exchange obtained from exports on commercial (85%) and financial (15%) markets.
(vi) Commercial Policy	Apr: Progressive removal of prior peso deposit requirements and of QRs on imports.	Further relaxation of QRs on imports as foreign exchange reserves increased.	Dec: Elimination of prior peso deposit requirement for financing foreign trade. Progress announced for reduction of tariffs to 16% average, and elimination of export taxes by 1986.	Jun: 1978 tariff reduction program accelerated.			

Uruguay, where liberalization was much less widespread, pressure from foreign competition was only felt at the height of real exchange rate overvaluation. For example, in Uruguay redundant protection was only eliminated in 1981 (see Table 3c and Figure 1). At that time the bias against export sales was still 35%. 10/

Rapid and pervasive deregulation of domestic financial markets was a common feature of the reforms in all three countries. Prior to deregulation, non-price allocation of credit and strongly negative real interest rates had been widespread and longstanding. The reforms began by progressively eliminating ceilings on interest rates, and then reduced restrictions on financial intermediaries. Argentina went from 100 percent reserve requirements and directed credit programs to a decentralized fractional reserve system. The Chilean government began by loosening its control of the financial system by allowing non-bank intermediaries to operate without interest rate controls. Then, over several years, it removed interest rate ceilings for commercial banks and returned state owned commercial banks to the private sector. In Uruguay, dollar deposits were legalized and directed credit programs were progressively dismantled starting in 1974. Later, in 1977, controls on entry to the banking system were also lifted.

With respect to international capital flows, the sequencing and speed of reforms differed from country to country. Uruguay legalized unrestricted movements of private capital as early as 1974 and reached full convertibility by early 1977. Argentina eliminated most controls on capital movements in 1979. Chile progressively deregulated medium-term capital flows, eliminating global limits on borrowing in 1979 and restrictions on monthly inflows in April 1980. Restrictions on short-term capital inflows were not dismantled until late 1981, however.

Finally, in all three countries, there was relatively little liberalization of labor markets. These markets continued to be controlled through penalties or prohibitions on labor dismissals, together with legislated wages and/or wage indexation. Thus, while the weakening of trade union power in the early stages of the reforms amounted to a degree of de facto deregulation, no Southern Cone country followed the prescription in Section 2 for enhancing labor mobility.

With respect to the sequencing of liberalization and stabilization respectively, the three countries followed the appropriate sequence (i.e., beginning with stabilization): this was especially clear in Chile and Argentina. When one examines the order of reforms within the liberalization phase, however, some significant departures from Section 2 prescriptions become apparent. Argentina and especially Uruguay deregulated capital flows early on. Here the Uruguayan experience is particularly interesting since none of the perverse side-effects (e.g. real exchange rate appreciation) suggested by proponents of a sequencing starting with current account deregulation was observed so long as the exchange rate was not used to bring down inflation. Indeed the contractionary effects associated with orthodox stabilization was avoided because of capital repatriation (de Melo 1986). With high capital mobility, the maintenance of a stable real exchange rate with the passive crawl was a key to improved growth during 1974-78 -- though other factors, including higher savings and investment rates than in the pre-reform period, also helped. ^{11/} Though the sequence of liberalization was reversed in Uruguay, following the recommendation of maintaining a stable real exchange rate avoided the appearance of macroeconomic disequilibria.

To sum up, along with the lifting of domestic price controls, the most extensively implemented liberalization program in all three countries was the deregulation of financial markets. This is not surprising: one might reasonably expect much less resistance from threatened interest groups to the reduction of restrictions in this area than, say, to reduction of trade barriers or removal of protective labor market regulations (where, as just noted, very little was indeed done). Eventually all three countries also decontrolled short-term external capital flows -- a liberalization measure rarely carried out in developing countries -- but only Uruguay adopted a fully liberalized regime in this area. Finally in foreign trade, only Chile virtually eliminated protection.

As the chronological summary in Tables 3a, 3b and 3c shows, deregulation was usually gradual. The exceptions were the rapid removal of capital flows restrictions in Argentina and especially in Uruguay, and the rapid sale of public enterprises in Chile. Otherwise domestic prices were decontrolled gradually, interest rate ceilings were lifted slowly and trade liberalization in Chile took place over a five year period. On the whole, therefore, the reform process cannot be criticized for its abruptness; indeed, trade liberalization in Argentina and Uruguay was, if anything, too little, too late, and too slow.

4. Lessons from Reform Implementation

The first lesson is that during the orthodox stabilization phase, when markets were being liberalized and inflation was being reduced through an exchange rate policy designed to maintain an "appropriate" parity, the three Southern Cone economies did well by historical standards. The turnaround in Uruguay was the most dramatic of the three. Years of stagnation during the

import-substitution phase gave way to eight years of rapid growth, during which the budget deficit (3.2% of GDP in the 1971-73 period) was progressively reduced, reaching 1.9 percent of GDP in 1977-78. But inflation only fell from a historic peak of 62.7% in the 1971-73 period to 51% by the end of this orthodox stabilization phase. In Chile, despite the 1975 recession when GDP fell 13% (mainly because of a sharp external shock), the initial stabilization program was also successful. The government budget was turned around from a deficit of 9.3% of GDP during 1971-73 to a 1.2 percent surplus by 1977-78, and inflation fell from 150% to 79%. Only in Argentina, was growth never restored to the rates achieved during the period of import-substitution-led industrialization.

The second lesson relates to the coordination of appropriate macro policies with liberalization efforts. Argentina never reduced its fiscal deficit below 8% of GDP, and meanwhile pursued mutually inconsistent exchange rate and monetary policies. This was especially the case during the tablita phase, when the deficit fed the growing expectations of devaluation during 1980 -- which are in turn reflected in the interest rate trajectory in Figure 1. The collapse of Argentina's exchange rate regime has been thoroughly studied [Cumby and van Wijnbergen (forthcoming) and Connolly (1985)]. It is now clear that borrowing abroad to finance the fiscal deficit and monetization of non-performing commercial bank loans were inconsistent with the tablita and that the liberalization episode was doomed from the start because of inconsistent macro policies. ^{12/}

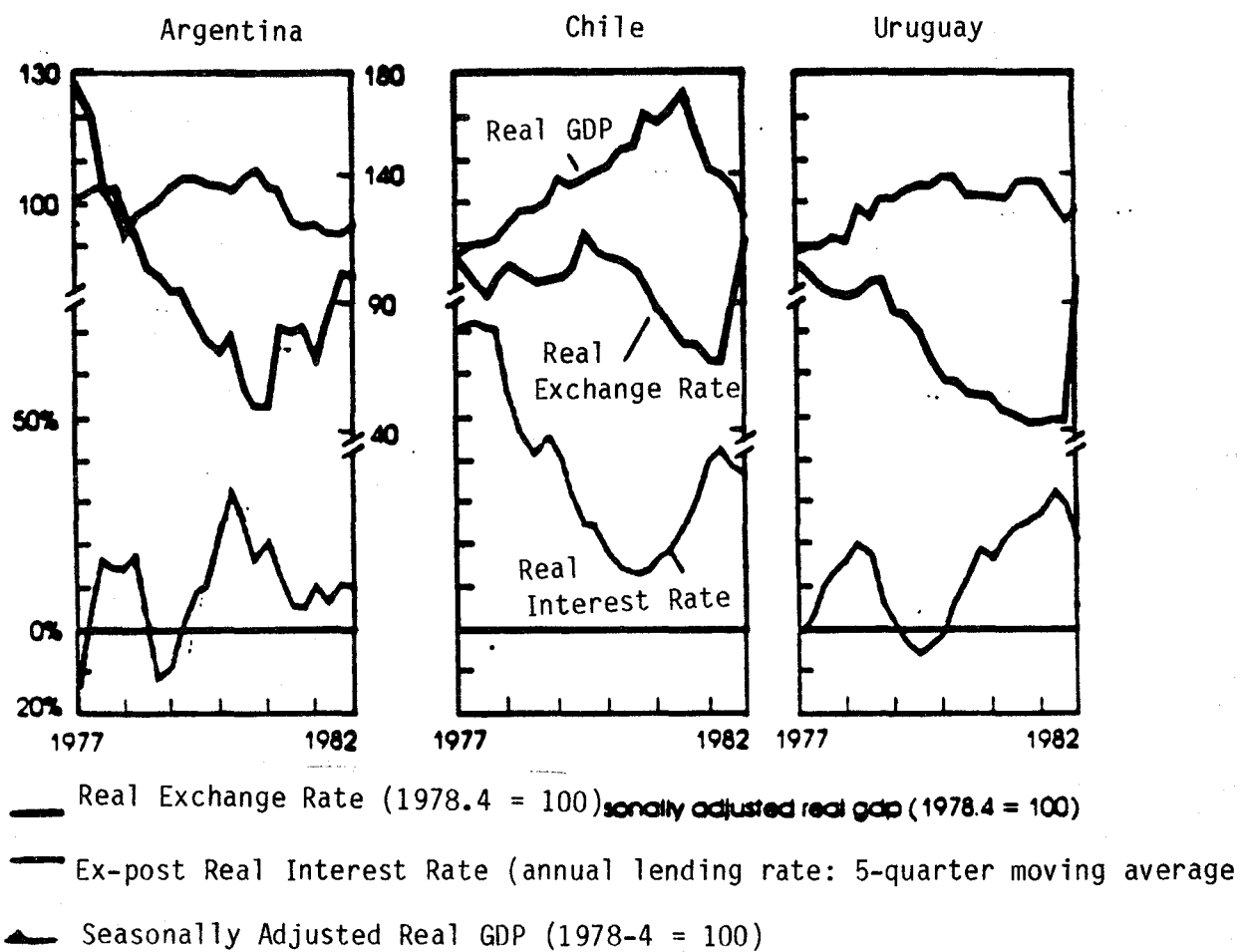
The third lesson has to do with the pursuit of exchange-rate-based stabilization. In terms of inflation alone, the second stabilization phase ultimately achieved its goal. In Chile, inflation fell from an annual rate of

35% in 1978 (II) to -1% in 1982 (II); in Uruguay, from 49% in 1978 (II) to 23% in 1982 (III); and in Argentina, from 167% in 1978 (IV) to 72% in 1981 (I). But all three economies eventually collapsed (see Figure 1) and had to abandon their exchange rate policy. Indeed, it is the disastrous Southern Cone experience with exchange-rate-based stabilization that has prompted today's growing consensus against adoption of a similar strategy elsewhere. Figure 1 corroborates Diaz-Alejandro's (1981) concern about this approach -- that it was slow to work through into the commodity and financial markets, but meanwhile created large capital movements and strong real exchange rate appreciation.

In all three countries capital inflows were initially large. In Argentina and Uruguay, the opening of the capital account when substantial restrictions were still operating on commodity trade prompted large and sudden portfolio adjustments, which produced large capital inflows. This fueled private expenditures, which resulted in strong currency appreciation, followed by outflows when appreciation appeared clearly unsustainable. This capital flight in turn aggravated the recession. In Chile, meanwhile, where trade restrictions had been lifted, backward wage indexation contributed to an unwanted (and unwarranted) real exchange rate appreciation (Corbo, 1985b).

The boom-squeeze-bust sequence during the second stabilization phase is clearly illustrated in Figure 1. Initially, a "boom" occurs, in part because of the fall in the real interest rate (which turned negative in Argentina and Uruguay), in part because of a perceived increase in wealth. In Chile real interest rates always remained positive, partly because of the remaining controls on the term structure of capital inflows. In all three countries, however, large capital inflows created a strong feeling of euphoria

Figure 1: Real Exchange Rates and Real Interest Rates
During the Active Crawling Peg.



NOTES: Real Exchange Rate Index on right hand scale
Real Interest Rate and GDP index on left hand scale

as their real exchange rate appreciated and purchasing power swelled. This euphoric phase was akin to the stages of financial crisis described in Kindleberger (1978) and alluded to by Diaz-Alejandro (1985): as leverage increases, financial structures become more fragile and agents are induced to shift their portfolios towards dollar-denominated debt (Tybout, 1986).

Next comes the "squeeze" as real interest rates increase sharply, in part because of rising expectations that the tablita will be abandoned. The squeeze thus produced by higher financial costs is aggravated by a squeeze from falling earnings as competition from abroad intensifies because of the strong real currency appreciation. Agents now respond with increased borrowing to stave off bankruptcy, and await a postdevaluation bailout (Diaz-Alejandro, 1985).

Finally comes the "bust" phase: banks and firms face insolvency while capital flees the country as the collapse of the exchange rate regime becomes imminent. In all three countries, the response was a series of inflationary measures to bail out insolvent banks and firms, complemented by governmental assumption of privately contracted debt. ^{13/}

How much of this pattern of apparently (with hindsight) inevitable debacle was due to faulty policies, how much to external events? Below we give a partial account.

5. How Important Were External Shocks?

As mentioned in the Introduction, it has been claimed that most of the problems that Chile and Uruguay faced in the early 1980s were due to unfavorable external conditions (Sjaastad (1982), (1983)). Here we attempt to quantify roughly, in a general equilibrium framework, the contribution of external and domestic factors to output growth and debt accumulation.

A small macro model is estimated with annual data (1962-83) separately for the three countries and is presented in the Appendix. It builds on Caballero and Corbo (1985). Here we use Hayashi's (1982) technique to specify the expenditure function with a fraction of the population liquidity constrained [Caballero (1986)]. This gives us two elements: an expectational error that provides some idea of the magnitude of the unexpected component of the growing bubble during the boom-and-bust sequence described above; and disposable income as a way to capture the direct effects of external shocks (terms of trade and interest rates) on expenditure.

To isolate the importance of external shocks, we disaggregate the model into five goods: exportables (manufacturing and nonmanufacturing); importables (oil and non-oil); and nontradables. Two-stage budget allocation determines demand for goods. ^{14/} On the production side, supply functions come from optimization with ad-hoc lags to capture adjustment dynamics. Identities implied by the general equilibrium feature of the model allow us to determine nontradable prices and hence the real exchange rate. Finally a Philips curve reflects wage stickiness. This implies that a sudden contraction after a boom may have strong real effects because of increases in unemployment caused by rising real labor costs.

Below we report preliminary simulation runs for each country for the 1981-83 period, but on the hypothesis of no external shocks (which we model by maintaining the national accounts terms-of-trade index at its value for 1980 -- a good year -- and by assuming interest rates at their level in the late seventies). The general conclusion is that only a small part of the poor performance during the early eighties was due to unfavorable external conditions.

5.1 Chile

We find that even if the terms of trade of 1980 and the international interest rate of the period 1974-79 had been in place in the 1981-83 period, GDP growth would have been only 2.1 percent per year, and by the end of 1982 the debt would have still been 15.9 billion dollars (the historical value given in Table 4 was 18.2 billion).

Thus, according to our model, even without external shocks, the performance of the Chilean economy in the 1981-83 period would have been much worse than in the 1976-80 period. Critical causal factors include the drop in the real exchange rate, the increase in real wages, and the slow capital accumulation during 1976-80, all of which slowed GDP growth.

Consider now the likely outcome if expenditure had not been allowed to grow so rapidly. The outcome of this simulation, with no external shock but with expenditure following a "more normal path", is average GDP growth of 2.7% during 1981-83 and external debt of only 12.2 billion dollars. ^{15/} This more favorable outcome is achieved by the following mechanisms. With a normal expenditure path, growth would have been less in 1981 but borrowing and real wage increases would also have been less. Lower real wages would have raised employment and benefited production, especially in the nontradable sector. Production of nontradables would have also benefited from the higher disposable income available with lower interest payments.

Robustness is added to these results by performing the same experiment but instead assuming the actual trajectory of the terms of trade and interest rates. Now the average drop in GDP would have been only -0.9 percent per year and the level of debt only 12.9 billion dollars. These results compare very favorably with the actual GDP and debt trajectories.

Table 4:

Terms of Trade, GDP and Debt: 1980-83

	<u>Argentina</u>			<u>Chile</u>			<u>Uruguay</u>		
	Terms of <u>1/</u> Trade	GDP	External Debt	Terms of <u>1/</u> Trade	GDP	External Debt	Terms of <u>1/</u> Trade	GDP	External Debt
1980	1.0	1.00	30.2	1.00	1.00	11.0	1.00	1.00	1.1
1981	1.14	0.94	39.4	0.90	1.06	14.7	1.04	1.02	1.4
1982	0.87	0.89	43.6	0.80	0.91	17.4	1.04	0.92	1.7
1983	0.95	0.92	46.0	0.80	0.90	18.2	1.16	0.87	2.5

1/ - National Account Terms of Trade : 1980 = 1.0

- External Debt in Billions of US\$s

- GDP, real index : 1980 = 1.0

Indeed, 1980-83 average GDP growth was only -3.4 percent and the debt at the end of 1983 was 18.2 billion dollars (Table 4).

5.2 Argentina

Large fluctuations and lack of data account for less precise model estimation in this case. Hence we concentrate on simulations dealing with the magnitude of external shock effects. In Argentina too, we find that external shocks only account for a fraction of the recession.

As indicated in Table 4, Argentina's historic average annual growth rate for the 1980-83 period was -3.2 and debt accumulation was 15.8 billion dollars. The external shock was less important than for Chile -- first, because the terms of trade did not fall by much and second, because the debt/GDP ratio was much smaller.

Our simulation shows that had Argentina faced in 1982 and 1983 the favorable 1981 terms of trade (see Table 4) and the average interest rate of the late seventies, GDP growth would instead have been 0.7% a year and debt would have decreased by 4.2 billion dollars during 1981-83. Argentina's capacity to borrow would certainly have increased, giving her the option of delaying the looming macroeconomic crisis.

Further confirmation of the latent crisis comes from the 1981 recession when the terms of trade were 14 percent higher than in 1980, a good year. It is true that the interest bill doubled from 1980 to 1981 but our simulation suggests that this would only have produced a 1 percent effect on growth and a 1.5 billion dollar accumulation of foreign debt for 1981. Hence, even with favorable interest rates in 1981, output would have fallen by 5.3 percent in 1981 and borrowing would have been 7.7 billion dollars. The roots of Argentina's crisis lay elsewhere.

5.3 Uruguay

For Uruguay too, unfavorable external shocks only explain part of the country's poor performance during the early 1980s. Analyzing the external shock effect for Uruguay presents special problems because of the proximity of Buenos Aires and Montevideo (which makes expenditures very sensitive to changes in the bilateral exchange rate between the two countries). The terms of trade rose during 1980-83, giving the impression (in addition to the international interest rates effect) of a positive external shock. This is misleading, however, because the terms of trade measure includes the fall in the relative price of Argentine goods following the large devaluations in Argentina in 1981, 1982 and 1983 while Uruguay maintained its tablita. (Even Uruguayan barbers faced a very elastic demand with respect to the exchange rate with Argentina, and this is not registered as an import (or export) in balance of payments accounting.) Expenditure on domestic goods fell because of this real appreciation vis-a-vis Argentina.

With this caveat in mind, the simulations only capture the interest rate effect. The simulation gives rates of growth of GDP that are 0.3 and 2.2 percentage points higher than the historic -9.4 and -5.9 for 1982 and 1983, respectively. The level of debt would have been only 122 million dollars less by the end of 1983. We conclude that the interest rate shock was not important, although Uruguay certainly suffered from Argentina's instability. This is not to say that the effect of this instability could not have been dampened had Uruguay formulated her exchange rate policy to take into account her real exchange rate with Argentina.

6. Conclusions

This paper has reassessed Southern Cone reforms in terms of the different causes of failure mentioned in the introduction. The historical record suggests that reforms were not as widespread as some believed, although they were large in relation to the status quo ante. In particular, our synopsis shows that very little trade liberalization took place in Argentina and Uruguay, where redundant protection was barely eliminated at the height of real exchange rate overvaluation. Some of the anti-export bias was reduced by eliminating taxes on traditional exports, but it remained high throughout the reforms, as did average effective protection to domestic sales and its variance across sectors. Furthermore, labor markets remained fairly highly regulated in all three countries, even though labor dismissal was easier than before the reforms. The synopsis also suggests that, by and large, liberalization was gradual. Even the relatively rapid trade liberalization in Chile still spanned five years.

Our reassessment suggests several errors of program design and implementation. Relatively restrictive wage legislation (Chile) or political instability combined with a preoccupation with rising unemployment (Argentina) impeded the resource reallocation process prompted by commodity market liberalization. Liberalization measures were also thwarted by poorly designed macro policies. This was particularly important in Argentina throughout the reform period (and in Uruguay towards its end), when the monetary policy to deal with growing fiscal deficits was inconsistent with the accompanying exchange rate policy.

Finally we have provided a rough quantification of the contribution of terms-of-trade and interest rate shocks to the collapse of the three

economies in the early eighties. We found that in no case were external shocks the most important explanatory variables. For Chile we also showed that the recession would have been greatly reduced had the macro policies that fueled private expenditures been avoided.

FOOTNOTES

- 1/ Other recent analyses of stabilization and liberalization policies [e.g. Killick (1984) and Ching-Yuan Lin (1985)] have shown that simultaneous application of the two is unlikely to be sustainable and successful.
- 2/ The view that real exchange rate appreciation to bring down inflation should be avoided owes much to Southern Cone experience with this policy. See Section 4.
- 3/ For infant industries a timetable of reduction in protection over, say, a five year period should be adhered to. See Balassa (1976) and Bell, Ross-Larson and Westphal (1985). And, for countries with export earnings derived from natural-resource-based products, it is appropriate and accepted to tax windfall gains during commodity booms and to offer rebates to producers during troughs. See Davis (1983).
- 4/ Lessons from interviews with manufacturing firm managers in the Southern Cone countries are summarized in Corbo and de Melo (1985b). They found that major efficiency gains were achieved in a short period for some firms but that others delayed adjustment because of lack of belief in the reforms.
- 5/ Much has been written in the last three years on this topic. Our purpose here is to summarize the main reforms. This section draws mostly on Corbo, de Melo and Tybout (1986) and Corbo and de Melo (1985). Other references are Calvo (1986), Edwards (1985), Harberger (1982), Rodriguez (1982) and Sjaastad (1983).
- 6/ The introduction of crawling peg exchange rate regimes, in the mid 1960s in Chile and later in Uruguay (1972) and Argentina did reduce the more extreme fluctuations in the real exchange rate, but imbalances persisted.
- 7/ Annual inflation rates approached 1,000 percent in Chile (September 1973) 2,300 percent in Argentina (March 1976) and 100 percent in Uruguay. The fiscal deficits were substantial well before the collapse of the civilian governments (Table 2). In Argentina and Chile inefficient public enterprises contributed to high public sector deficits.
- 8/ Chile's rate of inflation was around 50 percent in late 1977, Argentina's was 166 percent in late 1978, and Uruguay's was roughly 50 percent in late 1978.
- 9/ How exchange-rate-based stabilization was supposed to work is described in Rodriguez (1983). Comparisons of the two approaches is provided in Dornbusch (1982).

- 10/ For further discussion see Nogués (1986) Petrei and de Melo (1985) on Argentina and Mezzera and de Melo (1985) on Uruguay.
- 11/ Controlling for other factors, de Melo and Tybout (1986) showed that savings and investment rose during the reform period. However, they could not attribute this rise to financial market reforms only and suggested that fiscal reforms played an important role.
- 12/ The same inconsistency appeared in Uruguay in 1981-82 when the fiscal deficit reappeared and was financed by external borrowing.
- 13/ Diaz-Alejandro (1985) perceptively analyzed the moral hazard issues associated with this financial liberalization without supervision in his 1985 paper. Lessons from Southern Cone domestic financial market deregulation are summarized in Tybout (1986).
- 14/ The second stage expenditure allocation uses a CES utility function.
- 15/ By "more normal path" we understand a path where the unexpected growth in the "bubble" (as defined earlier) is zero. Moreover, we assume that expenditure followed the perfect foresight path after 1980.

REFERENCES

- Aedo, C. and L. F. Lagos (1984), "Protección Efectiva en Chile 1974-1979," Documento de Trabajo No. 94 I.E.P.V.C.
- Balassa, B. (1976), "Reforming the System of Incentives in Developing countries," World Development, Vol. 3, No. 6, pp. 365-82.
- Bell, M., B. Ross-Larson and L. Westphal (1984), "Assessing the Performance of Infant Industries," Journal of Development Economics, 101-28.
- Bension, A. and J. Caumont (1981), "Uruguay: Alternative Trade Strategies and Employment Implications," in A. O. Krueger, H. Lary, T. Monson, N. Akrasanee, eds., Trade and Employment in Developing Countries, The University of Chicago Press.
- Berlinski, J. and D. Schydrowsky (1982), "Incentive Policy and Economic Development: Argentina," in B. Balassa and Associates, Development Strategies in Semi-Industrial Economies, A World Bank Research Publication.
- Bruno, M. (1983), "Real versus Financial Openness Under Alternative Exchange Rate Regimes," in P. Aspe et al. Financial Policies and the World Capital Market: The Problem of Latin American Countries, NBER, University of Chicago Press.
- Buiter, V. W. (1986), "Macroeconomic Responses by Developing Countries to Changes in External Conditions," NBER Working Paper No. 1836, February.
- Caballero, R. (1986), "Testing Liquidity Constraints: International Evidence," Mimeo, January.
- Caballero, R. and V. Corbo (1985), "Explaining the Trade Balances: A General Equilibrium Approach," World Bank Discussion Paper No. DRD141, November.
- Calvo, G. (1986), "Fractured Liberalism: Argentina Under Martinez de Hoz," Economic Development and Cultural Change, V. 34, No. 3.
- Cavallo, D. and A. Pena (1983), "Deficit Fiscal, Endeudamiento del Gobierno y tasa de Inflación in Argentina: 1940-82," Estudios, IERAL.
- Centro de Investigaciones Economicas (CINVE), (1983), "Estudio Sobre el Impacto de La Reforma Arancelaria Sobre el Sector Industrial Uruguayo," CINVE, Montevideo, Mimeo.
- Chenery, H. and M. Syrquin (1975), Patterns of Development 1950-1970, London: Oxford University Press.

- Connolly, M. (1985), "Speculative Attack on the Peso and the Real Exchange Rate: Argentina 1979-81," Journal of International Money and Finance, Suppl. pp. 117-30.
- Corbo, V. and P. Meller (1981), "Alternative Trade Strategies and Employment Implications: Chile," in A. O. Krueger, H. Lary, T. Monson, N. Akrasanee eds., Trade and Employment in Developing Countries, The University of Chicago Press.
- Corbo, V. (1985a), "Reforms and Macroeconomic Adjustments in Chile During 1974-84," World Development, Vol. 13, No. 8.
- Corbo, V. (1985b), "International Prices, Wages and Inflation in an Open Economy: A Chilean Model," The Review of Economics and Statistics, November.
- Corbo, V. and J. de Melo (1985a), "Liberalization with Stabilization in the Southern Cone of Latin America: overview and Summary," World Development, Vol. 13, No. 8.
- Corbo, V. and J. de Melo (eds.) (1985b), "Scrambling for Survival: How Firms Adjusted to the Recent Reforms in Chile, Uruguay and Argentina," World Bank Staff Working Paper, No. 764.
- Corbo, V., J. de Melo and J. Tybout (1986), "What Went Wrong with the Recent Reforms in the Southern Cone," Economic Development and Cultural Change, Vol. 34, No. 3.
- Cumby, R. and S. van Wijnbergen (forthcoming), "Fiscal Policy and Speculative Runs on the Central Bank under a Crawling Peg Regime: Argentina 1974-81," forthcoming in J. Bhandari ed. Exchange Rate Management Under Uncertainty, MIT Press, Cambridge, MA.
- Davis, J. M. (1983), "The Economic Effects of Windfall Gains in Export Earnings, 1975-78," World Development, pp. 119-139.
- Diaz-Alejandro, C. (1981), "Southern Cone Stabilization Plans," in W. Cline and S. Weintraub eds., Economic Stabilization in Developing Countries, The Brookings Institution.
- Diaz-Alejandro, C. (1985), "Good-bye Financial Repression, Hello Financial Crash," Journal of Development Economics, Vol. 19, No. 12.
- Dornbusch, R. (1982), "Stabilization Policies in Developing Countries: What Have we Learned?," World Development, Vol. 10, No. 9.
- Edwards, S. (1985), "The Order of Liberalization of the External Sector: An Analysis Based on the Southern Cone Experience," Mimeo, December.
- Fernandez, R (1985), "The Expectations Management Approach to Stabilization in Argentina During 1976-82," World Development, Vol. 13, No. 8.

- Fischer, S. (1986a), "Issues on Medium Term Adjustment," World Bank Economic Observer, Vol. 1, No. 2.
- Fischer, S. (1986b), Indexing, Inflation & Economic Policy, MIT Press.
- Frenkel, J. (1982), "The Order of Economic Liberalization: Discussion," in K. Brunner and A. H. Meltzer (eds.) Economic Policy in a World of Change, North Holland.
- Frenkel, J. (1983), Panel Discussion on the Southern Cone, IMF Staff Papers, vol. 30, No.1.
- Hanson, J. and J. de Melo (1985), "External Shocks, Financial Reforms, and Stabilization Attempts in Uruguay During 1974-83," World Development, Vol. 13, No. 8.
- Harberger, A. (1982), "The Chilean Economy in the 1970s: Crisis, Stabilization, Liberalization, Reform," in K. Brunner and A. H. Meltzer (eds.) Economic Policy in a World of Change, North-Holland.
- Harberger, A. and D. Wisecarver (1977), "Private and Social Rates of Return to Capital in Uruguay," Economic Development and Cultural Change, p. 411-55.
- Hayashi, F. (1982), "The Permanent Income Hypothesis: Estimation and Testing by Instrumental Variables," Journal of Political Economy, 90.
- Killick, T., Ed. (1984), "The IMF and Stabilization: Developing Country Experiences", Heinsmann, Odi.
- Kindleberger, Ch. (1978), Manias Panics and Crashes, Basic Books.
- Krueger, A. (1978), "Foreign Trade Regimes and Economic Development: Liberalization Attempts and Consequences," Cambridge, Massachusetts.
- Krueger, A. (1981), "Interactions Between Inflation and Trade Objectives in Stabilization Programs," in W. R. Cline and S. Weintraub (eds.) Economic Stabilization in Developing Countries, Washington, D. C.: Brookings Institution.
- Krueger, A. (1984), "Problems of Liberalization," in World Economic Growth, ed. by A. C. Harberger, ICS Press, San Francisco.
- Lin, Ching-Yuan (1985), "Latin America and East Asia: A Comparative Development Perspective," International Monetary Fund, Mimeo.
- Melo, J. de (1986), "Financial Reforms, Stabilization and Growth Under High Capital Mobility: Uruguay 1973-83," in M. Connolly and C. Vega eds. Economic Reform and Stabilization in Latin America, Praeger.

- Melo, J. de and J. Tybout (1986), "The Effects of Financial Liberalization on Savings and Investment in Uruguay," Economic Development and Cultural Change, pp. 561-88.
- McKinnon, R. (1982), "The Order of Economic Liberalization: Lessons From Chile and Argentina," in K. Brunner and A. Meltzer (eds.) Economic Policy in a World of Change, North-Holland.
- Mezzer, J. and J. de Melo (1985), "Adjustments by Industrial Firms in Uruguay During 1974-82," in V. Corbo and J. de Melo eds., Scrambling for Survival, How Firms Adjusted to the Recent Reforms in Argentina, Chile and Uruguay, World Bank Staff Working Paper No. 764.
- Mussa, M. (1986), "Macroeconomic and Trade Liberalization," World Bank Economic Observer, (forthcoming).
- Nogués, J. (1986), "The Nature of Argentina's Policy Reforms During 1976-81," World Bank Staff Working Papers, No. 765.
- Petrei, H. and J. de Melo (1985), "Adjustments by Industrial Firms in Argentina During 1976-81," (eds.) Corbo, V. and J. de Melo Scrambling for Survival, How Firms Adjusted to the Recent Reforms in Argentina, Chile and Uruguay. World Bank Staff Working Paper No. 764.
- Rodriguez, C. A. (1982), "The Argentina Stabilization Plan of December 20th," World Development, Vol 10, No. 9.
- Rodriguez, C. A. (1983), "Políticas de Estabilización en la Economía Argentina," Cuadernos de Economía, April.
- Sachs, J. (1986), "Conditionality and the Debt Crisis: Some Thoughts for the World Bank," Mimeo, January.
- Sjaastad, Larry (1983), "Failure of Economic Liberalism in the Cone of Latin America," The World Economy, March.
- Tybout, J. (1986), "A Firm-Level Chronicle of Financial Crises in the Southern Cone," Journal of Development Economics, (forthcoming).
- Yeager, L. B. (1981), Experiences with Stopping Inflation, American Enterprise Institute, Washington, D. C.

Appendix

General Equilibrium Model of Balances of Trade and Services

A1. Model Equations

Expenditure

$$(1) \quad C = \alpha_0 C + \mu(DY - \alpha_0 DY_{-1}) + e_t$$

$$\text{Imports} \quad (P_M^M \equiv OILM P_{oil} + NOM P_{NO})$$

$$(2) \quad \log(NOM) = \beta_0 + (1/(1-\beta_1)) (\log(P_c) - \log(P_{NO})) + \log E$$

$$\text{Exports} \quad (P_x X \equiv P_{XNM} X_{NM} + P_{XM} X_M)$$

$$(3) \quad \log(XNM) = \gamma_{01} - \gamma_{11}(\log(W) - \log(P_{XNM})) - \\ \gamma_{21}(\log(P_{XNM}^i) - \log(P_{XNM})) + k_{XNM}$$

$$(4) \quad \log(XM) = \gamma_{02} - \gamma_{12}(\log(W) - \log(P_{XM})) - \\ \gamma_{22}(\log(P_{XM}^i) - \log(P_{XM})) + k_{XM}$$

Non-Tradable Price and Phillips Curve

$$(5) \quad \log(P_N) = \theta_{01} \log(W) + (1 - \theta_{01}) \log(P_M) \\ + \theta_{14} (\log(E) - k_N)$$

$$(6) \quad \Delta \log(W) = \theta_{02} + \Delta \log(P_c) + \theta_{12} (\log(Y) - \log(N))$$

Deflator and Basic Identifiers

$$(7) \quad \log(P) = \phi_0 \log(P_N) + \phi_1 \log(P_X) + (1 - \phi_0 - \phi_1) \log(P_{oil})$$

$$(8) \quad B \equiv P_x X - P_M M$$

$$(9) \quad Y \equiv [EP_c + B]/P$$

$$(10) \quad DY \equiv [PY - INT]/P_c$$

Price Definitions

$$(11) \quad \log(P_c) = \psi_{11} \log(P_{NO}) + (1 - \psi_{11}) \log(P_N)$$

$$(12) \log(P_{XNM}^i) = \psi_{22} \log(P_{OIL}) + \psi_{22} \log(P_{NO}) + (1 - \psi_{12} - \psi_{22}) \log(P_N)$$

$$(13) \log(P_{XM}^i) = \psi_{13} \log(P_{OIL}) + \psi_{23} \log(P_{NO}) + (1 - \psi_{13} - \psi_{23}) \log(P_N)$$

$$(14) \log(P_M) = \psi_{14} \log(P_{OIL}) + (1 - \psi_{14}) \log(P_{NO})$$

$$(15) \log(P_X) = \psi_{15} \log(P_{XM}) + (1 - \psi_{15}) \log(P_{XNM})$$

Where Δ is the log difference operator and the subscript index -1 means one period lag and

C : Private consumption plus investment (per capita).

DY : disposable income (per capita)

e_t : Expectational error (orthogonal to information available at t-1)

PM : imports price

M : imports volume

OILM: oil imports

POIL: oil price

NOM : non-oil imports

PNO : non-oil import price

P_c : Private consumption (plus investment) deflator.

E : total expenditure

P_X : exports price

X : exports volume

X_{NM} : nonmanufacture exports

P_{XNM} : nonmanufacture exports price

X_M : manufacture exports

P_{XM} : manufacture exports price

W : nominal wage

P_{XNM}^i : input price in nonmanufacture exports

P_{XM}^i : input price in manufacture exports
 k_{XNM} : log of capital in nonmanufacture exports
 k_{XM} : log of capital in manufacture exports
 k_N : log of capital in nontradables
 P_N : nontradeable price
 N : population
 P : GDP deflator
 B : Balance of trade
 Y : GDP
 INT : interest payments (abroad) in local currency

A2. Data and Estimation

Data are from national accounts and IFS. The estimation period is 1962-83. Dynamic structure and dummy variables are not reported here. Instrumental variables (for expenditure equation) and FIML were applied. Simulations are dynamic.

Economic Liberalisation and Its Impact on Agriculture: The Case of Australia*

R.G.Gregory

Australian National University, GPO Box 4, Canberra, ACT

1. INTRODUCTION

The Australian agricultural sector has always been consistent in its approach to economic liberalization. It has favoured liberalization when it appears to be in the agricultural sector's interest and opposed it when it has not.

Thus a decade ago, if a farm lobbyist was called upon to deliver an address in favour of economic liberalization the response would be fairly predictable. The address would stress the need for trade liberalization, first in terms of increased access to overseas markets and second in terms of tariff reductions on manufacturing imports. The idea that tariffs impose a cost on a rural export sector, both directly through the increase in input costs and indirectly through the effect of the trade restrictions on the real exchange rate are ideas that go back in Australia at least to the Brigden Report of the 1920s. As an aside the lobbyist might also include a reference to the need to deregulate the labour market as it relates to the rural sector but such a remark was rather unlikely. Liberalization was generally thought to be a good thing for agriculture.

There are other issues which relate to regulation and liberalization and which were unlikely to have been mentioned in the address. For example, there is a wide range of regulatory measures introduced by governments which are seen to favour agriculture and which most participants in the sector would not wish to see liberalized. I am referring here to the special assistance agriculture receives from the taxation system and the activities of numerous marketing authorities (See Sieper, 1982). In addition the farm sector has not been in the forefront of arguing for a deregulated transport system or for selling off public utilities such as Telecom. The degree of cross subsidies delivered to the farm sector by public authorities appears to be quite considerable (see Kolsen, 1983).

Today, an address by a farm lobbyist is likely to be much more complicated and wider in its economic scope. The liberalization debate has become more complex because increasingly the agricultural sector has come to realize that there are many links between policy for other areas of the economy and the rural sector. The understanding of these links in Australia was helped along considerably by the sorts of analysis that were undertaken over the last decade on the rapid development of the mineral sector. Thus, in a paper delivered to a conference of your Australian counterparts a decade ago, I pointed out that the rapid development of mineral exports was more important to the exporting agricultural sector than any conceivable tariff liberalization on the horizon (Gregory, 1976). The simple argument is well understood now. Any large increase in exports from one sector will affect the real exchange rate and therefore reduce the competitiveness of other exporting sectors. Once these connections are realized the agricultural sector comes to have a direct interest in government policy towards the mineral sector. The arguments that were well understood with respect to the effects of

*I have benefited considerably from discussions with W. Martin of the BAE and the Australian National University.

tariffs on the rural sector have a symmetry with respect to the export developments in other sectors. The model I presented was firmly in the tradition of the real theory of international trade.

The models utilized today, however, increasingly seem to be moving out of the old fashioned real theories of international trade and into the newer financial and monetary models of exchange rate determination. The current debate, for example, often relates the interests of rural exporters to government deficits, interest rates and monetary policy, taxation reforms and so on.

In the following pages I will begin with the old issues of liberalization, then discuss recent developments in the Australian balance of payments and finally move on to more current issues.

2. THE OLD ISSUES

Tariff Liberalisation

It is now widely accepted in Australia that the old industry policy of increasing levels of protection for manufacturing to enable the growth of industry behind tariff walls is entirely inappropriate. Attitudes began to change towards the end of the sixties and the first signs of this new approach were the creation of the IAC in January 1973, the 25 per cent across the board tariff reduction of July 1973, and lower levels of protection for a number of industries such as white goods and electronics. Since 1975 progress has been slower. Generally speaking, low tariffs have been reduced further, but in response to the 1975 economic downturn a number of industries were protected by import quotas which have not been liberalized to any significant extent.

Until recently the effective tariff equivalent of these quotas protecting the motor vehicle, textiles, footwear and clothing industries has steadily risen with quite dramatic effects on the level of protection. (See Table 1). For Transport equipment, for example, the level of effective tariff protection increased to 72 per cent. For Clothing and Footwear the increases were even more startling; the effective tariff rate at 1982-83 is estimated to be 200 percent. In each instance the principal source of the increase was the restrictive effects of the quotas.

The present Labour government has been designing industry plans for these industries and a central feature of each plan has been the intention of further tariff reductions. Thus, for the motor vehicle industry, the plan calls for the replacement of quotas by tariffs and after an increase of the out of quota nominal tariff to 90 per cent a planned general reduction of the nominal tariff level to 60 per cent by 1992. Similar considerations will probably be built into the plans for the Textiles, Clothing and Footwear Industries. Although these target tariffs are likely to be high by pre 1975 standards, they will probably involve a significant reduction from present levels.

There are, however, a number of clouds on the horizon. First, it seems fairly clear the level of unemployment will increase over the next year or so. Whether the Cabinet will be able to proceed with tariff reductions in this climate is not clear. The left wing and the union elements of the Labor party do not believe that the government has done enough for manufacturing industry. In an environment of increasing unemployment the political strength of those favouring a more interventionist policy is likely to increase and the outcome may well be to reduce the extent of future tariff liberalization, and indeed, on balance, to increase the degree of support against imports. Second, the very rapid

**Table 1: AVERAGE EFFECTIVE RATES OF ASSISTANCE^a MANUFACTURING
SUB-DIVISIONS: 1968-69 TO 1982-83 (per cent)**

ASIC Sub-Division	1968-69	1974-75	1975-76	1977-78	1978-79	1982-83
21 Food, beverages and tobacco	16	21	20	13	10	9
23 Textiles	43	37	50	57	47	54
24 Clothing & Footwear	97	71	99	149	141	200
25 Wood, wood products and furniture	26	18	19	18	18	13
26 Paper & paper products printing & publishing	52	32	30	29	24	24
27 Chemical, petroleum and coal products	31	26	26	18	19	14
28 Non-metallic mineral products	15	10	10	5	5	4
29 Basic metal products	31	21	16	12	10	11
31 Fabricated metal products	61	41	38	32	30	27
32 Transport equipment	50	42	59	61	48	72
33 Other machinery and equipment	43	28	25	21	20	18
34 Miscellaneous manuf.	34	25	26	27	30	25
TOTAL MANUFACTURING	36	28	28	26	23	25

^a

The estimates from 1968-69 to 1981-82 are in three series: 1968-69 to 1977-78; 1974-75; 1975-76; 1977-78; and 1978-82. The first series is based upon 1968-69 production weights; the second series uses 1974-75 production weights; and the third series employs 1977-78 production weights and also incorporates forms of assistance not included in previous series estimates.

Source: Assistance to Manufacturing Industry 1977-78 to 1982-83, Industries Assistance Commission Annual Report, 1980-81; Annual Report 1976-77.

growth of a substantial current account deficit in the balance of payments has emerged as the number one policy problem in Australia and policies to increase imports are likely to be postponed in this environment. Third, in the short run, almost all the industry plans involve increases in industry assistance, but the instruments of assistance are not always directly imposed against imports. For example, the new \$90 million heavy engineering assistance package is focused on training and concessional loan finance. Whether packages such as these will lead to more defacto protection against imports in the long run is not as yet clear. Fourth, there is growing pressure on the Federal government to increase the preference for Australian products as a part of a government procurement policy. This could quite easily lead to increases in protection for Australian manufacturers against imports. At this stage though there has been some progress towards lower protection as state preferences are to be abolished but whether the federal levels of industry assistance that will be embodied in government preference for local products will be lower remains to be seen. Fifth, the Liberal party appears to have remained a high tariff party. For example, their last plan for the motor vehicle industry, just before losing office, was based on further increases in tariffs from the high levels of that time of around 80 to 90 per cent to a tariff level of 150 percent and then steadily reducing to 125 percent by 1992. We will have to wait and see whether their policy has changed along with the growing strength of the right wing of the party. Despite these clouds, however, at this stage the tendency in Australia is quite clearly towards lower tariffs but the speed of tariff reduction is likely to be slow.

Over the last decade and half not only has Australia enjoyed lower levels of tariff protection but perhaps more importantly with the exception of those industries protected by quotas we have avoided increases of tariffs. The net result has been that imports have been allowed to increase as a proportion of GDP and the share of manufacturing output in GDP has fallen. This has been reflected in the employment figures. In 1966 manufacturing employed about 30 per cent of the Australian workforce. Today that proportion is around 16 per cent. It is clear that over the last decade the balance of protection policies has allowed a substantial increase in the level of imports and, as a result of the effect on the real exchange rate, cost conditions have been made easier for those parts of the rural sector that export.

Regulations in agriculture

While the average rate of assistance applying to rural industries is relatively low, a small group of industries have received quite high nominal and effective rates of assistance (IAC, 1983). These industries, which are generally labour intensive, and heavily oriented towards the domestic market, include eggs, dairying (particularly the market milk sector), tobacco and citrus. The majority of the assistance provided to these industries is obtained by transfers from domestic consumers, rather than through direct assistance measures.

Marketing arrangements for eggs and dairy products, in particular, have received close scrutiny in the past decade, partly because of the extent of the transfers, partly because of the inefficiencies in the marketing arrangements, and partly because of the oversupply problems which arise from the equalisation approaches used. Some progress has been made in rationalising the inefficiencies in the marketing arrangements for these commodities and reducing the extent of transfers, although reform of these arrangements has proven extremely difficult. The involvement of both state and federal governments in these arrangements and the need to obtain a consensus on any major reforms provides a brake on any rapid changes to the arrangements.

Costs of regulation have also emerged as a major issue in the handling of wheat and sugar cane. It is argued that the highly regulated marketing systems for these industries

do not always provide the appropriate incentives to minimize costs (BAE 1985, p. 26). Some deregulation of wheat trade for feed purposes has already occurred, and a Royal Commission into wheat handling and costs has been announced. Reform of the myriad regulations applying to sugar cane production and processing has proved extraordinarily difficult, despite evidence that relaxation of controls could benefit the sugar industry by around \$146 million per year (BAE 1985, p. 26).

3. THE AGRICULTURAL SECTOR AND THE BALANCE OF PAYMENTS

Over the last year the balance of payments has increasingly become the centre of economic policy concerns. Before discussing in detail the implications of this we will first outline the longer term trends in the balance of payments over the last two decades and then move onto the more immediate environment.

The Longer Term Trends

Exports

The balance of payments in Australia over the last two decades has been dominated by the rapid growth of mineral exports. The changing structure of our exports can be seen from Figure 1. The contribution of the rural sector has continued to shrink. The increase of mineral exports is substantial. For example, purely as a mechanical calculation, if mineral exports had remained at their 1970 proportions of total exports and rural exports had grown instead of minerals then the volume of rural exports would have increased by about 50 percent and the farm sector would have faced an exceptional decade. Of course this exaggerates the possible outcome because for some products such as wool increased volumes could not be sold without substantial price falls.

As might be expected the rural sector's shrinking share of economic activity has also affected employment in the rural sector. There has been a dramatic decline in full time employment of male farmers, a rapid increase in the number of women who describe themselves as farmers and continued growth of off farm income and employment.

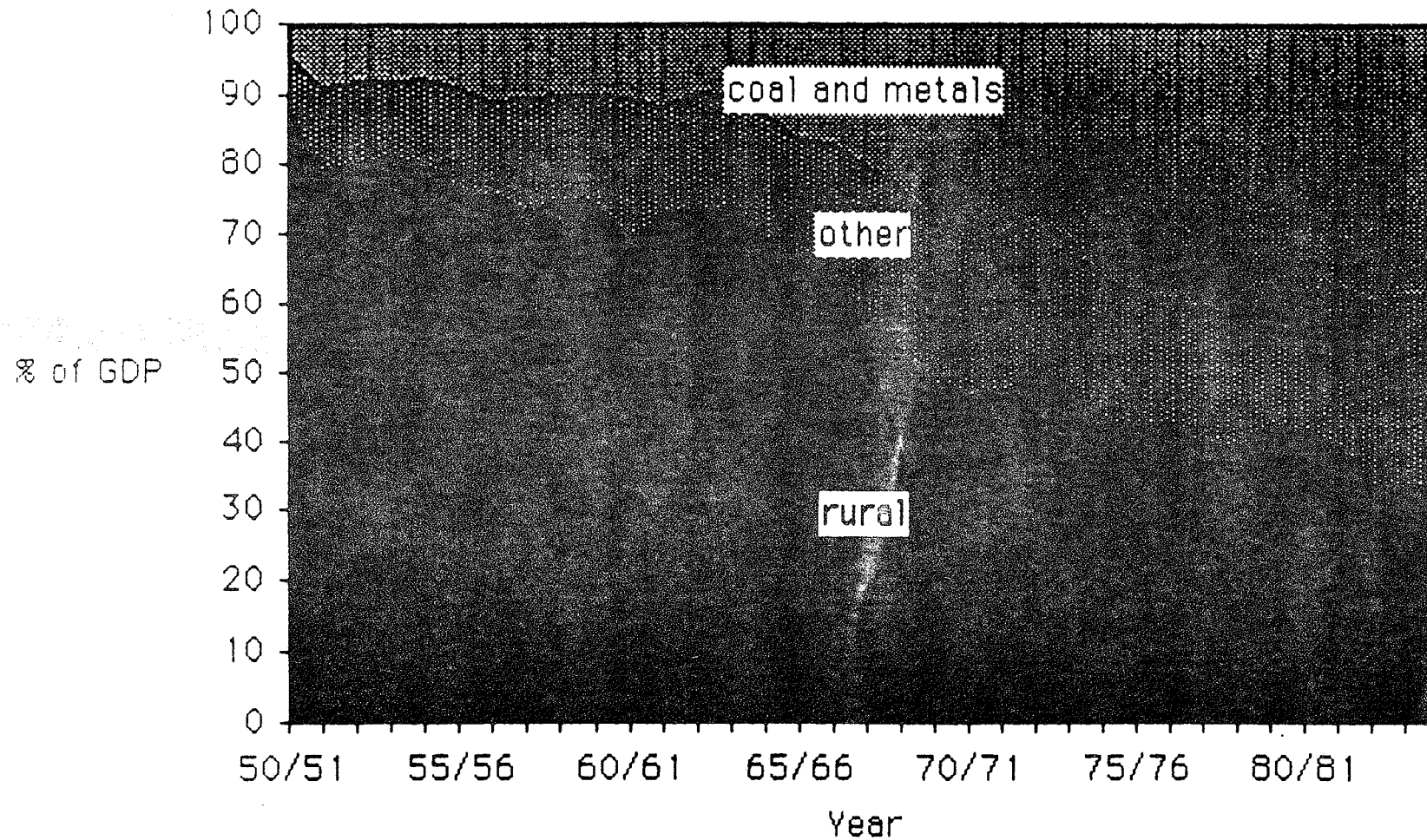
Imports

As indicated above, imports have significantly increased their share of Australian expenditure. Since the first three years at the beginning of the seventies to the first three years at the beginning of the eighties expenditure on imports as a ratio of GDP has increased from 10.1 per cent to 14.7 per cent. Some of this increase was associated with the boom in mineral investment in the 1978-1982 period but the increase seems to have been a general response to changing relative cost conditions. Over the last few years, for example, when investment has not been at unusually high levels, the volume of imports has remained high.

It is particularly interesting that so much of the rapid growth of imports has occurred in the product categories where there are no tariffs. We refer to these imports as non competitive because it is assumed that if close substitutes were made locally the imports would be subject to a tariff. The rapid growth of these imports has two important implications. First, it is indicative of the degree to which Australia has avoided tariff increases. It is likely that during the fifties and sixties as these imports developed a market some local producer would seek a tariff and begin local production. This outcome, however, has not been common over the last decade. Second, it explains in part why Australian imports and manufacturing production do not respond quickly and significantly to exchange rate devaluations. Recent experience suggests that the degree of substitution between two thirds of Australian imports and domestic manufacture is

FIGURE 1:

Exports of Goods
by Commodity Group



very low. Thus in the three months to March 1986 over the same period of 1985, and in the face of an exchange rate devaluation of about 26 percent, the value of capital and intermediate goods imports increased by 29 and 25 percent respectively. These items, approximately two thirds of imports, are non competitive. Consumption goods, which are mainly competitive imports increased by about 15 percent.

The Current Economic Environment

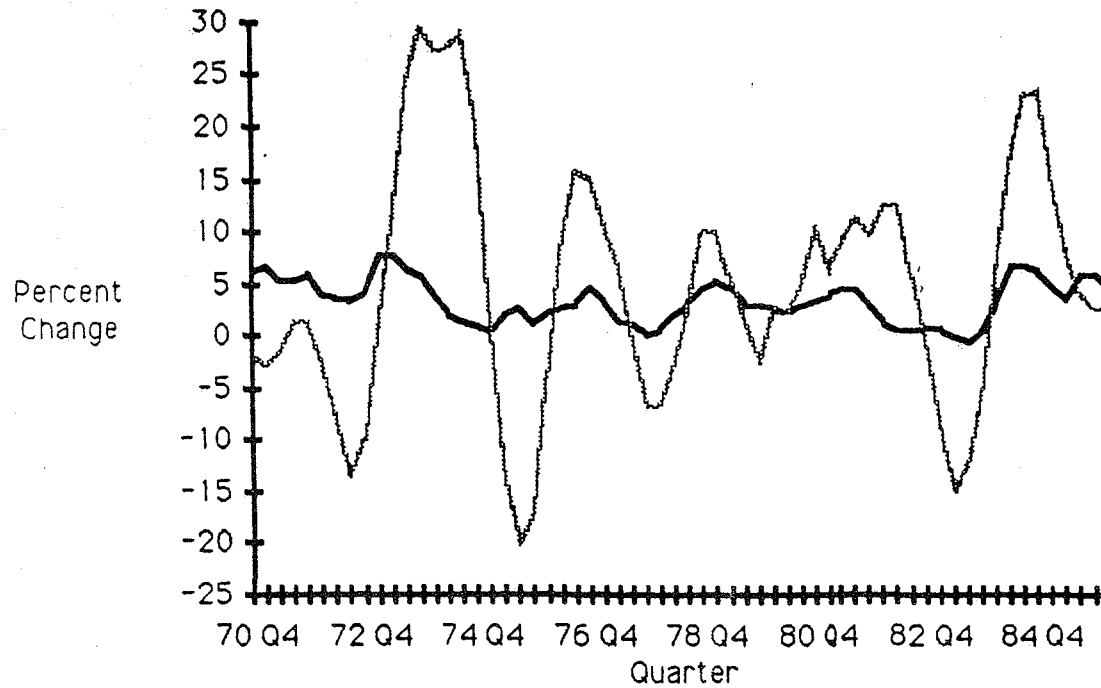
To understand the current economic environment in Australia it is necessary to go back at least to the beginning of the 1970s. Along with most of the world, the Australian economy boomed during the 1972 to 1974 period. This was also a period of rapid acceleration in the rate of inflation. Also, along with the rest of the world, we entered a slump in 1975 which led to increased unemployment, an increase in the real wage and a significant rise in government expenditure and the government deficit. Perhaps in response to these disturbances Australia entered a decade of slow growth during which the large changes in the structure of the economy that flowed from the mid seventies, - the increased levels of unemployment, real wages and government expenditure -, were very slow to adjust. It appeared for a while, during the period 1980 to 1982, that perhaps the trend towards low growth might be broken but after an outbreak of wage inflation, the Australian economy entered the worst recession since the 1930s. The exceptional depth of this recession came about by a conjunction of circumstances; the downturn in the world economy, the effects of a drought and the natural and foreseen cessation of the exceptional high levels of investment in mineral development.

Just after the election of the Labour Government in Dec. 1982 the economy began to grow again quite quickly; partly in response to a turnaround in the factors that caused the slump such as the drought and the slow down in the world economy and also in response to the large increase in government expenditure brought about by the last budget of the Liberal party. Over the last three years employment growth has been exceptionally high although the inroads into the government deficit and the number of unemployed has been quite modest.

Currently the economy is slowing down primarily in response to a general tightening in the stance of government policy which has seen as its main manifestation considerable increases in interest rates. The last three years has seen the emergence of new policy problems that are of interest to the agricultural sector. A few years ago it was widely believed that fast economic growth would encounter a constraint arising from our wage fixing system. This was the lesson of the 1980-82 period. This does not seem to have happened in the most recent recovery. The Accord between the Labour Government and the Unions, following upon the worst recession in the labour market since before World War II, seems to have effectively controlled wage increases. Instead of beginning in the labour market the effective constraint has become evident in the balance of payments.

It is a characteristic of the Australian economy that whenever the economy grows quickly imports grow even quicker (Figure 2). In this instance imports began their surge from an unusually high base. It was probably in recognition of this phenomenon, and memories of the rapid wage growth during the previous economic upturn, that led to the substantial devaluation of February 1985. This very large devaluation was expected to lead to a substantial switching of expenditure in Australia away from imports and towards domestic production. Indeed, at the time of last Budget, the Treasury forecast that over the year 1985/86 one third of the economic growth of production would come from the external account, increased exports and reduced imports in response to the devaluation.

Figure 2: Rates of Growth.



Rates of growth calculated on % growth from same quarter of previous year.
A 2-quarter moving average is also placed through both series.

Source: Quarterly Estimates of Nat'l Inc. and Exp., March 1986.
ABS 5206.0 (based on 79-80 prices, season. adj.).

After the event, the exchange rate devaluations have been greater than anticipated, especially with respect to the TWI but the switching was very slow and yet the economy did not seem to falter. Then, in response to fears as to a further deterioration in the balance of payments and strain on the Accord, monetary policy was tightened in November 1985 as we all waited for the J curve to arrive, that is for the balance of payments to improve after the initial worsening in response to the devaluation.

However, the current account of the balance of payments has deteriorated further. The volume of Australian exports has grown quite considerably over the last year but during the last nine months of so there has been a considerable collapse in the Australian terms of trade. This decline has been substantial both in terms of its impact on the current account and on the real value of national income. The Statistician has estimated that the deterioration in the terms of trade has reduced the level of national income this year by three percent below what it otherwise would have been.

As might be expected Australia's terms of trade fluctuate considerably and in historical terms the current reduction is not really exceptional in the extent of the decline. (Figure 3). The major difficulties arise because the fall begins from such a low base and the timing is so bad for economic policy. Table 2 is taken from the Bulletin of the Reserve Bank of Australia, April, 1986. It allocates the changes in the balance of trade to four factors; a volume effect, an average price effect, a terms of trade effect and a residual. It is apparent from the table that the effects of the terms of trade have been paramount. Over 1985 the balance of trade was in deficit by about 1 billion. The change in the terms of trade contributed about one and a half billion to the deterioration thus offsetting the considerable rise in the volume of exports relative to imports that occurred over the year. Without the change in the terms of trade the balance of trade in goods and services would have improved in 1985. Since Dec. 1985 the terms of trade have fallen a further five per cent.

4. AGRICULTURE AND CURRENT POLICY ISSUES

The Exchange Rate

The Australian exchange rate has become very volatile over the last year or so and it now seems to dominate the economic news. The exchange rate was floated 1 Dec 1983 but for macro economic purposes it could be regarded as floating well before that date. Before Dec 1983 the rate was set directly on a daily basis but it is quite clear from Figure 3 that there is no natural break in exchange rate behaviour between the earlier period and the period during which the rate floated freely. Before floating the exchange rate there were a number of decisions, as part of our widespread financial deregulation, which increased the mobility of international capital to and from Australia which may have been as important as the move to the fully floating rate.

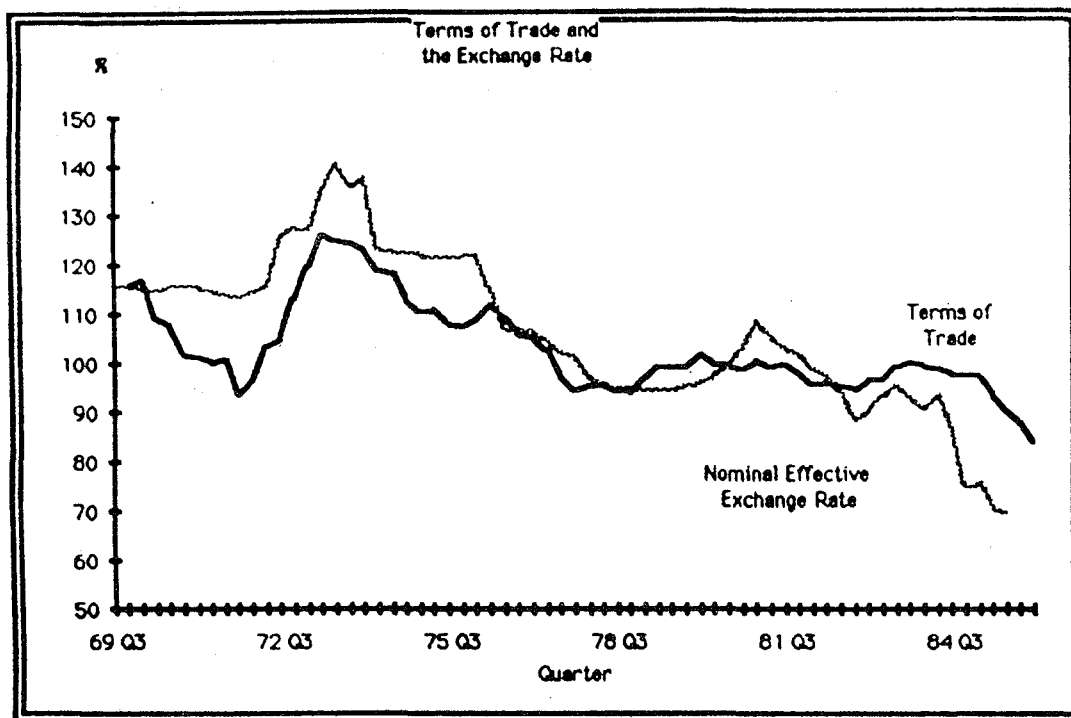
Relative to the Bretton Woods system the new regime obviously exerts a quicker and larger influence upon the prices farmers receive as measured in domestic currency. When agricultural prices increase the exchange rate in Australia tends to also increase. In this way the exchange rate variations moderate short run adjustments in the sector. The exchange rate acts as an income smoothing mechanism. The degree to which the exchange rate changes can modify price fluctuations in domestic currency is quite considerable as can be seen in a comparison of the farmers' terms of trade (the ratio of prices received to prices paid) and the nominal and real exchange rates.

Although agricultural products have diminished in importance as a share of exports it is unlikely, from the viewpoint of the rural sector, that this smoothing mechanism has weakened because, as a guess, it is probable that mineral and agricultural prices will

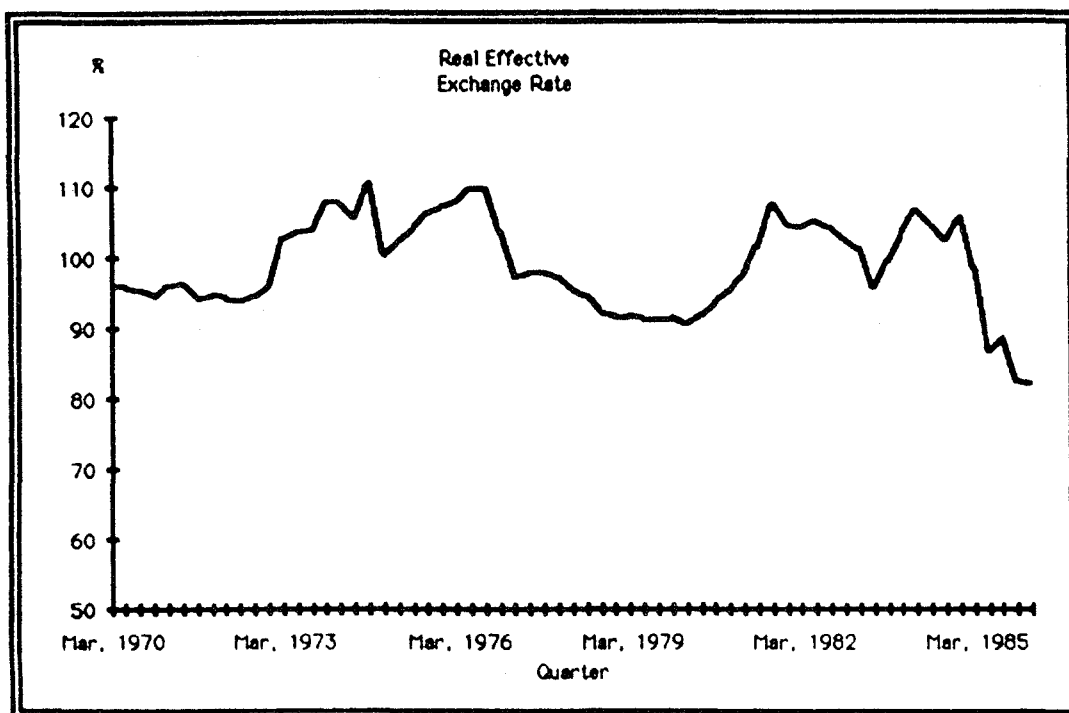
Table 2:
Contributions to Changes in the Balance of Trade in Goods and Services
(\$A million)

	1984		1985	
	I	II	I	II
Volume effect	-687	-531	1503	-453
Average price effect	16	-113	-146	-198
Terms of trade effect	-132	-179	-552	-1086
Residual	<u>15</u>	<u>35</u>	<u>-102</u>	<u>60</u>
Change in balance on goods and services	<u>-788</u>	<u>-788</u>	<u>703</u>	<u>-1677</u>

FIGURE 3:



Sources: Terms of Trade - Quarterly Estimates of Nat'l Inc. & Exp., March 1986, ABS 5206.0.
Nominal Exchange Rate - Morgan Guaranty



Source: Morgan Guaranty

generally continue to move together. Hence the diversification of Australian exports that has increased over the last few decades has, on the one hand, not really reduced our susceptibility to economic fluctuations in world primary product prices and, on the other, not weakened the income smoothing effect discussed earlier. Of course, under the Bretton Woods system, more of the adjustment to a downward movement in rural export prices was to take place in the domestic price level rather than in the exchange rate. In the post World War period this strategy has been difficult to follow as domestic prices have been rarely flexible in a downward direction. Exchange rate variability therefore gives much more flexibility to the system and would seem therefore to be an advantage to a farm sector that placed a positive value on income smoothing.

As the current account has deteriorated economic policy makers and commentators have become more aware of the links between foreign capital inflows and interest rates. In Australia, as pressure seem to have increased on the exchange rate, interest rates have recently risen relative to the rest of the world and to record levels. (Figure 4) The very high interest rates, however, have been associated with fast growth of money and credit aggregates and generated a debate in the rural sector and elsewhere as to the appropriate mix of macro economic policies.

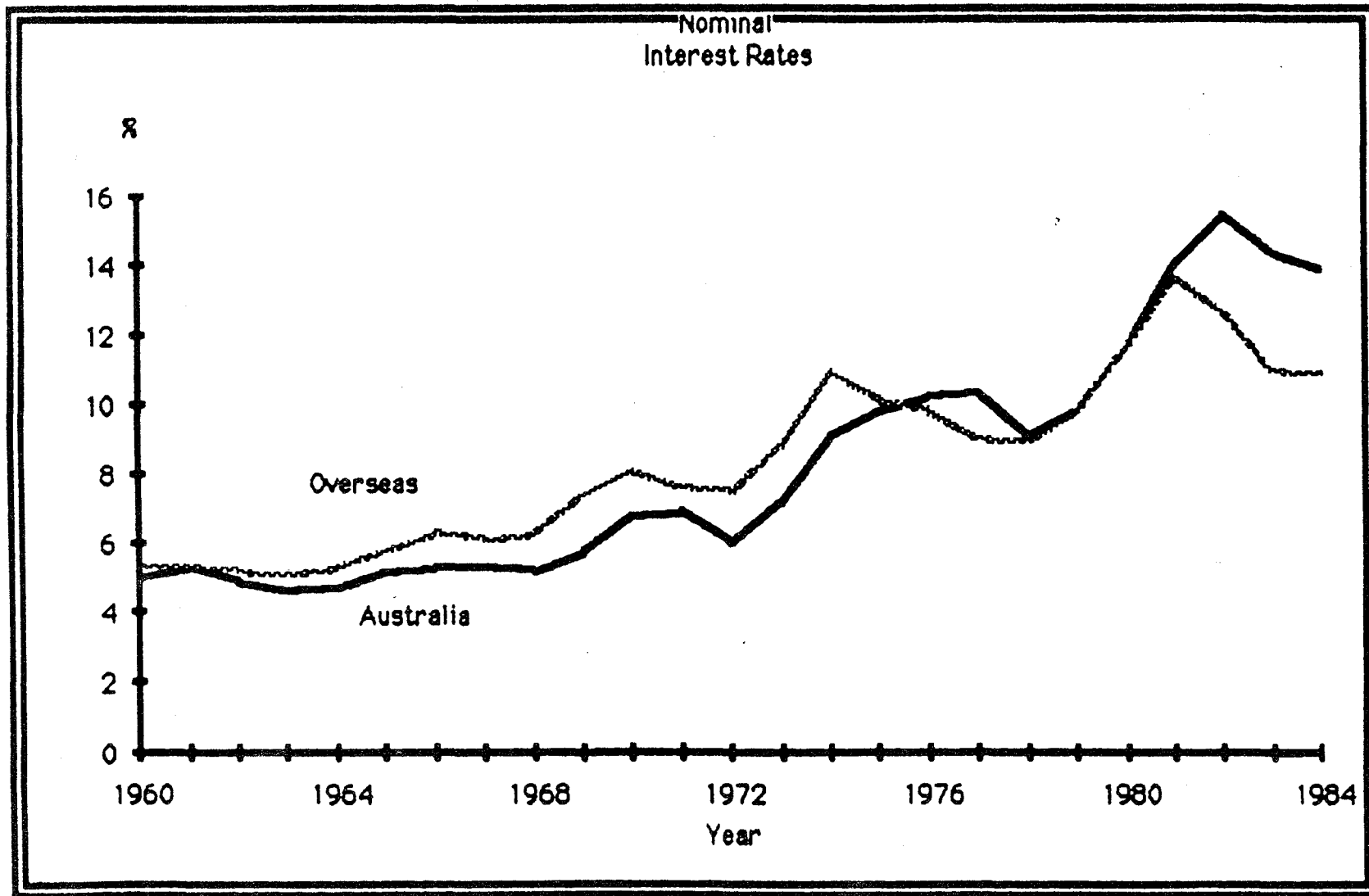
The Macro Policy Mix

It is fairly widely believed in Australia at the moment that the mix of macro policies is unbalanced and that too much emphasis is being placed on monetary policy. Monetary policy is seen as generating higher interest rates and thereby supporting the currency. The government seems anxious to be able to reduce interest rates as soon as possible but does not seem to be anxious to see a fall in the exchange rate. The recent significant reductions in the exchange rate are seen to be contributing to the inflation problem and the government has worked quite hard to achieve an agreement with the unions whereby they would accept wage discounting for the exchange rate effects on the price level. It is thought that any further large falls in the exchange rate will place too great a strain on the Accord.

In response to the deterioration of the terms of trade and the worsening of the current account the government has begun to shift the burden of policy away from monetary policy and towards the reducing the demand of the government sector on resources and towards moderating wage increases. To illustrate how these arguments are now of interest to the rural sector we can look at the way these changes were anticipated in a speech of the Director of the Bureau of Agricultural Economics delivered to the National Agricultural Outlook Conference in January 1986. Dr. Stoekel argues as follows:

- . further reductions in the rate of interest and the real exchange rate are necessary to achieve the increased exports that are needed.
- . monetary policy should not be relaxed. Relaxing monetary policy may in the medium term actually increase interest rates and although a relaxation may cause the exchange rate to fall, the result may be additional inflation so that the real exchange rate may not improve.
- . therefore the government deficit and the public sector borrowing requirements should be reduced. This will reduce the level of foreign capital inflow.
- . a reduced foreign capital inflow will cause the exchange rate to devalue.

FIGURE 4:



Overseas rates are for France, the U.K., Germany, and the USA.

Source: Australian Economic Statistics 1949-50 to 1984-85: I Tables, Occasional Paper No. 8A, Reserve Bank of Australia, Long Term Interest Rates

to avoid increases in inflation wages should be discounted further.

It may be of general interest to discuss some of these points as they relate to liberalization of the exchange rate setting mechanism and the agricultural sector. First, the agricultural sector is well aware that it would be better off with sustainable lower levels of interest rates and the exchange rate. The Director of the BAE estimates that a one percentage point reduction in the rate of interest would reduce interest payments by the farm sector on institutional debt by around 70 to 80 million a year, that is by about 2 to 3 per cent of the net returns of farmers. Over the last year interest payments have risen by an average of \$2650 per farm. Similarly, the BAE estimates that a one per cent reduction of the real exchange rate would add between 50 and 100 million to the net value of farm production.

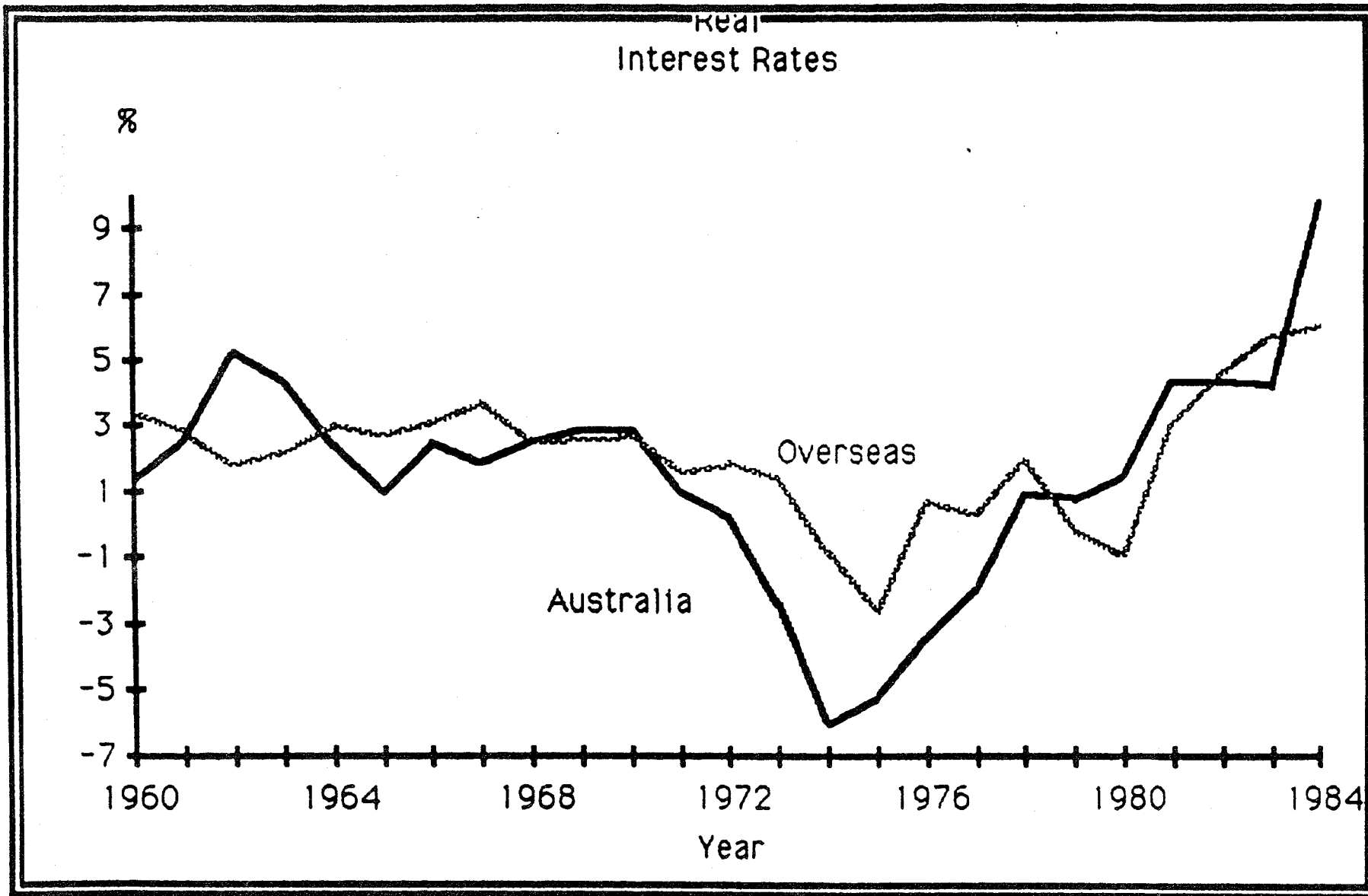
Second, whether monetary policy should be relaxed or not to achieve these objectives is more debatable. With expectations playing such a large role in exchange rate and interest rate determination nowadays it seems to be possible to argue any relationship between the rate of interest and monetary policy. Indeed the Director of the BAE seems to be doing just that by arguing that tight monetary policy has increased interest rates but that loose monetary policy will not reduce them. Of course these positions can be reconciled by varying the time period to which the statements apply and whether the nominal or real rate is being considered. It is not clear, however, to what degree interest rates are determined in Australia by monetary policy and the public sector borrowing requirements and to what degree overseas developments are important. Both sets of factors obviously contribute but for many policy purposes we need to have an idea of the relative strength of these two sets of influences. Figures 4 and 5 plot Australian real and nominal interest rates against overseas interest rates. A number of associations seem clear.

Generally speaking, the association between Australian and overseas nominal interest rates is very close. The high nominal interest rates that prevail here today would seem to have been part of a general trend towards higher nominal interest rates around the world. It is also noticeable, that there is a close association of real rates. This is a reflection of the similarity of Australian and world inflation rates. It would seem, therefore, that the extent to which inflation is under our control is very much the same extent to which nominal rates are under our control.

Third, would a tighter fiscal policy help the farm sector? At the moment economic activity is slowing quickly in Australia and in the absence of any other policy change a tighter fiscal stance will contribute to that downturn. The private sector does not instantly rush in to fill any expenditure gaps that are left by the public sector. Furthermore, in the short run, reduced economic activity and higher unemployment may not reduce the budget deficit to any degree. In fact over the last decade each downturn in economic activity has been associated with an increase in the budget deficit as decreases in economic activity leads to reduced tax revenue and increased expenditure on welfare payments. The lower activity, however, generated by the tighter fiscal policy should ease the pressure on the balance of payments and enable interest rates to be less supportive of the dollar. Under this outcome the farm sector is likely to lose as much by a stronger dollar as it is to gain by a lower interest rate. The proposition that cutting the government deficit will in the *near* future result in a lower real exchange rate must be very doubtful, indeed I would argue the reverse. In any event, I don't want to pretend to be certain about the actual short run links between these economic variables but rather to illustrate how the range of tools of economic analysis needed by agricultural economists is changing. To be a micro agricultural economist would not seem to be enough today.

As is indicated by the address of the Director of the BAE agricultural economists here

FIGURE 5:



Overseas rates are for France, the U.K., Germany, and the USA.

Real Interest Rate = Long Term Interest Rate - CPI

Source: Australian Economic Statistics 1949-50 to 1984-85: 1 Tables, Occasional Paper No. 8A,
Reserve Bank of Australia

have begun to discuss macro policy questions, but to date there is very little published analysis in Australia. It is interesting, in this context, to look at some more recent developments among US agricultural economists. J Chalfant et. al. (1985) presented a paper at the recent Australian Agricultural Economist Conference where they argued that loose fiscal policy and tight monetary policy was clearly a policy mix that was not in the interests of the rural sector in the US. In their view this policy mix led to overshooting of the exchange rate. The large appreciation of the US dollar quite clearly led to the rural sector being subject to greater foreign competition. Their model generates short run effects of monetary policy which change relative prices to benefit the agricultural sector when monetary policy is expansionary and turns against the sector when monetary policy is tight. The principal source of the conclusion is that farm prices respond quickly to exchange rate changes, monetary policy can affect exchange rates quickly, but prices elsewhere in the economy are slow to respond. Consequently, an appreciated exchange rate in the short run reduces farm prices received much more than it leads to lower prices paid by farmers. There is obviously an interesting field of research here for agricultural economists.

Finally, the Director of the BAE has called for a greater degree of liberalization in the labour market. Even to be a good macro economist is not even enough but a good agricultural economist must also understand labour markets as well. The call for greater flexibility would seem to come from two sources. First, there is a perceived need to allow farmers' costs to have some downward flexibility during difficult times for the farm sector. In the recent past, for example, National Wage Increases have been delayed before being passed on to the farm sector. Second, the call for more flexible labour markets can be related to the earlier point about the flexibility of farm product prices relative to input prices. It is thought that more flexibility in the domestic non farm price level will reduce the variability in the real exchange rate.

One of the successes of the Labour government to date has been the Prices and Income Accord. This agreement with the unions has delivered a much greater degree of wage moderation than was thought possible a few years ago. Currently, however, because of the devaluations and full wage indexation the rate of inflation has been slow to reduce in Australia. As a result the government has argued that money wage increases should be discounted for the effects of the devaluation and in this way slow down the inflation emanating from that source. Since the terms of trade have deteriorated and the current account has not improved the pressure for further adjustments to wages policy has increased. The current proposals are to postpone the next wage round so that there is only one wage decision this year, slow up the rate of introduction of private superannuation schemes for workers, and to seek further discounting in the next wage round in response to the terms of trade loss. Whether the unions will accept such an outcome is yet to be seen. Of course, as in all policy debates the real problem is the counterfactual case. It is not clear, for example, that the attempt to get more flexibility in labour markets and wage moderation in a country where unions have very large coverage and are powerful may not lead to the opposite outcome.

5. CONCLUDING REMARKS

I began discussing the old issues of liberalization and then gradually drifted off into discussing some current macro policy issues. As I did so it became increasingly clear to me that the dominant theme of the address is a very exciting one for young agricultural economists but just another sign of bad times for us older guys who are finding it hard to learn new tricks. The exciting theme, of course, is the opening up of the agricultural economics profession that will occur over the next few years. To be a profession consisting only of good micro economists will not be appropriate in the new world.

Main stream macro concerns--the appropriate macro policy mix, the effects of monetary policy on interest rates and exchange rates, the determinants of real exchange rates--will increasingly become topics of research and interest to farmers.

References.

J.B. Brigden et.al. (1929), *The Australian Tariff: An Economic Enquiry*, Melbourne University Press.

J. Chalfant, A. Lowe, G. Rausser and K. Stamoulis (1986), The Effects of Monetary Policy in US Agriculture. Paper delivered to the Conference of Agricultural Economists, Canberra 1986 (mimeo).

R.G. Gregory (1976), "Some Implications of the Growth of the Mineral Sector," *Australian Journal of Agricultural Economics*, Vol. 20, August.

K.M. Kolsen (1983), Effective Rates of Protection and Hidden Sectoral Transfers by Public Authorities, *The Australian Journal of Agricultural Economics*, August.

E. Sieper (1982), *Rationalizing Rural Regulation*, Melbourne University Press.

A. Stoeckel (1986), Australian Agriculture: What is the Future?, *Quarterly Review of the Rural Economy*, Bureau of Agricultural Economics, Vol. 2, No. 2, May.

Medium Term Outlook for the Rural Sector (1985), B.A.E. submission to EPAC.

Assistance to Australian Agriculture (1983), Industries Assistance Commission.

ECONOMIC LIBERALISATION AND ITS IMPACT ON AGRICULTURE: THE CASE OF CHILE

Cristián Zegers Prado
Development Manager
Chilean Production Development Corporation

INTRODUCTION

The process of liberalising the Chilean economy was initiated in 1974 after four decades of growing government intervention. At the time when the authorities adopted this decision and implemented the first measures to transform economic activity, the country was in a very difficult situation with a large number of enterprises intervened in or administered by the Government, a significant area of the country's agricultural land (about 40 percent of the productive equivalent land) had been expropriated or taken over by the Land Reform programmes of the two previous administrations, and on top of that, Chile had the highest inflation rate in the world. In this difficult environment the present government decided to give back to the private sector its decision making role in production, to open the economy to foreign markets and to control inflation. This started with the application of several macro-economic and sector-specific measures within an overall policy framework, but in practice many of them had unexpected effects. This was largely due to the dynamics of the Chilean economy, which on several occasions did not adjust at the desired speed, or the adjustments requested were not small, but of a large magnitude, and the economic agents reactions were not those anticipated by policy makers. Fortunately, the economy is now moving in the right direction, and the agricultural sector is making a large contribution towards the goals of self sufficiency and generation of foreign exchange. These last results, in the case of agriculture, have been achieved within a scheme that provides a certain degree of protection to key crops for internal consumptions, while keeping open the rest of the agricultural markets.

OVERVIEW OF MACRO-ECONOMIC POLICIES AND THEIR IMPACT ON THE ECONOMY

During the last 12 years Chile has applied an economic liberalisation policy in order to achieve growth, employment and price stability. This policy introduced changes in an effort to increase efficiency in resource allocation and to benefit from the economic gains stemming from international trade and large markets. The main characteristics of this programme have been the elimination of price controls, the freeing of the capital markets, the liberalisation of trade, the control of inflation, the assurance of private property rights and a reduction of government intervention in the economy.

From the outset of this period, the macro-economic programme addressed the elimination of the fiscal deficit and a devaluation of the exchange rate. There was a major devaluation of approximately 300 percent in September 1973 (Tables 1 and 2). At the same time, several

TABLE 1 CHILE.
INFLATION AND NOMINAL EXCHANGE RATE OF THE US DOLLAR
(Annual Averages)

Y E A R	Inflation rate	Pesos per Dollar	Y E A R	Inflation rate	Pesos per Dollar
1973	508.1	0,11	1980	31,2	39,00
1974	375,9	0,83	1981	9,5	39,00
1975	340,7	4,91	1982	20,7	50,91
1976	174,3	13,05	1983	23,1	78,79
1977	63,5	21,54	1984	23,0	98,48
1978	30,3	31,67	1985	26,4	160,86
1979	38,9	37,25			

SOURCES: Banco Central de Chile. Indicadores Económicos y Sociales 1960-1982.
Banco Central de Chile. Boletín Mensual Abril 1986.

measures were taken to unify the exchange rate during 1975, and eliminate the multiple system applied by the previous Administration.

Exchange rate management was necessary due to internal inflation and balance of payments objectives, determining the application of a crawling peg system until mid 1976, when a 10 percent revaluation of the peso occurred and the authorities shifted to a system of pre-announced mini-devaluations. During this period the government reduced import tariffs and eliminated quotas.

This realistic exchange rate policy can be regarded today as one of the principal elements in the successful growth rates attained by the Chilean economy between 1975 and 1979, which were based on the expansion and diversification of its exports and the substitution of imports.

The progress in the export sector was very important for the country, because 82 percent of foreign exchange earnings in 1973 came from a single product: copper. The liberalisation policy meant a challenge to the private sector that was successfully faced and a fast

TABLE 2 CHILE.

FISCAL INCOME, EXPENDITURE AND OVERALL SURPLUS OR DEFICIT

(in percentage of GDP)

Y E A R	Fiscal Income	Fiscal Expenditure	Overall Surplus or Deficit (-).
1973	20.2	44.9	- 24.7
1974	21.9	32.4	- 10.5
1975	24.8	27.4	- 2.6
1976	23.5	25.0	- 2.3
1977	23.1	24.9	- 1.8
1978	23.0	23.8	- 0.8
1979	24.5	22.8	1.7
1980	26.2	23.1	3.1
1981	26.6	24.9	1.7
1982	26.2	28.5	- 2.3
1983	24.6	28.4	- 3.8
1984*	24.8	28.8	- 4.0

*PROVISIONAL FIGURES

SOURCE: Banco Central de Chile. Boletín Mensual Marzo 1986.
 Taken from Ministry of Finance. National Budget Office.

response came in the form of increased exports of fruits, fishmeal and forestry products, such that copper reduced its share to 47 percent of Chilean exports in 1979 (Table 3).

The period between 1975 and 1979 is also characterised by a more efficient allocation of resources and increments in productivity. Nevertheless these changes had negative effects on the manufacturing sector, which decreased its share in the overall economy in reaction to foreign competition in subsectors like textiles, chemical products and several industrial goods. On the other hand, the positive side is found in the expansion of sectors with export potential which increased their absolute and relative contribution to gross domestic product (GDP). The liberalisation of the economy has been the major force behind the structural adjustments observed, with the farm sector moving away from internal consumption crops (like cereals, sugarbeets, oilseeds) towards products demanded in international markets (fruits, pulses, vegetables), with the forestry sector and related industries expanding their exports (logs, sawn woods, pulp and paper products) and a similar expansion in non-ferrous minerals and fishmeal exports.

TABLE 3 CHILE. EXPORT OF GOODS
(Millions of US dollars)

I T E M	Average 1960-1970	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984*
Total Exports	740.8	1,247.5	2,152.5	1,552.1	2,082.6	2,190.3	2,407.8	3,835.4	4,705.3	3,836.5	3,705.7	3,830.5	3,650.3
Mining Products	636.0	1,132.6	1,806.9	1,075.4	1,443.6	1,403.2	1,422.3	2,155.0	2,614.6	2,177.5	2,123.7	2,335.4	1,961.7
- Copper	526.3	1,025.6	1,653.5	890.4	1,246.5	1,187.4	1,201.5	1,887.9	2,124.7	1,737.8	1,684.6	1,874.9	1,603.8
Agricultural and Fishing Products	25.8	25.5	55.0	86.1	118.9	159.5	203.5	264.5	339.9	365.4	374.9	327.5	428.3
- Agricultural	16.0	20.8	42.9	59.7	86.2	126.6	157.7	183.8	244.3	268.0	278.1	253.7	345.7
- Animal	8.2	1.2	4.4	16.7	24.8	23.2	27.8	37.5	36.9	29.1	33.5	26.4	28.9
- Forest	0.7	1.9	3.2	3.7	1.0	1.2	2.4	3.3	1.6	2.1	2.2	2.3	1.8
- Fishes & Seafood	0.9	1.6	4.5	6.0	6.9	8.5	15.6	39.9	57.1	66.2	61.1	45.1	51.9
Manufacturing Products	79.0	89.4	290.6	390.6	520.1	627.6	782.0	1,415.9	1,759.8	1,293.6	1,207.1	1,167.1	1,260.3
Foods (-Fishmeal)	21.4	9.3	18.0	72.6	48.4	82.6	80.2	120.2	141.9	124.0	109.8	116.8	131.1
Fishmeal		12.0	31.1	29.2	61.6	86.5	105.8	152.6	233.7	202.0	256.0	307.1	275.7
Woods	3.8	4.1	12.7	25.2	29.4	70.4	94.4	164.7	286.2	121.0	122.3	116.4	116.3
Pulp & Paper	16.0	33.1	115.0	93.7	135.9	134.4	159.1	238.8	297.2	254.3	219.6	208.0	259.3
Others	37.8	30.9	113.8	169.9	244.8	253.7	342.5	739.6	800.8	592.3	499.4	418.8	477.9

*Provisional figures

SOURCES: Banco Central de Chile. Indicadores Económicos y Sociales 1960-1982.

Banco Central de Chile. Boletín Mensual Abril 1986.

TABLE 4 CHILE.
GROSS DOMESTIC PRODUCT AND TRADE
(Million of 1977 pesos)

Y E A R	Gross Domestic Product	Export	Import	Trade Balance	Terms of Trade Effect	Export as % of GDP	Import as % of GDP
Average 1960-1970	186.661	27.969	50.679	- 22.710	21.065	15.0	27.1
1973	287.750	28.548	72.005	- 43.457	35.499	9.9	25.0
1974	290.554	41.666	74.429	- 32.763	34.140	14.3	25.6
1975	253.043	42.644	45.647	- 3.003	281	16.9	18.0
1976	261.945	53.037	47.608	5.429	3.710	20.2	18.2
1977	287.769	59.338	64.523	- 5.185	-	20.6	22.4
1978	311.417	65.978	75.851	- 9.873	- 753	21.2	24.4
1979	337.207	75.310	93.040	- 17.730	7.639	22.3	27.6
1980	363.446	86.077	110.461	- 24.384	7.361	23.7	30.4
1981	383.551	78.373	127.182	- 48.809	59	20.4	33.2
1982*	329.523	82.069	81.378	691	- 8.105	24.9	24.7
1983*	327.180	82.583	69.072	13.511	- 4.166	25.2	21.1
1984*	347.926	88.190	80.471	7.719	n.a.	25.3	23.1
1985*	356.447	94.257	71.623	22.634	n.a.	26.4	20.1

* Provisional figures. n.a. not available.

SOURCE: Banco Central de Chile. Cuentas Nacionales de Chile 1960-1983.

Banco Central de Chile. Boletín Mensual Abril 1986.

The export drive between 1973 and 1979 is reflected in the large proportion of exports in the total economic product. Exports increased from 9.9 to 22.3 percent of GDP, while imports decreased from 25 to 18.2 percent between 1973 and 1976 and expanded again to 27.6 percent by 1979 (Table 4). As a result of these movements, the trade balance was positive only in 1976.

The 1973-76 period is also characterised by GDP growth rates oscillating from positive to negative, and with disinvestment in fixed capital in 3 out of 4 years. This behaviour changed afterwards and the economy grew at an average rate of 7.7 percent per year between 1976 and 1981, along with investment in fixed capital growing at an annual rate of 17.7 percent (Table 5).

TABLE 5 CHILE.
FIXED CAPITAL INVESTMENT, EXPORTS, IMPORTS AND
GROSS DOMESTIC PRODUCT GROWTH RATES.
(in percentages)

Y E A R	Fixed Capital Investment	Export	Import	GDP
Average 1960-1970	4.3	3.6	6.6	4.3
1973	- 6.0	2.8	- 5.4	- 5.6
1974	19.1	45.9	3.4	1.0
1975	- 22.8	2.4	- 38.7	- 12.9
1976	- 14.8	24.4	4.3	3.5
1977	15.4	11.9	35.5	9.9
1978	17.4	11.2	17.6	8.2
1979	16.8	14.1	22.7	8.3
1980	21.9	14.3	18.7	7.8
1981	16.8	- 9.0	15.7	5.5
1982*	- 33.9	4.7	- 36.3	- 14.1
1983*	- 14.9	0.6	- 15.1	- 0.7
1984*	9.0	6.8	16.5	6.3
1985*	14.8	6.9	- 11.0	2.4

* Provisional figures.

SOURCES: Banco Central de Chile Indicadores Económicos y Sociales 1960-1982.

Banco Central de Chile Boletín Mensual Abril 1986.

In spite of the rather low magnitude of investment, it was large enough to support the effort of many Chilean producers who decided to compete in the international markets, but the situation in the home

market for others became tougher with imports expanding between 1977 and 1980 at a faster rate than exports (Table 5).

The low investment levels are partially explained by the reduction of public investment with the goal of eliminating the fiscal deficit, which was achieved only in 1979, 1980 and 1981. Another characteristic of investment in this period is that important amounts were allocated to inventories and construction (mainly houses), with these two items totalling 65.5 percent of the gross capital formation in 1981 (Table 6).

Nevertheless, the performance of the Chilean economy prior to 1979 can be regarded as successful, and this can be associated with the exchange rate policy. However in mid 1979 the peso-dollar parity was fixed at a rate of CH\$39 per US dollar, with two major objectives in

TABLE 6 CHILE.

CAPITAL FORMATION

(in percentage of GDP)

Y E A R	Gross Capital Formation	Gross Fixed Capital Formation	Change in Stocks
1973	14.3	14.7	- 0.4
1974	25.8	17.4	8.4
1975	14.0	15.4	- 1.4
1976	13.6	12.7	0.9
1977	14.4	13.3	1.1
1978	16.5	14.5	2.0
1979	19.6	15.6	4.0
1980	23.9	17.6	6.3
1981	27.6	19.5	8.1
1982	11.1	15.0	- 3.9
1983	9.3	12.9	- 3.6
1984	15.3	13.2	2.1
1985	13.9	14.7	- 0.8

SOURCES: Banco Central de Chile. Cuentas Nacionales de Chile 1960-1983.

Banco Central de Chile. Boletín Mensual Abril 1986.

mind: to reduce inflation and to lower interest rates (Table 1). This fixed exchange rate lasted until 14 June of 1982, when the peso was devaluated by 18 percent. The decision to peg the dollar price, together with the opening of the capital account, proved to be extremely negative to the economy. These two measures caused tremendous disequilibria that ended in a large depression with exports decreasing 9.0 percent in 1981 and GDP falling by 14.1 percent in 1982 (Table 5).

An unexpected result was that the purchasing power of important segments of the population increased with inflation due to the pre-established system of wage indexation. Thus a fixed exchange rate made imports cheaper and affected negatively the activity of import substituting industries.

During these years construction and commerce were the most favoured activities of this artificial boom, greatly assisted by large capital inflows. Consequently, the foreign debt of Chile expanded at a speed that became very difficult to pay. As an example, in 1981 capital entered the country in an amount equivalent to 47.7 percent of GDP (US\$4.7 billion).

The positive sides of this policy were the decrease in the inflation rate and the growth of credit and financial activities. But the overall effect was negative throwing the country in a depression characterised by:

- negative growth rates
- negative capital formation
- increments in the unemployment level (it reached 23.8% in 1982)
- increased debt levels
- insolvency of many firms
- liquidity problems in several banks

The general picture forced a decision from the government, such that in June 1982 the fixed exchange rate was changed and in September the peso was floated along with restricting access to other currencies after an important loss in foreign reserves. These adjustments produced in a short time: a trade surplus (mainly due to the fall in imports, which in 1983 diminished to 54 percent of the 1981 level), an inflation rate of 23.1 percent, unemployment decreased to 14.6 percent of the labour force and GDP fell by 0.7 percent.

However, during this period Chile was able to expand its exports as shown by the corresponding quantity index (+13.5% between 1980 and 1983), unfortunately prices received by exports declined by 27.9 percent. This movement is reflected in the terms of trade index, which in the last 3 years has remained around 83 percent of the level observed in 1980 (Table 7). The government faced with a loss in the purchasing power of the country's exports and the restricted access to external funds, established in 1985 a strict structural adjustment programme based on:

- (a) The expansion of export and import substitution sectors.
- (b) Incentives to domestic savings and investments and
- (c) The renegotiation of the external debt.

The first results of this new policy have accomplished the predefined

TABLE 7 CHILE
PRICE AND QUANTUM INDEXES OF EXPORTS AND IMPORTS

ITEM	1980	1981	1982	1983	1984	1985 ^a
<u>Total Export</u>						
Price Index	100,0	87,2	75,5	72,1	69,2	63,5
Quantum Index	100,0	95,2	109,3	113,5	122,7	127,7
<u>Agric. & Fishing Exports</u>						
Price Index	100,0	104,7	102,0	84,8	98,0	88,7
Quantum Index	100,0	108,6	128,7	139,1	166,5	201,1
<u>Total Import</u>						
Price Index	100,0	104,1	97,2	83,7	83,4	84,2
Quantum Index	100,0	133,1	92,5	68,6	82,9	73,1
<u>Terms of Trade</u>	100,0	83,8	77,6	86,1	83,0	75,4
% Annual Variation	-	- 16,2	- 7,4	10,9	- 3,6	- 9,1

SOURCE: Banco Central de Chile. Boletín Mensual Abril 1986.

goals and Chile's economy is growing again (2.4 percent in 1985, and the estimates of 1986 place this rate between 3 and 5 percent). Unemployment is decreasing and it is close to 11 percent, interest rates are falling (borrowing rate about 8 percent in 1986 instead of 16.9 percent in 1982), and the trade balance is positive (US\$1 billion in 1985 and US\$616 million for the January-May period of 1986).

Having this background information let us review the behaviour of some of the most important variables of the agricultural sector, such as land use, economic returns, the price situation and trade.

LAND USE

The area planted with crops remained at a level close to 1.2 million hectares during the second half of the seventies, but it diminished rapidly between 1981 and 1983 to 871 thousand hectares reflecting the impact of macro-economic decisions. This sharp decline in the area planted is largely explained by wheat (Table 8). The situation changed in 1984 and 1985 when the area devoted to wheat reached 471

TABLE 8 CHILE.
AREA PLANTED WITH CROPS AND FRUITS
(thousand hectares)

Y E A R	Wheat	Other Cereals	Row Crops	Oilseeds	Sugarbeets	Total Crops	Table Grapes	Apples	Total Fruits
1974	591,0	307,0	214,9	33,5	26,3	1.172,7	4,150	11.290	63.950
1975	686,2	283,9	176,5	58,8	40,7	1.246,1	4,250	11.350	63.885
1976	697,6	271,6	188,1	81,1	60,9	1.299,3	5,650	11.700	65.675
1977	628,0	300,6	238,1	64,0	54,8	1.285,5	6,950	12.200	67.640
1978	579,5	276,4	262,5	55,3	21,4	1.195,1	8,405	12.970	69.885
1979	560,5	323,4	274,8	75,6	16,3	1.250,6	10,290	13.585	73.202
1980	545,7	306,3	291,3	82,8	11,1	1.237,2	12,550	14.735	77.186
1981	432,2	291,8	289,0	29,0	36,8	1.078,8	14,480	15.768	82.310
1982	373,8	275,4	260,0	13,7	22,0	944,9	15,958	16.652	86.113
1983	359,2	276,4	194,2	5,6	35,6	871,0	17,363	17.662	89.708
1984	471,3	311,2	211,1	9,1	47,8	1.050,5	18,824	17.897	93.034
1985	506,2	293,8	200,1	39,1	44,1	1.083,3	21,375	17.997	96.003

SOURCES: Instituto Nacional de Estadísticas
CORFO Catastros Frutícolas
Universidad Católica. Departamento de Economía Agraria.

and 506 thousand hectares, respectively. Oil crops, declined steadily from a maximum area planted of 81 thousand hectares in 1976, to 5,600 hectares in 1983. At present, rapeseed and sunflower sowings show a partial recovery, approaching 40 thousand hectares, reflecting the effect of the price band decreed by the government, as in the case of wheat.

Sugarbeets also expanded strongly after 1982 responding to the special incentives provided for this crop. Area planted with sugarbeets in 1984 totalled 48 thousand hectares supplying most of the internal consumption of sugar.

After 1983 farmers have responded to general and sectorial policies implemented in 1983 and 1984. The consequence has been the expansion of 200 thousand hectares in the area planted between 1983 and 1985, and that together with higher yields in most crops resulting from a strong technological transfer effort, has produced an important substitution effect on imports of foodstuffs and agricultural products.

Fruit production is the subsector that has benefited most from the opening of international markets. The area planted increased from

65 thousand hectares in 1973 to 96 thousand hectares in 1985, but production has expanded at a faster pace than area. In 1975 output was close to 550 thousand tons and in 1985 it exceeded 1 million tons, with an increasing proportion of exports in total fruit production (it increased from 55 percent in 1975 to 78 percent in 1985).

Fruits are produced basically for the export markets of Europe, North America, Latin America and the Middle East. The most important fruits are table grapes and apples, which generated 56 and 25 percent of the value of the fruit crop in value terms in 1984.

Vegetables have occupied a rather stable area, of the order of 100 thousand hectares, although in 1984-85 the area planted with these crops has been estimated to be 118 thousand hectares. Export of asparagus, melons, garlic, onions and of other (fresh and frozen) vegetables is starting to grow, together with the construction of several processing and freezing plants.

Wine production, which was largely protected by different regulations, is another product affected by the liberalisation policies. Legal changes that eliminated restrictions on planting vineyards, and productivity changes introduced by farmers generated a supply expansion in the seventies with depressing effects on internal wine prices and building up of large stocks. The farmers' reaction was to pull up plants and to graft with table grapes varieties. This adjustment has resulted in a decrease in the area planted in vineyards from 113 thousand hectares in 1973 to 70 thousand hectares in 1985.

ECONOMIC RETURNS IN AGRICULTURE

Disaggregated information by economic sector from the national accounts is available only for the 1974-82 period. These data provide some insight on the distribution of the total agricultural product. In fact, the relative figures for 1974-77 show a gain in input

TABLE 9 CHILE.
RELATIVE DISTRIBUTION OF AGRICULTURAL SECTOR PRODUCT
(in percentage)

Y E A R	Gross Value Product	Inputs	Value Added	Hired Labor	Net Indirect Taxes	Depretiation	Operating Surplus
1974	100.0	50.5	49.5	14.6	1.4	10.1	23.4
1975	100.0	52.0	48.0	13.7	2.4	12.1	19.7
1976	100.0	42.4	57.6	12.8	5.0	9.9	30.0
1977	100.0	32.8	67.2	13.5	4.1	9.0	40.5
1978	100.0	37.9	62.1	15.8	5.2	9.1	32.0
1979	100.0	38.0	62.0	14.6	4.8	9.0	33.6
1980	100.0	38.4	61.6	14.9	6.3.	8.8	31.5
1981	100.0	41.0	59.0	17.1	6.7	8.9	26.4
1982	100.0	46.7	53.3	20.1	6.9	10.2	16.0

76

Note: Information not available for 1983, 1984 and 1985.

SOURCE: Calculated from Banco Central de Chile. Cuentas Nacionales de Chile 1960-1983.

productivity due to a better allocation of resources (input share diminished from 52 to 33 percent), suggesting that growth in the sector's GDP was based on a cost minimisation approach (Table 9). After 1977 input share recovered importance indicating that output expansion can be associated with the larger amounts of inputs used.

Labour share, in turn, moved around a 14 percent level, with the exception of 1981 and 1982, when it jumped to 17 and 20 percent, respectively. This higher participation of labour in the total product should be linked with the wage indexation policy, which together with the fixed exchange rate negatively affected the economy. In the case of agriculture, the higher shares of inputs and labour, plus the increasing trend of indirect taxes, are the main reasons for the reduction in the operating surplus observed for this sector. This indicator decreased from 40.5 percent in 1977 to 16.0 percent in 1982. This loss in economic productivity is the main reason behind the changes in area planted with crops in those years.

There is no published data available, after 1982, at a disaggregated level, but growth rates in agricultural GDP in 1984 (7.1 percent) and in 1985 (5.6 percent) suggest a recovery in the profitability of this sector.

TABLE 10 CHILE.

OPERATING SURPLUS OF THE ECONOMY AND AGRICULTURE & FORESTRY

Y E A R	TOTAL ECONOMY		AGRICULTURE & FORESTRY	
	as % Total GDP	as % Total Disposable Income	as % Sector GDP	as % Sector Income
1974	35.9	49.1	47.3	61.6
1975	32.3	44.4	41.1	58.9
1976	34.7	47.5	52.0	70.0
1977	34.5	46.7	60.3	74.9
1978	36.2	47.7	51.5	66.9
1979	41.5	53.5	54.2	69.8
1980	40.1	51.2	51.2	67.8
1981	35.8	46.9	44.7	60.7
1982	34.2	45.2	30.0	44.3

NOTE: Income figures not available for 1983, 1984 and 1985.

SOURCE: Calculated from Banco Central. Cuentas Nacionales de Chile 1960-1983.

AGRICULTURAL AND FOOD PRICE POLICIES

Government intervention in marketing and pricing of foods and agricultural products has a long history in Chile. They started in the thirties with the application of several measures to the so-called essential foods. But it is not necessary to go so far back to demonstrate the role of government in the agricultural sector. In 1960 it was possible to find the following intervention measures:

1. Nominal price fixation for:
wheat, bread, beef, milk, rice, sugar and oil seeds.
2. Marketing margins fixation for:
Wheat, flour and milk.
3. Export restrictions for:
Wheat, flour and sheep meat.
4. Differentiated tariffs and prior deposits for imports of:
Wheat, beef cattle, dairy products, fertilisers, pesticides, farm machinery.
5. Beef marketing restrictions:
(Slaughter prohibition of heifers, restriction on the number of meat retail outlets, beef sales rationing).
6. Subsidies for:
Fertilisers, railway fares and credit.

These measures were mainly adopted with the purpose of providing low priced foods to the urban consumers and they were applied within an anti-inflationary framework. As a consequence of this price policy, agricultural income was low and there was little incentives for technical change and investment, in spite of the partial compensation stemming from interventions in the input markets.

In the second half of the sixties the Frei Administration proposed an explicit price policy. Its main objectives were to raise farm income in order to finance investments and sectorial growth, and to change the price relationships within the sector based on the production advantages of the country.

This policy resulted in a larger government intervention and price fixation than before, although an alignment with international prices was intended in order to lessen existing distortions.

The Agricultural Development Plan proposed by that Administration defined wheat as the basic product with prices of other crops and products adjusting in relation to it, some of them increasing in real terms (i.e. oil seeds) and other decreasing (i.e. corn, pork). Nevertheless, the lack of growth in livestock production generated special recommendations for this subsector, which in terms of prices meant that beef should get the highest possible real price of all products with the milk price at the farm gate fixed in specific relation to that of beef. This active policy excluded the prices of some products with fruits and vegetables being the big exceptions.

The Allende Administration (Nov. 1970-Sept. 1973), instituted a system of price fixation based on production costs plus "adequate" profit margins, together with an increasing presence of State owned marketing boards that purchased production from farmers at official prices. This expansive trend of Government intervention was enlarged in early 1973 in response to the appearance of black markets and chaos in the distribution system for foods as well as other goods.

The present Administration, which took over the government in September 1973, proposed a completely different policy, market oriented, with the state assuming a subsidiary role, leaving to the private sector the responsibility of most production decisions. This policy instituted a progressive liberalisation of prices (including those of agricultural products) along with a reduction in tariffs and adjustments in the exchange rate.

In 1977, only three products - wheat, sugarbeets and oil seeds - remained subject to intervention via the application of price bands, although they were not effective because prices moved within the established bounds and they were eliminated in 1979. Milk production also was protected through the application of import levies in order to counteract the European Economic Community export incentives for dairy products.

The opening of agriculture to foreign markets generated an increase in real prices which promoted a recovery in the sector's output (Table 12). Nevertheless the overvalued peso and the high cost of credit, especially between 1980 and 1983 (the peak years of trade and price liberalisation in Chile), influenced negatively the production of most crops. This is reflected in:

- (a) A 29.6 percent decrease in the area planted with crops between 1979-80 and 1982-83.
- (b) An increase in food imports (up 58% between 1979 and 1981).
- (c) A decrease in the operating surplus of the sector that, according to national accounts, reached 30 percent of the agricultural gross domestic product in 1982, down from 54 percent achieved in 1979.
- (d) The expansion of the sector's debt which was estimated at US\$1.7 billion in 1983, a figure larger than that year's agricultural GDP of US\$998 million.

In 1983, the government implemented a programme to stimulate agricultural production consisting of the re-establishment of price bands for wheat and oil seeds and the announcement of support prices for sugarbeets together with a system of variable tariffs for imported wheat, oil seeds and sugar, and a 35 percent tariff on the FOB prices of dairy products in the European Economic Community.

The opening of the economy for livestock and milk producers made necessary the application of import surcharges to the imports of dairy products, as explained previously, but it is necessary to mention that in 1981 the country was able to eradicate foot and mouth disease. This success could allow Chile to become an exporter of beef to the US

TABLE 11 CHILE.
DOMESTIC WHOLESALE PRICES FOR SELECTED AGRICULTURAL PRODUCTS
(in 1985 US dollars)

Y E A R	Wheat US\$/100 Kg.	Corn US\$/100 Kg.	Sugar Beet US\$/ton.	Rapessed US\$/100 Kg.	Beef Cattle US\$/Kg.	Fresh milk US\$/lt.	Wool US\$/Kg.	Table Grapes US\$/100 Kg.	Apples US\$/100 Kg.
Average 1960-1970	8,47	9,57	22,04*	14,62	0,47	0,08	1,03	12,76	8,72
1973	3,45	20,43	13,02	5,25	0,64	0,10	1,01	21,15	17,01
1974	14,55	14,19	18,77	14,08	0,94	0,12	1,06	24,74	10,78
1975	19,15	13,02	33,15	24,31	0,35	0,10	0,69	18,67	20,16
1976	17,70	13,12	31,62	24,74	0,58	0,11	1,32	22,44	18,02
1977	15,50	10,64	24,78	22,51	0,73	0,11	1,50	24,08	23,54
1978	14,58	13,02	24,16	26,37	0,79	0,12	1,47	19,32	16,16
1979	14,55	12,48	23,25	25,61	0,90	0,13	1,50	22,63	14,61
1980	13,37	11,97	33,54	19,03	0,85	0,12	1,30	29,68	15,10
1981	12,41	9,78	26,90	17,00	0,68	0,10	0,95	21,49	12,56
1982	11,91	9,93	27,75	11,77	0,58	0,10	0,71	12,82	10,31
1983	16,17	13,48	36,67	13,83	0,56	0,11	0,98	16,06	10,11
1984	17,06	14,17	38,53	23,31	0,68	0,13	1,29	18,33	8,25
1985**	19,45	12,79	47,79	28,80	0,73	0,13	1,28	14,98	10,36

* Average for 1969-70.

** Average for January-October.

SOURCE: Universidad Católica. Statistics collected by the Department of Ag. Economics from different sources.

TABLE 12 CHILE.
INTERNATIONAL PRICES FOR SELECTED AGRICULTURAL PRODUCTS IN CHILE
(in 1985 US dollars)

Y E A R	Wheat US\$/100 Kg. CIF	Corn US\$/100 Kg. CIF	Sugar US\$/ton. CIF	Soya Oil US\$/100 Kg. CIF	Slaughtered Cattle US\$/Kg. CIF	Dry Milk Powder US\$/Kg. CIF	Wool US\$/Kg. CIF	Table Grapes US\$/100 Kg. FOB	Apples US\$/100 Kg. FOB
Average 1960-1970	22,52	-	-	-	2,55	1,13	-	61,37	40,85
1973	36,10	-	160,76	-	5,20	1,54	1,03	73,30	61,40
1974	40,40	-	763,09	-	4,57	1,34	3,72	66,40	37,20
1975	34,70	-	267,97	-	3,08	1,44	5,50	96,70	61,10
1976	41,30	-	80,86	-	2,56	1,15	5,66	85,50	42,60
1977	18,80	15,20	88,62	97,10	2,51	1,23	3,37	85,20	41,80
1978	21,20	15,40	130,86	89,20	2,36	1,32	3,97	96,60	54,90
1979	25,20	15,70	119,53	84,70	3,84	1,33	4,11	118,10	46,30
1980	23,70	16,00	218,28	68,60	3,85	1,55	3,52	103,00	53,80
1981	22,10	15,40	250,69	55,00	3,77	1,60	2,92	102,60	46,80
1982	18,60	12,50	163,47	43,60	2,84	1,49	3,02	103,80	47,40
1983	17,80	13,10	194,48	47,70	2,76	1,39	3,57	87,20	36,50
1984	16,20	14,10	128,80	66,80	1,71	1,07	4,22	92,70	36,90

* Calculated by the Department of Ag. Economics Universidad Católica.

SOURCE: Universidad Católica. Statistics Collected by the Department of Ag. Economics from different sources.

and other selected countries, but until now has acted as a sanitary barrier (non-tariff barrier) restricting imports from neighbouring countries and generating higher prices for cattle in the internal market. The possibility that Chile will become a meat exporter will depend on its capacity to adjust slaughterhouses, penetrate foreign markets and expand the cattle herd to a number large enough to satisfy domestic consumption.

Prices for fruits and vegetables have not been affected by government intervention. The differentials existing between internal and export prices along with the off-season characteristic of production are the main reasons behind the expansion of the fruit subsector in recent years. A similar effort is being made in vegetable production, but structural problems within this subsector (lack of sufficient research and a predominance of small farmers) is resulting in a slower and lagged response in this area (Table 13).

TRADE IN AGRICULTURAL SECTOR

International trade in the Chilean agricultural sector is reviewed here from two standpoints. First, the analysis is limited only to flows within the agricultural sector. In this context agricultural exports present an outstanding record in Chile. They increased their share in the sector's GDP from 4.9 percent in 1974 to over 20 percent in 1982 (Table 14). During this period (except for 1973) imports fluctuated between 10 and 17 percent of the agricultural GDP. The combination of these two variables shifted to positive in 1979 erasing the negative trade balance observed in this sector for decades.

A more general analysis is the one that includes the flow of agricultural products and foodstuffs, which can be of agricultural origin. From this standpoint it is possible to observe that exports of foods and beverages fluctuated around US\$70 million in the 1975-85 period, while the nominal value of exports of agricultural products grew at an annual rate of 21 percent (14 percent in real terms). On the other hand, imports of agricultural products and foodstuffs are characterised by a decline between 1973 and 1975, and a recovery from that year to 1980, when they exceeded the US\$1 billion mark. The depression occurred in 1982-83, and the macro-economic and sectorial measures adopted afterwards resulted in a sharp fall in imports, which decreased to US\$250 million by 1985. Last year is the only one in this long time stretch with a positive trade balance for the aggregate of foods and agricultural products.

FINAL REMARKS

The liberalisation of the Chilean economy has represented a significant change in the way that both private and public sectors approach production and investment decisions. Today it is possible to observe many sectors and private enterprises performing at international standards and competing in world markets. Exports have increased their contribution to national product and they have surpassed the level of imports. Thus a trade surplus has developed in recent years improving the country's capacity to grow and pay its international commitments.

TABLE 13 CHILE
RATIOS OF DOMESTIC TO RELEVANT INTERNATIONAL PRICES FOR SELECTED AGRICULTURAL PRODUCTS

Y E A R	Wheat	Corn	Sugar beet *	Rapeseed **	Beef Cattle	Milk ***	Wool	Table Grapes	Apples
Average 1960-1970	0,38	-	-	-	0,18	0,64	-	0,21	0,21
1973	0,10	-	0,49	-	0,12	0,58	0,98	0,29	0,28
1974	0,36	-	0,15	-	0,21	0,72	0,28	0,37	0,29
1975	0,47	-	0,75	-	0,11	0,63	0,13	0,19	0,33
1976	0,43	-	2,37	-	0,23	0,86	0,23	0,16	0,42
1977	0,82	0,70	1,69	0,58	0,29	0,80	0,44	0,28	0,56
1978	0,69	0,85	1,12	0,74	0,33	0,82	0,44	0,20	0,29
1979	0,58	0,79	1,18	0,76	0,23	0,88	0,37	0,19	0,32
1980	0,56	0,75	0,93	0,69	0,22	0,70	0,37	0,29	0,28
1981	0,56	0,64	0,65	0,77	0,18	0,56	0,33	0,21	0,27
1982	0,64	0,79	1,03	0,67	0,20	0,60	0,23	0,12	0,22
1983	0,91	1,03	1,14	0,72	0,20	0,71	0,27	0,18	0,21
1984	1,05	1,00	1,81	0,87	0,25	0,84	0,31	0,20	0,23

* (sugarbeet price/.165): Sugar Price.

** (rapeseed price /.40) : Soya Oil Price.

*** Fresh milk price: (Dry Mil Powder /9).

SOURCE: Calculated from Tables 11 and 12.

TABLE 14 CHILE.
TOTAL AND AGRICULTURAL SECTOR TRADE
(in percentages of GDP)

Y E A R	E C O N O M Y			A G R I C U L T U R A L S E C T O R		
	Export	Imports	Trade Balance	Export	Imports	Trade Balance
1974	14,3	25,6	- 11,3	4,9	24,3	- 19,4
1975	16,9	18,0	- 1,1	6,9	13,0	- 6,1
1976	20,2	18,2	2,0	9,7	10,1	- 0,4
1977	20,6	22,4	- 1,8	11,4	12,4	- 1,0
1978	21,2	24,4	- 3,2	15,3	17,7	- 2,4
1979	22,3	27,6	- 5,3	17,9	14,3	3,6
1980	23,7	30,3	- 6,6	17,4	16,4	1,0
1981	20,4	33,3	- 12,9	17,3	17,2	0,1
1982	24,9	24,7	0,2	20,9	14,5	6,4
1983	25,2	21,1	4,1	n.a.	n.a.	-
1984	25,3	23,1	2,2	n.a.	n.a.	-
1985	26,4	20,1	6,3	n.a.	n.a.	-

n.a.= Not available

SOURCES: Banco Central de Chile. Cuentas Nacionales de Chile 1960-1983.
Banco Central de Chile. Boletín Mensual Abril 1986.

TABLE 15 CHILE.
COMPOSITION OF EXPORTS AND IMPORTS OF FOODS AND AGRICULTURAL PRODUCTS
(in millions US dollars)

Y E A R	EXPORT			IMPORT					Agricultural and Foods Trade Balance
	Agricultural Products	Foods & Beverages*	Total	CONSUMER GOODS		INTERMEDIATE GOODS		T O T A L	
				Agricultural Origin	Foods of Ind.Origin	Agricultural Origin	Foods of Ind.Origin		
1973	22,0	4,8	26,8	9,0	167,5	304,0	137,6	618,1	- 591,3
1974	47,3	11,3	58,6	10,0	35,8	328,7	213,3	587,8	- 529,2
1975	76,4	62,6	139,0	11,5	13,9	240,5	69,8	335,7	- 196,7
1976	111,0	33,2	144,2	8,9	39,2	246,6	74,2	368,9	- 224,7
1977	149,8	57,6	207,4	13,1	89,4	154,8	121,5	378,8	- 171,4
1978	185,5	52,8	238,3	18,7	113,5	282,6	83,0	497,8	- 259,5
1979	221,3	93,2	314,5	32,7	137,0	277,0	133,3	580,0	- 265,5
1980	281,2	114,7	395,9	40,2	382,7	357,5	243,5	1.023,9	- 682,0
1981	297,1	90,6	387,7	32,9	280,2	327,2	123,7	764,0	- 376,3
1982	311,6	65,6	377,2	22,3	168,3	277,0	99,2	566,8	- 189,6
1983	280,1	55,9	336,0	11,8	119,7	265,3	117,6	514,4	- 178,4
1984	374,6	69,3	443,9	11,9	101,5	218,0	132,0	463,4	- 19,5
1985	462,9	73,9	536,8	9,2	27,5	112,5	100,7	249,9	286,9

* exclude fishes and seafood.

SOURCE: Banco Central de Chile. Boletín Mensual (Several issues).

This dynamic response has mainly come from natural resource based activities like mining, forestry, fishing and agriculture.

In order to achieve these positive results, a widespread reallocation of resources has occurred moving toward those productive activities with higher returns. In this adjustment process certain industries have suffered due to excessive previous protection, the type and quality of invested capital or because of productive inefficiencies.

For the agricultural sector the confrontation was somewhat more difficult. On one side was the challenge imposed by macro decisions associated with the liberalisation of the economy, and on the other was the need to cope with international prices determined, in many cases, in non-perfect markets dominated by export subsidies and trade agreements. Under these conditions, Chilean farm producers were not always able to compete in a completely open market situation, and the authorities decided to establish price bands and a corresponding system of tariffs for a group of selected commodities in order to secure internal production. This practical approach has proven to be quite effective for Chile, and agricultural output has expanded again based both on improved yields and the allocation of resources toward products with comparative advantages.

Nevertheless, in the Chilean case, it has been demonstrated that specific agricultural policies are not sufficiently strong in the face of macro-economic decisions, especially those associated with the value of the exchange rate.

ECONOMIC LIBERALISATION AND IT'S IMPACT ON AGRICULTURE: THE CASE OF NEW ZEALAND

Ralph Lattimore

"There remains one obstacle to sterling joining the EMS (European Monetary System): Mrs Thatcher still thinks there is something rather undignified about the pound's exchange rates being fixed one Sunday afternoon by a lot of haggling finance Ministers. The markets are trying to tell her that they feel comfier with such untidy compromises than with the lemming-like behaviour of 25 year old foreign exchange dealers"

Editorial, Economist, 12 April 1986

SUMMARY

In July 1984, Government embarked on an ambitious programme of economic policy adjustment. This 'liberalisation' regime attacked the import substitution bias, regulations, inflation and the fiscal deficit simultaneously but not in a balanced fashion. The effects of these policy changes will take some years to work out given lagged responses in many sectors, including agriculture. Nevertheless, the short term effects have been significant.

It is argued that the particular timing and sequencing of policy changes means that current performance in the agricultural sector may be a poor guide to future prospects. In particular the policy package appears to have induced a temporary recession in agriculture and some other sectors with concomittant effects on the economic performance of the country as a whole.

INTRODUCTION

The last two years has been the most radical period of economic policy change in New Zealand's history with the possible exception of the period from 1934 to 1938.

The policy changes have altered the commercial operating environment in the private sector to such an extent that major change in industry performance is occurring (and will continue to occur). Asset and financial markets were, predictably the first to adjust. Output, investment and employment changes take much longer to work through, especially in the agricultural sector due to technical and biological lags. These latter changes take even longer to find out about, due to long statistics collection and processing lags.

For these reasons this paper is largely devoted to the short-term impact of the recent 'economic liberalisation' programme on the agricultural sector. These effects are important but are not as important potentially as the medium and longer term effects.

It will be argued that the current performance of the agricultural sector is unlikely to reflect its future performance because of the particular policy adjustment path that Government has chosen. This will take us into the speculative realm but hopefully it will provide some stimulus to the sort of discussion we agricultural economists love so dearly, viz. discussion where views can be dogmatically stated without fear of contradiction by 'the facts'.

The quotation at the beginning of the paper has virtually nothing to do with the content. It is there to remind us that the new economic policy regime that is developing will be politically determined and that is a much wider information set than economics can cope with, the 'economic imperialists' notwithstanding, (Hirshleifer, 1985). Editorial writers of the Economist are somewhat renowned for their ideological purity but they have limits.

The paper begins with a brief overview of how the agricultural sector has developed over the last 30 years within the context of New Zealand's import substitution strategy. This may be helpful in understanding the industry structure and policy balance as it existed in mid-1984. The second section of the paper is devoted to analysing the impact of policy reforms initiated in 1984 after the election. Much of that analysis has been developed by other economists and I am merely trying to draw some of the threads together here.

The final section concerns what might happen to agriculture in the medium term future. What forecasts we present are qualitative in nature. Hopefully it will provide an opportunity for, those who have become 'affectionately' known as the 'Stalinists of the Treasury'* to thrash it out with the 'revisionists' of the

1 This term was used (satirically) by Mr Harry Broad, a prominent business and agricultural columnist. The remaining labels are added as an embellishment with no harm intended.

Department of Trade and Industry, the 'Trotskyites' of the Ministry of Agriculture and Fisheries, the 'reactionaries' of the University of Victoria, the 'dogmatic libertarians' from the University of Canterbury and the enlightened academics from Lincoln College. Joking aside, the New Zealand experiment in liberalisation is already an important one in political economy. From a social, political and an economic viewpoint, future policy changes may turn out to be more important than ones taken to date. The liberalisation programme may (hopefully) move New Zealand away from its traditional import substitution strategy, it may set in place only what has been achieved to date, it may back track on some policy changes or (more likely in my view) it may do a bit of each.

THIRTY YEARS OF POLICY INTERVENTION

Much has been written and continues to be written about the recent economic history of New Zealand. Comprehensive treatments of the issues raised here, drawing together much other work, over the period from 1938 to 1984 can be found in Hawke (1985), Gould (1982), Endres (1986), Lloyd et al (1980), Rayner and Lattimore (1986) and Lattimore (1986).

The New Zealand agricultural sector is relatively large for a high income country comprising around 18 per cent of GDP and employing 20 per cent of the workforce, Tables 1 and 2. Half of these amounts are contributed by farming itself. A high proportion of output from the sector is exported so that agriculture is a major component of the export sector in terms of both primary and manufactured exports, Table 3.

Table 1: Agricultural Sector Output

	1976-77 \$m	% of GDP	1981-82 \$m	% of GDP
Farming	1,364	10	2,305	8
Processing	782	6	1,590	5
Input Supply	302	2	652	2
Wholesale/Retail	155	1	319	1
Transport	107	1	189	1
	-----	--	-----	--
TOTAL	2,710		5,055	
Total Net Output	13,926	20.0	29,150	17.8

Source: Stewart et al (1985)

Table 2: Agricultural Sector Employment

	1976-77 No.	% of Total in Work Force	1981-82 No.	% of Total in Industry
Farming	106,641	8	113,565	9
Processing	73,403	6	76,062	6
Input Supply	29,752	2	35,755	3
Wholesale/Retail	10,949	1	10,878	1
Transport	10,340	1	9,886	1
	-----		-----	
TOTAL	231,085	18%	246,146	20%
Total Persons in NZ Workforce	1,272,333		1,332,342	

Source: Stewart et al (1985)

A second distinguishing feature of the economy until recently has been the high and increasing levels of Government intervention in the private sector.

This is a relative concept again and only partly quantifiable. Nevertheless trade policy intervention, regulations, public ownership, loan guarantees to the private sector, moral suasion, taxes and subsidies have tended to be used extensively to guide or replace private sector activity.

Two important themes are discernible in this intervention over the period 1934-84. The first is a strong bias in trade policy towards import substitution and the second is tight financial and foreign exchange controls.

Import substitution policy went through various phases after the period 1934-38. The last episode began around 1964. At that time the average level of import protection in the form of tariffs (30 per cent) and quantitative restrictions, was of the order of 55 per cent (domestic use weights), (Lattimore, 1986). It continued at that level until 1981 when the introduction of an import license tender system and expanding quotas resulted in a gradual reduction in import protection. Chart 1 gives a ordinal index of the degree of trade liberalisation over time (with higher indices indicating greater liberalisation). The high import protection regime from 1958 is indicated by the import policy line.

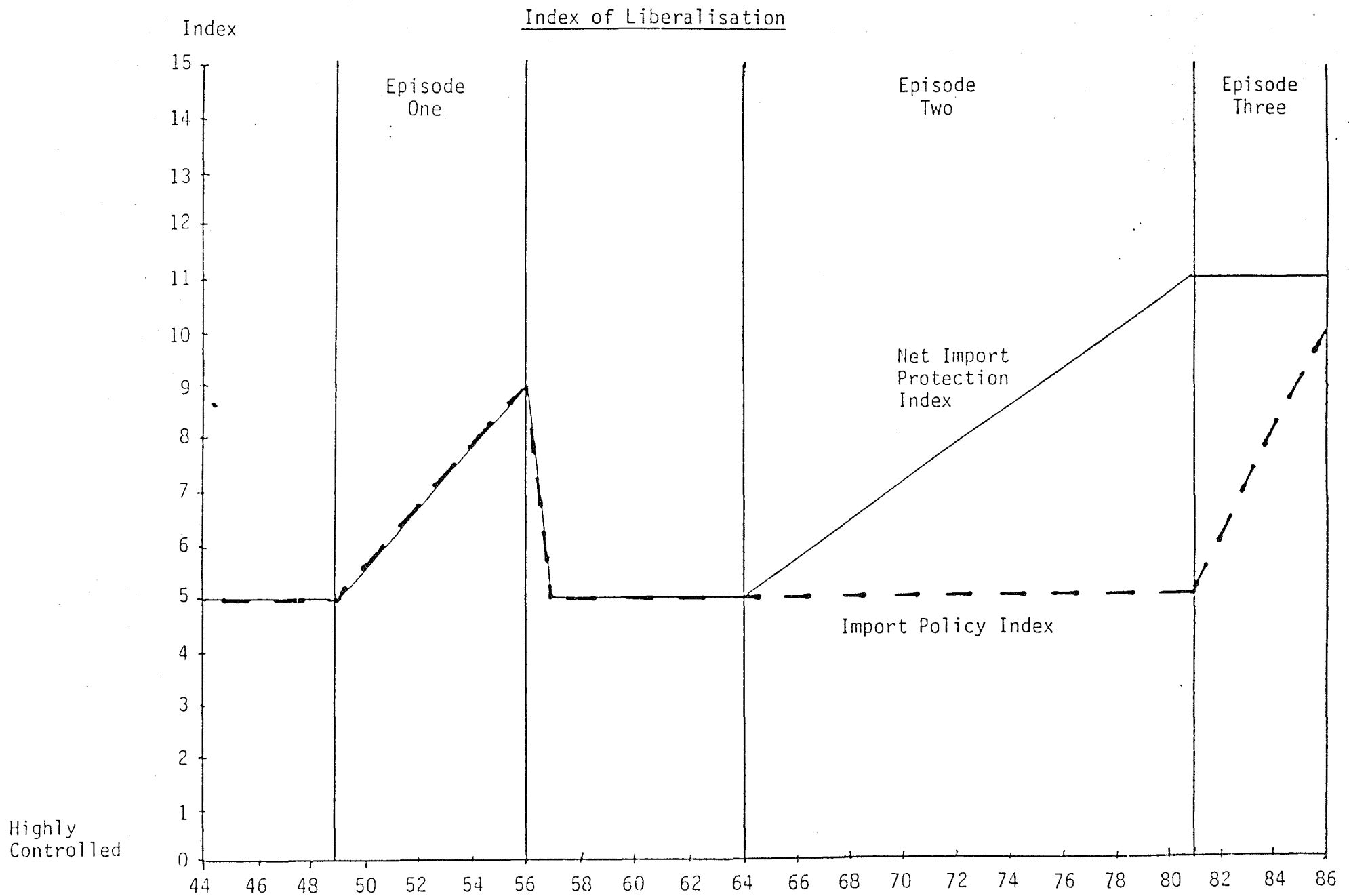
Table 3: Composition of NZ Visible Exports

Exports Based on:	1977 crude mfgd ¹ Total			1978 crude mfgd Total			1982 crude mfgd Total			1983 crude mfgd Total			1985 crude mfgd Total		
a) Livestock	2123	53	2176	2080	96	2176	4112	194	4306	4748	266	5014	5781	864	6645
b) Crops	144	43	187	144	97	241	519	82	601	626	134	760	1120	223	1343
c) Forestry	150	71	221	145	116	260	363	232	595	289	248	537	337	391	728
d) Metals	140	3	143	165	11	176	291	2	293	366	116	483	849	22	871
e) Mainly imported or other materials	-	457	457	-	282	282	-	799	799	-	896	896	-	1201	1201
TOTAL EXPORTS	2557	627	3184	2534	602	3135	5285	1309	6594	6029	1660	7690	8087	2702	10789
Summary															
1. % Total Exports	80	20	100	81	19	100	80	20	100	78	22	100	75	25	100
2. % Based on local materials (a) to (d)		86			91			88			88			89	
3. % Manufacturers based on local materials %		27			53			39			46			55	
imported materials %		73			47			61			54			45	

Source: Derived from External Trade Statistics, NZ Dept of Statistics, Wellington

1. Manufactured or highly processed products

Chart 1



Beginning in 1964 Government began to compensate the export sector for import protection by providing grants, subsidies, export incentives and other tax concessions. The balance of import protection less export subsidies is denoted by the net import protection index in Chart 1. The corresponding rates of nominal import protection and export subsidisation are given in Tables 4 and 5. By 1984, the trade policy balance continued to favour the import competing sector but to a much lesser degree than in earlier years. The 'tariff compensation' package that Government had developed for the export sector was adding to the fiscal burden and compounding neutrality problems in the tax system. Both import protection and the export subsidies were unevenly applied across industries causing further distortion.

Table 4: Export Incentives and Production Subsidies¹

Year	Nominal Rate of Export Subsidy Equivalent %
1938-64	0.1
1964-67	0.5
1972-73	1.7
1978-79	2.3
1983-84	11.1

1 Industry assistance to the exportable sector includes grants and subsidies to primary producers, tax expenditures to the agricultural sector and export incentives to manufacturers.

Source: Rayner and Lattimore (1986)

Table 5: Nominal Rate of Import Protection
Ad Valorem Tariff Equivalent

Year	Import Protection Rate
1938-49	very high (60%)
1955-57	34
1958-81	56
1985	40

Source: Rayner and Lattimore (1986)

Monetary and fiscal policy compounded resource allocation problems caused by trade policy. In the face of a volatile terms of trade, Table 6, New Zealand Government in the 1970's increasingly overvalued the dollar and financed current account deficits with foreign borrowing. For much of the period 1974-84, real interest rates were kept negative, Table 7, by interest rate and foreign exchange controls in the face of high inflation rates.

The growth, employment and inflation record of New Zealand over the import substitution period is not unfavourable by average world standards but poor by high income country standards, Table 7. There is growing evidence that import substitution caused a significant misallocation of resources in the import competing sector

Table 6: Exchange Rate Overvaluation, Terms of Trade and Foreign Debt

Year	Market Exchange Rate Index NZ\$/unit F.E.	External Terms Trade 1957=100	Degree Over-valuation per cent	Official Foreign Debt per cent GDP
1958	1.200	85	+11	9.4
1959	1.207	100	0	12.3
1960	1.213	96	+4	11.1
1961	1.212	90	+11	9.5
1962	1.215	94	+6	10.1
1963	1.221	99	0	10.6
1964	1.220	111	-11	9.9
1965	1.220	108	-7	9.3
1966	1.227	107	-8	8.7
1967	1.230	101	-1	9.8
1968	1.071	89	0	12.1
1969	1.069	88	0	11.7
1970	1.070	87	+1	10.2
1971	1.069	83	+10	10.0
1972	1.044	93	-1	9.5
1973	1.143	113	-11	7.1
1974	1.259	112	-5	5.1
1975	1.181	78	+23	10.8
1976	1.004	72	+19	17.3
1977	0.996	79	+9	18.6
1978	0.996	78	+19	21.4
1979	0.996	86	+11	21.0
1980	0.910	82	+10	20.6
1981	0.853	76	+18	20.1
1982	0.799	77	+18	22.8
1983	0.742	74	+23	28.4
1984	0.742	74	+22	26.7
1985	0.593	73	+4	35.1

Source: Lattimore (1986)

Table 7: General Economic Indicators, 1951-85

March Year	Annual Growth Rate in Real G.N.P.	Annual Inflation (%)	Registered Unemployment % Labour Force	Average Real Wage ¹ Index 1977 Q4 = 1000	Real Interest ² Rate %
1951	+13.9	11.1	0.0	792	-7.0
1952	-3.8	7.8		776	-3.7
1953	+0.6	4.3 6.1		790	0.0
1954	+6.0	4.5		811	0.0
1955	+7.7	2.7		823	2.0
1956	+2.2	3.4		810	1.4
1957	+2.6	2.2 2.4		829	2.9
1958	+1.6	4.3		801	0.9
1959	+0.1	3.8		785	1.4
1960	+6.5	0.7	0.1	820	4.3
1961	+5.7	2.0		817	3.0
1962	+1.2	2.6 2.7		822	2.7
1963	+5.3	1.9		822	3.6
1964	+5.8	3.4		819	3.8
1965	+6.6	3.6		840	2.2
1966	+5.5	3.6		841	2.5
1967	-2.2	6.2 4.9		834	0.1
1968	-0.3	4.3		830	2.3
1969	+0.6	4.8		836	1.9
1970	+3.6	6.6	0.1	887	0.2
1971	+3.9	10.7	0.3	985	-3.8
1972	+9.4	6.6 10.5	0.2	1006	0.8
1973	+11.6	8.9	0.1	1040	-1.3
1974	+4.4	11.4	0.3	1063	-3.5
1975	-4.1	14.8	0.3	1040	-6.6
1976	-2.2	17.2	0.4	1008	-8.6
1977	+5.1	14.5	0.6	1002	-4.9
1978	-1.8	11.1 14.8	1.8	1016	-0.8
1979	-1.6	15.2	2.0	1034	-4.3
1980	+3.7	16.3	2.8	1044	-4.9
1981	+0.6	15.4	3.7	1080	-2.5
1982	+2.8	16.6 12.0	3.9	1041	-2.3
1983	+4.1	5.4	5.6	972	9.8
1984	+0.3	7.0	4.9	937	7.2
1985	-	16.3	-	886	-3.1

¹ The average wage deflated by the C.P.I.

² The average interest rate on registered new mortgages less the rate of increase in the C.P.I.

Source: Monthly Abstract of Statistics, Department of Statistics, Wellington

and exportable sector. The export base remained narrow and the volatility of the terms of trade may have, in part, been caused by import substitution. The relative importance of trade in the economy fell, particularly in the 1950's and 1960's, reflecting the constraint on exports.

The real effective exchange rates for agricultural products varied considerably over the last 30 years in response to changing world export prices, the degree of export subsidisation and the degree of exchange rate overvaluation in relation to domestic costs,

Table 8. The output response to these factors and biological and technical considerations is shown in Table 9. Beef output and exports rose sharply in the late 1960's mainly in response to higher world prices, Chart 2. The output of sheepmeat and wool were stimulated by high real export prices for sheepmeats over the period 1976-82 and increasing export subsidies.

Table 8: Real Effective Exchange Rates¹ - Relative to Non-Tradeables Indices 1970 = 100

Year	Sheep- meat	Wool	Exports			Import Competing Manufacturing
			Beef	Dairy	Other Manufacturing	
1958	84	150	67	103	-	-
1959	69	140	71	129	-	-
1960	73	163	65	144	65	75
1961	67	148	66	106	67	75
1962	61	143	62	107	68	76
1963	69	148	64	121	68	77
1964	72	188	66	130	76	78
1965	90	152	65	135	78	80
1966	80	145	73	122	80	82
1967	75	126	77	110	79	81
1968	85	89	81	102	95	93
1969	92	103	95	103	96	96
1970	100	100	100	100	100	100
1971	100	94	108	105	104	104
1972	88	102	110	167	104	104
1973	123	201	125	129	105	102
1974	144	225	132	109	116	106
1975	124	152	83	114	133	131
1976	111	160	79	117	126	125
1977	106	179	65	102	103	102
1978	98	150	68	105	101	99
1979	100	143	84	97	100	95
1980	100	149	88	87	98	93
1981	111	138	81	94	92	88
1982	128	136	75	118	93	86
1983	129	113	79	118	104	92
1984	121	124	85	115	120	101

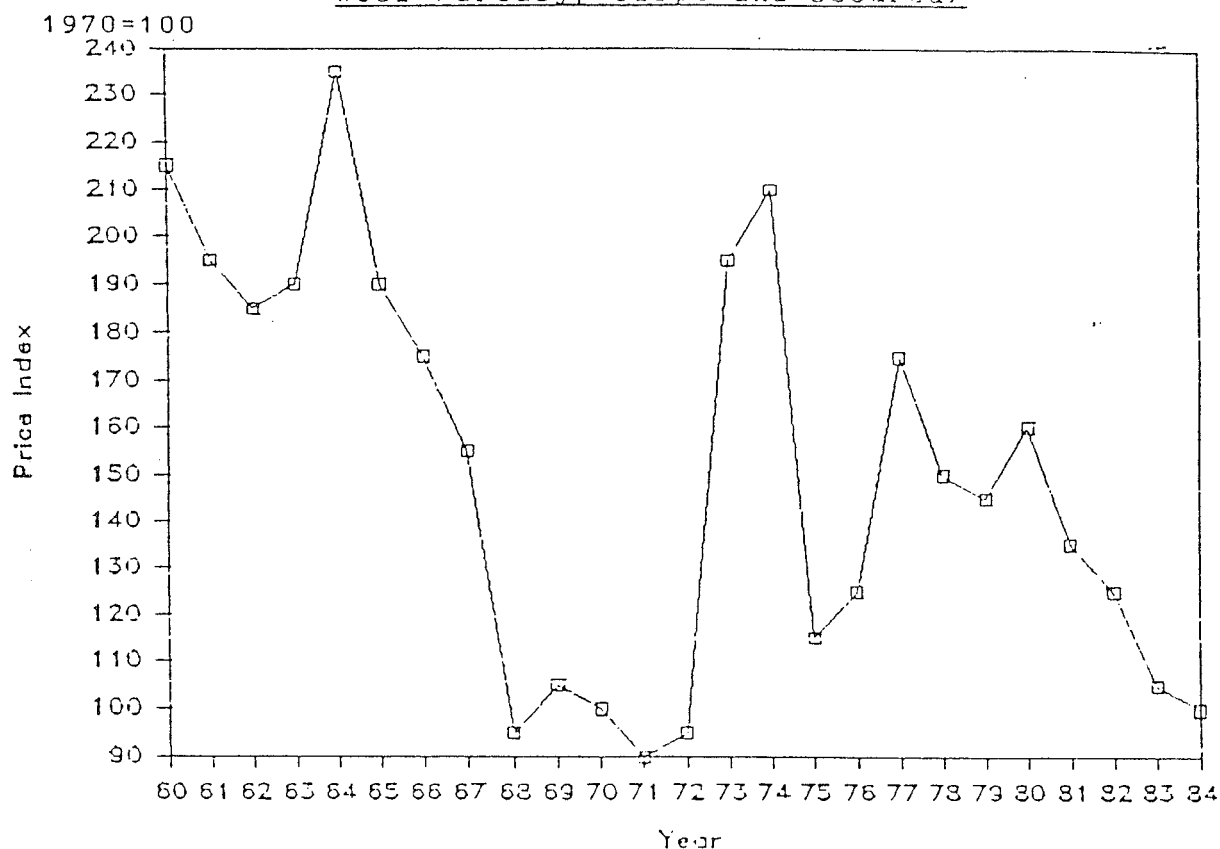
1 The New Zealand dollar price of goods inflated by the nominal rate of assistance and deflated by the price of non-tradeables. The export and import price of other manufactured goods is taken as the average GDP deflator for OECD countries US\$ (which is intermediate between the US wholesale price index and OECD export price index for manufactured export goods (SITC 5-8)).

Table 9: Gross Real Farm Output, by Product

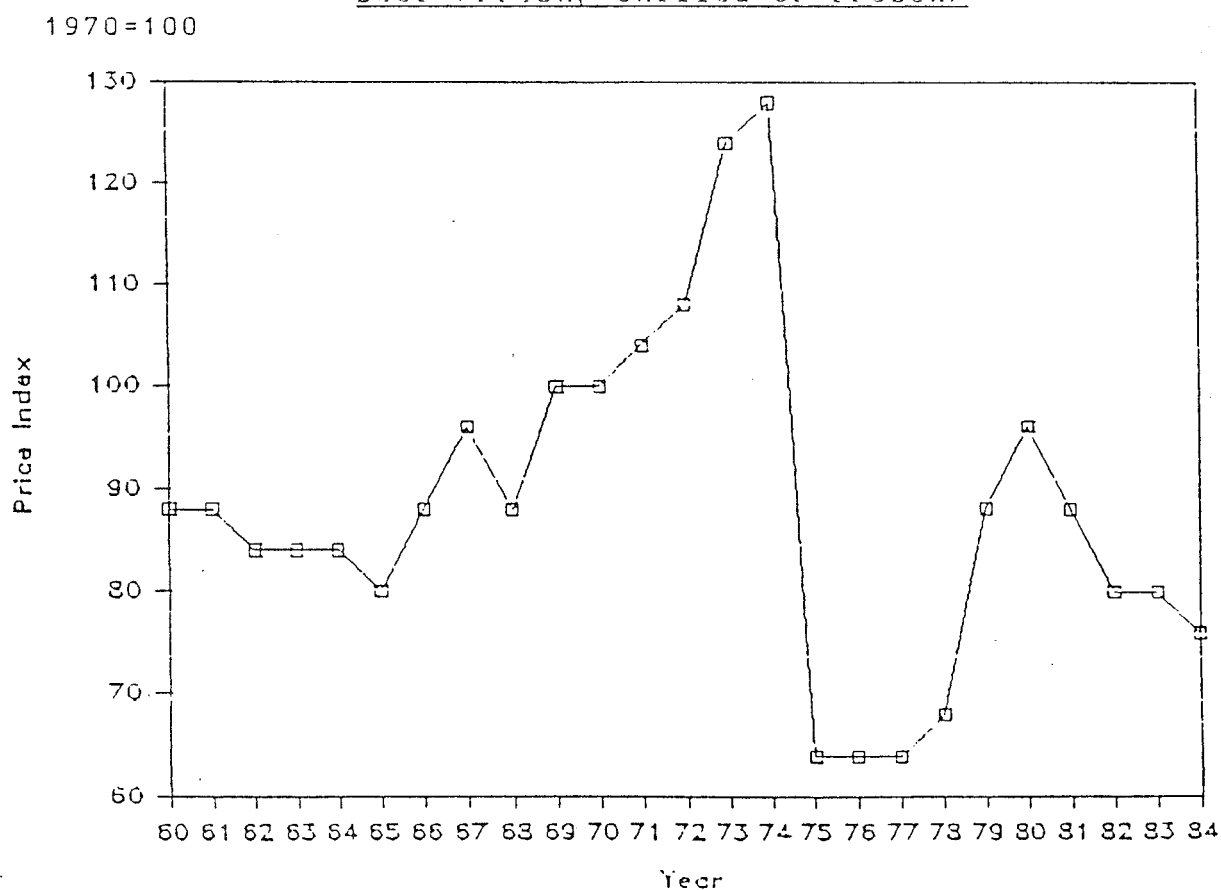
Year (ending June)	Wool		Sheepmeat		Beef	
1950	101		94		51	
1	102		97		54	
2	108	3.0% p.a.	96	2.9% p.a.	57	3.4% p.a.
3	111		95		65	
4	113		105		58	
5	122		106		71	
6	124		111		69	
7	134	6.0	110	5.9	69	7.9
8	136		124		81	
9	147		136		81	
1960	153		138		81	
1	159		146		79	
2	160	3.0	153	3.5	90	2.0
3	171		155		95	
4	169		160		89	
5	171		162		94	
6	193		167		96	
7	193	3.4	180	3.4	108	8.1
8	196		187		125	
9	198		187		125	
1970	195		193		140	
1	198		185		145	
2	191	-2.6	201	-2.1	132	1.1
3	184		183		128	
4	172		167		132	
5	181		167		120	
6	193		182		128	
7	192	2.1	187	2.3	128	-2.1
8	184		190		122	
9	190		186		118	
1980	214		220		120	
1	230		223		117	
2	219	3.4	219	7.3	122	-0.4
3	216		240		116	

Source: Wallace and Philpott (1984)

Chart 2: Real Export Prices, Agricultural Products¹
Wool (Greasy, slipe and scoured)



Beef (Fresh, chilled or frozen)

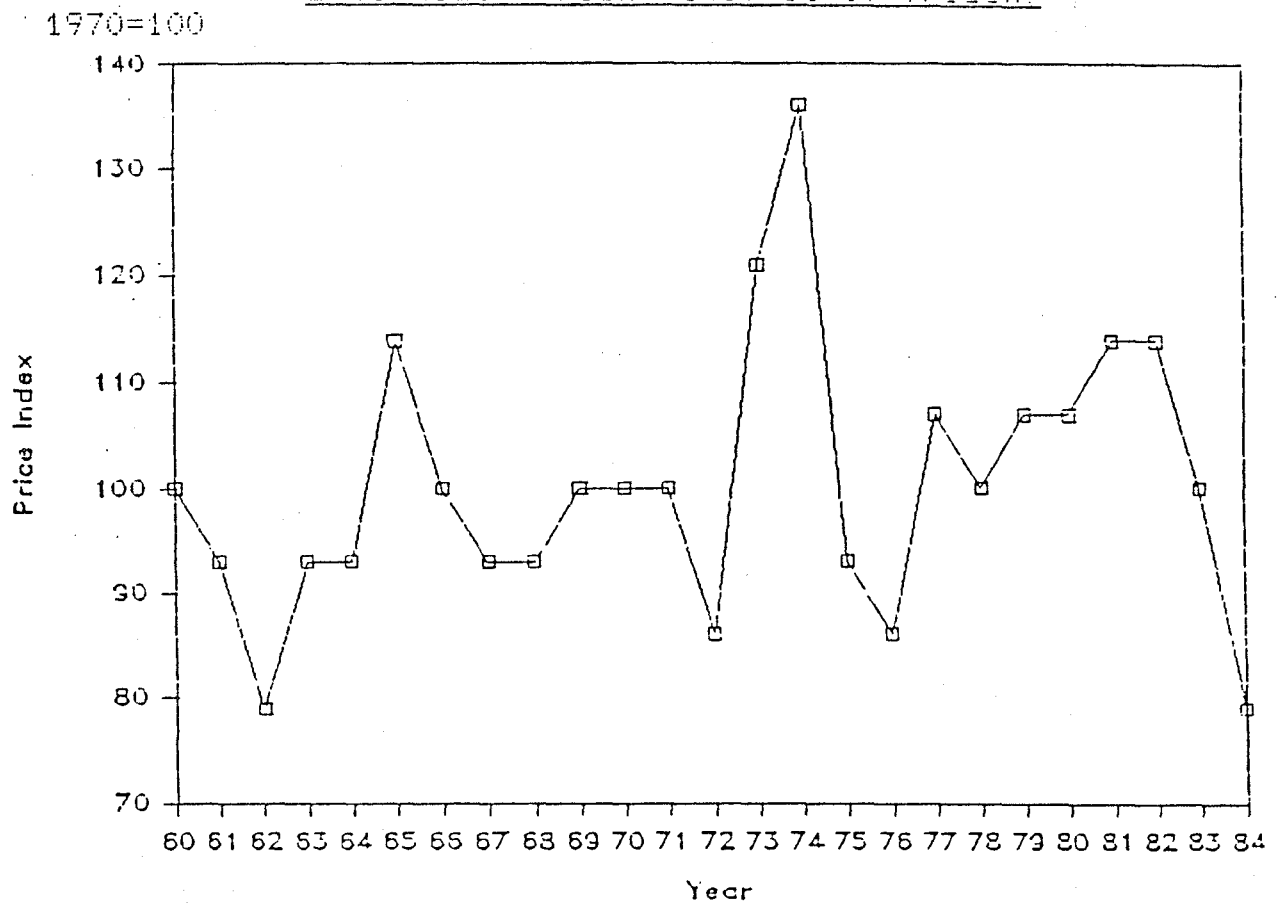


Footnotes

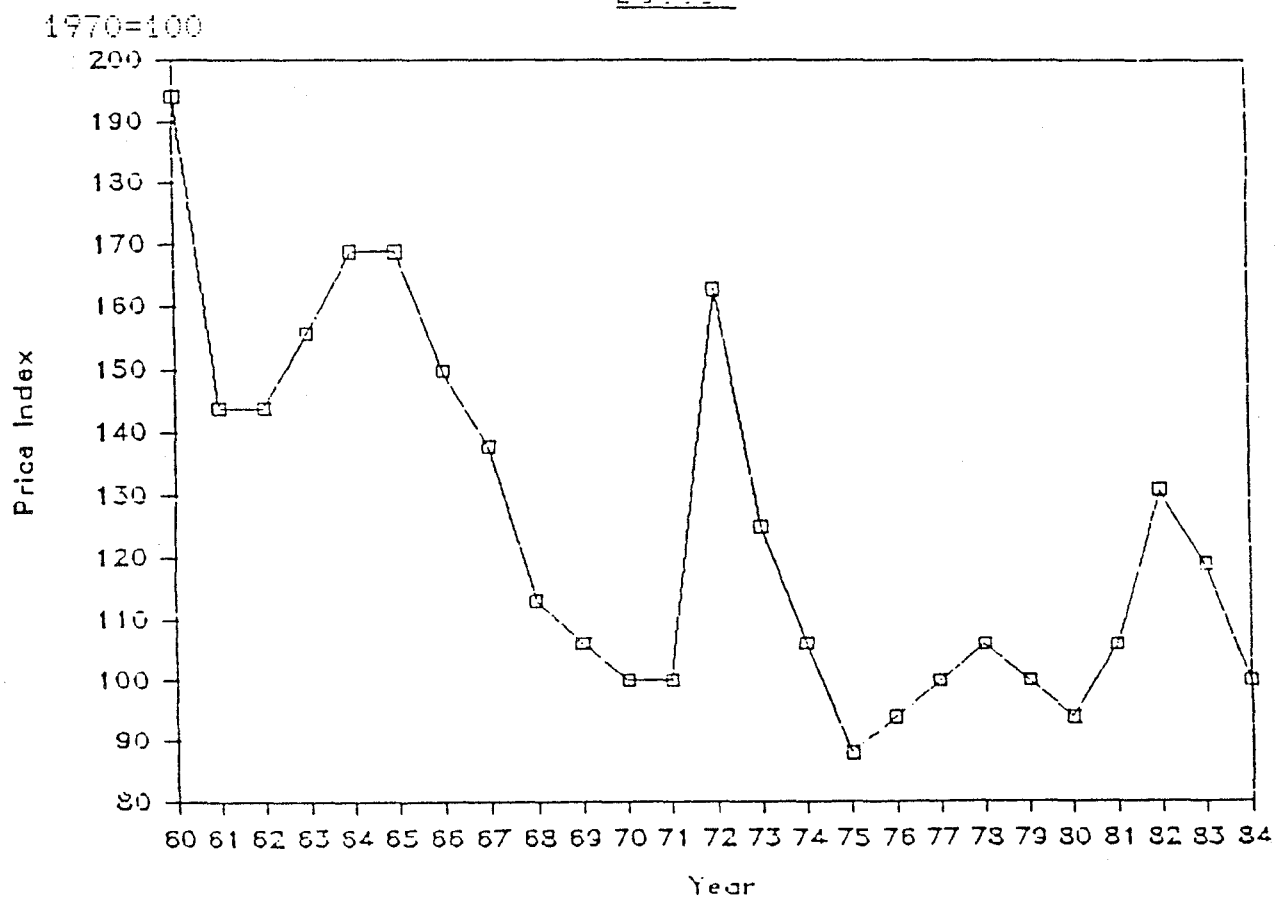
1. The New Zealand export price for each commodity converted to U.S. dollars and deflated by an index of G.D.P. deflators for O.E.C.D. countries (itself expressed in U.S. dollar terms 98

Chart 2 contd:

Sheepmeat (Fresh, chilled or frozen)



Eutler



THE 'LIBERALISATION' PROGRAMME

The new Government came to power in July 1984 with the fixed exchange rate seriously overvalued, depleting foreign exchange reserves and a large budget deficit. A programme of wage, price and interest rate controls was in place.

Structurally, the economy was still poorly conditioned though the degree of gross import protection had been reduced from 55 per cent in 1981 to around 45 per cent in 1984, (Rayner and Lattimore, 1986). The level of export subsidisation was at its peak, averaging 11 per cent in 1984, Table 4. As a result the degree of import subsidisation bias was lower than it had been since the mid-1950's. However, there was a great deal of variation in relative incentives at the industry level on both the importable and exportable side.

Government devalued by 20 per cent and over the next few months removed wage, price, interest rate and other financial controls. It announced the phasing out of production subsidies and grants over a two year period and tax incentives for export manufacturers over a 4 year period. The exchange rate was floated in March 1985.

With continued depression in export prices and a virtually unregulated financial sector, expectations were for an expansion in areas of non-intervention. Asset prices reacted immediately. Share market values rose steeply while rural (and urban) property prices fell in nominal terms, Chart 3. The real exchange rate, RER, (defined in Chart 4 as the price of non-tradeables to tradeables to correspond to banking practise in New Zealand), fell for 3 quarters following devaluation but only by one third of the nominal devaluation. Following the float, the RER rose as a result of an appreciation of the market exchange rate, softening export prices and rising domestic prices and costs. In the current quarter the real exchange is probably 5 per cent higher (appreciated) than prior to devaluation. Farm incomes fell accordingly in 1985/86 to half their average value for the period since 1981, in real terms, Table 10.

The deteriorating asset/income position of the farm sector is summarised in Chart 5 in nominal terms. Other industries in the tradeable sector have been placed in the same income/cost squeeze reflected in the real exchange rate with the result that the current account deficit continued to rise from 7 per cent of GNP in 1984 to nearly 9 per cent in 1985 (Rayner and Lattimore, 1986). The funding of the deficit changed from predominantly Government foreign borrowing in 1984 to predominantly private funding last year.

Import protection continues to be reduced as part of the liberalisation programme both for import licensing and the customs tariff. (In fact there was quite a milestone in New Zealand history on the first of January this year: a few tariffs relating to non-competing imports were abolished, the first tariff reduction in our European history).

Table 10: Income per Sheep and Beef Farm
(\$)

Financial Year	1981-82	1982-83	1983-84	1984-85*	1986-87**
Gross Income:					
Shorn Wool	39,046	39,434	38,448	46,900	40,400
Sheep & Lambs	32,086	34,521	36,154	44,300	22,600
Cattle	14,650	17,811	14,022	18,800	17,700
Other	9,804	13,608	16,154	15,900	17,000
Total Gross Income	95,586	105,374	104,775	125,900	97,700
Expenditure	74,185	81,978	86,284	96,400	83,700
Net Income ¹	21,401	23,396	18,491	29,500	14,000
Net Income in Real Terms (\$) ²	9,341	9,037	6,849	9,784	4,070
Index of Real Incomes ³	636	663	502	718	298
Consumers Price Index ⁴	2,290	2,589	2,700	3,015	3,440

Source: NZ Meat and Wool Board's Economic Service, Wellington

1. Per Farm, not per farmer, income. Net income must meet all drawings, tax, capital repayments and development costs

2. Deflated by the CPI.

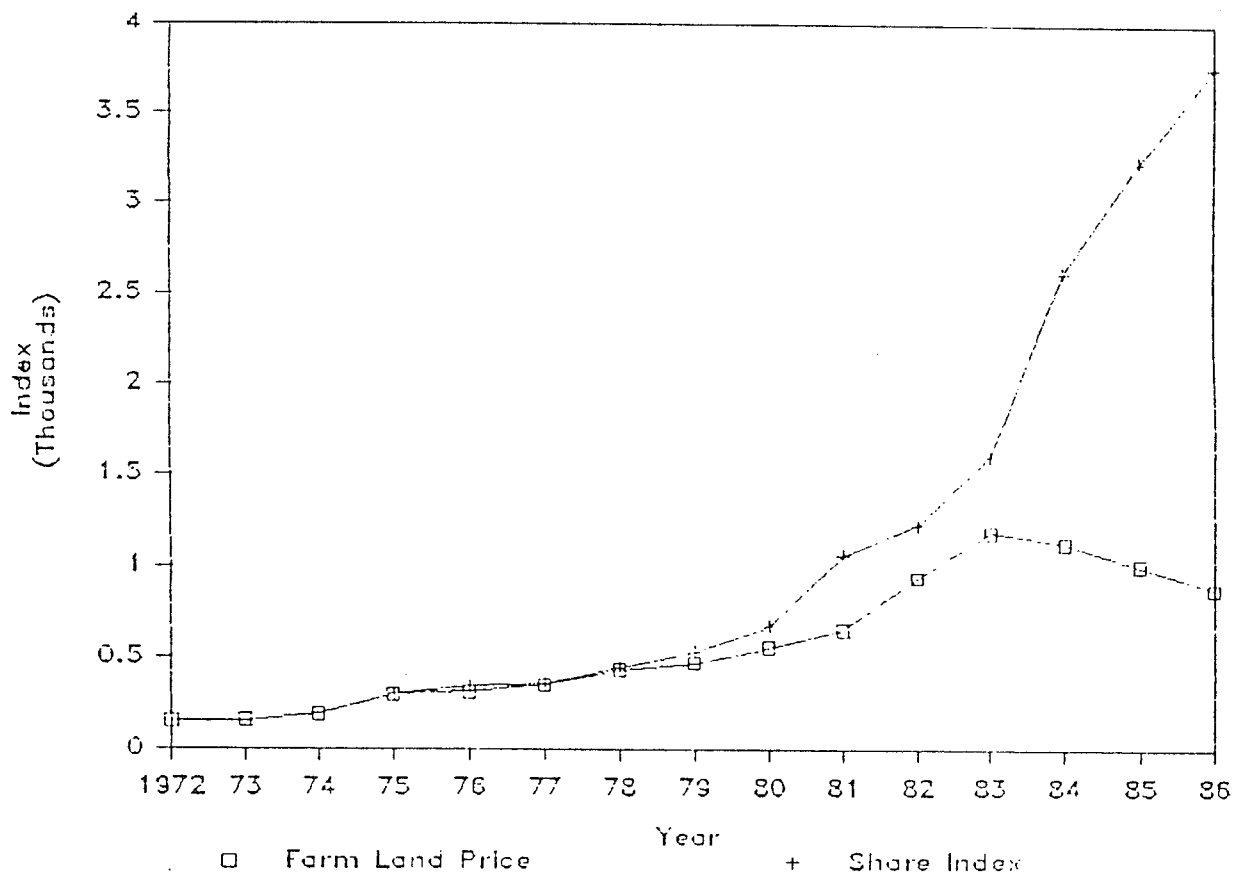
3. Index of net income in real terms June 1975-76 = 1000

4. June 1975-76 = 1000

* Estimate

** Provisional

Chart 3: Farm Land and Share Prices, 1972-86



Source: Farm Land Sale Price, New Zealand Meat and Wool Board's Economic Service, Paper No 1930, Wellington, 18 March 1986. The index has been deflated to equal the share price index in 1975. The share price index was provided by Jarden and Co., Wellington.

Note: 1. The value for 1986 is for the month of March.
 2. Farm Land Sale Price Index 1975 = 300.
 3. Jarden's Share Price Index 1981 = 1000.

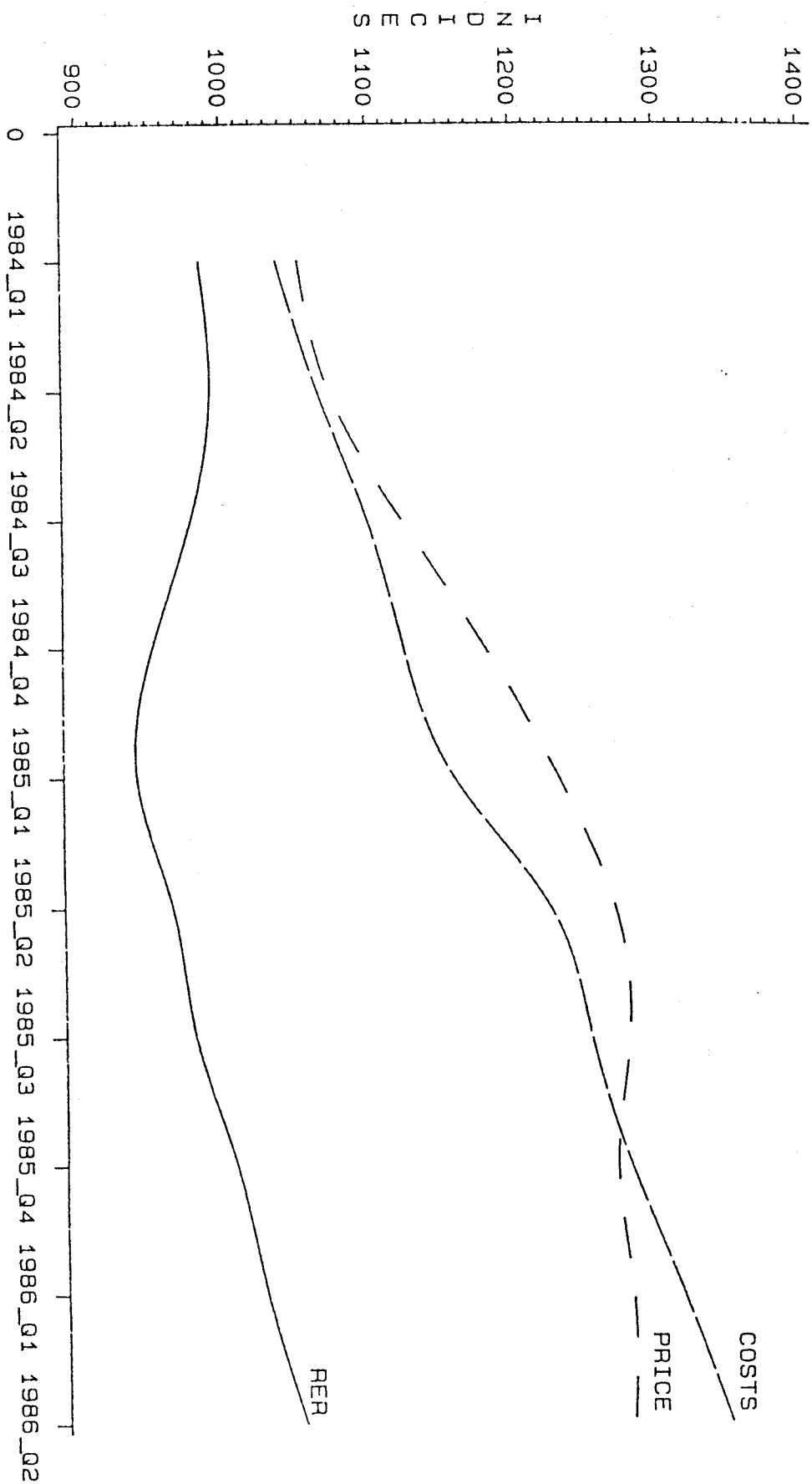
The declining importance of import licensing as a protective measure can be gauged for the premiums given in Table 11 for import tender rounds 1 in 1981 to round 31 in late 1985. The average successful premium in 1981/82 was around 20 per cent for \$57 million worth of imports; it was 8 per cent on \$1331 million month in 1985.

At the product level the results of tendering import licenses are more mixed as the detailed information in the two following tables indicates. Table 12 provides average import license premia for selected products in various rounds while Table 13 gives import penetration ratios for similar selected industries since 1981.

Chart 4:

REAL EXCHANGE RATE

Indices 1982 = 1000



Source: Agricultural Economics Research Unit, Lincoln College.

Footnote

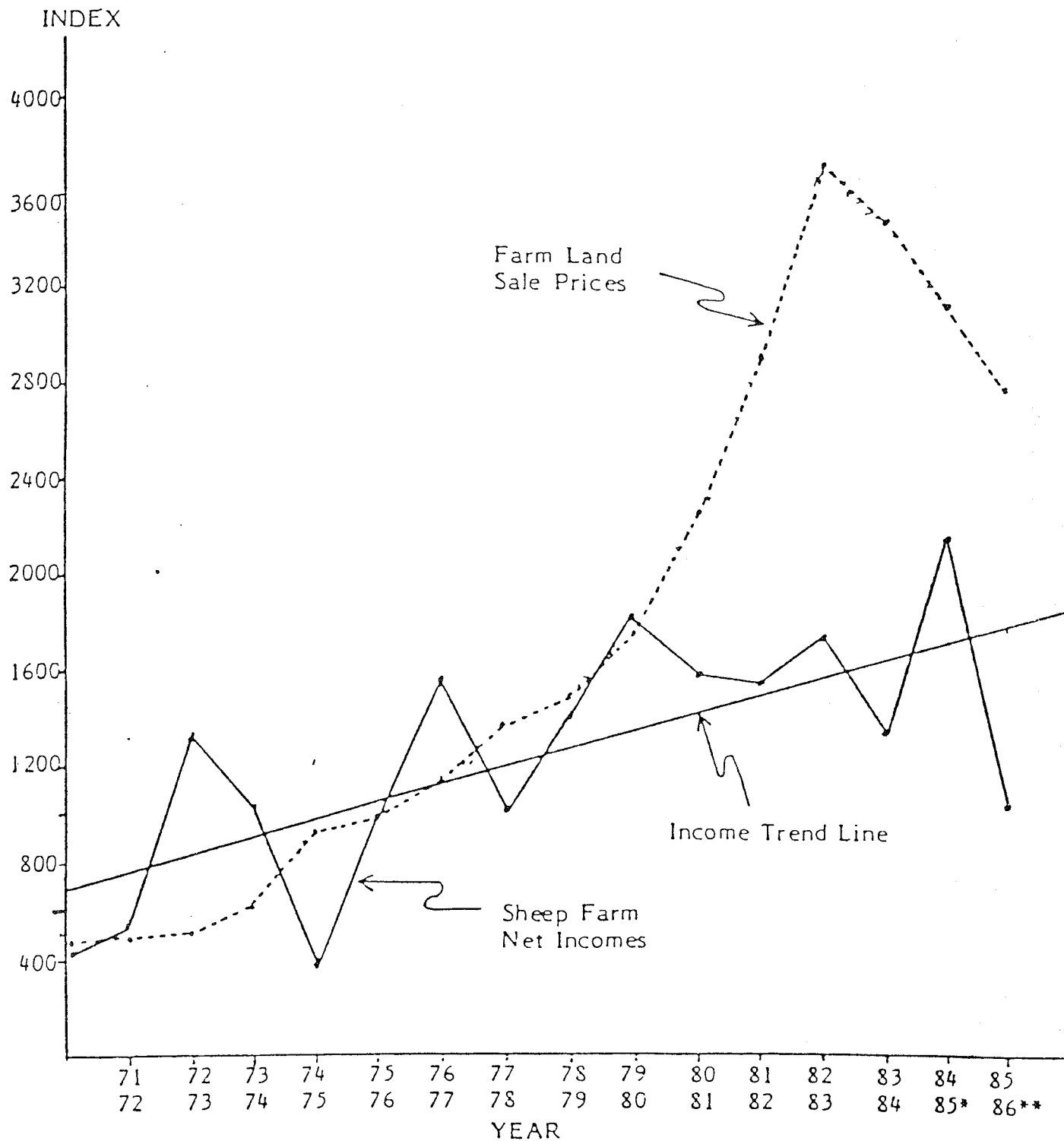
1. The real exchange rate is defined here as the index of domestic prices of non-traded goods and services deflated by the index of export and import prices.

Chart 5:

SHEEP AND BEEF FARM INCOMES AND

FARM SALES PRICES

(Money Terms, 1975-76 = 1000)



• Provisional Net Income

•• Provisional land sales prices, estimated Net Income

Source: N.Z. Meat & Wool Boards' Economic Service, Sheep and Beef Farm Survey. (S1/18)
Valuation Department (Combined Grazing and Fattening Land Sale Index).

Table 11: Import Licensing Premiums (Exclusive of Tariffs)
1981-1985

Round	Date	Licence Allocation \$ millions	Successful Premium \$m	Average Premium Rate (%)	Type Round
1	Mar 1981	10.7	1.75	16	
2	Mar 1981	5.9	1.08	18	
	1981	16.6		17	
3	May 1982	13.2	4.61	35	General Plastic, Glassware
3a	Aug 1982	18.8	3.09	16	
4	Nov 1982	8.4	1.60	19	
	1982	40.4		23	
5a	Jan 1983	14.3	1.36	10	
5b	Mar 1983	0.2	0.01	5	
6	May 1983	138.0	2.20	2	
7	May 1983	18.8	1.20	6	
8	June 1983	24.2	4.86	20	General, Plastic Glass Tyres
9	July 1983	3.5	1.16	33	
10	Aug 1983	1.5	1.25	83	
11	Nov 1983	4.6	1.00	22	Tyres
	1983	205.1		6	
12	Mar 1984	15.5	1.08	7	Plastics
13	May 1984	122.2	1.44	1	
14	May 1984	18.3	7.31	40	
15	May 1984	40.4	2.40	6	Tyres
16	Aug 1984	18.4	1.40	8	Plastics, Glass
17	Oct 1984	19.4	0.40	2	CER
18	Oct 1984	13.4	6.86	51	Tyres
19	Dec 1984	453.7	15.00	3	General, Plastic
	1984	701.3		5	
20	Feb 1985	56.7	14.49	26	General, cars
21	Mar 1985	10.4	0.57	5	
22	Apr 1985	21.7	10.06	46	General, Tyres
23	May 1985	183.4	0.92	1	CER
24	May 1985	24.5	7.63	31	General
25	June 1985	49.0	2.46	5	
26	July 1985	49.2	11.48	23	General, cars
27	Aug 1985	6.2	0.25	4	
28	Oct 1985	47.2	4.35	9	Ceramics, Glass
29	Oct 1985	69.6	0.75	1	
30	Nov 1985	720.3	10.92	2	General
31	Nov 1985	92.8	2.96	3	Plastics
	1985	1331.0		8	

Weighted Average 1981-85

7 percent

Source: Department of Trade and Industry, Wellington.

Your attention is drawn to some main points only. Imports of motor vehicles are a sensitive item and tendering has only been in operation for 15 months. License premia have declined. According to Witt (1985), the industry is responding positively to the implied reduction in protection. Nevertheless more time is required to judge whether the reduction will be permanent or not.

Most products have demonstrated this declining trend in protection from licensing but there are exceptions like car tyres shown in Table 12.

Apparently, the struggle for market share in the tyre distribution industry is behind the significant rise in the average premium in April 1985. This occurred in spite of a doubling of the import penetration ratio between 1982 and 1984, Table 13. Import penetration ratios have tended to increase, Table 13, but there are notable exceptions in the importable grouping including wine and communication equipment. The ratio for clothing also remains very low.

Table 12: Import Licensing Premia, Selected Products

Product	Tender Round	Date	License Premium (%)
Car Tyres	9	July, 1983	40
	11	Nov, 1983	60
	15	May, 1984	71
	18	Oct, 1984	55
	22	Apr, 1985	95
Household plastic utensils	3 A	Aug, 1982	55
	4	Nov, 1982	45
	8	June, 1983	35
	12	Mar, 1984	28
	16	Aug, 1984	27
	19	Dec, 1984	30
	31	Nov, 1985	6
Motor Vehicles	20	Feb, 1985	27
	26	July, 1985	27
	32	Dec, 1985	low
Wool carpet	28	Oct, 1985	low
	32	Dec, 1985	low
Synthetic carpet	28	Oct, 1985	19
	32	Dec, 1985	low

Source: Department of Trade and Industry

Table 13: Import Penetration within Development Plans

NZSIC	Product	Year	Manufacturing Units No.	Employment persons	Turnover \$m	Imports \$m	Import Penetration %	First Tender
32112	Woollen Mills	1977	37	4521	98.981	-	-	1981
		1979	35	3900	140.469	-	-	
		1982	38	2864	164.000	9.0	5.49	
		1984	37	3013	233.000	16.0	6.87	
32130	Knitting Mills	1866	112	6908	119	-	-	
		1979	106	4764	124	-	-	
		1982	121	4654	187	32.0	17.11	
		1984	142	4550	229	51.0	22.27	
		1985	-	-	-	68.0	-	
32219	Clothing	1977	758	21 462	253	-	-	1981
		1979	750	20 520	342	-	-	
		1982	714	18 057	467	9.0	1.93	
		1984	957	18 563	596	16.0	2.68	
		1985				23.0		
32140	Carpets	1977	39	2 936	91	-	-	1985
		1979	29	2 123	92	-	-	
		1982	31	2 309	53	8.0	5.23	
		1984	47	2 464	188	14.0	7.45	
31320	Wine	1977	73	1 256	24	-	-	-
		1979	78	1 215	53	-	-	
		1982	66	1 018	86	15.0	17.44	
		1984	98	1 131	112	17.0	15.18	
		1985	-	-	-	26.0	-	
35130 35600	Plastics	1977	215	9 313	287	-	-	1982
		1979	341	9 621	359	-	-	
		1982	330	9 186	627	20.0	3.19	
		1984	463	10 113	835	34.0	4.07	
35510	Tyres	1977	42	1 920	81	-	-	1983
		1979	51	1 944	108	-	-	
		1982	99	2 842	175	24.0	13.71	
		1984	68	1 823	126	32.0	25.40	
		1985	-	-	-	58.0	-	
38431	Motor Assembly	1977	23	6 563	307	-	-	1985
		1979	26	6 646	384	-	-	
		1982	28	6 841	761	55.0	7.23	
		1984	30	5 783	799	82.0	10.26	
		1985	-	-	-	185.0	-	
38320	TV, Radio & Communications equipment	1977	94	4 898	132	-	-	1984
		1979	107	4 410	131	-	-	
		1982	132	4 616	258	36.0	13.95	
		1984	220	4 647	360	38.0	10.56	
		1985	-	-	-	58.0	-	

The level of import protection for petroleum products has risen sharply in recent months as world oil prices have fallen. Imports of these products are controlled by the oil companies through distribution regulations and special monopoly import rights granted by Government.

The reduction in tariffs has been much more modest. In 1984 the weighted average tariff was 30 per cent (Rayner and Lattimore, 1986). The tariffs on a range of non-competing imports were abolished early in 1986 and on 1 July 1986 and 1987 there will be small across the board tariff reductions made. A tariff review is scheduled for 1988 after the next election.

These protection changes together with reductions in nominal export subsidies are projected through 1986 in Table 14. This picture is not complete because input subsidies are not included either for the importable or exportable sectors and these items are significant. Nevertheless it gives an idea of the current nominal balance of assistance: still favouring import substitution.

THE FUTURE PROSPECTS

The Government has placed its highest priorities on inflation control and dismantling the regulatory structure. Government also believes that the removal of import protection would exacerbate the level of unemployment more than the removal of export subsidies is doing. For these reasons the 'liberalisation' programme has to date tended to stimulate the non-traded sector at the expense of traded goods and within the latter to favour the importable sector.

The adjustment path of the real exchange rate, Chart 4, and the increasing current account deficit suggests that the exchange rate is overshooting. While this continues production and employment incentives in the tradeable sector will be reduced.

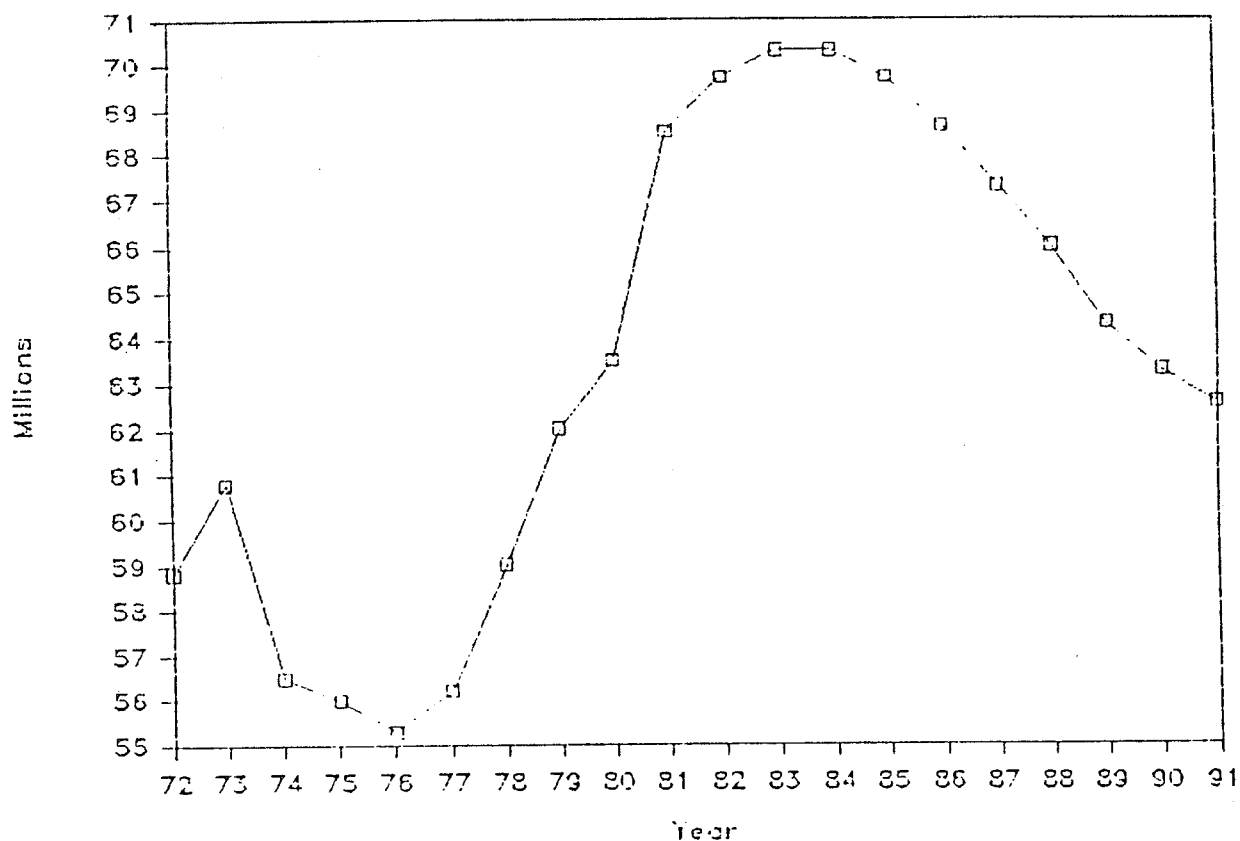
This depressing effect is being compounded in the export sector where the continuing import substitution bias places an additional tax on the sector.

The other major variables are export prices and while there are optimistic signs for medium term recovery overall, the short-term outlook is for continued general depression in world agricultural prices. There are exceptions of course, but any short term improvements in the terms of trade are more likely to come from declining import prices (including oil) than from export prices.

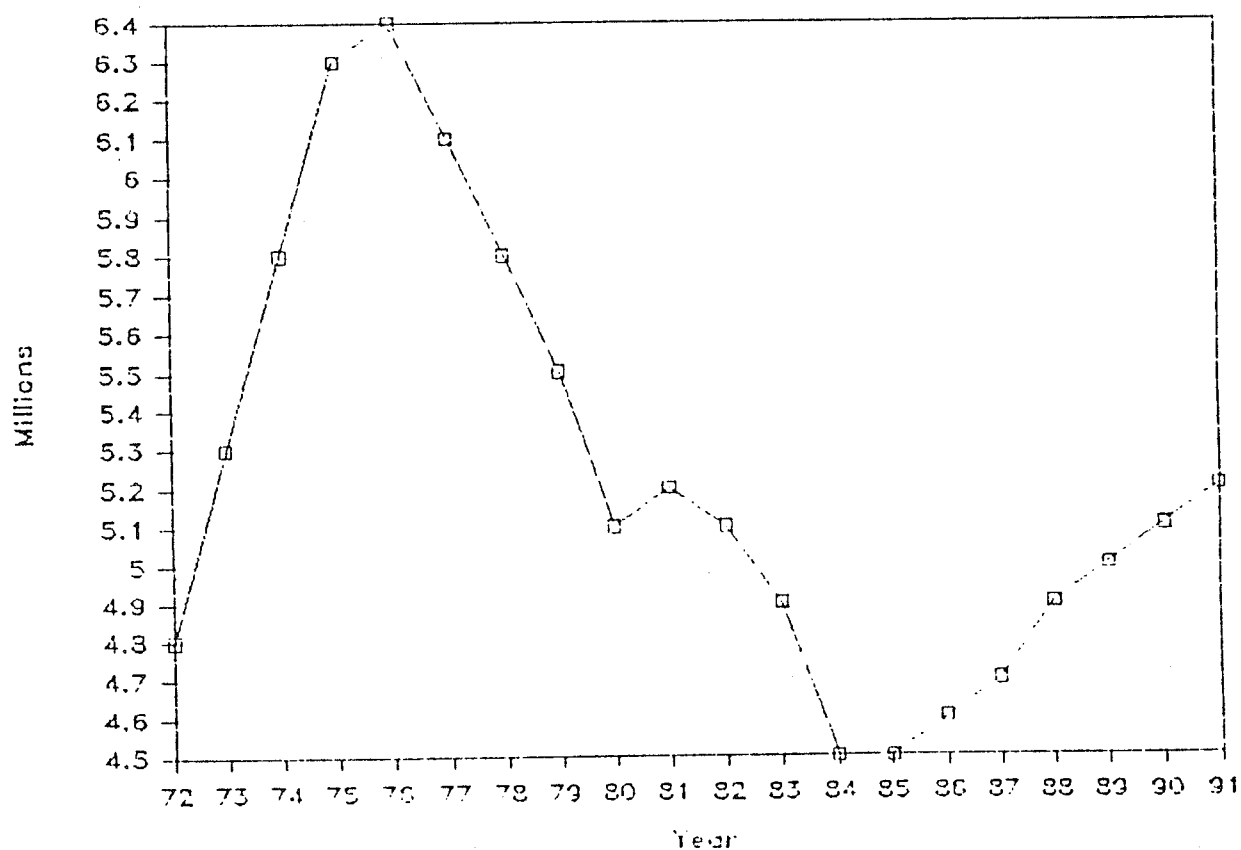
This scenario would seem to imply that the real exchange rate will adjust but it is difficult to forecast the turning point. This is especially true in the New Zealand case because the (presumed) overshooting is being stimulated not only by a change to tight monetary policy but also by the very rapid de-regulation of the financial sector. This might suggest that the correction when it comes would be larger than normal but it may not imply that the adjustment will be longer in coming.

The NZ Meat and Wool Board's Economic Service has projected that at current returns, sheep numbers will continue to decline, Chart 6. In part this will be compensated by an expansion in

Chart 6: Projected Sheep and Beef Cattle Numbers, 1972-91
Sheep



Beef



Source: NZ Meat & Wool Board's Economic Service, Paper G 1934, 14 April 19

Table 14: Nominal Rates of Assistance, Exports, Imports

Year	Nominal Export Subsidies (%)					Nominal Import Protection
	Sheepmeat	Wool	Beef	Dairy	Other ¹ Manufacturing	
1958	0.1	0.00	0.1	0.2	0.0	55
1959	0.1	0.0	0.1	0.2	0.0	55
1960	0.1	0.0	0.1	0.2	0.0	55
1961	0.2	0.0	0.1	0.2	0.0	55
1962	0.2	0.0	0.2	0.2	0.0	55
1963	0.3	0.0	0.2	0.2	0.0	55
1964	0.3	0.0	0.2	0.2	9.0	55
1965	0.4	0.0	0.3	0.2	9.0	55
1966	0.4	0.0	0.3	0.2	9.0	55
1967	0.4	0.0	0.3	0.2	10.0	55
1968	0.4	0.0	0.2	0.2	14.0	55
1969	0.3	0.0	0.2	0.2	12.0	55
1970	0.3	0.0	0.1	0.2	12.0	55
1971	0.3	0.0	0.1	0.2	12.0	55
1972	0.5	0.0	0.1	0.2	11.0	55
1973	0.7	0.0	0.2	0.1	16.0	55
1974	0.9	0.0	0.3	0.1	15.0	55
1975	1.1	0.0	0.4	0.0	14.0	55
1976	1.3	0.0	0.5	0.0	13.9	55
1977	1.6	0.0	0.5	0.7	13.9	55
1978	1.9	0.0	0.6	1.4	13.9	55
1979	2.2	0.0	0.7	2.1	17.4	55
1980	2.2	0.0	0.9	0.4	17.4	55
1981	9.3	13.9	5.2	0.4	17.4	55
1982	24.6	20.4	5.2	0.4	17.4	49
1983	34.0	7.0	1.1	0.4	17.4	43
1984	34.0	7.0	1.1	0.4	17.4	37
1985 P	1.0	0.0	0.5	0.2	8.7 ²	34
1986 F	1.0	0.0	0.5	0.2	4.4	30

Source: Rayner and Lattimore (1986)

Footnotes

1. From Tweedie and Spencer [1981] for years 1959-75.
2. Projected on the basis of the phase out announcement by the Associate Minister of Finance, September 21, 1984.

Note: The agricultural subsidy rates are taken from Lattimore [1976] and interpolated for intervening years.

cropping and other livestock activities. However, the disinvestment in sheep is likely to be mirrored in the sector investment pattern given the size of the sheep industry with the result that primary and manufactured agricultural output and exports will decline for at least 2-3 years.

Within that 2-3 year time frame, however the exchange rate adjustment will have occurred and another election will have been held. This will be significant in solidifying the adjustment away from import substitution or on some other path. It would by my opinion that in any event the market and policy pressure will have raised incentive levels in agriculture at least back to trend levels and hopefully beyond.

The composition of the agricultural sector is, however, dependant on what course of action is pursued by Government. The continuance of current policy changes at existing export prices will probably lead to continuing diversification within resource and market constraints. Policy revisions will tend to slow this process down.

The adjustment path that has been followed has had major effects on the distribution of wealth. In particular, in this context the equity position of rural landowners has been significantly eroded. This has prompted many commentators to project massive numbers (around 20 per cent) of farm bankruptcies over the next year or two. This is most unlikely to occur. First the extreme squeeze on farm incomes is temporary and their down side risk is probably very low at present. Second, farm debts represents a high proportion of total economy wide debt spread over a large number of borrowers. Accordingly there will be strong pressure in the mortgage market to spread the intertemporal debt burden. Future inflation, asset price and exchange rate corrections and export prices will most likely overcome the problem with no change in policy.

REFERENCES

- Endres, A.M. (1986), "The Political Economy of W.B. Sutch: Towards a Critical Appreciation", Economics Working Paper No. 20, University of Auckland.
- Gould, John (1982), The Rake's Progress, Hodder and Stoughton,
- Hawke, G. (1985), The Making of New Zealand, Cambridge University Press, Cambridge.
- Hirshleifer, Jack (1985), "The Expanding Domain of Economics", Amer. Econ. Rev. Vol. 75 (6), pp. 53-68
- Lattimore, Ralph (1986), "A Developed Country Case Study of Policies and Problems" Economic Adjustment: Policies and Problems, ed. Sir Frank Holmes, Reserve Bank of N.Z., Wellington, forthcoming.
- Lloyd, P.J. et al (1980), "New Zealand's Long Term Foreign Trade Problems and Structural Adjustment Policies", Planning Paper No. 6, N.Z. Planning Council, Wellington.
- Rayner, Tony C. and Ralph Lattimore (1986), The Timing and Sequencing of a Trade Liberalisation Policy: The Case of New Zealand, World Bank, Washington D.C. forthcoming
- Stewart, Sir James et al (1985) "Economic Management and Land Use Issues", Federated Farmers of New Zealand.
- Witt, Daniel A. (1985), "The NZ Motor Car Industry After the Plan," Working Paper 85/47, N.Z.I.E.R., Wellington

INTEREST RATES, EXCHANGE RATES, AND GOVERNMENT POLICY

Bryce Wilkinson and Peter Keenan
Jarden & Co, Wellington

"Few would argue that bond markets need intervention just because real interest rates are unusually high. It is well understood, at least by those who understand, that this is a reflection of the policies that influence demand and supply conditions in the bond market. The same is true of the exchange market and the answer is more sensible policy mixes (monetary, fiscal and incomes policy), not schemes to tax interest rates or exchange rates."

(Dornbursch, "The Overvalued Dollar",
Lloyds Bank Review, April 1984)

INTRODUCTION

There appears to be considerable concern, at least amongst some New Zealand borrowers and exporters, about the domestic interest rate and real exchange rate levels which have been experienced during the last year.

Much of the local comment appears to have been based on the perception that causation is running overwhelmingly from domestic monetary and fiscal policies to interest rates and then through to the nominal, and hence real, exchange rate. In other words, the perception appears to be that the high exchange rate is due to high domestic interest rates which are in turn due to current government policies. Through this set of spectacles interest rates (and hence the exchange rate) will stay up until the fiscal deficit is reduced. Lower deficits reduce the size and frequency of government bond tenders and the pressure they are judged to put on domestic interest rates.

The purpose of this paper is to review New Zealand's interest rate levels from an internationally oriented investment perspective. This involves considering the factors which influence all investors' perceptions about New Zealand country risk. It could well be that current interest rate levels in New Zealand owe much more to past rather than current policies and the perceived probability in investors minds that sooner or later there could be a reversion to past inflationary policies.

From an international bond market perspective, causation does not run from interest rates to the exchange rate. Both are endogenous and a drop or rise in interest rates may be associated with a rise or fall in the spot exchange rate depending on what is causing world perceptions of New Zealand to change. For example, an event which appears likely to increase New Zealand's future inflation rate relative to world inflation could well, other things being equal, both depreciate the currency and put up local interest rates. Alternatively, an anticipated sudden demand for funds (e.g. an unanticipated domestic inventory build-up) could increase both domestic interest rates and the exchange rate in the short-term.

From this perspective, a slower adjustment path for New Zealand (e.g. a looser monetary policy) could raise, rather than lower, longer term interest rates by increasing doubts in investors' minds about the government's true policy intentions and staying power.

The following sections of this paper aim to throw some light, from an international bond market perspective, on why New Zealand has the interest rates and the real exchange rate that it has. This perspective suggests that getting the fiscal deficit down is important not so much because it reduces the size of the bond tender programme (which is miniscule in terms of world capital markets) but because it affects investor perceptions about the government's economic performance and their perceptions about the margins that need to be built into New Zealand interest rates to compensate for exchange rate risk.

HOW HIGH ARE DOMESTIC INTEREST RATES?

In Table 1 we compare the returns available internationally on five-year government bonds. It is clear that yields in New Zealand appear to have a significant premium built into them, presumably for expected inflation and other factors. Of course it is impossible to accurately split these nominal yields into the component which reflects the required real rate of return and that which reflects the expected rate of inflation. Inflation expectations are not directly observable but indicative rates of inflation may be assessed on the basis of past trends and a knowledge of forecast inflation rates by organisations which specialise in such tasks. The table presents the results of a rough attempt to assess required real returns from fixed interest five year government bonds on the basis of indicative rates of inflation.

For New Zealand, the indicative 5 year inflation rate is based on 15 per cent inflation for 1986/87 and an average of 8 per cent per annum for the following four years.

In the table, the implied real rates of return (column (4)) are measured as the nominal bond yield less the indicative inflation rate (column (3)). New Zealand stands out for the size of its interest rate differential relative to those of the other countries (columns (2) and (5)). The sharp drop in yields in New Zealand during the June quarter 1986 has reduced the degree to which it stands out in such comparisons, at least with respect to the nominal yield gap.

Table 1
Returns on Five Year Government Bonds
Secondary Market Yields

	(1) Current Nominal Yields 24/06/86 %pa	(2) Nominal Yield Gap* %pa	(3) Indicative Inflation Rate Next 5 Years %pa	(4) Implied Required Real Return %pa	(5) Apparent Real Returns Differential* %pa
NEW ZEALAND	15.40	10.38	9	6.40	3.38
Australia	12.95	7.93	8	4.95	1.93
Japan	5.02	0	2	3.02	0
United Kingdom	9.18	4.16	5	4.18	1.16
United States	7.30	2.28	3	4.30	1.28

* Compared with Japan

Real (pre-tax) interest differentials for each country, relative to Japan, appear to be smaller than nominal yield differentials (compare columns (2) and (5) in the table), which supports the view that the dominant source of interest rate differentials across a broad sample of countries is usually differences in inflation rates.

INTEGRATED WORLD CAPITAL MARKETS

The basic premise driving our discussion of interest rate differentials is that funds will tend to flow across markets until individual investors feel that real, after-tax, risk-adjusted interest rates have been equalised. Few investors are likely to invest in any one market if they can get a higher after-tax real return somewhere else with no additional risk. Of course, in the short-term, a number of factors of which information costs are an important element, give rise to adjustment costs and volatility in this process. An international bond market perspective would suggest that, to the extent that investors believe that a leopard does not easily change its spots, it is New Zealand's past economic performance, in terms of inflation and a 'soft' currency which is likely to explain recent domestic interest rate levels.

Evidence of the increasing internationalisation of New Zealand's bond markets is shown by:

- the issue overseas of New Zealand dollar denominated bonds (Eurokiwi and Yankee Kiwi bonds);
- the considerable foreign interest in New Zealand dollar denominated government stock and equities;
- the now routine commentary on New Zealand in foreign broker reports, including recommendations on participation in the stock tenders (these include Merrill Lynch, Salomon Brothers Inc, and a range of Australian brokers and financial institutions).

SOURCES OF NOMINAL CROSS-COUNTRY INTEREST RATE DIFFERENTIALS

In general, investors hold financial assets giving a nominal, not a real, yield. We therefore need to consider the factors which explain the persistent differences across countries in nominal bond yields.

The following factors would be relevant in assessing the causes of differences across countries in apparent required nominal rates of return on fixed interest government bonds:

- default risk (zero for the countries considered here)
- tax wedges (note that Australia and New Zealand have similar withholding taxes)
- interest rate risk (the possibility of capital losses during the life of the investment resulting from changes in the yield curve which are not offset by compensating exchange rate gains)
- the size of any trend movement expected in the exchange rate (see below)
- nervousness about how far the actual exchange rate movement over the life of the investment will depart from the expected movement.

Investors may expect a trend movement in the nominal exchange rate for any of the following reasons:

- inflation differentials across countries (investors would normally expect exchange rates to move so as to broadly offset the effect of inflation differentials)
- the perceived need for a real exchange rate change for balance of payments reasons (a real change here means an exchange rate movement which does not match inflation differentials). This factor includes so-called "overshooting" considerations.

Undoubtedly the Government's funding requirements put pressure on local credit markets, and thus on interest rates and exchange rates. However, the general level of interest rates must be determined, in the current environment of a domestic capital market which is becoming increasingly internationalised, by expected inflation, together with the risk premium associated with interest rate and exchange rate risk. The point is that, although the budget deficit is large, the borrowing programme by the New Zealand Government is miniscule in terms of world capital markets. It is not the size of the fiscal deficit so much as the perceived difficult economic problems facing New Zealand (of which the deficit is an important indicator) which is likely to be making investors nervous about New Zealand dollar-denominated fixed interest investments. The deficit is not the only source of uncertainty in the current environment. The degree to which a smaller deficit would produce lower interest rates would depend on the manner in which deficit reductions were achieved, and the influence they had on perceptions about the risk factors listed above.

The following sections go on to consider these risk factors and to give some indication of their magnitude in New Zealand relative to those of other countries. At issue here is whether the apparent premium built into yields on NZ government securities, relative to those of other countries, reflects a fair margin for risk.

INTEREST RATE RISK

Different investments have different risk/rate-of-return characteristics. Investors will be cautious about investing in government bonds with relatively volatile yields. This is because the perceived risk of capital loss from an unanticipated rise in yields on such bonds would be high. A premium would have to be built into relative interest yields on such bonds to compensate investors for the greater relative riskiness.

A market-weighted gross returns index provides a useful summary measure of yield variability. Such an index avoids putting an undue emphasis on any particular maturities and is not disturbed by price fluctuations as bonds go ex-interest. The following assessments of yield volatility and risk exposure utilise such indexes on central government bonds.

Relative Variability in Yields

Table 2 analyses the volatility of weekly percentage movements in Australia and New Zealand gross returns indexes on central government bonds.

Table 2
Standard Deviations of Weekly & Changes

<u>Late June 1985 to End May 1986</u>	<u>Australian Accumulation Index</u>		<u>New Zealand Gross Returns Index</u>	
	<u>\$A</u>	<u>\$NZ</u>	<u>\$NZ</u>	<u>\$A</u>
Standard Deviation(%)	0.88	3.78	1.33	2.99
Highest Weekly Rise(%)	2.20	16.94	4.51	7.88
Largest Weekly Fall(%)	-2.14	-8.31	-3.64	-6.90

It is clear from the table that bond prices (and therefore yields) have been appreciably more variable in domestic currency units, in New Zealand than Australia since June 1985. The standard deviation of weekly percentage changes, at 1.33 for New Zealand is 50% higher than the 0.88 for Australia. The following graph also illustrates the point. The importance of \$A/NZ exchange rate fluctuations is indicated by the much higher standard deviations for weekly changes in each index when put into the currency of the other country.

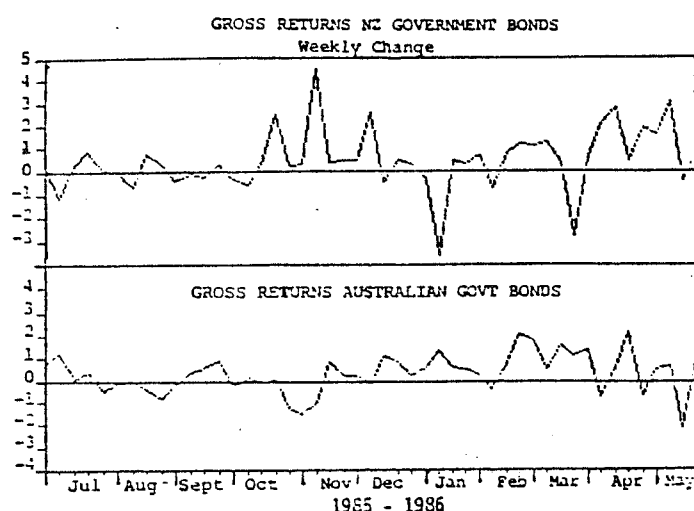


Table 3 summarises the experienced day-to-day variability, due to yield fluctuations during the last twenty trading days, in market values of government bonds, for a range of maturities, in Australia, the United Kingdom, the USA and New Zealand. The 'Risk Exposure' statistic, shown in this table is the product of 'Rate Volatility', a measure of recent yield variability, and 'Price Volatility', a measure of the sensitivity of the price of a bond to a unit change in its yield.

The data indicates that the experienced daily volatility in New Zealand is much greater than that in Australia. The differences are less marked the longer the term to redemption. In turn, Australian bond volatility has been appreciably higher than bond yield volatility in the United Kingdom and the United States.

Table 3
Comparative Giltnet Government Bond
'Risk Exposure' Statistics 24 June 1986

	<u>1 Year</u>	<u>3 Years</u>	<u>5 Years</u>	<u>8 Years</u>
Australia ⁽¹⁾	0.58	1.73	2.55	3.50
United Kingdom ⁽²⁾	0.44	1.28	2.08	2.71
United States ⁽³⁾	0.39	1.19	1.84	2.69
<u>New Zealand⁽⁴⁾</u>	<u>0.91</u>	<u>2.28</u>	<u>3.10</u>	<u>4.01</u>
NZ/Australia	<u>1.57</u>	<u>1.32</u>	<u>1.22</u>	<u>1.15</u>

Note: (Coupons), Bond Maturities, respectively for 1 year, 3 years, 5 years and 8 year terms are as follows:

- (1) Australia - (10.40) 15/5/87, (12.50) 15/6/89, (13.00) 15/5/91
(13.50) 15/5/94
- (2) United Kingdom - (6.5) 15/5/87, (10.50) 15/6/89, (11.00)
15/10/91, ((13.50) 15/4/94
- (3) United States - (9.125) 31/5/87, (11.75) 15/5/89, (14.50)
15/5/91 (13.125) 15/5/94
- (4) New Zealand - (11.00) 15/5/87, (10.00) 15/5/89, (16.00)
15/6/91 (16.00) 15/7/94

Source: Jarden & Co and Australian Gilt Services

The data strongly suggests that there has been significantly greater interest rate risk for investors in the New Zealand market. In the light of the major changes taking place in New Zealand, and the associated uncertainties, we must continue to expect a relatively high degree of domestic interest rate volatility.

Exchange Rate Risk

For investors, there are two distinct features of exchange rate risk which they must allow for. One is short-term volatility; the other is expected trend movements in the exchange rate, where relative inflation rates and trends in the balance of payments will be important considerations.

There are two dimensions to the risk investors face in respect of short-term exchange rate volatility. One is the normal volatility of asset prices, of which exchange rate volatility is one example. The other element concerns the size of any exchange rate 'position' that could be transacted without moving the market significantly i.e. it concerns the 'depth' of the market.

In respect of market depth, turnover on the foreign exchange market has been steadily increasing over the past two years. At present, one-way \$US/NZ transactions of NZ\$50 million could be readily accommodated on a normal trading day, by a sequence of individual transactions, each of \$5 million or less. On days of relatively thin trading volumes, a NZ\$25 million transaction could move the market. Buy-sell spreads for the \$US/NZ rate have remained around 15 points since the middle of last year.

Volatility in the NZ Dollar

This section summarises various cross-country comparisons of the volatility in the value of the New Zealand dollar since the float on March 4, 1985, to February 1986.

A. Extreme Values During 1985/86: Table 4 summarises the variation, between the highest and lowest values taken by a number of currencies, against the US dollar during the year ended March 1986. The remarkable thing about these figures is the extent of the movements they reveal between most major currencies and the US dollar. The smallest variation was the 30.1 percent range for the Australian dollar. The largest was the 62.8 percent range for the Deutschmark. New Zealand's 38.9 percent range is unexceptional.

B. Within-Day and Within-Week Exchange Rate Volatility: Within-day volatility of the New Zealand dollar, in terms of US dollars, has been appreciably greater than that of the Australian dollar and the major currencies. The average within-day movement for the New Zealand dollar was 1 per cent. The next highest was 0.68 percent for the Australian dollar.

Within-week volatility was 3 to 6 times greater than within-day volatility for all the currencies considered. The New Zealand dollar was still, on average, more volatile than the other currencies but to a much lesser degree.

C. Daily, Weekly and Monthly Volatilities: Table 4 indicates that the New Zealand dollar has exhibited greater volatility on a day-to-day and month-to-month basis than the other currencies. Of course the number of end-of-month observations since March 1985 is very limited so this particular volatility calculation may be a very poor indicator of future month-to-month volatility. On a week-to-week basis, the volatility of the New Zealand dollar has been, as measured, less marked than for several of the other currencies.

Although foreign exchange market for New Zealand dollars continues to deepen rapidly, it will always be small in world terms. The volatility in the New Zealand dollar is understandable given the volatility in other currencies, the circumstances surrounding the floating of the currency, and the major structural changes taking place in New Zealand.

Table 4
1985/86¹ Exchange Rate
Extremes Against the US Dollar

	<u>High</u>	<u>Low</u>	<u>Variation</u> (%)
NZD	.5985 (15.10.85)	.4310 (05.03.85)	38.9
YEN	178.55 (27.02.86)	263.05 (25.02.85)	47.3
STG	1.4900 (29.11.85)	1.0520 (26.02.85)	41.6
AUD	.8230 (11.01.85)	.6305 (22.04.85)	30.1
DMK	2.2120 (28.02.86)	3.4510 (25.02.85)	62.8
SFR	1.8770 (27.02.86)	2.9230 (05.03.85)	55.7

Notes:

1. Year Ended March

2. NZD: Indicative market
midrate in NZ at 9 am

3. YEN: DMK, STG, SFR: New York rates

4. AUD: Sydney closing

Source: Reserve Bank of New Zealand

Table 5

Day-to-Day, Weekly and Monthly Volatilities
Against the US Dollar

Standard Deviations of Percentage Movements
From 6 March to 27 March 1986

	<u>Daily¹</u>		<u>Weekly²</u>		<u>Monthly³</u>	
	Rank	%	Rank	%	Rank	%
NZ Dollar	1	1.20	4	2.28	1	5.82
Australian Dollar	3	1.08	2	2.57	3	3.72
British Pound	2	1.15	1	2.77	5	3.15
Deutschmark	5	1.03	5	2.16	4	3.35
Swiss Franc	4	1.06	3	2.37	2	3.72
Yen	6	0.80	6	1.71	6	2.93

NZ Dollar Range:

Maximum (%)	4.61	4.99	11.48
Minimum (%)	-6.37	-6.93	-12.02

Source: Jarden & Co based on RBNZ daily press releases, 8.30am indicative rates.

Notes: 1. Daily data is taken from the 8.30am RBNZ indicative rates as published in the RBNZ Daily News Summary. The data in this newsletter corrects an error in this data source which was not picked up in the Jarden & Co Research Note, of 31 January 1986, on Exchange Rate Volatility. As a result, the January note incorrectly reported that the New Zealand dollar had a lower daily volatility than the Swiss Franc and the Deutschmark between the 6 March 1985 and 28 January 1986. The error is regretted.

2. Weekly changes are based on Thursday to Thursday movements.

3. Monthly changes are taken from the last trading day in the month.

Expected Exchange Rate Movements

A trend reduction in the value of the New Zealand dollar must be expected on account of inflation differentials. New Zealand's inflation rate is likely to exceed that of its trading partners for the next two or three years at the very least. The major question mark here would be about the future rate of inflation in Australia which has been drifting upwards. However, as shown in Table 1, inflation differentials cannot explain the full amount of interest rate differentials.

In addition to the inflation factor, it is possible that the market place is expecting a trend decline in the real exchange rate for the NZ dollar during the next five years.

The real exchange rate, on a range of measures, is above the long-term historical average. There are a number of factors influencing this, in particular, the willingness of the private sector to increase its net foreign currency indebtedness and the willingness of some foreigners to build up their portfolios of New Zealand dollar-denominated assets during the process of liberalisation of New Zealand's capital markets and the imposition of monetary constraint. Offsetting influences come from the large current account deficit, the poor short-term prospects for pastoral output, and the influence of a strong real exchange rate on relative competitiveness.

Table 6 below presents real exchange rate index values in relation to the long term average level. Assuming the nominal trade-weighted exchange rate index will remain at about its value of 66 experienced recently, the table indicates that in 1986 the real exchange rate, as measured by relative wholesale prices, will be approximately 9% above the long term average. Measured by relative consumer prices, the real exchange rate would be about 1% above the long-run average: by relative unit labour costs it would be about 8% above, and by the relative price of tradeables to non-tradeable goods and services it would be about 12% above the long-run average. The accompanying chart shows relative unit labour costs and relative wholesale prices as deviations from their long-run mean. Given the high level of official overseas borrowing necessary to support the historical average exchange rate and, over recent years, export incentives, this data appears to suggest that a downwards movement in the real rate will be necessary in due course.

COMPETITIVENESS INDICATORS

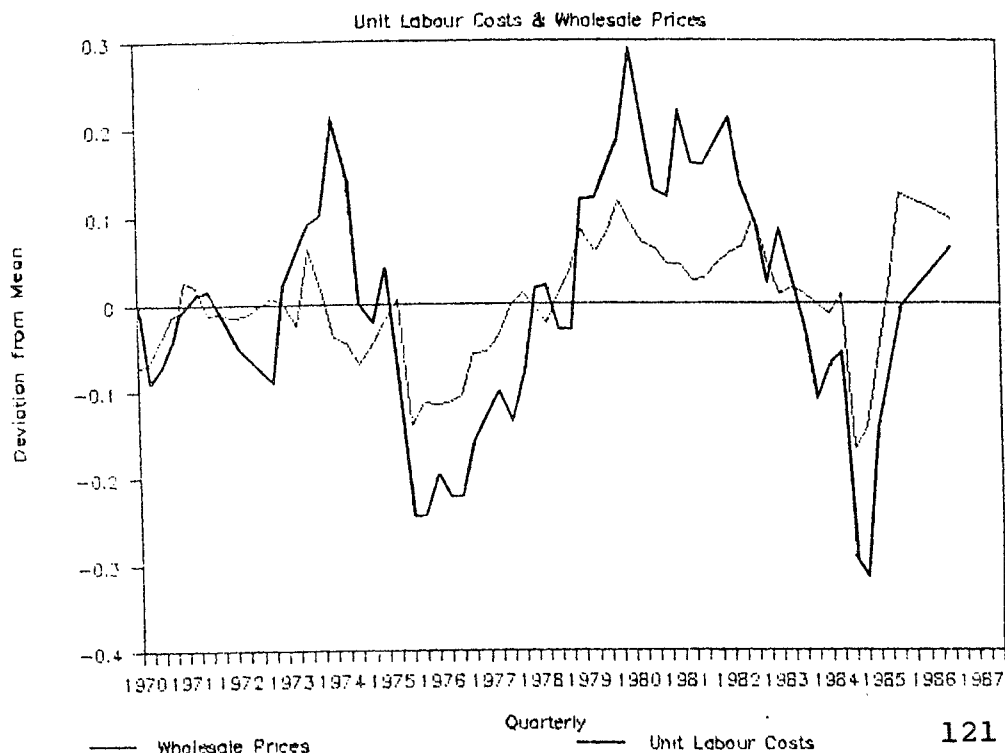


Table 6

Real Exchange Rate Indices*

	<u>1986</u>	<u>Long-term Average</u>
Relative Consumer Prices(1)	980	970
Relative Wholesale Prices(2)	1.111 (Qtr3)	1.015 (1972-1986)
Relative Unit Labour Costs(2)	1.108 (Qtr3)	1.042 (1972-1986)
Tradeables/Non-tradeables Price Index(3)	1028 (Qtr1)	917 (1972-1985)

Sources of Historical data:

(1) Jarden & Co, Base 1979 = 100

(2) NZIER

(3) Agricultural Economics Research Unit, Lincoln College.

* The higher each of these indexes, the further has the real exchange rate appreciated.

In Table 7 we present an international comparison of current real effective exchange rate positions, relative to their 1980-82 averages.

Table 7

Index of Real Effective Exchange Rates

As at June 1986*
(1980-82 = 100)

<u>NZ</u>	<u>Aust</u>	<u>USA</u>	<u>UK</u>	<u>W Germany</u>	<u>Japan</u>
104	80	97	96	99	123

* Based on trade-weighted exchange rate adjusted for relative wholesale price movements.

Source: Jarden & Co for New Zealand data, Morgan Bank for International data as reported by Solomon Brothers

New Zealand is still running a substantial deficit in the current account of the balance of payments. Some of the drop in the deficit forecast for 1986/87 (to 2.5% of GDP compared to 6.3% in 1985/86) reflects the pro-cyclical nature of imports, although the drop in world oil prices is also serving to reduce the underlying current account deficit. The current account deficit is expected to be about 2.5-3.0% of GDP in 1987/88. The key question for the future level of the exchange rate is at what exchange rate an inflow of private capital will be forthcoming to finance an ongoing current account deficit of this scale during the next two years.

In that respect it is worth noting that New Zealand's long history of large current account deficits as a percentage of GDP, relative to Australia, has given it a much larger external debt burden. During the last decade New Zealand's external current account deficit has averaged 5.1% of GDP compared with a 3.8% average for Australia. As a consequence New Zealand has a much higher ratio to GDP of external indebtedness. For example, the ratio of total gross external debt to GDP for New Zealand was an estimated 55% in September 1986, compared to an estimated 25.1% for Australia in June 1985.

Expansionary fiscal policy, accommodating monetary policies, and a pegged exchange rate regime in New Zealand have been responsible for the persistent current account deficits, financed in the main by official borrowing. Thus the bulk of accumulated debt is official debt. However, with the sharp change in monetary and fiscal policy since the change of government in mid-1985, together with the move to a floating of the exchange rate, this is changing fast. The government is now fully funding its budget deficit by internal borrowing thereby leaving private capital flows to finance the current account deficit.

It is clear that the private sector has been prepared to increase its net external indebtedness rapidly during the last year in response to the abolition of exchange controls, the general liberalisation of financial markets, high levels of domestic economic activity and high domestic real interest rates. At the same time, foreigners have been prepared to increase their investment in New Zealand dollar-denominated assets. It is an open question as to at what prices this process will continue.

While a 5-10% reduction in the real exchange rate is probable during the next two or three years, it is likely that New Zealand could sustain a relatively high real exchange rate for some time. An earlier drop in the exchange rate is not inevitable in terms of trends in the balance payments, especially against Australia. Nevertheless, the uncertainty associated with expected trend exchange rate movements is another factor which will be reflected in the interest and exchange rates at which participants in capital markets will be prepared to invest.

SUMMARY

Long-term real required returns from government bonds in New Zealand have been and remain exceptionally high, given the outlook for inflation on current government policies. Nevertheless, as the data presented earlier demonstrates, there are rational reasons for expecting real interest rates to be higher in New Zealand than in countries like the USA, Japan and the United Kingdom.

These include:

- greater interest rate risk in New Zealand associated with a difficult policy-making environment for the Government
- greater exchange rate volatility for the New Zealand dollar
- the likelihood that investors expect a trend deterioration in New Zealand's exchange rate.

The data presented in this paper - on recent interest and exchange rate volatility, and likely trends in the exchange rate - suggest that there is good reason for investors to require a significant risk premium for investing in New Zealand bonds.

These considerations have important implications for economic policy. Clearly a continuation of the policies responsible for the reduced rate of inflation over the past year and the now more favourable inflation outlook will reduce nominal interest rates. This increased confidence in a lower inflation outlook, while leading to a reduction in international interest rate differentials, does not necessarily alter real interest rates or the real exchange rate.

Although we can expect continued interest rate and exchange rate volatility, the maintenance of more stable macroeconomic policies is likely to lead to a lessened degree of volatility and thus to a reduction in the associated risk premia. In this respect a lower fiscal deficit is likely to help with perceptions concerning sustainable inflation/interest/exchange rates.

Nevertheless, because of the legacy of poor economic performance in past decades, perceptions of the exchange rate risk associated with New Zealand will be slow to change. A lower risk premium can only be achieved by the consistent pursuit of sensible monetary and fiscal policies which clearly differentiate themselves from the excesses of the the past.

In time, such policies can be expected to generate the statistical record, and thus the credibility, which would reduce the risk characteristics of New Zealand's capital markets.

RISK MANAGEMENT IN FINANCIAL MARKETS

T. W. Stevenson

Zealcorp Financial Limited, Wellington

SUMMARY

This paper simply demonstrates how exchange rates and interest rates are priced for future settlement dates. It relates the forward traded cash markets with the equivalent futures contracts.

Designed for a 20 minute presentation this paper does not address the wider implications of using either medium or trading and hedging styles that may be employed.

All that is demonstrated here is the rational pricing of future rates in either market.

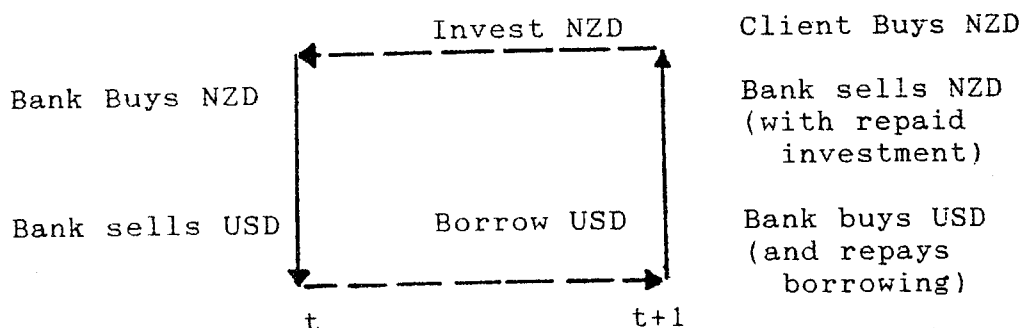
Key words: Forward Exchange Rates, Forward (Interest) Rate Agreements - FRA's, Futures.

FORWARD EXCHANGE AND US DOLLAR FUTURES

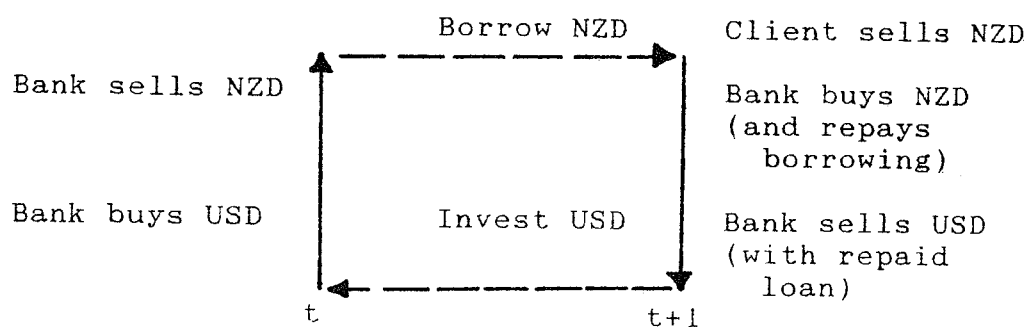
Calculation of future or forward foreign exchange rates is based on the cost or benefit of holding either currency on behalf of the client, until the date of currency exchange specified by the client.

To deduce a forward exchange rate for the client, the bank works backwards from the future transaction.

1. For a client wishing to buy NZD in the future.



2. For a client wishing to sell NZD in the future



The formula to calculate either the cost or benefit for US dollars against NZ dollars ("kiwi") is:

$$\text{Forward Points} = \text{SPOT} - \left[\frac{((\text{USi} * \text{days}) + 360) * \text{spot}}{360 + (360 * \text{NZi} * \text{days} / 365)} \right]$$

(where spot is the value for exchange today.)

To Calculate One Month Kiwi Forwards

Kiwi currently 0.5350/60
One month days 18/6 to 18/7 = 30

USi Bank borrows at 6.94
Bank lends at 7.06~

NZi Bank borrows at 14.65~
Bank lends at 15.15

1. Exporter fixes one month rate to buy kiwi

Today we borrow US, to exchange i.e. sell USD / buy NZD, and invest NZD for the period so we have it to sell to client in one month

$$0.0033 = 0.5360 - \left[\frac{((0.0706~ * 30) + 360) * 0.5360}{360 + (360 * 0.1465~ * 30 / 365)} \right]$$

one month forward rate, client to sell
 $0.5360 - 0.0033 = 0.5327$

2. Importer fixes one month rate to sell kiwi. Using our kiwi buying price, US borrowing and NZ investing rates we calculate forward points 0.0035

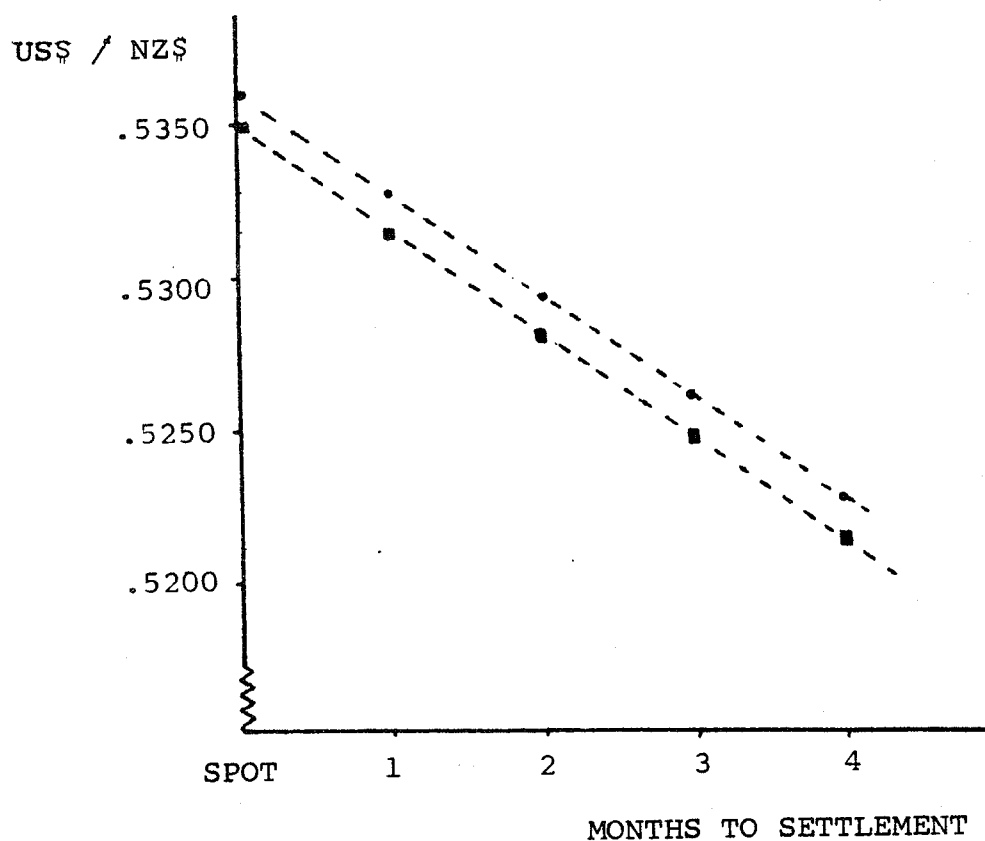
one month forward rate, client to buy
 $0.5350 - 0.0035 = 0.5315$

Using the yield curves for both currencies (see Figure 1 for US dollars per NZ dollar; and Figure 2 for NZ dollars

per US dollar), at a kiwi of 0.5350/60 a series of forward rates is calculated as follows:

Mnth	USi		NZi		USi		NZi	
	borrow	lend	borrow	lend	borrow	lend	borrow	lend
1	6.94	7.06	14.65	15.15	.0035	.0033	.5315	.5327
2	6.88	7.00	14.60	15.10	.0071	.0066	.5279	.5294
3	6.88	7.00	14.50	15.00	.0104	.0097	.5246	.5263
4	6.88	7.00	14.50	15.00	.0139	.0129	.5211	.5231

Figure 1 Forward Exchange Rates
US\$ per NZ\$

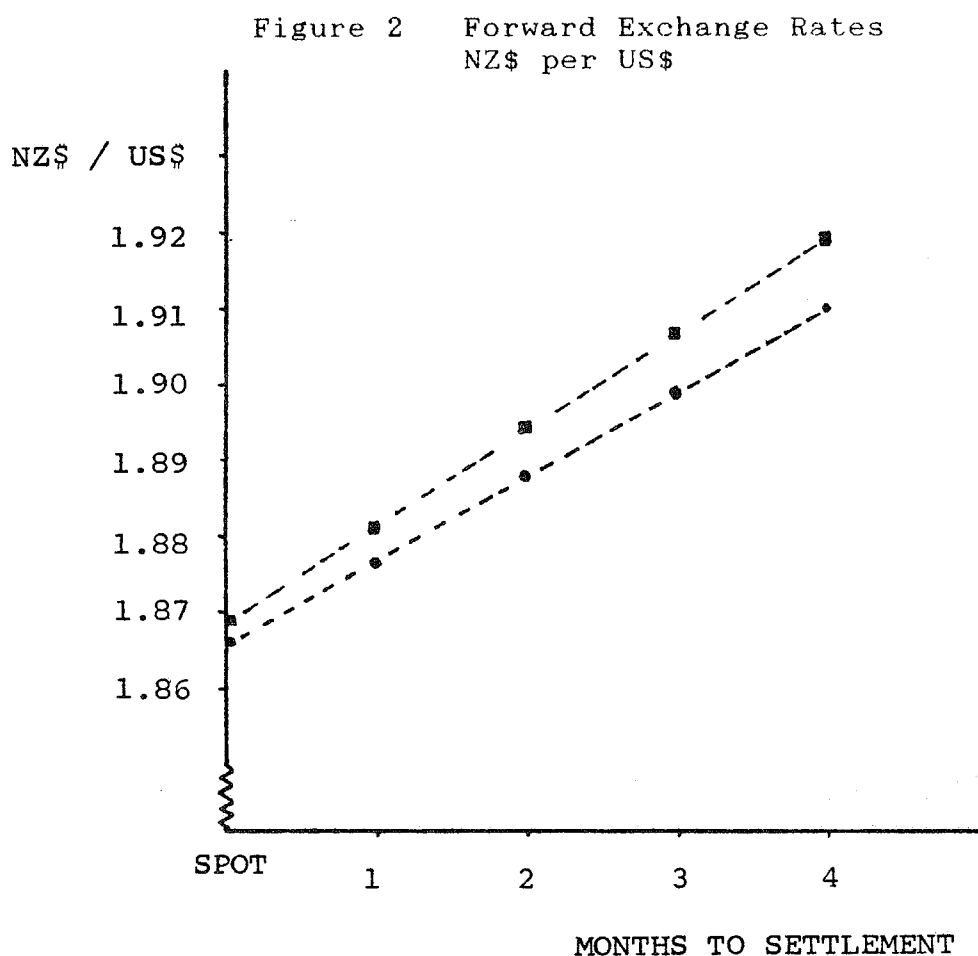


The USD futures, however, are set for delivery on specific future dates and are quoted as NZD / USD. From the forward rates given above the levels at which the futures should be bid and offered can be interpolated as follows:

	Offer	Bid
18 July	1.8822 (0.5313)	1.8769 (0.5328)
15 August	1.8950 (0.5277)	1.8882 (0.5296)
12 Sept	1.9062 (0.5246)	1.8990 (0.5266)

Given the direct link to spot kiwi at any time, the following relationships therefore apply:

1. A move in spot kiwi will cause a move in the theoretical trading range for all months
2. If kiwi doesn't move but interest rates do, only the relationship between quoted months will move.



Figures 3 and 4 demonstrate more clearly the basis of this relationship. Figure 3 simply shows a diagrammatic representation of the change in the spot kiwi. Figure 4 shows the effect on the interest rates.

With respect of the futures trading range, the point is that if speculators, in their exuberance, push the trading

level for any month above that range, we would sell USD (buy kiwi) in the futures and buy USD (sell kiwi) in the

Figure 3 Change in Spot Kiwi

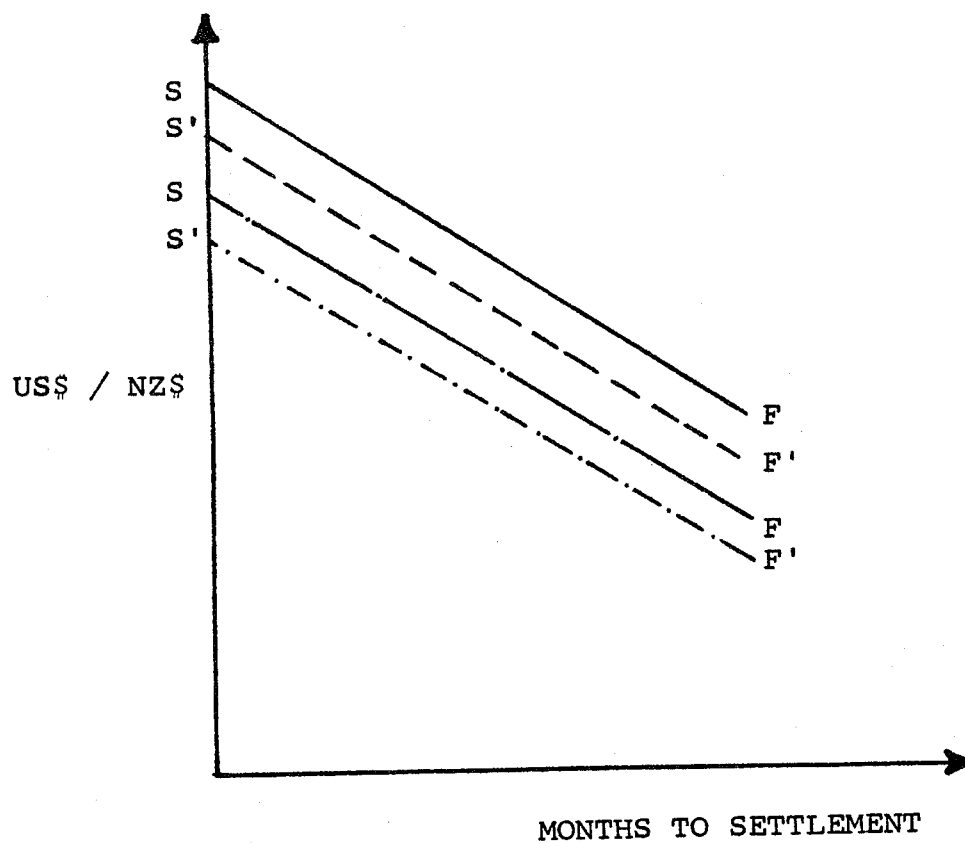
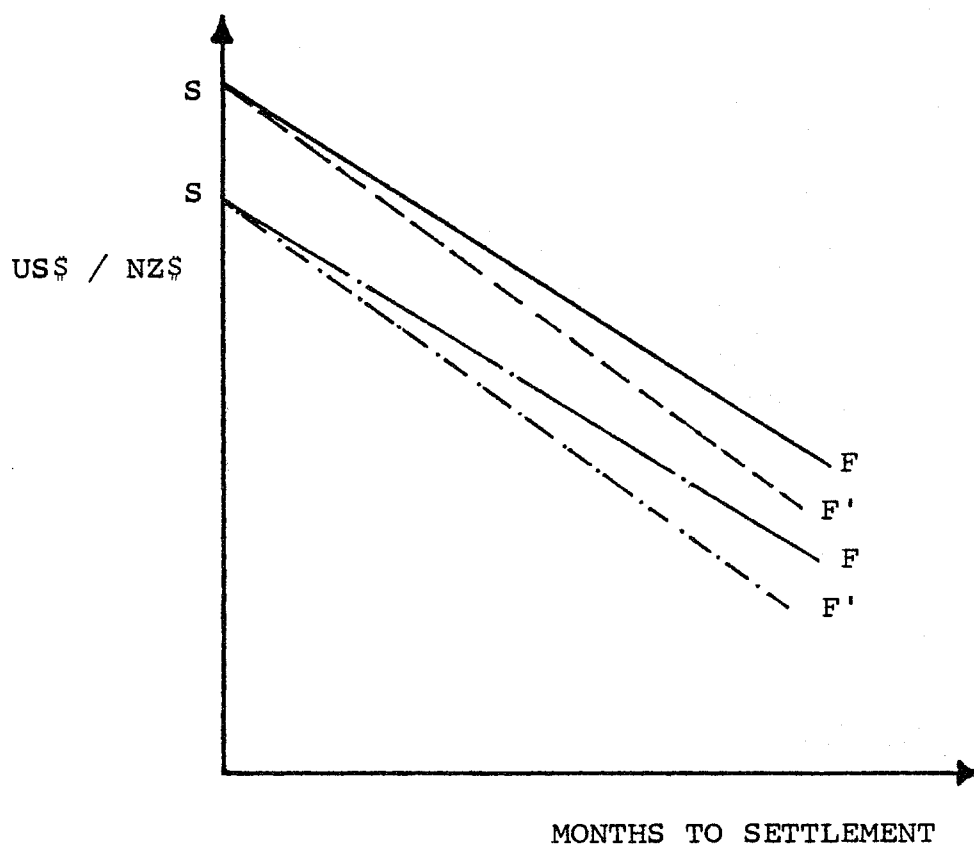


Figure 4 Change in Interest Rates



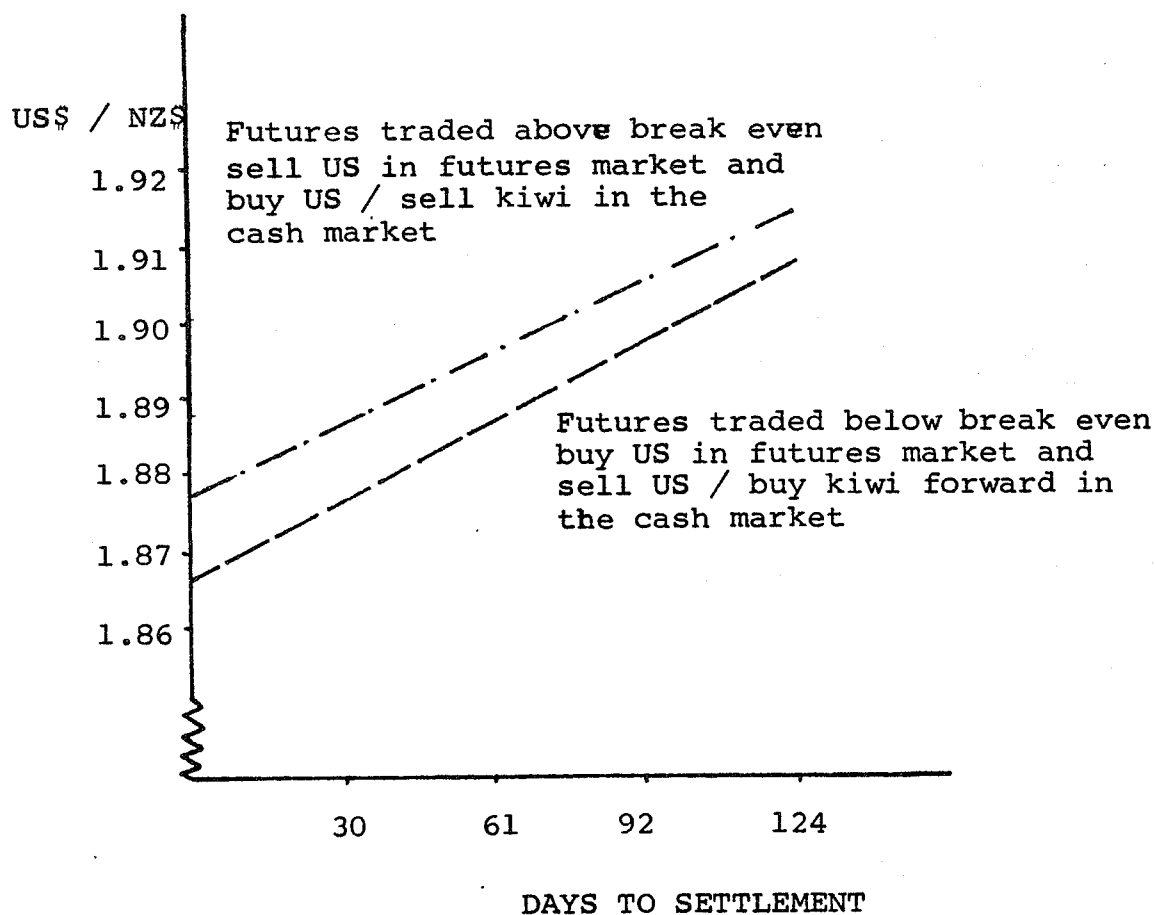
physical forward market at a profit. This is simple arbitrage and the converse is true. If futures traded below the theoretical trading range, we would buy USD (sell kiwi) in the futures and sell USD (buy kiwi) in the physical forward. This phenomenon is demonstrated in Figure 5.

In effect, the activity of the arbitrageur keeps the prices in the futures market "honest". Given that, both exporters and imports can lock into the spot currency levels via both the physical forward exchange market and the futures market.

FORWARD (INTEREST) RATE AGREEMENTS AND PRIME COMMERCIAL PAPER FUTURES (FRA'S AND PCP'S)

It is relatively simple to calculate what interest a bank should be able to offer on a future date, given a current yield curve.

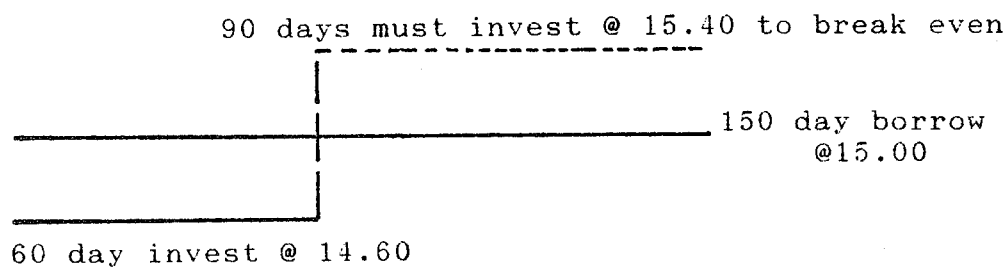
Figure 5 Forward / Future Exchange Rates
NZ\$ per US\$



To calculate both borrowing and investing rates, for either a 90 day drawdown or a 90 day investment in 60 days time, note the current rates.

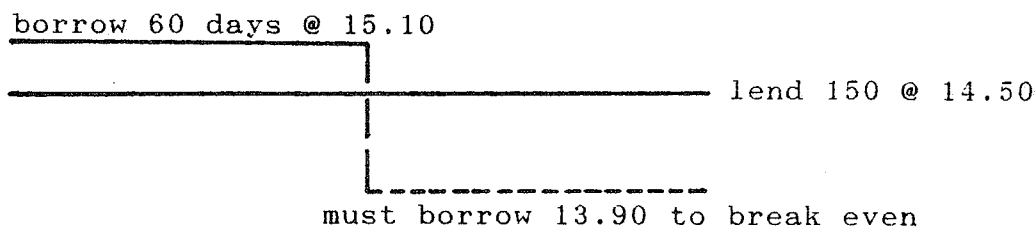
60 day	bank borrows	14.60
	bank invests	15.10
150 day	bank borrows	14.50
	bank invests	15.00

If the bank has to borrow for 150 days at 15.00 and invests for 60 days at 14.60, to break even it must invest for the remaining 90 days at 15.40.



(This does not make allowances for a compounding factor in the future period.)

Conversely if the bank borrows for 60 days @ 15.10 and can lend for 150 @ 14.50 then it would be prepared to offer a 90 day rate commencing in 60 days time at 13.90 or better.



In this example, the bank's offer of forward interest rates, for 90 day borrowing or investing, in 60 days time would be:

13.90 to borrow
15.40 to lend

At 17/6/86 the yield curve offered by DFC was as follows:

DFC:	Borrows	Lends
30 days	14.65	15.15
60 days	14.60	15.10
90 days	14.50	15.00
120 days	14.50	15.00
150 days	14.50	15.00
180 days	14.50	15.00

The creation of offers and bids in the Prime Commercial Paper futures is done by establishing the forward rate relationships as at the termination date for each of the quoted futures months.

The futures market quotes an index as 100 - yield so that it reflects the rising and falling value of the asset (interest rates are an indicator of that value and move in the opposite direction, so are inappropriate to be traded in the context of the futures market).

Given those rates, therefore, the 90 day PCP futures should be quoted as follows:

Delivery Date	Ask	Bid
July 18	85.72 (14.28)	85.23 (14.77)
Aug 15	85.89 (14.11)	85.42 (14.58)
Sept 12	85.99 (14.01)	85.52 (14.48)

With respect to the futures trading range the point is that if speculators, in their exuberance, push the trading level for any month above these offers, we would sell the futures and buy 90 day assets in the cash market and lock in the profit.

That is a simple arbitrage and the converse is true. If futures are traded below the theoretical trading range, we would buy the futures and sell 90 day assets in the cash market.

In effect, the activity of the arbitrageur keeps the prices in the futures market "honest". Given that, both future borrowers and lenders can lock into rates today, consistent with expectations represented by the yield curve represented in the cash market.

COMMODITY FUTURES

(see also Government Stock Future and Share Price Index Futures.)

The most common misconception made by observers of commodity futures is that the prices quoted in future months are a simple representation of the market's expectations.

Before the effects of relative supply and demand are placed on the true future price of a commodity, account must be taken for carrying charges.

For example when pricing a commodity for a particular future month one must consider the price that needs be obtained in the future if a cash commodity was purchased today and stored.

This cost includes storage, possibly transport and, of course, insurance. The major carrying charge is interest. Thus when pricing non-commodity futures such as Government Stock or Equity contracts, the same opportunity cost must be allowed.

WOOL PRICE AND THE VALUE OF THE NEW ZEALAND DOLLAR

P. A. Conway

NZ Wool Board
Private Bag
Wellington

This paper examines the effects of changes in the value of the New Zealand dollar on the price of a major agricultural export, viz. wool. It presents the results of regressing a wool price series against different exchange rate series for the period since the float of the \$NZ. This approach is subject to two main limitations: it examines only short-term responses and it assumes that all other factors are unchanged. The influence of different exchange rate series is discussed and different periods are examined separately. Some historical material is discussed for comparative purposes.

Key words: correlation, wool price, currency movements.

INTRODUCTION

One of the most significant steps taken in the liberalisation of the New Zealand economy, especially in relation to the agricultural sector, was the floating of the New Zealand dollar on 4 March 1985. Prior to that there had been a variety of exchange rate arrangements, the most recent of which was the setting of the value of the New Zealand dollar against other currencies in such a way as to maintain a fixed value in terms of a basket of the currencies of our major trading partners.

Under that system the Reserve Bank calculated a mid-rate against the United States dollar at the beginning of each day's trading and provided dealing rates on either side of the mid-rate, thereby setting ranges for the cross-rates for other currencies. The mid-rate depended on developments in overseas foreign exchange markets and local dealers could respond to market pressures within the narrow band of buy and sell rates. The Reserve Bank maintained these rates by buying or selling foreign exchange so that the market was cleared at the rate fixed against the basket.

Since 4 March 1985 the value of the New Zealand dollar has been determined freely in the foreign exchange market. The Reserve Bank still uses the basket to calculate a trade weighted index, indicative of the overall value of the New Zealand dollar.

Since the float the New Zealand dollar has fluctuated considerably on a day-to-day basis and over longer time periods. The sale of New Zealand wool at auction provides a good opportunity to examine the effect of these fluctuations on the domestic currency price of a major agricultural commodity and export. The reasons why wool is a good subject for such a study are:-

World Price

Although wool is a highly differentiated commodity (even in its raw state) and the New Zealand clip is predominantly coarse wool, it is nevertheless generally considered that there is a "world price" for wool (much as for oil). The existence of this world price is partly due to the fact that relatively few trade barriers apply to wool; ie. it is traded fairly freely internationally. Both as an agricultural product and as a textile fibre it is remarkable for this.

Price-taker

New Zealand wool production accounts for only thirteen percent of total world wool production and over ninety percent of New Zealand production is exported. With such a high proportion exported and a relatively small world market share, it is reasonable to assume that New Zealand is a price-taker in respect of wool¹ and that the New Zealand price is the world price, adjusted by exchange rates.

Wool Auctions

Eighty percent of New Zealand's shorn wool is sold at auction, ie. in a free and efficient market where the latest information (including exchange rates) is quickly acted upon. Auctions are held frequently throughout the season (on average more than one a week) and for each auction a composite price (the market indicator) is calculated which represents the weighted average price for all the types of wool in the New Zealand clip.

In view of these factors it could reasonably be expected that day-to-day changes in the value of the New Zealand dollar would be reflected in the New Zealand currency price of wool sold at auction. Indeed this has been the case. However, it has not been clear how much of the variation in the wool price can be explained by currency fluctuations, nor with which currency (or basket of currencies) changes in the price of wool are most closely correlated.

The floating of the dollar provides an opportunity to examine both of these questions, because previously the New Zealand dollar was fixed to either a single currency or a basket of currencies and adjustments were either occasional discrete changes or marginal changes made to preserve an index value. Since the float the New Zealand dollar has fluctuated considerably; furthermore, the relationships between the major currencies have also changed considerably over this period. Thus there is an opportunity to examine not only how much of the variation in the wool price can be explained by currency movements, but also with which currency (or basket of currencies) changes in the wool price are most closely correlated.

¹ Cf. G.M. Scobie, "The Price Elasticity of Demand for New Zealand Exports: Theory and Estimation", NZ Economic Papers, Vol. 7 (1973) 1-24.

METHODOLOGY

This paper presents and discusses the results of regressing a New Zealand wool price series on a number of exchange rate series. Before presenting these results some words of explanation are in order about the data and the methodology used.

Period Investigated

The study covers the period from mid-March 1985 (ie. just after the float) to the end of April 1986.

Data Points

The data points are each day on which there was a wool auction held in New Zealand in the period investigated. This gives a total of 72 observations. These observations are not distributed evenly throughout the year; the four months November, December, January and February account for approximately half the wool sales, and there is a hiatus of approximately six weeks from the last sale of the season in late June to the first sale of the following season in early August. This uneven distribution does not affect the results of the investigation.

Wool Price

The wool price series is the New Zealand Wool Board market indicator for each wool auction. Each sale day the Wool Board calculates a market indicator price which is an average price for the wool sold on the day, weighted on the basis of the previous year's proportions of different wool types in the total clip. If a particular type of wool is not sold at an auction (or is not sold in significant quantities) the most recent acceptable price ratio for that type is used instead. The market indicator is what the weighted average price would be if the whole of the clip for a season were sold at a particular auction in the same proportions as the previous year's clip.

Exchange Rates

For most of the currencies investigated the New Zealand opening rates on the day of the sale were used. In the case of the United States dollar and the Australian dollar, which appeared the most promising for in-depth investigation, three different series were tried. These were:-

- (a) New Zealand close, previous day
- (b) New Zealand close, same day
- (c) average of (a) and (b)

In the case of both exchange rate series it was found that reading (c) gave the best fit over the period investigated (as measured by the R squared statistic). Although only marginally better (tenths of a percent) it was considered significant that the same result was obtained for both currencies. This average reading was taken to represent the value of the New Zealand dollar on the sale day. In the case of the Reserve Bank Trade Weighted Index (TWI) the 9.00 a.m. reading was used.

The ratio used to express the exchange rate is that of the number of New Zealand dollars required to buy one unit of foreign currency, eg. $\$US/\$NZ = 1.8518$. This is the reciprocal of the usual way the exchange rate is quoted, viz. $\$NZ/\$US = .54$. The reciprocal series (ie. $\$US/\NZ etc.) gave better results for all the major exchange rates, including the Reserve Bank TWI. Apart from the fact that these reciprocal rates gave better results, using them means that the elasticities derived from the regressions are directly comparable with the "transmission effects" of previous devaluations.

Regression

Ordinary least squares linear regression was used, with attention focussed on the R squared statistic as the key result. This indicates the degree of correlation between the dependent and independent variables by expressing the percentage of the variation in the dependent variable (in this case, wool price) which is "explained" by the variation in the independent variable (exchange rates). The R squared statistics from regressions of the wool price against different exchange rate series can be compared to see which exchange rate is correlated most closely with the wool price; the exchange rate series with the highest correlation is also the one that "explains" the highest proportion of the variation in the wool price series.

Model

The regression model is of the following form:-

$$NZPw = a + b.1/e + r$$

NZPw is the market indicator, e is the exchange rate (eg. $\$NZ/\US), a and b are estimated in the regression and r is the unexplained residual. Considerably better results (in terms of the R squared statistic) were achieved by including a constant. It follows that a more accurate estimation of the change in the wool price for a given change in the exchange rate is obtained from a model of this form. Absolute changes and percentage changes in the dependent and independent variables were also regressed. Each of these explained approximately the same percentage of variation as the other, but for the $\$US$ and $\$A$ exchange rates they explained much less of the variation than the undifferenced series with a non-zero intercept.

LIMITATIONS

This study is subject to a number of limitations. The chief of these are:-

Forward Contracts

In taking the exchange rates and the wool price for each sale day this study examines only short-term responses. There may be other response patterns to currency movements. According to the Federation of New Zealand Wool Merchants, in excess of 50% of export

orders are sold short;² ie. merchants sign forward contracts, denominated in foreign currency, to supply wool before they actually buy the wool.

A merchant who sells short is exposed to two categories of risk, viz. exchange rate risk and wool price risk. (These may cancel each other.) The merchant could hedge his position on these risks and lock in the price set in the contract (a) by taking forward cover and (b) by buying the wool at the time the contract is signed (presuming that the current price is reflected in the contract), or by buying a wool futures contract. The pattern of responses will depend on which of these courses of action merchants adopt.

If wool merchants take forward cover for exchange rate risk, they will respond chiefly to changes in the wool price, buying to fill orders when the price is low. If a lower wool price has been brought about by a strengthening of the currency, the behaviour of these merchants will be counter to the foreign buyer's short-term response. Local mills will behave in the same way as wool merchants. As for wool price risk, if merchants do not either buy the wool when the contract is signed or buy wool futures contracts (ie. they wait until orders are due to be filled before they buy), then their buying patterns will exhibit a lagged response to the exchange rates ruling at the time the contracts are signed.

Activity of both these kinds (ie. responding to wool price rather than exchange rates and lagged responses to exchange rate changes) will tend to obscure the pattern of immediate responses to currency fluctuations.

Market Expectations

As well as lags there may also be leads involved in the wool price response to exchange rate movements; ie. the wool market may anticipate changes in the foreign exchange market. For example, if a sizeable proportion of buyers consider that the New Zealand dollar is about to weaken they may bid strongly to acquire stocks before the price goes up and in so doing push the price up to the level that corresponds to the expected value of the dollar. Activity of this kind will confuse the pattern of short term responses. Because of the relatively fixed supply and auction method of selling, a speculative element in the market may bring about an exaggerated price response.

Ceteris Paribus

The chief limitation of this study is that it assumes that all other factors (most notably, demand factors) remain equal throughout the period. This assumption has been made in order to simplify the analysis. This study is not an attempt to explain as fully as possible the changes in the wool price; rather it isolates one factor, viz. the exchange rate, and attempts to discover what influence it has on the sale-by-sale price of New Zealand wool.

² "Wool News", Federation of N.Z. Wool Merchants, November 1985, p. 1-2.

RESULTS

Table 1 below sets out the results of regressing the New Zealand wool price (market indicator series) against selected exchange rate series for the period 15 March 1985 to 24 April 1986. Each currency series is expressed as the number of New Zealand dollars required to buy one unit of foreign currency; as noted above, this is the reciprocal of the usual way in which the exchange rate is quoted. In the case of the Yen/\$NZ rate the unit of foreign currency is 100 Yen.

Table 1: Results of Regressing the New Zealand Wool Price against Selected Exchange Rates for the Period 15 March 1985 - 24 April 1986. No. of observations: 72 Degrees of freedom: 70

<u>Exchange Rate</u>	<u>Constant</u>	<u>Coefficient</u>	<u>t Statistic</u>	<u>R Squared</u>
\$US/\$NZ	174.6	91.9	14.4	75%
\$A/\$NZ	172.2	134.8	11.0	64%
RBNZ TWI	175.6	116.6	6.4	37%
£ stg/\$NZ	219.7	49.5	3.6	16%
Yen/\$NZ	397.1	-50.8	2.3	7%
DM/\$NZ	382.6	-43.4	1.4	3%

The top scorers, on the R squared statistics, are the \$US and the \$A. The Reserve Bank TWI trails a very poor third, followed by the Pound sterling. The Yen and the Deutsche Mark performed particularly badly. A number of other currency series were also tried, but - with a couple of exceptions (which are discussed below) - they performed as badly as or worse than the Yen and Deutsche Mark. The signs on the coefficients for the first four exchange rates listed above are positive, indicating that a weakening of the \$NZ leads to an increase in the wool price, which is what one would expect. The Yen and the Deutsche Mark series carry negative signs.

Graphs are attached in the appendix showing actual values versus estimated values for the \$US and \$A series. It can be seen from Graphs 1 and 2 that, although there is a reasonable fit overall on the shape of the line, there is not a close correspondence on every observation. More seriously, in the case of both the \$US and \$A, the estimated values are below the actual values for approximately the first half of the series and above for the second half (ie. the residuals exhibit considerable first order autocorrelation). However, as was pointed out above, the aim is not to give a complete explanation of changes in the price of wool, but to see how much of the variation can be explained by currency movements. Before the fit of estimated to actual is discussed, the relative performance of the different exchange rates will be considered.

United States Dollar

The \$US shows the closest correlation with the wool price series. This is not surprising considering the role of the \$US as a currency against which the value of other currencies, including the \$NZ, is set. The value of New Zealand's currency was set against the \$US for the period from 1961, when New Zealand joined the International Monetary Fund, until July 1973 when, with the floating of the \$US, New Zealand decided to fix the value of its currency to a basket of currencies rather than a single currency.³ Even since then the \$NZ has been quoted against the \$US with cross-rates calculated for other currencies from their rates against the \$US. The rate for the \$NZ against the \$US still appears to be the most important indication of the \$NZ's value, at least in this context.

The underlying reason for this role of the \$US is its importance in international trade, particularly trade in commodities. According to Reserve Bank figures the \$US accounts for over half of New Zealand's current account receipts for wool. Table 2 below shows a breakdown of current account receipts for wool by currency.

Table 2: Percentages of Current Account Receipts for Wool by Currency for 1984 and 1985 (September years).⁴

Year	fstg	\$A	\$US	DM	Yen	\$NZ	Other
1984	11.6	2.9	58.7	0.5	1.3	22.1	2.9
1985	7.9	3.0	55.2	2.2	1.9	26.3	3.5

The percentage of \$US receipts for wool is higher than the average for all current transactions (45.8% and 49.2% for 1984 and 1985 respectively). Although the currency of receipt is not necessarily the same as the currency in which contracts are written, these figures suggest that the \$US is the main currency in which New Zealand wool is traded. Thus it is not surprising that the \$US exchange rate should show the closest correlation with the wool price. What is also of interest in these figures is the high percentage of \$NZ receipts for wool. The average for all transactions is around 19% and for meat and dairy around 8% and 2% respectively. However these figures cannot be taken as showing that a quarter of wool exports are invoiced in New Zealand dollars; this category includes payments which are converted before repatriation.

³ "Financial Policy Reform", Reserve Bank of New Zealand, Wellington (1986), p. 128-9.

⁴ These figures are quoted from "A Review of the Foreign Exchange Market and Exchange Rate Developments", Economic Monitoring Group (NZ Planning Council), April 1986, p. 33.

Australian Dollar

The reasons for the performance of the \$A are different from those which apply in the case of the \$US. The \$A accounts for only 3% of current account receipts for wool exports. Although Australia is New Zealand's major market for manufactured goods (including woollen products), it is not a major market for New Zealand raw wool. In 1984/85 it accounted for less than 4% of raw wool exports.

The reason for the importance of the \$A in relation to the New Zealand wool price is that Australia and New Zealand are competitors in fine wools, and the degree of competition is determined partly by the \$NZ/\$A exchange rate. If the \$A is weak against the \$US at a time when the \$NZ is strong against the \$US, then in \$US terms Australian wool is much cheaper than New Zealand wool. This is reflected in a weakening of the New Zealand wool price. Thus the effect of the \$NZ/\$A exchange rate on the wool price is the same as that of the \$NZ/\$US, but the reasons for its influence are different.

Reserve Bank TWI

The Reserve Bank Trade Weighted Index is calculated from the basket of currencies against which the value of the \$NZ was set prior to the float in March 1985. The weights in the basket are adjusted every quarter, based on latest trade figures. The current weights are: \$US (30.7%), \$A (24.2%), £ stg (22.4%), Yen (18.8%) and DM (3.9%). By its very nature an index is less volatile than its individual constituent currency series, unless the \$NZ moves by the same proportion and in the same direction in relation to all of those currencies. Thus, although over 50% of the index is accounted for by the \$US and \$A, other currencies have a smoothing or cancelling effect if they are either stable or move in the other direction from the \$US and \$A in relation to the \$NZ. This has happened to some extent over this period and the performance of the Reserve Bank TWI in the wool price regression reflects this.

Pound Sterling

The Pound sterling shows a low correlation with the New Zealand wool price. Although Britain is a major market for wool exports (it is considerably more important than the United States), the Pound is not a very significant currency for wool export receipts (11.6% in 1984, 7.9% in 1985). Over the period examined the value of the \$NZ has fluctuated considerably in relation to the Pound, but no strong trend is evident. The £ stg/\$NZ exchange rate does not appear to be an important influence on the wool price.

Yen and Deutsche Mark

Given the reasonably high correlation between the wool price and the \$US and the movement of the Yen and the Deutsche Mark in relation to the \$US over the last year, it is to be expected that there is little correlation between the wool price and the Yen and the Deutsche Mark over this period. These two currencies have appreciated strongly against the \$US over the last year and the \$NZ has depreciated against them, whereas it has appreciated against the \$US and \$A.

Percentage Changes

The ranking of the exchange rates is slightly different in the regressions of percentage changes in the wool price and exchange rates. The \$US/\$NZ exchange rate still shows the closest correlation with an R squared statistic of 33%. It is followed by the Reserve Bank Trade Weighted Index (29%) and the \$A/\$NZ exchange rate (27%). The Yen and the Deutsche Mark perform better in the percentage change regressions (21% and 13% respectively) and also carry the expected sign. The Pound still explains only approximately 16%. The rankings are the same, and the R squared statistics approximately the same, in the regressions of absolute changes as in the regressions of percentage changes.

Estimated vs. Actual

Over the period investigated the wool price graph exhibits an overall downward trend with two major falls, one in June/August, the other in early November. There is a sharp increase in late December, but the price falls away again from its peak and continues on a downward trend with minor fluctuations. The \$US and \$A exchange rate series are able to explain the overall shape of the wool price graph, although there are considerable discrepancies in some periods and neither of them does very well on picking turning points.

For convenience the period investigated may be broken into three shorter periods with the divisions falling at 13 June and 29 November 1985. These are obvious turning points in the wool price series. In the first period from mid-March to mid-June 1985 neither the \$A nor the \$US exhibits a good fit with the wool price. The \$US shows the right trend from April on but is unable to explain the variation. The \$A picks up some of the turning points but is a considerable distance away from the actual values.

The second period commences with the fall in the wool price at the end of the 1984/5 season and the beginning of the 1985/6 season, and corresponds to the sharp appreciation of the \$NZ against all currencies from the second half of June 1985. With some fluctuations the wool price declined throughout the period until 29 November when it reached a low-point of 324 cents/kg (greasy). Throughout most of this period the \$US and \$A estimated values correspond with the actual series on turning points, but both exchange rates under-estimate and then over-estimate the actual values. An explanation for this is suggested below.

The third sub-period begins with the increase in the wool price in the second half of December corresponding to the fall in the value of the \$NZ against all currencies. Both the \$A and \$US series under-estimate the extent of the increase, and they both have the wool price continuing up after it has peaked. From there on the results are rather mixed. There has clearly been some variation in price in the third period which was not due to currency movements.

At most, currency movements are able to explain only three quarters of the variation in the wool price over the period investigated. Experiments with different baskets of currencies brought no improvement on the \$US/\$NZ result. It is clear that exchange rate changes cannot explain all of the variation in wool price and that other factors have not remained unchanged. Before the impact of one of these factors is discussed, the results of regressing wool price against two other exchange rates are discussed.

Drachma and Renminbi

As mentioned above, two exchange rate series stood out amongst the other currencies which were tried. In fact these two currencies scored higher R squared statistics than the \$US/\$NZ rate. They are the Drachma (79%) and the Renminbi (84%).

The reason these two currencies have not been mentioned earlier is that it is very difficult to believe that they have strongly influenced the New Zealand wool price. Greece has accounted for less than 3% of raw wool exports on average over the seasons 1981/2 to 1984/5. Although China has accounted for 10% of raw wool exports on average over the same period (third position after Japan and the UK), its pattern of buying is not constant. Greece and China have maintained approximately the same shares of wool exports in the current season as in previous seasons.

Why do these currencies show such a close correlation with the New Zealand wool price? Both exchange rates, but especially the Renminbi, followed a similar path to the \$US/\$NZ rate. The chief difference in the case of the Renminbi, apart from the absence of a couple of spikes which are in the \$US/\$NZ series, is that from January 1986 the \$NZ has been relatively stronger against the Renminbi than against the \$US. This gives a better fit with the wool price in this period.

The underlying reason for the close correspondence of both the Renminbi/\$NZ and Drachma/\$NZ rates with the \$US/\$NZ rate is that both these currencies are tied to currency baskets which include the \$US. Furthermore, both currencies were devalued against the \$US in October 1985, coinciding with the fall in the New Zealand wool price. This helps explain their better performance than the \$US/\$NZ rate.

No conclusion about the determination of the New Zealand wool price can be drawn from the high correlation between it and the Renminbi/\$NZ and Drachma/\$NZ exchange rates; however these results serve as a reminder that all the results presented in this paper should be treated with a degree of caution. Although good reasons can be given for the performance of the \$US and \$A exchange rates, there is nothing fixed about the relationships; quite different results might be obtained from a study of different periods. The results presented here are only a broad indication of the strength of the relationships involved.

MARKET INTERVENTION

It was claimed at the beginning of this paper that wool is sold in a free market. Strictly speaking this is not the case. The New Zealand Wool Board intervenes in the market when the price falls to a certain level and buys all wool that would otherwise sell for less than that price. This makes the auction price higher than it would otherwise be at those times. For those periods when the Board is active in the market as a purchaser the market price is not the "true market price".

Allowance can be made for this distortion by including in the regressions a series representing Wool Board purchases. The inclusion of such a series (viz. the percentage of bales purchased by the Board) gives a higher R squared statistic for the period investigated. The R squared for the \$US/\$NZ regression increases from 75% to 82% and for the \$A/\$NZ from 64% to 71%. In particular, the fit of the estimated line to the actual is considerably better in October when the Board was purchasing 30% or more of the offering. (See graphs 3 and 4.)

Although there is a better fit in this period and a slightly higher R squared is obtained for the whole period, the fit on other parts of the line is not much improved, and in places actually seems to deteriorate. For example, in the case of the \$US/\$NZ exchange rate, the errors between actual and estimated are slightly larger in early January when purchases are taken into account; there is also a decrease in the number of turning points correctly identified.

There are problems associated with the inclusion of an intervention series which might explain why a worse fit results in some places.

Intervention Level

The first of these problems is that Wool Board intervention policy was not constant over the period investigated. As market prices fell in October-November intervention levels were also lowered. As a result when wool prices reached their lowest level in late November, the percentage of bales purchased was also low. The estimated values which take into account Wool Board purchases give a considerably better fit in this period, significantly reducing the under-estimation/over-estimation in October/November. (See Graphs 3 and 4.) However the adjustments made to the intervention level mean that the relationship between wool price and the percentage of bales purchased by the Wool Board is not constant. (The t statistic for the purchases variable is 4.13 when included with the \$A/\$NZ variable and 5.43 with the \$US/\$NZ.)

Fine Wool

The market indicator is representative of all wool types and shows no bias in relation to fine wool centres. However, the percentage of bales purchased was considerably higher in fine wool centres than in cross-bred centres because of the strong competition from Australia on fine wools. This is reflected in the estimated values which take Wool Board purchases into account in an increase in spikes. For example, a spike appears on 13 November; the sale on that day was in Dunedin, a fine wool centre, and the Wool Board purchased a considerable proportion of the offering.

Sales

Wool Board purchases are only one side of the intervention coin. The Board also sells the wool which it buys at auction. Accordingly, sales should also be included. However, not all sales are made through the auction system, as the Wool Board sells a considerable amount of wool ex stock between sales. It would be difficult to construct a series for Board sales which corresponds with the data points used in this study.

It might be thought that it is net purchases which are relevant. However a net purchases series would allow no distinction between the effect of purchases and sales. The Wool Board's market intervention activity is based on the premise that there is an asymmetry in the effect of purchases and sales, viz. that the purchase of a given quantity of wool raises the price by more than the sale of that same quantity depresses the price.⁵ Of course purchases and sales are made under different market conditions. The inclusion of a sales series in a study of this kind may be a way of testing this assumption.

COMPARISONS

Two different historical comparisons can be made with the results of this study. First, the effect of changes in the value of the New Zealand dollar on the wool price in the period investigated and in previous periods can be compared, and second, the variation in the wool price in the period investigated can be compared with the variation in previous seasons.

Transmission Effects

In the past it was not possible to undertake a study of this kind because changes in the value of the New Zealand dollar were made much less frequently and/or were marginal and unlikely to have much

⁵ Cf. B.P. Philpott, "The Contribution to Stabilisation by the New Zealand Wool Commission and Lessons for the Present", NZ Economic Papers Vol. 9, (1975) 33-57.

impact on the wool price. Furthermore, where the value of the New Zealand dollar was changed by the same amount against all other currencies it was not possible to detect the effects of the different exchange rates on the wool price. The impact of discrete devaluations was commonly measured by the "transmission effect", i.e. the proportion of a change in the value of the currency (expressed as a percentage change) which is reflected in a change in the wool price (also expressed as a percentage change). This effect can be calculated for the period investigated in this study; in this context it might be referred to as the "exchange rate elasticity of the wool price".

The limitations discussed above in respect of the method of analysis adopted in this study also apply to the derivation of elasticities. In addition, at most only eighty two percent of the variation in wool price has been explained and it may be that the factors employed in that regression are explaining influences which would be more correctly ascribed to other factors. (Similar limitations apply to the interpretation of the transmission effects derived from analysis of past devaluations).

Table 3 presents the elasticities for wool price in relation to the \$US/\$NZ and \$A/\$NZ exchange rates, derived from the regression results presented above.

Table 3: Exchange Rate Elasticities for New Zealand Wool Price for the Period 15 March 1985 - 24 April 1986, based on average values.

<u>Exchange Rate</u>	<u>Other Variable</u>	<u>Elasticity</u>	<u>Corresponding R²</u>
\$US/\$NZ	none	0.5	75%
\$US/\$NZ	NZWB purchases	0.59	82%
\$ A/\$NZ	none	0.51	64%
\$ A/\$NZ	NZWB purchases	0.62	71%

Two sets of results are presented. These correspond to the regressions with and without the Wool Board purchases series. The inclusion of this variable in the regression can be seen as a correction factor for the wool price series; on that view the elasticities derived from the regressions which include Wool Board purchases should be interpreted as the effect of exchange rate changes on the "true market price". However, although it is better to derive elasticities from the regressions that explain the most, in this case it is better to use the results from the single variable regressions. Not surprisingly, these elasticities show that exchange rate fluctuations have less effect on the actual price than on the "true market price". But it is after all the actual price.

The results presented in Table 3 show that on average there is approximately fifty percent transmission of fluctuations in the \$NZ in relation to the \$US and \$A to the wool price. Lower elasticities were obtained from the regressions of percentage changes in the dependent and independent variables. These elasticities are 0.41 for the \$US/\$NZ rate and 0.34 for the \$A/\$NZ rate.

Previous Devaluations

Table 4 below sets out the evidence for the transmission effects of the major changes in the value of the New Zealand dollar between the adoption of the basket method of setting the exchange rate in July 1973 and the floating of the dollar in March 1985. (There were other smaller discrete changes in this period as well as frequent marginal adjustments against the currencies in the basket). The changes in the value of the \$NZ listed below are all measured in terms of the Reserve Bank TWI, but their effect was the same across all exchange rates. The third column in the table shows the change in the wool price on the assumption that the world price remains constant and that the New Zealand price adjusts fully for the exchange rate change. The fourth column shows the actual change in the price of wool between the last sale before the devaluation/revaluation and the first sale afterwards. The fifth column is column four divided by column three.

Table 4: Transmission Effects of Major Changes in the New Zealand Exchange Rate on the Wool Price, 1973 - 1985.

<u>Date</u>	<u>Devaluation (-) Revaluation (+)</u>	<u>Expected * Impact</u>	<u>Percent Change in Wool Price</u>	<u>Transmission Effect</u>
10/9/73	+ 10%	- 9.1%	- 11.86%	130%
10/8/75	- 15%	+ 17.6%	+ 18.75%	107%
22/6/79	- 5%	+ 5.26%	+ 8.5%	162%
8/3/83	- 6%	+ 6.4%	+ 6.75%	106%
16/7/84	- 20%	+ 25%	+ 22.6%	90%

* On the assumption of constant world price and full adjustment for change in the exchange rate.

The results presented in Table 4, like those presented earlier in this study, take no account of other factors. Three of the devaluations (1975, 1979 and 1984) occurred between wool selling seasons. In the four to six week break between seasons a number of other factors can have an impact on the wool price. In view of these

considerations, these results must be taken as tentative. However, they do suggest a considerably greater impact on wool price than the elasticities applicable to the period since the float.

The objection might be made that elasticities which are derived from regression results (and so are by their nature averages) cannot be compared with figures obtained from the analysis of discrete changes in the exchange rate. Table 5 below sets out the percentage changes in the value of the \$NZ and the percentage changes in the wool price for wool auctions either side of the largest wool price changes which occurred in the period of the main study.

Table 5: Transmission Effects of Changes in the New Zealand Exchange Rate on Wool Price, 27 June - 8 August 1985, 13-19 December 1985.

<u>Exchange Rate</u>	<u>Percent Change</u>	<u>Expected * Impact</u>	<u>Percent Change in Wool Price</u>	<u>Transmission Effect</u>
<u>27 June - 8 August 1985</u>				
RBNZ TWI	+ 8%	- 7.4%	- 5%	67%
\$NZ/\$US	+ 11.6%	- 10.4%	- 5%	48%
\$NZ/\$A	+ 6.12%	- 5.77%	- 5%	87%
<u>13 - 19 December 1985</u>				
RBNZ TWI	- 4.5%	+ 4.7%	+ 5.5%	117%
\$NZ/\$US	- 5.15%	+ 5.4%	+ 5.5%	102%
\$NZ/\$A	- 4.7%	+ 4.9%	+ 5.5%	112%

* On the assumption of constant world price and full adjustment for change in the exchange rate.

The figures presented in Table 5 are directly comparable with those presented in Table 4. The strengthening of the New Zealand dollar in the period June - August 1985 did not have as great an impact (proportionately) on the wool price as the weakening in its value in mid-December 1985, nor as great an impact as the earlier major changes in the exchange rate in the period 1973 - 1985. Other factors may explain these different transmission effects.

The evidence concerning transmission effects in the period of this study and earlier periods is inconclusive, possibly because of the effect of other factors not taken into account here. The low (50%) average transmission effect found to apply for the period investigated in this study cannot be taken as evidence of a "smoothing policy" adopted by wool buyers. It may simply reflect the incomplete explanation obtained in the regressions.

Previous Fluctuations

The period investigated has exhibited considerable fluctuation in the wool price. It has varied between 387 c/kg and 324 c/kg and there have been changes of up to 19 c/kg between sales (27 June/8 August, 13/19 December). The standard deviation for the market indicator wool price series for the period is 16.9 c/kg. Table 6 below sets out the standard deviations and average values (simple averages, not weighted averages) for the wool price for the period investigated and the five seasons from 1981/2 to 1985/6.

Table 6: Standard Deviations and Simple Averages for Sale-by-Sale Wool Prices (Market Indicator), 1981/2 - 1985/6.

<u>Period</u>	<u>Standard Deviation</u>	<u>Simple Average</u>
1981/2 season	9.57	256
1982/3 season	21.64	256
1983/4 season	8.79	296
1984/5 season	7.91	375
1985/6 season	11.14	345
15 March 1985 -	16.9	351
24 April 1986		

The variation in the period investigated is greater than the average variation for the four seasons 1981/2-1984/5 (11.97), but it is exceeded by the variation in the 1982/3 season. Although a devaluation of the New Zealand dollar part-way through that season brought an increase in the wool price, a second, larger increase occurred one month after the devaluation. The variation in the 1985/6 season is less than the average for the previous four seasons (11.14 compared with 11.97).

The variation in the wool price which has occurred in the period investigated is less than that which has occurred in one previous season, and the variation in the 1985/6 season is less than the average for the previous four seasons. This suggests that the variation which has occurred in the period investigated (including the 1985/6 season) could be expected to occur through the influence of exchange rate changes and other factors.

CONCLUSION

The limitations affecting this study were discussed at the beginning of this paper. In summary, the method of analysis adopted examines only short-term responses of the wool price to exchange rate changes and all other factors are held constant. Furthermore, as the regressions do not explain a very high proportion of the variation in the wool price and as the period studied is quite short, no

generalisations can be made about the influence of particular currencies on the wool price. The conclusions which can be drawn from this study are as follows:

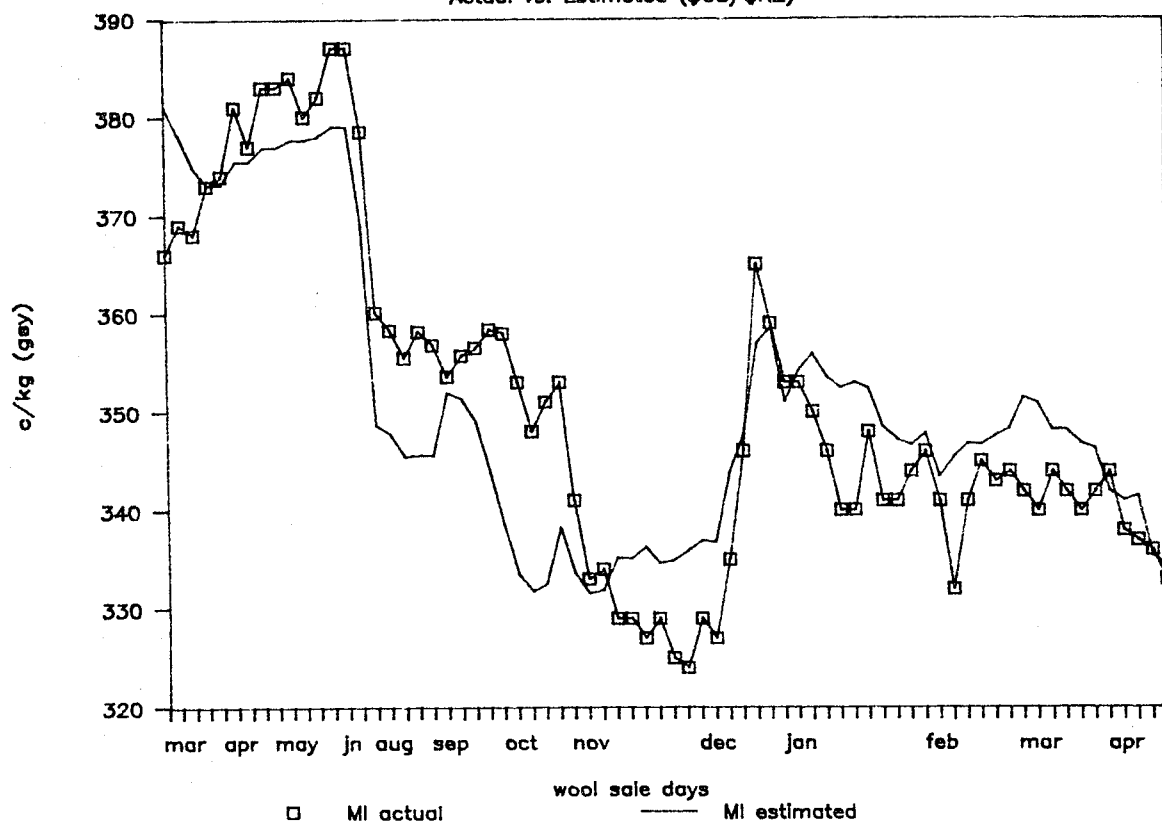
1. At most seventy five percent of the sale-by-sale variation in the wool price in the period since the floating of the New Zealand dollar to the end of April 1986 can be explained in regression analysis by exchange rate changes.
2. The exchange rate which was correlated most closely with the wool price over the period investigated is the \$US/\$NZ rate.
3. The inclusion of New Zealand Wool Board purchases improves the regression results, but there are problems associated with this variable.
4. No conclusions can be drawn from a comparison of the elasticities derived from the regressions with the transmission effects of previous major exchange rate changes.
5. The variation in the period investigated is less than that in the 1982/3 season and the variation in the 1985/6 season is less than the average for the previous four seasons.

Appendix

1

NZ Wool Price

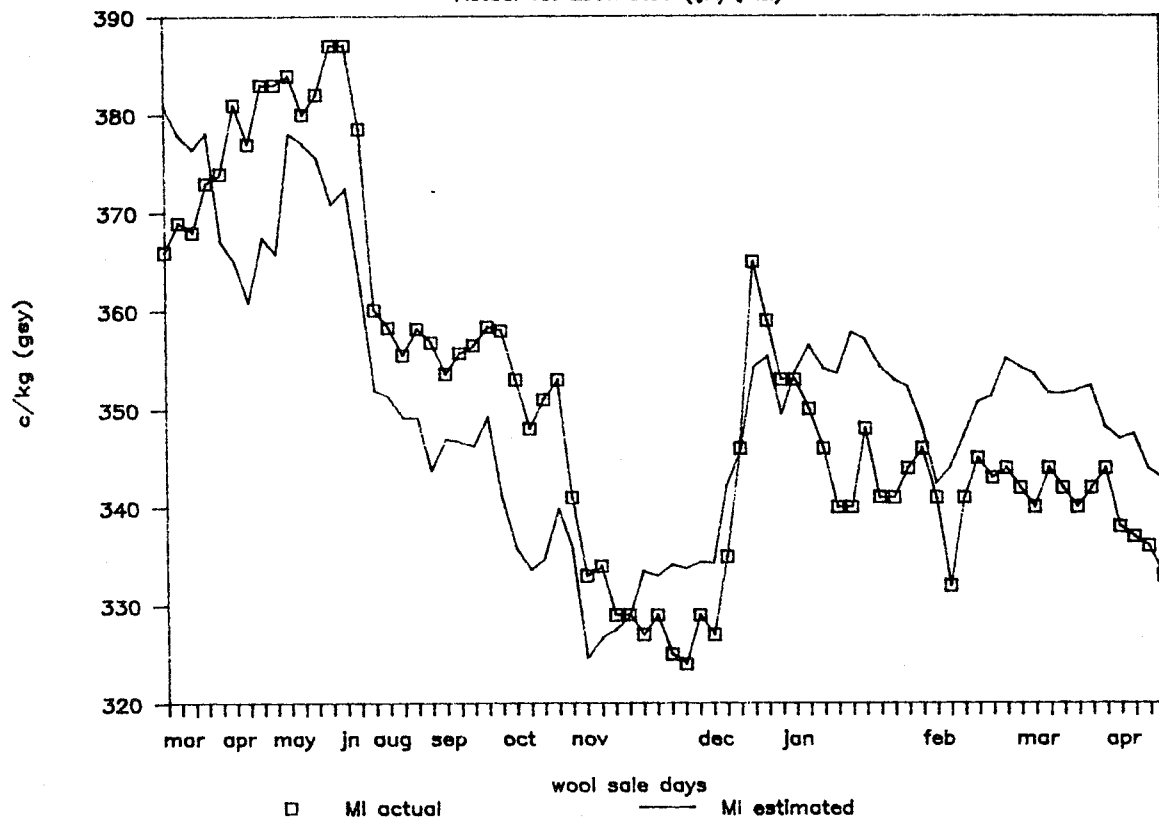
Actual vs. Estimated (\$US/\$NZ)



2

NZ Wool Price

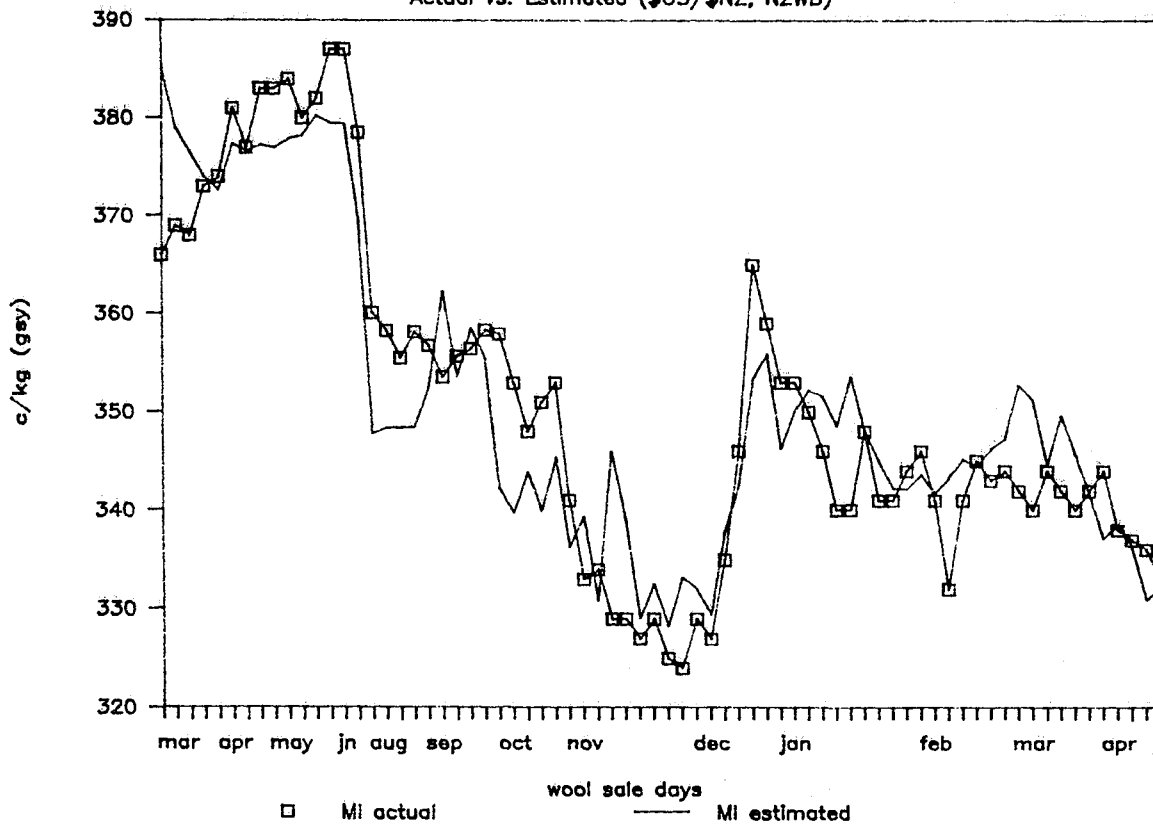
Actual vs. Estimated (\$A/\$NZ)



3

NZ Wool Price

Actual vs. Estimated (\$US/\$NZ, NZWB)



4

NZ Wool Price

Actual vs. Estimated (\$A/\$NZ, NZWB)

