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**TRADE BETWEEN NEW ZEALAND AND LATIN
AMERICAN COUNTRIES: A MODIFIED GRAVITY MODEL**

A thesis
submitted in partial fulfilment
of the requirements for the Degree of
Doctor of Philosophy (Economics)
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by
M.V. Cortés-Rodriguez

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Abstract of a thesis submitted in partial fulfilment of the
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COUNTRIES: A MODIFIED GRAVITY MODEL**

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The thesis studies the evolution of bilateral trade between New Zealand and seventeen Latin American countries over the period 1958 to 1997. The period includes the early stage of erratic emergent trade as well as the foreign trade-oriented phase of the nineties.

The work has two objectives. The first is to understand the qualitative nature of the evolution of bilateral trade. In this part we focus on the emergence of specific product groups and country patterns. We find that much of the evolution has been influenced by factors like the economic policy orientation of participating countries, local politics and diplomatic and marketing efforts - factors that usually fall outside the scope of standard trade theoretic analysis.

The second objective is to model quantitative evolution using a modified gravity model. Unlike in most of the gravity model literature that uses cross-section analysis, we use a country-specific time-series model. This allows us to incorporate the effects of political and military developments as well as structural changes specific to each country. We find that while traditional explanatory variables like income and population of participating countries are important, to explain the time series data more adequately we need to incorporate additional attributes like local political and military events into the model.

The estimated import equations are then analysed and interpreted to focus on the aspects of bilateral relation that may be of use for the future evolution of New Zealand trade with Latin American countries.

Key words: Latin America, New Zealand, adjusted gravity model, international trade, political and military influences, structural breaks.

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ABBREVIATIONS

APEC	= Asia-Pacific Economic Cooperation pact
APCs	= Andean Pact Countries
CACs	= Central American Countries
CER	= Australia and New Zealand Closer Economic Relations Treaty
CHH	= Carter Holt Harvey Ltd
CONASUPO	= <i>Compañía Nacional de Subsistencias Populares S.A.</i>
DOTS	= Direction of Trade Statistics
EAI	= Enterprise of the Americas Initiative
ECLA	= Economic Commission for Latin America
FCH	= Fletcher Challenge Ltd
FSU	= Former Soviet Union
GATT	= General Agreement on Tariffs and Trade
GDP	= Gross Domestic Product
IFS	= International Financial Statistics
IMF	= International Monetary Fund
IS	= Import Substitution policy
LACs	= Latin American countries
LAMGI	= Latin American global imports
LAMNZ	= Latin American imports from NZ
LAXGI	= Latin American global exports
LAXNZ	= Latin American exports to NZ
M	= imports
m	= million
MFAT	= Ministry of Foreign Affairs and Trade
MERCOSUR	= <i>Mercado Común del Sur</i> , Southern Cone Common Market
MERT	= Ministry of External Relations and Trade (NZ)
NAFTA	= North American Trade Agreement
NZ	= New Zealand
NZAPMB	= New Zealand Apple and Pear Marketing Board
NZDB	= New Zealand Dairy Board

NZDS	= New Zealand Department of Statistics
NZMG1	= New Zealand global imports
NZMLA	= New Zealand imports from Latin America
NZMP	= New Zealand Milk Products
NZXG1	= New Zealand global exports
NZXLA	= New Zealand exports to Latin America
OECD	= Organisation for Economic Co-operation and Development
PWT	= Penn World Table
SAP	= Structural Adjustment Programs
SITC	= The Standard international trade classification
TICA	= Trade and Investment Consultation Agreement
TRADENZ	= New Zealand Trade Development Board
UK	= United Kingdom
UN	= United Nations
UNCTAD	= United Nations Conference on Trade and Development
UNDP	= United Nations Development Program
US	= United States
WTO	= World Trade Organisation
X	= exports

CHAPTER 1

INTRODUCTION

1.1 Motivation

This chapter introduces the subject matter of the thesis, its motivation, aims and methodology. The thesis is an examination of the evolution of bilateral trade between New Zealand and seventeen Latin American countries (LACs) over the period 1958 to 1997. There are several motivations in focusing on the bilateral trade of this group of countries, though they are yet to become significant contributors to the economic lives of the respective countries.

First of all, though the trade relations between New Zealand and some Latin American countries are relatively small and have often been erratic in the past, they have been steadily growing since the middle of the 1980s. In particular, in the strategic thinking of New Zealand, Latin American trade has been getting increased prominence in recent times. Since New Zealand lost its traditional trade partner, the UK, after the UK joined the European Community in the 1970s, there has been substantial effort in New Zealand at repositioning the global orientation of its trade. In the search for new trade partners, New Zealand has focused on three areas: South-East Asia, Pacific Islands and Latin America. Some of the markets explored during this period -for example, Malaysia, Singapore, South Korea, Taiwan and Hong Kong- have indeed developed into stable trade partners, with growing volumes of trade recorded every year. In the case of Latin America, in spite of fairly focussed attempts, stable trade relations have eluded New

Zealand. In the 1990s, however, bilateral trade between New Zealand and a number of Latin American countries appears to have acquired a steady footing.

This trade has immense potential for New Zealand. Mexico is the largest single-country market for imported milk, a product in which New Zealand enjoys considerable resource and technology advantage. Some other countries, e.g. Chile, Argentina, Uruguay and (southern) Brazil, with climatic, geographical and primary product orientation similar to New Zealand, are important potential markets for technology, equipment and technical services in shared product areas. Given the size of the larger Latin American markets and their current disposition towards more trade-friendly and open regimes, the potential for future expansion of trade between these countries and New Zealand appears immense. So the first motivation for our study is the importance of this trade, which we may expect to grow rapidly, given today's geopolitical parameters and the nature of trade regimes.

There are additional reasons why the potential appears to be promising. New Zealand and some of the Latin American countries are members of multilateral trade agreements such as the Asia-Pacific Economic Co-operation pact (APEC)¹ and the Cairns Group², in addition to the World Trade Organisation (WTO)³. In the near future New Zealand may be also able to become a member of the MERCOSUR group⁴. The potential of these multilateral pacts is nowhere near being fully utilised, and they can produce substantial gains through trade and investment for the

¹ Chile, Peru and Mexico are members of the APEC.

² Argentina, Brazil, Chile, Colombia and Uruguay.

³ Erstwhile General Agreement on Tariffs and Trade (GATT).

⁴ MERCOSUR is the group comprising Brazil, Argentina, Uruguay and Paraguay, which plans to become a full-fledged free-trade area sometime in the future. Both Chile and New Zealand, it is reported, are willing to enter the group (Edlin, 1999).

participating countries in the future. In addition, investment in joint ventures in Mexico can earn New Zealand investors valuable access to the North American market through the North American Free Trade Agreement (NAFTA). If NAFTA is extended further south in the future, investment in some other countries in the region may also prove strategically rewarding.

Apart from the reasons outlined above, a study of New Zealand-Latin American trade is rewarding for a completely different set of academic issues. Bilateral trade between a developed OECD country and developing countries exemplifies a number of features that are absent in the more familiar interaction among developed countries. New Zealand's white settlers, who came mostly from the UK, share a language and cultural perception very different from the Spanish culture of the dominant economic institutions of Latin America⁵. This factor may well be the reason why New Zealand developed trade and diplomatic relations with British colonies (or later, countries of the British Commonwealth) much more successfully than with Latin America. A third set of differences that should be remarked on is between political institutions. New Zealand's democratic institutions and well developed civil and human rights provide a contrast with the centralised political regimes of Latin American countries during most of the period of our study.

We cannot presume *a priori* that these differences would have influenced bilateral trade, either in its composition or its volumes. In fact the composition or volume of trade is explained in the theory of international trade with a set of

⁵ Native pre-colonial cultures have influence in the national life of Latin American countries. But it is a fair assessment that the economically dominant institutions with which we will be concerned show more Spanish influence.

economic variables, e.g. endowments, income, exchange rates and transport costs (to name the most important ones), which can be measured without any reference to these factors. However, much of that theory applies to nations in established trade i.e. along a trajectory where trade relations are already well-established, and further evolution is essentially quantitative. By contrast New Zealand-Latin America trade, for a large part of the period that we study, is in an incipient stage. Until the 1980s, and well into it in some cases, trade between New Zealand and Latin America appears tentative and experimental. Trading organisations or corporations are found to be trying out new markets in an exploratory spirit, and only later in the period did these efforts take any coherent pattern. During these formative years it is not so much the evolution of quantity, but the emergence of a pattern in terms of countries, markets, customers and products that becomes the focus of attention.

We should further add that early trade relations among today's developed economies are well studied and documented in the literature. On the other hand, the early phase of the development of trade between a developed economy and a developing economy or a set of developing economies has usually been studied in the context of an empire's colonial trade. By contrast, the trade between New Zealand and Latin America is a case of emergent trade relations between a developed economy and a set of developing economies without any empire-colony or center-periphery connotation. Finally trade between 'dissimilar' countries is rarely studied and provides conceptual difficulties not handled by standard trade

theory⁶. Thus, even without reference to commercial considerations the emergence of this trading relationship seems to be a worthwhile subject of study.

1.2 Latin American Countries: Definition and Basic Features

In the literature the term "Latin America" has been used by different authors to refer to different sets of countries⁷. It is therefore necessary to define Latin America in the context of the present work. We use the phrase Latin American countries to refer to the region (Fig. 1.1) that consists of seventeen countries located in North, Central and South America⁸. The LACs have an area of 19.8 million square kilometres, which represents 14.7 per cent of the world's land area. Its population in 1996 was estimated at 446 million (IMF, 1998). In terms of market size, this population is comparable to the European Union or the Association of South East Asian Nations (Lattimore, 1992).

Peoples of the LACs have some common socio-economic and political history: long colonial experience, independence around the same time, and similar nation-building problems. As stated by Wynia (1990), the LACs also have similar economic problems, such as poverty and hunger, severe income inequality, irregular economic growth, and heavy dependence on developed countries for market, technology and finance.

⁶ See, for example, Helpman (1987), who argues that traditional theories cannot explain why trade volumes are low between countries that look dissimilar.

⁷ For instance, Davis & Wilson (1975) refer to Latin America as the nations that lie to the south of the US. Others (e.g. Wynia, 1990) refers to LACs as a "family" of nations linked to the Spanish empire in America. This definition excludes the largest country in the region, i.e. Brazil, which was part of the Portuguese empire.

⁸ The most general classification of the LACs is with respect to their geographical position: North, Central and South America. Mexico is the only North American country included. Central America has 6 countries (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama) with an average area of 83 sq. km and average population slightly below 5 million. South America refers to 10 countries (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay and Venezuela) with an average area of 1734 sq. km and an average population of around 30 million.

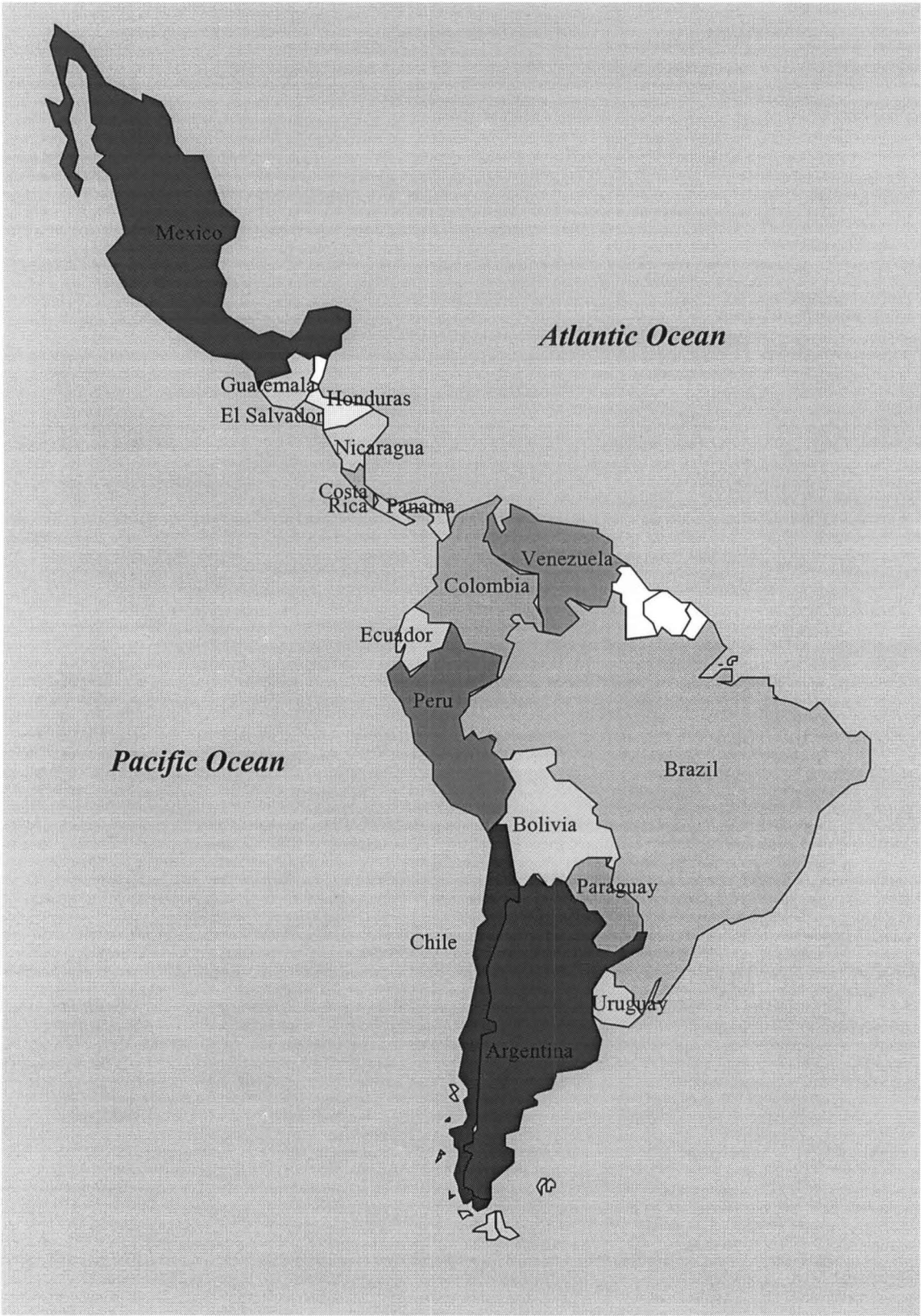


Figure 1.1 **Latin American Countries**

Gross domestic product per capita ranged from US\$ 698 in Peru to US\$ 6,659 in Argentina during 1996 (IMF, 1998). By standard classification, the countries fall in the low and medium income categories. However the size of some of the economies is large, and concentration of income in the middle and upper income brackets make them attractive markets.

In the last decade, the LACs have been implementing trade reforms in various degrees. As part of the reforms, they are eliminating barriers, creating new opportunities for trade (Jennings, 1993; Clark, 1991), and opening up to foreign investment (Baker, 1992; Belli, 1991; De Quesada, 1993). Arguably as a result of liberalisation, the region has become one of the world's fastest growing markets for trade (Curtin, 1992; Korporaal, 1992; Rowley, 1992; Gooley, 1993; Watson, 1994), with some authors rating it to have the "greatest economic promise" (e.g. Hunter et al, 1991).

1.3 Scope and Methodology

There are two main objectives of this research. (i) The first one is to understand the qualitative nature of the evolution of this bilateral trade taking into account the commodity composition and country patterns. (ii) The second objective is to model the quantitative evolution using a modified version of the traditional gravity model.

About the first objective, we note that very little systematic information is available on New Zealand-LACs trade. From the viewpoint of larger LACs, New Zealand trade is too small and information relating to it is scarce and scattered. Even in New Zealand where there is a growing awareness of the strategic importance of this trade, neither facts nor statistical data are easy to come by. The

information on the New Zealand- LACs trade is also hard to understand because of differences in economic institution and politics (Yeabsley, 1996). Parts of the documentation for LACs are available only in Spanish. Given this state of affairs, the first part of our effort has been concentrated in gathering the information related to this trade, and organising the trade statistics available in a systematic form. After the information was systematised, we explored the historical features of its evolution. Time series information show a number of structural break points making it difficult for the econometric analysis of the second part of the study. On the other hand these structural breaks appear to be the result of political and economic regime changes in the LACs and have contributed to the peculiar stop-go character of bilateral trade in many instances. In the early chapters we explore trade and economic data qualitatively connecting them to economic and political history.

The second part of the thesis estimates a series of modified gravity models. The empirical success of gravity models in bilateral trade studies makes the model attractive for our work. We use a country-specific time-series model with adjustments for the political environment of trade in each country. There are two sets of variables: the traditional economic variables (e.g. income, population and exchange rate) and new qualitative variables to incorporate relevant influences (binary variables to capture the influences of structural breaks, political and military events). An alternative would have been to estimate a Vector Autoregression model for the Latin American imports, and separate models for New Zealand imports. For the LACs' imports it could enable the modeling of the cross effects of the shocks to trade of different members. But the nature of time

series data and a few other issues discussed later, did not permit a VAR approach to modeling of LACs' imports.

The model has been estimated separately for New Zealand imports from three countries (Argentina, Mexico and Peru) and ten LACs' imports from New Zealand (Argentina, Brazil, Chile, Colombia, El Salvador, Mexico, Panama, Peru Uruguay and Venezuela). We have also identified a number of other issues and factors related to the emergence of a repetitive pattern or composition of trade.

1.4 Contents of the Chapters

The work is divided into seven chapters. Chapter 2 describes the general setting of New Zealand-LACs trade. Among other things, it contains a brief survey of the social, political and economic parameters that characterise the two sides. It also provides an overview of the nature of global trade of New Zealand and of the LACs in terms of commodity composition and partners.

Chapter 3 presents the main features of the evolution of New Zealand-LACs trade between 1958 and 1997. It is based on statistical and other information that was compiled in the course of this study. Some of the data are presented in this chapter; other data are displayed in the Appendix. In course of examining the quantitative evolution of trade over the period, three distinct phases, marked by conspicuously different behaviour of trade, have been identified. These phases coincide with significant economic and political change in LACs as well as in New Zealand, and thus provide a framework for correlating domestic and international events with the evolution of trade. The first part of the chapter focuses on the global trade performance, while the second part of the chapter carries over the discussion to

the bilateral context. In this chapter we also discuss New Zealand's trade with Latin American blocs: MERCOSUR, Central American and Andean Pact countries.

Chapter 4 visits parts of the theory of gravity models that can be useful in explaining the issues mentioned above, and then develops the empirical model. Here we discuss the alternative modelling strategies available, and then explain the reasons of our using the Gravity model. We then introduce the variables and the equation used in estimation.

Chapter 5 presents the data, the procedure of the empirical work and estimation results.

Chapter 6 discusses the main results that come out of this research. Also, it compares our results with those found by other scholars. It concludes that the leads from traditional economic variables appear to provide some explanations of bilateral trade, but not all, and assesses the contribution of the non-traditional variables.

Chapter 7 concludes the study. It comes back to the 'worldly' issues once again, and tries to put together a set of observations that may help the future growth of New Zealand-LACs trade given the findings of the earlier chapter. It also discusses the shortcomings of the present work and issues for future research that can be useful both for enhancing our understanding of New Zealand-LACs trade and also to help its growth.

CHAPTER 2

THE SETTING OF NEW ZEALAND - LATIN AMERICA TRADE

2.1 Introduction

To study evolving trade relations between countries, and changing trade composition and value over a long period, it is useful to place the countries in a perspective that is amenable to analysis. This provides the motivation for the present chapter. It tries to introduce the setting in which New Zealand - LACs trade has evolved historically.

Little is known about any possible ancient trade between LACs and the group of islands that later came to be known as New Zealand. In fact, little is known about the population and society of New Zealand prior to a thousand years ago with any degree of certainty¹. And while we know a little more about the life and the economy of the Maori before the arrival of European settlers, there is no evidence of any trade relations between them and the continent of South America. Our discussion therefore centres on more recent times.

This introductory chapter is organised as follows. Section 2.2 is a brief review of the geographical, socio-political and macroeconomic environment of the LACs and New Zealand. Section 2.3 deals with the (evolving) nature of trade and political regimes. Trends in liberalisation and privatisation are discussed in Section 2.4. Trade composition and trading partners of the LACs and of New

¹See for example Firth (1973) or Pearce (1980).

Zealand are discussed in Section 2.5. Section 2.6 summarizes various features of the trade setting discussed in the chapter.

2.2 General Characteristics: The LACs and New Zealand

The LACs and New Zealand are, in a meaningful sense, close neighbours in the Pacific. The distance between New Zealand and the southern states in Latin America is approximately the distance between New Zealand and some of its Asian trading partners. Thus, New Zealand to Santiago at 9,380 km is actually a slightly shorter hop than New Zealand to Hong Kong at 9,402 km. Prior to European settlement; New Zealand's trade relations were confined to the Pacific islands alone. Latin American trade itself was land-based rather than maritime, partly because over the vast landmass of the South American continent, countries could find a number of prosperous societies to trade with.

In more recent times, bilateral trade between New Zealand and LACs has been influenced by an important politico-cultural factor. New Zealand's trade history since European settlement has been very much circumscribed by its cultural and economic ties with Great Britain, from which the early European migrants had come. It also developed diplomatic and trade relations with British colonies and settlements, particularly ones closer at hand. Latin American countries, on the other hand, had a past that related them culturally and economically with European societies other than Great Britain. It is therefore not surprising that trade and diplomatic relations between New Zealand and LACs developed rather late.

The historical legacy of trading with the UK and its ex-colonies has certainly imposed a large transport cost on each dollar of New Zealand's exports and imports.

The average distance to capitals of the world's 20 major exporters, weighted by value of bilateral imports, for New Zealand is 1.6 times that for the average LAC (see Table 2.1). This shows the disadvantaged geographical position of New Zealand, and the LACs' relative advantage in the global trade map. With respect to access to international markets, LACs have generally remained better placed, though rapid development in South East Asia is expected to reduce the distance measure for New Zealand in the future.

The basic economic contrast between New Zealand and LACs derives from the fact that the latter are developing economies, while New Zealand is a developed OECD country. Though the countries within the LAC group are fairly diverse in terms of the usual indicators, the contrast between them as a group and New Zealand is apparent.

Table 2.1 presents some comparative information for 1992². LACs had on average only 26% of the per capita Gross Domestic Product (GDP) enjoyed by New Zealand. Investment as percentage of GDP, averaging 14.2% for LACs, was substantially below that of New Zealand at 23.7%. With the notable exception of Chile (27%), all LACs had lower investment share in GDP than New Zealand.

² See Appendix Table A.4 and Table A.5 for time series data (1958-1997) on GDP 1990 in US \$ and population.

Table 2.1 Geographic and Economic Indicators (1992): LACs and NZ

Country	Population (million)	Area '000 km ²	Distance* '000 km	Consumption (C)	Investment (I)	Government spending (G)	GDP Per capita 1990 US\$
				(% of GDP)			(000's)
Argentina	32.3	2,767	9.2	79	12	4	4.7
Bolivia	7.5	1,099	6.7	72	7	20	1.6
Brazil	154.0	8,512	9.5	71	14	12	3.9
Chile	13.6	757	9.9	57	27	16	4.9
Colombia	33.4	1,139	6.7	69	14	15	3.4
Costa Rica	3.2	51	6.4	64	19	18	3.5
Ecuador	11.0	284	7.6	62	18	13	2.7
El Salvador	5.4	21	4.8	68	9	26	1.8
Guatemala	9.7	109	4.7	83	10	11	2.3
Honduras	5.4	112	n.a.	74	16	15	1.4
Mexico	84.9	1,958	4.8	78	16	9	6.2
Nicaragua	3.7	130	7.1	58	9	32	1.2
Panama	2.5	77	n.a.	54	21	23	3.2
Paraguay	4.5	407	5.8	67	17	17	2.1
Peru	22.4	1,285	8.7	66	18	16	2.1
Uruguay	3.1	177	7.8	74	12	17	5.3
Venezuela	20.2	912	5.4	63	17	15	6.6
Total LACs	417.0	19,797					
Average LACs			7.0	64	14	15.4	3.2
New Zealand	3.4	266	11.5	66	24	14.3	12.0

Source: IMF, Summer & Heston (1992); Barro and Lee (1994).

* Average distance to capitals of world 20 major exporters, weighted by value of bilateral imports.

n.a.=no available data.

There is no simple way of correlating growth, development or trade with government expenditure as a percentage of GDP in the LACs. In some economies, government expenditure is constrained by the poor and corrupt revenue administration, as well as low per capita income level. In others, varying degrees of political will and corruption in the government means that government expenditure delivers what it purports to deliver with different degrees of efficiency. In addition, some governments are already going through a reform process, a component of which is to reduce government expenditure as well as government intervention in the economy. Therefore the share of government expenditure in GDP produces mixed signals in any causal analysis. We may simply note that government expenditure as percentage of GDP in the LACs is quite varied, ranging from 4% in Argentina to 32% in Nicaragua. For New Zealand, this share is about 14%.

New Zealand has been an open economy since 1984. This feature, has been complemented by reforms of the trade regime, removal of exchange controls and floating of the New Zealand dollar (TRADENZ, 1994). These reforms have been reinforced by wide-ranging internal reforms in financial markets, fiscal policy, labour market and the public sector. Some Latin American countries have introduced similar reforms since the late 1980s, but the reforms are often tentative and incomplete. Thus, the general policy environment, particularly the trade policy environment, is different between New Zealand and the LACs.

Concentrations of wealth and income have remained persistent in the history of the LACs (Worcester & Schaeffer, 1971). United Nations Development Program (1994) estimated that 40% of the LACs' people live below the poverty line. New

Zealand has a much more egalitarian society. Disparity in income, trade and social indicators between New Zealand and the LACs reflect vastly different social situations.

2.3 Trade and the Political System

The constitutions of a government and its political philosophy go a long way in shaping its trade policy. From the choice of trade partners to the question of choice between import substitution policy or export promotion- all of these are known to be affected by the nature of the government. For the politically volatile LACs, this has very obvious consequences. The nature of trade regimes, the extent of exchange control, and the choice of trade partners have changed over time for the same country and have varied across the subcontinent.

The ideological views of the LACs governments can be classified in three groups: socialists (e.g. Peru and Chile until 1970s), countries closely linked with the world market (e.g. Brazil), and countries which emphasise individual initiative and entrepreneurship (e.g. Argentina). Political regimes vary or have varied from the revolutionary (e.g. Nicaragua) to the very traditional (Mexico and Costa Rica). Countries with similarity in political and ideological views had developed stable trade relationships. During the Cold War period, a group of LACs with import substitution regimes and large public sectors, often described as socialist, used to have former Soviet Union and Cuba as principal trade partners. On the other side a group with more export promoting regimes used to have the US as principal partner. During the Cold War, the LACs were the focus of attention of both the US and the former Soviet Union because of their strategic geographic location (close to the US).

The LACs were beneficiaries of aid from both sources, financial, military, technical as well as of bulk food items such as milk powder and wheat.

A common characteristic for many of the LACs has been the influence of the military over the political and economic life (Baily & Hyman, 1974; Wynia, 1990). The subcontinent has been considered to be one of the most conflict-ridden regions in the world³. From the mid 1960s to the early 1980s, a large number of the LACs were ruled by some form of authoritarian regime⁴. Bertsch et al (1978) enumerated fifty-three successful and twenty-eight unsuccessful military coups in the LACs between 1945 and 1972. Within this environment, even some democratic regimes were significantly influenced by the armed forces (e.g. Colombia, El Salvador, Guatemala, Nicaragua, Paraguay and Uruguay). Only three democratic regimes had relatively small influence from the armed forces (Costa Rica, Mexico and Venezuela).

The leadership in most cases was from the richer classes, either urban industry and finance or from the rural landed oligarchies. Quite a few activist groups have been classified as terrorists and violent; insurrections and guerrilla warfare have been and are common (e.g. guerrillas: Shining path "sendero luminoso" in Peru; M19, ELN in Colombia; Zapatistas in Mexico; Sandinistas in Nicaragua) and peasant uprisings attempting to overthrow the power of rural oligarchies occurred in the past.

Table 2.2 reproduces the ranking of LACs in terms of a composite indicator of 'freedom' comprising weights given to political rights and civil liberties by Freedom

³ Numerous attempts have been made for peace and development in these countries, e.g. The General Assembly resolution in 1988, Tegucigalpa Commitment in 1991, and the summit in Guatemala in 1993 (United Nations, 1994).

House in 1993. While all such rankings are subjective, the table provides some indication of the general state of political and civil freedom in LACs.

Table 2.2 Freedom Rankings for the LACs

Country	Political Rights	Civil liberties	Freedom rating
Argentina	2	3	Free
Bolivia	2	3	Free
Brazil	2	3	Free
Chile	2	2	Free
Colombia	2	4	Partly Free
Costa Rica	1	1	Free
Ecuador	2	3	Free
El Salvador	3	3	Partly Free
Guatemala	4	5	Partly Free
Honduras	2	3	Free
Mexico	4	3	Partly Free
Nicaragua	4	3	Partly Free
Panama	4	3	Partly Free
Paraguay	3	3	Partly Free
Peru	6	5	Partly Free
Uruguay	1	2	Free
Venezuela	3	3	Partly Free

Source: Freedom House (1993). Ranking scale runs from 2-14, based on the combined scores of political rights and civil liberties. Countries ranked between 2 and 5 are considered "free"; 6-10 "partly free," and 11-14 "not free". For indicators on political rights and civil liberties, 1 represents the most free and 7 the least free.

⁴ In the 1970s, Chile, Argentina, Ecuador, Peru, Bolivia, Brazil, Honduras and Panama had military coups, and democracy was the exception (Mexico and Colombia).

The comparative analyses of political rights⁵ and civil liberties⁶ in the LACs show wide variation. Table 2.2 shows freedom rankings from 1984 to 1993. While Costa Rica consistently ranks very high, countries like Chile, Guatemala, Nicaragua, Panama, Paraguay and Peru often rank very low, some bordering on classification as an 'unfree' state.

Political freedom and civil liberties to a large extent determine the nature of government and public decision making. Since external trade in most LACs during our period of study has been characterised by government supervision rather than by freely functioning markets, the implication of the state of 'freedom' is significant to the subject of this thesis. Free enterprise and democracy now predominate in the region (Watson, 1994). Nevertheless, the analysis of a government's role and its implication for trade is a complex issue and cannot be generalised across the region. Also the trade regimes, even in the mid 1990s, have various forms of restrictions, though in general they are evolving towards a more open regime.

External debt crises and the world recession of the 1980s had a serious effect on the LACs, leading to decline in infrastructure, investment, research, education, and social and health indicators (Fischer, 1991). In the 1990s, the LACs have had a stock of social, political and income distribution⁷ problems, environmental degradation, uncontrolled urbanisation and bureaucratic corruption, all inherited from the past (Engen, 1993; Lowenthal, 1993). The problem has compounded over time, as LAC governments generally did not until recently have a long-term agenda

⁵ The political rights are defined as the right to participate freely in the political process.

⁶ The civil liberties are defined as the freedom to develop views, institutions and personal autonomy independently of the state (see Table 2.2).

on solving socio-economic problems. Most governments tended to adopt policies whose benefits would be realised during the government's own term (Canto, 1986).

Yet, or perhaps as a result of these problems, in the 1990s, basic socio-economic and political issues are very much in debate in the LACs. Governments are experimenting⁸ with forms of political rule and public policy. There seems to be a general optimism about the future. One reason for this optimism is the realisation that political liberalisation is feasible, and that given the vast resources of the subcontinent and the currently declining human fertility rates, economic turnaround is within reach, and that in turn can maintain political freedom (Lowenthal, 1990). It can be said that most LACs are looking for economic growth and trade through an active pursuit of political reform, and indeed some countries have done well in trade during recent years (e.g. Chile and Brazil).

Table 2.3 summarises features of the trading systems prevalent in the LACs and New Zealand as of 1994. New Zealand's political system presents a veritable contrast to those of the LACs. New Zealand is an independent state within the British Commonwealth⁹. With its highly developed political freedom and civil liberties, it enjoys a different kind of government decision making and public institutions. Individual economic rights are substantive and are honoured by institutions. Thus, trading with the LACs often involves the interfacing of two quite different sets of institutions whose premises are different in their own countries.

⁷ Many authors have related problems like ransom, kidnapping and violence with income disparities in the LACs, e.g. Brooke (1995).

⁸ In this respect Wynia (1990) stated about politics in LACs, " *...you will find democrats, authoritarians and communists, who all insist that they know what is best for themselves and their neighbours*".

⁹ New Zealand is a monarchy, with a parliamentary democracy inherited from Britain. The titular head is Queen Elizabeth II and her duties are performed by a locally-appointed governor-general.

Table 2.3 Exchange and Trade Systems in New Zealand and LACs: 1994

Features of trade systems	Argentina	Bolivia	Brazil	Chile	Colombia	Costa Rica	Ecuador	El Salvador	Guatemala	Honduras	Mexico	Nicaragua	Panama	Paraguay	Peru	Uruguay	Venezuela	New Zealand
1. Payments arrears	—	—	—	—	—	√	—	—	√	—	—	—	√	√	√	—	√	—
2. Bilateral payments arrangements																		
a. with IMF's members	—	—	—	—	√	—	√	—	—	—	—	—	—	—	—	—	—	—
b. with IMF's non-members	—	—	—	—	—	—	√	—	—	—	—	—	—	—	—	—	—	—
3. Payments restrictions																		
a. for current transactions	—	—	—	√	—	—	—	—	—	—	—	—	—	—	—	—	√	—
b. for capital transactions	—	—	—	√	—	—	—	—	—	—	—	—	—	—	—	√	√	—
4. Cost related import-restrictions																		
a. Import surcharges	√	—	—	√	√	√	√	√	—	√	√	√	√	√	√	√	√	—
b. Advance import deposit	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5. Surrender or repatriation requirement for export proceeds	—	√	—	√	—	—	—	—	√	—	—	—	—	—	—	√	√	—

Source: IMF, 1995. This standardised IMF approach relates to the comparison of individual LACs vs New Zealand trade system.

√ indicates that the practice is a feature of the trade system

— indicates that the practice is not a feature of the trade system.

2.4 Privatisation, Liberalisation and Openness

In the 1990s, trade and investment liberalisation were at the top of the agenda for many governments in the LACs. In New Zealand, too, the process gathered momentum after the mid- 1980s, and since then the country has gone through one of the most thorough privatisation and trade liberalisation programs in the history of OECD countries.

Early in the 20th century, many of the LACs practised nearly free trade and were open to foreign investment and business activity. The flow of foreign investment, however, started slowing after the Second World War. This was not because of much inherent change in the LACs, but because of the emergence of more profitable alternatives in other regions following the restructuring of the world economy and changed geopolitical parameters after the War. By the end of the 1970s, flow of foreign capital had almost stopped.

Domestic investment failed to take the place of foreign investment. Domestic savings were low and financial intermediation poor. The period of study is characterised by governments trying to adjust to this changed situation by drastic change in economic policy, diplomacy and, often, suspension of political freedom. Governments were not generally successful. In most of the LACs, the era saw private initiatives and investment further frustrated by inflation, exchange restrictions, shortening policy horizons and arbitrary policies in search of revenue (Clark, 1991).

What emerged from this protracted period of confused policy attempts is a common realisation that the LACs need foreign investment to re-build their economies. There is now a common effort to redefine investment rules and attract

foreign capital. The recent phase of privatisation, liberalisation and related reforms in the LACs is a result of this common realisation. The growing political stability is complementing this endeavour by allowing domestic reforms to work out less turbulently, and by also sustaining foreign investors' confidence.

2.4.1 Privatisation

The LACs

In the last decade, privatisation programs have brought many changes to the traditional, centrally controlled governments in the LACs (McCrary, 1991; Walden, 1993). Privatisation in the Latin American context mostly meant the sale of public stock to foreign investors and increasing the flow of direct foreign investment. This naturally requires complementary reforms in trade policy, exchange control, and rules of foreign investment and ownership.

In many countries, sizeable privatisation proceeds have enhanced national treasury (De Quesada, 1993) and have helped in reducing public debt and government deficits. The LACs markets are especially attracting investment from companies looking for cheap labor and growth markets. Most investors consider Mexico and Chile as top prospects for investment, followed by Argentina, Venezuela and Brazil (Owen & O Hop, 1993; Walden, 1993; Welch, 1993; Hunter et al., 1991; Lambert, 1992; Evans, 1990). Colombia, Ecuador, and Peru are attracting more adventuresome investors (McCrary, 1993). The industries that are receiving the most attention for foreign investment are computer equipment and services, telecommunications, banking, petroleum, travel and tourism (Owen & O Hop, 1993)¹⁰.

¹⁰ According to Evans (1990) agricultural, forest and fishing sectors are the best investments in the LACs, and have a lot of unused potential to be further exploited.

Foreign investment in the entire region was growing at the rate of 10% a year in the early 1990s (Gaudio, 1993). There were more than 150 privatisation deals completed during the early 1990s in Argentina, Brazil, Chile, Mexico, and Venezuela. According to the International Finance Corp (IFC), stock markets in Peru, Colombia, and Mexico were among the top ten emerging markets, with US dollar-based returns of 125%, 36%, and 19% respectively in 1992.

New Zealand

The impetus for reforms in New Zealand came with the protracted period of economic difficulties that started in the early 1970s. Early in the 1970s, the U.K., New Zealand's largest trade partner, joined the EEC, creating severe disorientation for New Zealand's small and open economy. The first oil shock soon followed to accentuate the difficulties. The period that followed saw experimentation with policies of various kind, until by the middle of 1980s, the economy appeared to have chosen a determined path of liberalisation in all its aspects. Privatisation of the economy was a major component of this path, given that New Zealand had a large public sector that dominated both production and employment. New Zealand's privatisation episode was quite unique in that it was completed in a few years with singular political determination. During a few years between 1987 and 1992, the economy managed to completely privatise the large infrastructural sectors like railways, telecommunications, ports, waterways and the postal system. The country also privatised a large number of services, which were earlier produced by government or were used by it as input to other services. According to one estimate NZ\$ 50 billion worth of assets were privatised between 1987 and 1993¹¹.

2.4.2 Liberalisation

The Latin American Countries

The new direction of global trade in the LACs is opening up these previously protected markets within the economic and political constraints which exist. Before the present round of trade liberalisation, several LACs have tried liberal and open trade policies for short or long periods. As remarked earlier, LACs' political regimes have been fairly volatile in the past and economic philosophy and policy have often changed with change of regimes.

Trade liberalisation –both recent and earlier- has especially reformed the economies of Chile, Mexico, Bolivia, Costa Rica, Argentina and Venezuela. These countries are deregulating and have signed regional free-trade pacts (Likar, 1993; Belli, 1991). Trade liberalisation and economic reform programs have generally resulted in growing foreign investment and growing and diversifying exports. It is also claimed by some that they have resulted in increasing per capita income and declining inflation (Delia-Loyle, 1992).

Trade policy reforms in the LACs have been focused on: (1) the removal of import licensing and other potentially rent-inducing quantitative restrictions, and (2) a reduction in both the highest tariff rate and in the dispersion among rates. These countries try to offset decline in revenue from reduced tariffs with comprehensive tax reforms and improved collection (Likar, 1993).

New Zealand

In New Zealand, the liberalisation of trade started in 1968 with an Economic Advisory Mission from the World Bank (World Bank, 1968). In 1973, New Zealand tariffs ranged from 0.6% on raw material, 8.5% on semi finished

¹¹ See Delahunty(1993), p 36.

manufactured goods to 32.6 % on finished manufactured goods. The effective rate of protection for manufacturing import licensing was 60% (Wooding, 1987).

In 1984-85 there was a rapid dismantling of import controls. In 1987 a government review of tariffs was conducted. This review led to the introduction of a five-step tariff reduction programme between 1988-1992. The country subsequently went through a third phase of liberalising its trade regime, which was completed in 1996.

New Zealand floated its exchange rate in March 1985. The New Zealand dollar became freely convertible for both current and capital account transactions. It dismantled its regime of exchange rate control in December 1994. New Zealand currently has very few trade restrictions, except for environmentally sensitive products. Its foreign investment regime is virtually free of any restriction.

2.4.3 Trade Openness

Since the days of European settlement, external trade has always remained important to New Zealand's economic life. European settlers came to live in New Zealand with a fully developed post-industrial revolution European consumption habit, while the country's production possibilities were geared to a different culture altogether. External trade with U.K. and Australia thus was an important factor for the survival of the new settlement. Over time trade became a structural feature of the economy.

For the LACs, the degree of openness has varied through time. Before European colonisation, the external trade of the older indigenous societies had developed historically through trade with neighbours for useful items and sometimes as part of cultural exchange. Colonisation by Europe opened these countries to large-

scale overseas trade, turning them into important suppliers of food, minerals and forest product to Europe, thus establishing modern trading institutions and practice.

2.5 Trade Composition and Partners

The Latin American Countries

The LACs have had an ambivalent attitude toward international trade. On the one hand trade is seen as a means of stimulating economic growth and development and, on the other, it has historically appeared to be associated with colonial domination and unstable export prices¹².

The LACs had a liberal model of development based on foreign trade during the nineteenth century. Foreign trade based on primary products was the source of income for the new states for more than one century (from independence until the Second World War). In fact, the economy and political life of the LACs revolved around primary products such as grains, sugar, coffee, wine, mules, cattle and in the Andes, coca (Miller, 1993).

After the Second World War, export of primary commodities boomed and remained healthy for about one decade. Subsequently, introduction of artificial substitutes affected the exports of some raw materials such as rubber in Brazil and nitrate in Chile (Miller, 1993). The resultant necessity of export diversification led to a rise in export of manufactured products. However, between 1948 and 1969, the LACs' trade still had a large concentration of primary exports. The LACs have been an important source of raw materials (such as tin, copper, silver, zinc, iron ore (Table 2.4) and agricultural products (coffee from Colombia, Brazil and Costa Rica;

¹² Most of the LACs were colonies until the nineteenth century; as such, they provided primary products and raw materials to their respective European colonisers, Spain and Portugal. These trade

bananas from Ecuador and Peru; cacao from Brazil, Ecuador, Colombia, Venezuela and Mexico). The four biggest countries of the region -Mexico, Brazil, Argentina and Venezuela- accounted for more than 56% of LACs global trade in the mid 1990s.

Table 2.4 Important Raw Material Exports from LACs

Commodity	Major LACs' suppliers				
Petroleum	Mexico	Venezuela	Ecuador	Colombia	
Sugar	Brazil	Colombia			
Coffee	Brazil	Colombia	El Salvador	Costa Rica	Guatemala
Copper	Chile	Peru	Mexico		
Iron ore	Brazil	Venezuela			
Tobacco	Brazil				
Tin	Bolivia	Brazil	Peru		
Cacao	Brazil	Ecuador	Colombia	Venezuela	Mexico
Beef	Argentina	Uruguay	Brazil		
Silver	Argentina	Bolivia	Honduras	Mexico	Peru
Zinc	Mexico	Peru			
Bananas	Costa Rica	Honduras	Ecuador	Colombia	Panama
Wheat	Argentina	Uruguay			

Source: United Nations, 1992; Todaro, 1994; Bulmer, 1998.

New Zealand

Since the late nineteenth century, New Zealand's major exports have been wool, frozen meat and dairy products; and the most important trade partner was the UK. The pattern changed through the long adjustment period starting in 1970.

relationships were characterised by unilateral decisions from the European country, and local nationalist programs and rhetoric often revolved around issues of trade and export prices.

Australia and New Zealand have been moving gradually to closer economic and political ties. Some bilateral Agreements have been signed between the countries. In 1966, the New Zealand-Australia Free Trade Agreement was dealing with import duties but did not include quota and licensing systems. Some years later, in 1983 they signed The Closer Economic Relations Treaty (CER). CER was designed to provide total free trade between the two countries. As a result of these agreements Australia became the most important market for New Zealand's manufacturing exports.

New Zealand currently has a diversified external market and products. In 1994, Australia was the largest export market, followed by South East Asia, Japan and the US (New Zealand Department of Statistics). During the last decade, export growth to specific markets was particularly strong in Australia and South East Asia. New Zealand has also moved away from its dependence on dairy products and meat (14.2% and 14.5% of exports respectively in 1994). Products such as forestry, horticulture, fish and manufacturing have become more significant.

In 1994, the most important New Zealand export commodities were:

- 1) Meat: New Zealand is a highly efficient producer of grass-fed beef meat, about 80% of which is exported. Its sheepmeat accounts for about 50% of world sheepmeat trade (TRADENZ, 1993). New Zealand is the world's largest producer and exporter of farmed deer products (venison and velvet).
- 2) Dairy: New Zealand is the world's most efficient producer of milk, and a highly competitive milk processor.

- 3) Apples and kiwifruit: Fresh apples and kiwifruits are New Zealand's two major horticultural exports. Chile and Argentina are also exporters of these fruits.

- 4) Wool: New Zealand is the world's largest supplier of cross-bred wool.

The product areas that currently promise rapid export growth are listed below.

They can lead to significant increase in New Zealand-LACs trade.

- 1) Wine: New Zealand wine exports had increased over the late 1980s and early 1990s (TRADENZ, 1993) from previous low levels. These exports compete in the LACs' markets with wines from Chile and California.
- 2) Forestry: This industry is expected to grow rapidly, with important ramifications for trade and the domestic economy.
- 3) Agritech: This industry uses opportunities afforded by the opening up of LACs' economies, in particular, in Mexico and the Southern Cone (Argentina, Chile, Uruguay, southern Brazil).
- 4) Telecommunications: LACs offer opportunities for the New Zealand telecommunications industry in equipment for rural environments, PABX consoles, mobile radios, base stations for fleet operations, custom-built equipment for civil and military use, and printed circuit boards (TRADENZ, 1993).
- 5) Services: Tourism, education and software are rapidly increasingly in importance. Export of consultancy services could include geothermal energy, electricity transmission, rural highways, food processing and dairy farming.

2.6 Summary

This chapter has discussed the general setting of New Zealand and Latin American trade. *Inter alia*, it highlighted the fact that trade between New Zealand and the LACs has in the past taken place between two very different socio-political and economic environments. The key difference between these contexts seems to be the nature of their social and political evolution.

Almost all the LACs are developing countries (with the exception of Mexico, which became a member of the OECD in 1994). In contrast, New Zealand has been a member of the OECD since 1973. This highlights not only per capita income differences, but also differences in the level of other social indicators.

Since LACs' independence, conspicuous disparity in wealth and income has remained an aspect of the social and political scene. This has often resulted in political disruption of economic activities. New Zealand, on the other hand, has enjoyed a stable political and economic system, with a fairer distribution of wealth, social security and liberty.

During the recent times, both New Zealand and LACs have reformed their economies significantly. Yet differences in economic institutions persist. While New Zealand's has often been described as having undergone the most thoroughgoing reform in the OECD, the LACs' reforms have been incomplete and often tentative.

CHAPTER 3

EVOLUTION OF NEW ZEALAND - LATIN AMERICAN TRADE: 1958-

1997

3.1 Introduction

This chapter describes and comments on the evolving trade relationship between New Zealand and LACs since 1958. This evolution has been influenced both by internal conditions in New Zealand and Latin America, and by international development¹.

The first part of the present chapter (Section 3.2) presents the essential data and discusses its major features. Sections 3.3 highlights the major features of the global trade of New Zealand and the LACs group since 1958. The issues highlighted are the growth of total exports and imports and the relation of this evolution to the ongoing economic growth. The second part of this chapter (Section 3.4), discusses the major features of bilateral trade. The last section (Section 3.5) covers the New Zealand trade relationships with the LACs from a regional integration viewpoint.

3.2 Data

Data and information used in this chapter have been culled from several sources.

¹ The international context has often influenced the LACs' trade policies. Apart from the general ECLA philosophy, which was influenced by the geopolitical situation immediately after World War II, the specifics of the Cold War and US foreign policy have often had strong influence on Latin American trade policies and regimes (see Cardozo De Da Silva, 1995).

- 1) For total imports, total exports and exchange rates, International Financial Statistics (IFS), published by IMF, have been used.
- 2) For data on New Zealand trade with LACs by country, we have used Direction of Trade Statistics (DOTS), also published by the IMF.
- 3) The composition of trade for both New Zealand and the LACs has been obtained from Yearbook of International Trade Statistics, Department of Economics and Social Affairs, United Nations.
- 4) Information on trade composition has been supplemented by a number of New Zealand sources. Information on institutions, corporations, politics etc was compiled from various sources: books, journal articles, official and semi-official reports, newsmagazines and newspapers. References have been provided in appropriate places.

Original data in current US dollars have been converted to constant New Zealand dollars as a convenient benchmark, and variously aggregated for purpose of analysis. Conversion into constant New Zealand dollars has been done using deflator indices for export and import prices for New Zealand and the LACs, as provided by IFS. These deflators are presented in Table A.3.2 of the Appendix. Unless otherwise stated, figures in NZ\$ denote constant New Zealand dollars valued in 1990.

The following notations are used for aggregates used in this study:

NZMLACs	=	NZ imports from the LACs
LACsMNZ	=	LACs imports from NZ
LACsMGI	=	LACs Global imports
LACsXGI	=	LACs Global exports
NZMGI	=	NZ Global imports
NZXGI	=	NZ Global exports

The first four are aggregates over all seventeen LACs. On some occasions we have referred to trade; it is defined as exports plus imports. Notations for those variables are self-evident.

3.3 Evolution of Global Trade

Global imports and exports for the LACs (as a group) and New Zealand are presented in Table 3.1. In real terms global exports and imports have grown steadily, and a visual representation of this is provided in Figure 3.1.

Some scholars studying Latin American economies have found different trade periods or phases. For example, Adkisson (1998) used four periods for studying data between 1960 and 1993 (1960-73; 1974-81; 1982-87 and 1988-93). He based his decision on the terms of trade, export price volatility, degree of openness, dependence on primary exports, and changes in living standards. Ben-David & Papell (1997) found that most trade ratios exhibited a structural break². Sanyal & Ward (1995) found evidence of a structural break in New Zealand trade and income data. Ben-David & Papell (1997) also report structural breaks for New Zealand imports in 1973 and for New Zealand exports in 1983.

In our data, three qualitatively distinct phases can be identified in the evolution of trade over the period 1958-97, for both the LACs and New Zealand. These phases can be picked up visually from the time series graphs of global trade (Figure 3.1). Later on we will try to econometrically confirm this by identifying break points in the time series, which will be presented in Chapter 5.

² The break year in import-output ratios for Panama was 1973, Venezuela 1976 and Mexico 1981. For the same countries the export-output ratios the break year was 1973, 1979 and 1981 respectively.

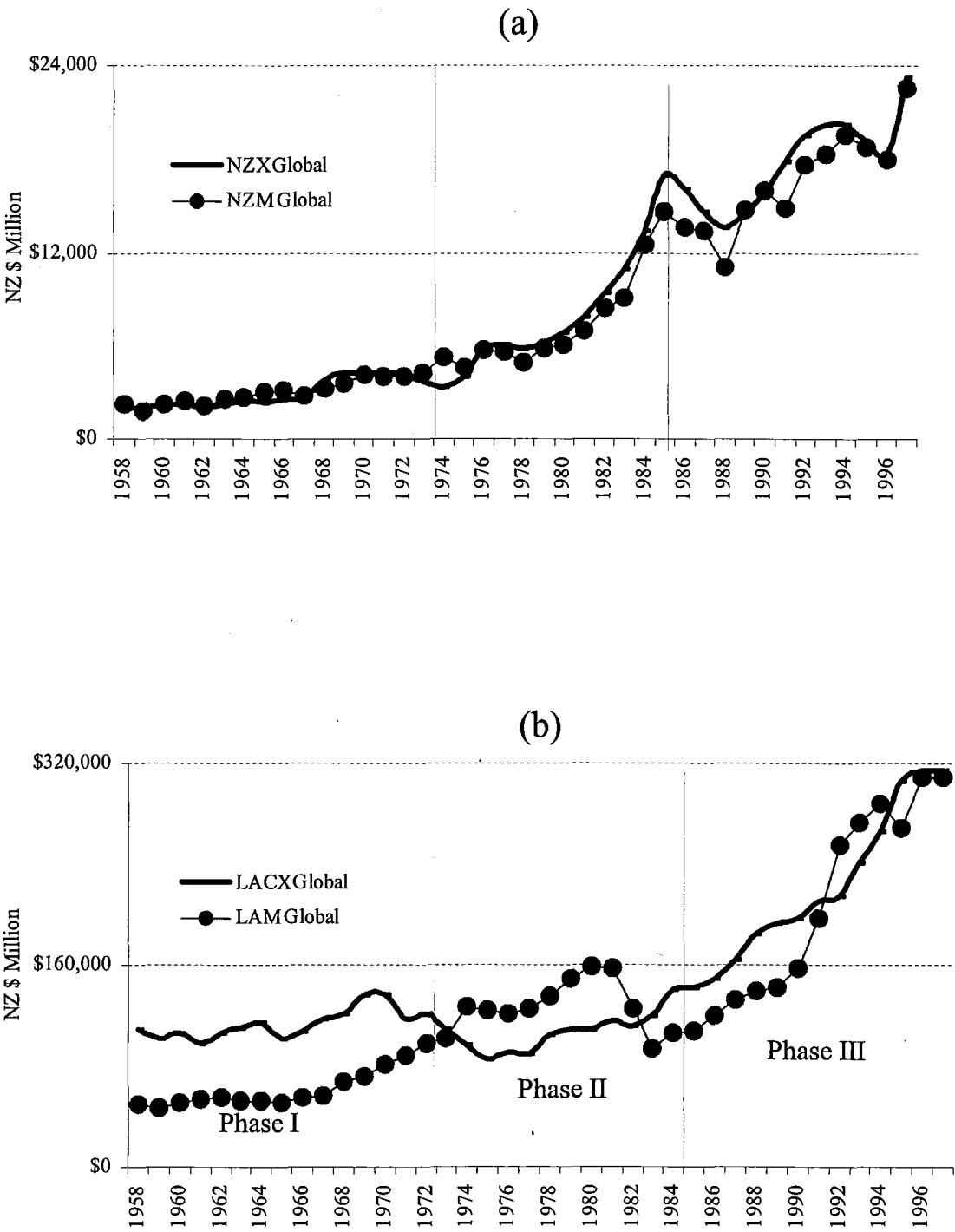


Figure 3.1 Global Trade: NZ (Panel a) and the LACs (Panel b)

Table 3.1 Global Trade: NZ and the LACs

	NZ		LACs		Comparison LACs/NZ	
	NZXGI	NZMGI	LACsXGI	LACsMG	Exports	Imports
Year	1990 NZ\$ (Million)				Ratio	
1958	2,006	2,195	108,753	50,116	54.2	22.8
1959	2,038	1,834	101,885	47,352	50.0	25.8
1960	2,185	2,186	106,568	51,304	48.8	23.5
1961	2,184	2,508	97,749	54,338	44.8	21.7
1962	2,145	2,153	106,177	55,179	49.5	25.6
1963	2,210	2,597	110,831	52,258	50.1	20.1
1964	2,444	2,717	113,911	52,965	46.6	19.5
1965	2,353	2,972	102,525	50,412	43.6	17.0
1966	2,557	3,102	107,275	55,054	41.9	17.7
1967	2,724	2,774	117,755	56,622	43.2	20.4
1968	3,751	3,257	120,836	67,382	32.2	20.7
1969	4,224	3,527	136,857	71,944	32.4	20.4
1970	4,250	4,106	136,659	81,506	32.2	19.9
1971	4,214	4,057	117,229	88,113	27.8	21.7
1972	4,177	3,994	121,975	97,594	29.2	24.4
1973	3,646	4,206	109,146	101,523	29.9	24.1
1974	3,306	5,263	96,077	126,794	29.1	24.1
1975	3,970	4,594	85,317	124,123	21.5	27.0
1976	5,736	5,670	90,398	120,968	15.8	21.3
1977	6,007	5,602	90,270	125,788	15.0	22.5
1978	5,782	4,911	104,319	135,207	18.0	27.5
1979	6,175	5,849	109,359	149,592	17.7	25.6
1980	6,786	5,976	108,408	159,302	16.0	26.7
1981	7,824	6,923	115,892	157,427	14.8	22.7
1982	9,404	8,368	112,004	125,193	11.9	15.0
1983	10,923	8,989	119,803	93,459	11.0	10.4
1984	13,360	12,541	140,162	106,403	10.5	8.5
1985	16,978	14,572	141,787	107,843	8.4	7.4
1986	16,078	13,598	148,675	119,750	9.2	8.8
1987	14,568	13,398	164,513	132,720	11.3	9.9
1988	13,623	11,071	184,454	139,822	13.5	12.6
1989	14,539	14,737	193,721	142,085	13.3	9.6
1990	15,894	15,916	197,253	157,204	12.4	9.9
1991	17,879	14,812	211,372	197,670	11.8	13.3
1992	19,589	17,610	215,544	255,069	11.0	14.5
1993	20,255	18,353	241,438	273,085	11.9	14.9
1994	20,254	19,500	266,742	288,084	13.2	14.8
1995	19,082	18,774	306,275	269,179	16.1	14.3
1996	18,337	17,970	315,008	308,891	17.2	17.2
1997	23,214	22,588	354,016	314,132	15.2	13.9

Source: IMF (IFS) Yearbook.

Interestingly, the three phases coincide with major trade policy changes triggered by either internal or international developments. Phase I (1958-1972) is characterised by a relatively stable international context. Phase II (1973-1985) starts with the first oil shock (1973) and includes the second oil shock (1978) and the external debt crises in the LACs. For New Zealand, this period includes the two oil shocks, the loss of the UK market following UK's decision to join the ECC, and the prolonged economic depression. Phase III (1986-1997) is the period of new trade policies, both in New Zealand and in the LACs. The general economic environment attending the three phases and their broad relation to trade policy are discussed in the following three sections.

Phase I: 1958-1972

The Latin American Countries

The LACs trade in Phase I was strongly influenced by the trade policy of the Economic Commission for Latin America (ECLA), based on import substitution³ to restrict import of industrial goods. The policy of import substitution generally tried to achieve protected development of domestic industry by public investment financed by government deficit, and by subsidising private investment. Such policies generally produced domestic terms of trade that were unfavourable for agriculture and the primary sector and in favour of domestic industry. As the LACs' exportable products at that time were mainly primary and agricultural products, this policy hampered the growth of exports.

Import substitution was also accompanied by a general discouragement of external trading activities. For example, the general philosophy was "*supply the*

foreign market only after domestic needs are met" (see Delpar, 1974). On the other hand, protection of industry resulted in an industrial structure that was non-competitive. Industrial exports therefore could not grow to replace traditional exports⁴. Some of the LACs that pursued strategies based on Import Substitution (IS) more vigorously were Mexico, Peru, Argentina, Brazil, Colombia and Uruguay.

Export earnings grew relatively slowly during this period. Other consequences of the import substitution strategy were inflationary pressures, foreign exchange shortage, and tardy growth. During Phase I, the LACs show a positive balance of trade (Table 3.1).

By the end of the 1970s, there was widespread concern about the potentials of import substitution and protectionism as development strategies, and the ideas of ECLA came under re-evaluation.

New Zealand

During Phase I, New Zealand, like the LACs, enjoyed a relatively stable environment. New Zealand inherited a fairly restrictive import policy from the War period, and the general political and intellectual climate favoured import substitution. But given the importance of foreign trade in its economy, import restrictions never took as rigid a form as in the LACs. Export promotion was the official trade policy in New Zealand between 1962 and 1978, while unofficially, exports were always accorded importance, because of the overwhelming social importance of the trade sector. In fact, import restrictions were in the process of dilution during Phase I. In 1949, the New Zealand Government proceeded with a protection program through the cascading effect of providing free access to

³ Their global trade was affected by import restrictions characteristic of IS policies: import licensing, quotas, tariffs, overvalued exchange rates and subsidies on domestic production.

materials but tight restriction on finished goods competing with New Zealand output. The government set up an Import Advisory Committee in order to recommend improvements in the import licensing system. By 1957, 80% of New Zealand imports were exempt from licensing (Wooding, 1987). In the 1960s New Zealand had tariffs ranging from zero on raw materials to fairly high rates on finished goods.

During the period New Zealand enjoyed a steady growth of exports, and from 1968-72 a positive balance of trade, owing partly to restricted imports and partly to its favoured export relationship with the UK.

Phase II: 1973-1985

The second phase (1973-1985) was more eventful for both New Zealand and the LACs.

The Latin American Countries

The two oil shocks had mixed effects on the LACs trade, because the LACs are divided into oil importers and oil exporters⁵. Oil exporter countries such as Mexico, Venezuela and Peru saw their export values booming, and oil revenues encouraged an import “buying spree”. Non-oil countries, however, had serious problems following import price increases. LACs’ global exports fell in the immediate aftermath of the first shock, between 1973 and 1978, but their global imports fell only between 1975 and 1976. Imports soon caught up, because imports into most LACs are fairly inelastic with respect of import prices.

⁴ For a general description of the effects of IS policies, see Krueger, 1984.

⁵ In terms of exports, LACs can be classified in 3 overlapping groups: countries exporting petroleum e.g. Mexico and Venezuela; countries exporting non-petroleum primary goods e.g. Peru; and countries exporting processed or semi-processed manufactured goods e.g. Brazil and Mexico.

Trade gaps started mounting towards the end of 1970's. Countries variously responded by putting up import barriers and increasing domestic and international debt. In countries where oil revenue was coming in, this inflow resulted in large monetary expansion that the economy could not absorb in terms of current economic activities. High rates of inflation resulted in these countries, often leading to flight of capital and investment, compounding the foreign debt problem.

The decade of the 1980s has been called "the lost decade" in the LACs. Most of the LACs were marked by economic stagnation, low or negative real growth and negative annual growth rate of trade between 1981-83. In retrospect, however, it appears that the shock of foreign debt and a balance of payments crisis, regenerated awareness of exports and foreign investment as important objectives in the whole region.

The crisis contributed to a decline in the LACs' imports from NZ\$ 157 m in 1981 to NZ\$ 93 m in 1983 (Table 3.1). But in spite of the increasing debt, inflation and fiscal chaos, the volume of the LACs exports rose by 4.4% a year between 1980 and 1987, while the volume of world trade increased only by 2.6%⁶. Particularly, Chile, Mexico, Brazil and Colombia followed an aggressive policy of increasing exports during the period. In these countries, the pro-export exchange rate policy was a central element of the structural adjustment programmes aimed at getting out of the desperate foreign debt problem. In many countries, nominal protection (average tariff rates) and quantitative import restrictions were already being reduced

⁶ There was, however, significant regional variation in export performance. Five countries showed increase of nearly 50% (Mexico, Colombia, Brazil, Uruguay and Chile), while some others stagnated, and yet others experienced contraction (Peru, Bolivia, El Salvador, Nicaragua, Guatemala and Venezuela) (Congdon, 1990).

and producing some results⁷. The period thus foreshadows the reforms that characterise the third phase described below.

New Zealand

For New Zealand, the period between 1973 and 1985 was a period of economic stagnation and search for a suitable set of policies. The first oil shock and the loss of the UK market for its primary and food exports in the early 1970s jolted the economy severely and sent it into a long period of recession, from which it emerged only in the 1990s. The period was characterised by stagnant income and rise in unemployment, while in the public life there was a keen search for a set of viable economic policies.

Exports fell between 1973 and 1975 and remained virtually stagnant between 1976 and 1978. However, overall rate of growth of exports during the entire Phase II was about twice that of the Phase I. New Zealand developed a negative trade balance between 1973-75, and kept accumulating foreign debt throughout Phase II. This phase culminated in 1984 with the devaluation of New Zealand dollar and the beginning of one of the most thoroughgoing economic reforms in OECD history. We will comment on some of the reform measures as we discuss Phase III below.

Despite the similarities of this Phase II for New Zealand and the LACs, there are some interesting differences. In New Zealand, the problem was seen as structural. The loss of the UK market underlined the unavailability of the erstwhile trade pattern, and both the government and the private sector were aware of the need for long-term repositioning of external markets and products. Thus, even though the phase was characterised by short-term policy experiments in demand management

⁷ Argentina, Brazil, Colombia, and Peru reduced their average tariff rates significantly during this period (Reynolds, 1991; Werrett, 1991).

and public investment, restructuring of the economy -in terms of new products, change in the style of management and marketing and search for viable markets outside the country- went on all along. Much of these efforts resulted in significant supply side gains to be reaped in the early 1990s, when the economic confidence increased, with a set of consistent economic policies. In the LACs, on the other hand, the efforts were directed at crisis management, so that most policies were directed towards short-run objectives. The idea that structural or long run problems might have been involved came in slowly and later.

In New Zealand, average growth rate of imports and exports was higher, but less steady than in Phase I. Increase in import prices following the oil shock jerked the countries into serious balance of payments problem and export efforts, and the period is characterised by major internal adjustments, which were to bring in important policy reforms in Phase III.

Phase III: 1986-1997

In the mid-1980s, economies everywhere looked different from their pre-oil shock pasts. Interest rates were higher, commodity prices falling, and demand was stagnant in developed countries (Goldin et al, 1993; Fischer, 1991). The idea of restructuring policy regimes away from demand management, protection, and cheap money was widespread and cut across developing and the developed worlds. The LACs and New Zealand were no exceptions, and the economic instability of the previous ten years generated shifts in domestic political equations as well as in economic policy.

The Latin American Countries

The economic crisis during the second phase was almost universally accompanied by inflation and balance of payments problems. A solution to the foreign debt problem in the long run and the balance of payments in the short run had to be found. These compulsions generally directed the LACs to reduce their current account deficits by devaluation and the promotion of non-traditional exports (Barham et al, 1992).

The recovery of the LACs from the recession started in 1987, when Mexico began its new economic policy. Since then, a combination of factors -such as the rescheduling of the external debt repayment, move towards democracy, democratic and liberal economic institutions and the opening up of the economies- helped turn the region into one of the fastest growth areas of the early 1990s (Korporaal, 1992). The nineties' boom of LACs started around 1991.

In general, all the LACs began to move towards policies that encourage outward orientation and reduce the government's role. Governments got committed to macro-economic reform and restructuring: monetary and fiscal reform, reduction of government size, privatisation, markets and trade regime deregulation and liberalisation of investment (Belli, 1991; Husain, 1989). These had significant impact on problem areas like inflation⁸, foreign debt, capital flight, currency weakness and trade deficits. The countries started gaining international competitiveness and attracted renewed foreign interest in direct investment, privatisation sales, and capital market issues (McCrary, 1991; Cordtz, 1992; Watson, 1994). The growth of imports into the liberalised markets of LACs has

⁸ The most notable example is Brazil, where a monthly inflation rate of 50.8% in June 1994 came down to 0.8% in January 1995 (Twagner & Gwalser, 1995).

been impressive. In 1996, the LACs global imports totalled about NZ\$309 billion in constant dollars (Table 3.1).

The process has not, however, been smooth, and it continues to be punctuated by setbacks. For example, Mexico, which was a notable showcase of reform for much of the period (Edwards, 1993), reversed some of its reform measures after the crisis of December 1994. The setback and reversals generated further ramifications. As the signs of Mexico's crisis became apparent in 1993, net private capital inflow into the region began to slow because of loss of investors' confidence⁹ (Chote, 1995). This in turn set Mexico and a few other countries on a course toward reposturing their environment towards more regulation. Thus though there was a general consensus towards liberalising trade and economic regimes, the process of reform has been slow and tardy and may take years to complete.

New Zealand

In contrast to the LACs scene, New Zealand's economic reforms, started by the Labour Government in 1984, continued on smoothly and even picked up momentum until 1992, when the reforms were virtually complete. The deregulation in New Zealand has been perhaps one of the most thoroughgoing reforms of its kind, encompassing the central bank and the financial market, trade and foreign exchange, fiscal policy and the labour market.

The deregulation in New Zealand started with a devaluation of its currency in 1984, followed by floating it. The currency depreciated further from its devalued level until 1987. Since 1987, the effect of devaluation and the float began to show results in export performance and trade balance, and in 1990 the

⁹ According to Chote (1995) the private capital inflow in 1993 and 1994 was more than US\$ 75 bn and US\$ 60 bn respectively. In contrast, in 1995 it was US\$ 1.3 bn.

balance of trade become positive. With these gains, the country began tariff reforms, significantly reducing tariffs in a number of areas. The second tariff reduction programme was completed by 1996.

As we remarked earlier, the trade reforms in New Zealand have been accompanied by all-round reform and restructuring encompassing the whole of economic life. This, arguably, has had a reinforcing influence on the gains of trade reform by improving competitiveness and making the country a notable destination for foreign direct investment.

3.4 Evolution of Bilateral Trade

We will begin this section by taking a historical look at the evolution of trade relations between New Zealand and the LACs. Very early this century, New Zealand's trade contacts in the LACs were limited to Argentina¹⁰ and Uruguay¹¹. After World War II, New Zealand exporters, mainly the New Zealand Dairy Board (NZDB), started looking for potential markets in Latin America. It was not, however, until the early 1970s that NZDB clinched some sales and signed long-term supply contracts. By the 1990s, Latin America became one of NZDB's fastest growing market regions, accounting for 12% of its consumer pack tonnage¹² (McEldowney, 1993a). 'Anchor'¹³ is NZDB's preferred flag brand in the region and the operating company New Zealand Milk Products (NZMP) is the market leader within the region, especially in Mexico, Peru and Central America (McEldowney,

¹⁰ The first recorded trade between New Zealand and LACs dates back to 1910, when New Zealand sold corriedale sheep to Argentina.

¹¹ NZ's total exports (FOB) to Uruguay were NZ\$ 10,000 during 1938 and 1948, and imports were NZ\$ 230,000 and NZ\$ 300,000 respectively.

¹² Wholemilk powder is the NZDB's most significant product in the LACs in volume terms, accounting for 70,000 tonnes (65% of New Zealand's sales in the region).

¹³ It is the brand name used by the Board to penetrate the consumer sector of Mexico, Peru and Chile. In 1992, Anchor was launched in Nicaragua and Bolivia.

1993c, 1993d). Mexico, Peru and Venezuela have been particularly important LAC markets for New Zealand dairy products since the 1980s (Small, 1992).

The LACs started trade with New Zealand at different dates. During the early 1960s, only Peru, Mexico and Venezuela had any registered trade with New Zealand, while Brazil, Chile, Colombia, Costa Rica and Ecuador began trade with New Zealand in the late 1960s. New Zealand developed trade relationships with other LACs in the 1970s: El Salvador (1972) and Nicaragua (1973). Countries such as Bolivia, Costa Rica and Paraguay, have only sporadic trade with New Zealand even to date.

Table 3.2 New Zealand -LACs Trade: Country Ranking by Trade Value

LACs	Phase I (195-1972)	Phase II (1973-1985)	Phase III (1986-97)	Total Period (1958-96)
Argentina	10	8	6	7
Bolivia	-	17	14	16
Brazil	6	4	2	3
Chile	3	6	5	5
Colombia	7	12	11	12
Costa Rica	9	10	15	14
Ecuador	5	5	7	6
El Salvador	-	9	9	9
Guatemala	-	15	10	10
Honduras	-	16	13	15
Mexico	2	2	1	2
Nicaragua	-	13	16	17
Panama	8	7	8	8
Paraguay	-	11	17	13
Peru	1	1	4	4
Uruguay	-	14	12	11
Venezuela	4	3	3	1

As per DOTS, seven of the LACs did not have any trade relation -export or import- with New Zealand during what we have termed Phase I. These countries are: Bolivia, El Salvador, Guatemala, Honduras, Nicaragua, Paraguay and Uruguay. Of the others, some had only exports to New Zealand but no imports from New Zealand: Colombia, Costa Rica and Ecuador. Several others only imported from New Zealand: El Salvador, Guatemala, Honduras, Nicaragua, Panama and Uruguay. The only regular trade partners for New Zealand among the LACs were Peru, Mexico and Venezuela (Table 3.2).

Thus, during our period of study, trade has evolved from very small values to a significant level, and has spread more evenly over Latin America. The actual evolution in constant New Zealand dollars is charted in Figure 3.2 below. Bilateral figures are presented in Table 3.3.

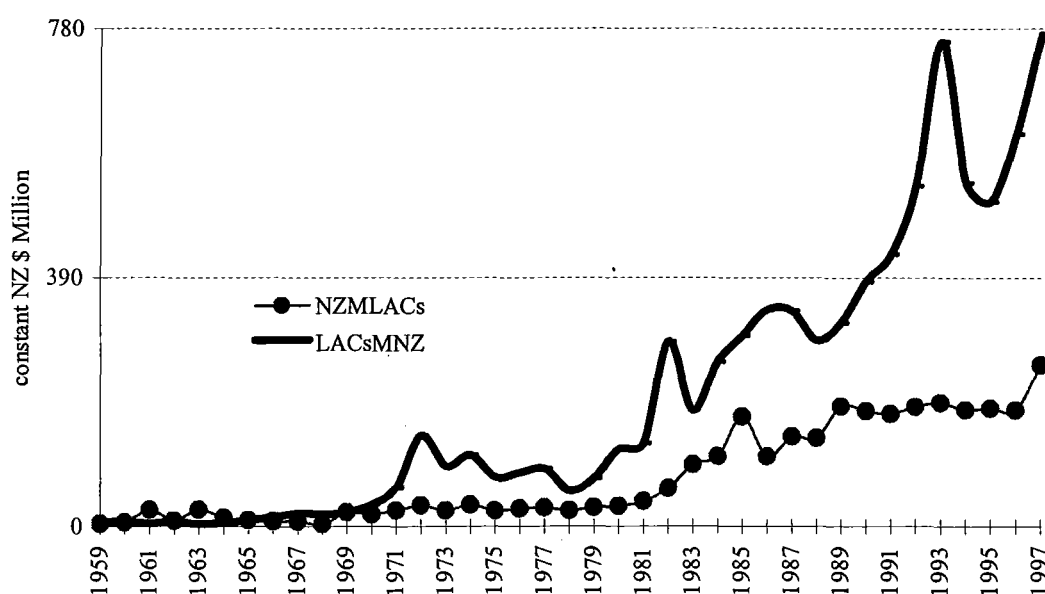


Figure 3.2 Bilateral Trade: NZ and LACs (1990 NZ \$)

Table 3.3 Bilateral Trade: NZ and the LACs

	NZMLACs	LACsMNZ	NZMLACs	LACsMNZ	NZMLACs	LACsMNZ
Year	1990 NZ\$ Million		% NZMGI	% NZXGI	% changes	% changes
1958	2.9	1.4	0.1	0.1		
1959	4.5	6.9	0.2	0.3	54.8	380.2
1960	6.4	7.7	0.3	0.4	40.1	12.5
1961	25.4	5.0	1.0	0.2	300.1	-35.5
1962	9.5	8.1	0.4	0.4	-62.6	62.1
1963	26.7	4.4	1.0	0.2	181.1	-45.2
1964	13.5	5.9	0.5	0.2	-49.4	33.6
1965	10.1	9.4	0.3	0.4	-25.7	59.1
1966	7.8	15.0	0.3	0.6	-22.1	59.1
1967	8.2	20.6	0.3	0.8	5.1	37.5
1968	3.3	19.3	0.1	0.5	-59.4	-6.5
1969	22.3	22.3	0.6	0.5	564.8	15.6
1970	18.6	33.9	0.5	0.8	-16.3	51.7
1971	25.0	60.7	0.6	1.4	34.1	79.3
1972	32.7	142.3	0.8	3.4	30.7	134.4
1973	24.5	94.2	0.6	2.6	-24.8	-33.8
1974	33.5	111.8	0.6	3.4	36.3	18.6
1975	24.6	77.1	0.5	1.9	-26.5	-31.0
1976	27.7	84.2	0.5	1.5	12.6	9.1
1977	29.0	90.0	0.5	1.5	4.7	7.0
1978	24.5	55.7	0.5	1.0	-15.6	-38.2
1979	29.3	75.1	0.5	1.2	19.7	34.8
1980	31.4	120.9	0.5	1.8	7.4	61.1
1981	39.1	130.5	0.6	1.7	24.4	7.9
1982	59.6	289.3	0.7	3.1	52.4	121.6
1983	96.8	182.0	1.1	1.7	62.3	-37.1
1984	109.6	258.6	0.9	1.9	13.3	42.1
1985	172.2	298.9	1.2	1.8	57.1	15.6
1986	109.7	339.6	0.8	2.1	-36.3	13.6
1987	140.7	338.3	1.1	2.3	28.3	-0.4
1988	138.4	291.9	1.3	2.1	-1.6	-13.7
1989	188.1	319.4	1.3	2.2	35.9	9.5
1990	180.9	383.8	1.1	2.4	-3.8	20.1
1991	176.7	427.0	1.2	2.4	-2.3	11.3
1992	187.6	534.4	1.1	2.7	6.1	25.1
1993	194.3	759.3	1.1	3.7	3.6	42.1
1994	183.3	538.7	0.9	2.7	-5.6	-29.1
1995	185.6	509.8	1.0	2.7	1.2	-5.4
1996	186.8	605.2	1.0	3.3	0.6	18.7
1997	253.6	770.5	1.1	3.3	35.7	27.3

Source: IMF (DOTS) Yearbook.

During Phase I, bilateral trade appears to have been not only small, but irregular and erratic. Between 1961 and 1965, New Zealand imports from LACs were higher than LACs' imports from New Zealand. Beginning in 1966 and indeed all the way through the rest of the study period, New Zealand managed a bilateral surplus. But the quantities involved are so small in Phase I and the pattern of trade so irregular (productwise and countrywise) that it is unwise to read much into it. It appears that regular bilateral trade was not established yet on any ongoing institutional basis, and most trade were results of one-off negotiations.

For example, LACs' imports from New Zealand showed an annual increase of 380.2% in 1959, which was mainly due to a 600% increase in Peru's imports from New Zealand, entirely one-off in nature. As a result, the growth of imports from New Zealand next year fell to 12.5%, followed by negative growth (-35.5%) a year later. Quantities involved were also insignificant. On average during this period, 0.73% of New Zealand's global exports and 0.74% of New Zealand's global imports were related to LAC trade. Reciprocal figures for the LACs are less than 0.03%.

Commodity Composition

From 1961 to 1966, New Zealand imported petroleum from Mexico and Venezuela. This relation, however, ended in 1967 after New Zealand changed over to supply from mainly the Middle East¹⁴. After the collapse of the petroleum trade, LACs exports to New Zealand remained erratic and diffused. They comprised small quantities of a large number of products from different countries. Thus in 1969, New Zealand imports from LACs were: alcoholic beverages (Brazil,

¹⁴ After 1969 New Zealand imported petroleum from Iran, Iraq, Kuwait, Saudi Arabia and Malaysia (New Zealand Department of Statistics, 1969).

Chile and Mexico); coffee (Brazil, Colombia, Costa Rica); sugar (Colombia); processed fats and inorganic chemicals (Chile and Mexico); organic chemicals, (Argentina); vegetable fibres (Peru), fresh fruits (Brazil, Ecuador and Peru); meat and tea (Argentina); wood and special fabrics (Ecuador); crude vegetable material (Peru, Paraguay and Guatemala) (New Zealand Department of Statistics, 1970).

The major efforts by New Zealand to enter the LAC markets started in the 1970s in the form of official and commercial visits, promotions etc. The efforts of NZDB slowly started getting results and other New Zealand exporters began to take an interest in the region. These developments gradually ushered in a more busy period for bilateral trade in the second phase, to which we now turn.

Bilateral Trade in Phase II

By the early 1970s all the LACs had developed trade relations with New Zealand as registered by DOTS data, though for some countries (e.g. Bolivia, Honduras and Uruguay) the quantities remained small. Peru remained the largest partner, but its place was slowly being taken by Mexico. The end of the oil trade with Mexico and Venezuela did not end trade ties with these countries. During the oil trade period, hesitant trading in other products was developing, particularly in New Zealand dairy products. Brazil, with its large and diversified economy, soon emerged as the largest exporter to New Zealand, so that after 1970, the imports from LACs were concentrated in Brazilian products.

Just before the first oil shock, New Zealand had developed important markets in the LACs, and its exports to LACs were steadily growing. The immediate effect of the shock was a rapid collapse of bilateral trade in 1972-73. During 1974-

75, some of the new markets that had been developing, e.g. Paraguay¹⁵, simply disappeared.

In New Zealand, the approximate coincidence of the first shock and UK's decision to join the EEC led to a severe economic downturn (Massey, 1995). One of its impacts was to reduce New Zealand's imports from LACs from NZ\$ 33 m in 1974 to NZ\$ 24 m in 1978 in constant NZ dollars. In the LACs, the oil exporters, Mexico, Venezuela and Peru, increased imports from New Zealand. However the non-oil exporting countries reduced imports so drastically that total imports from New Zealand fell by almost a quarter in a single year: from NZ\$ 112 m in 1974 to NZ\$ 77 m in 1975.

A small, open economy, New Zealand was compelled to quickly begin searching solutions to its trade problem. Two devaluations of the New Zealand dollar (9% in September 1974 and 15% in August 1975) generated their intended effects, albeit after a substantial lag. The turnaround was clear by the end of 1978. From 1979 to 1982 the LACs' imports from New Zealand increased by more than threefold, from NZ\$ 75 m to NZ\$ 289 m in constant NZ dollars. This was largely due to the increase of imports from the old markets [Chile (27%), Mexico (18%), Peru (28%) and Venezuela (23%)], but new markets such as Argentina were also developing.

It should be noted, however, that the effects of the first oil shock (1973) were hardly over in either the LACs or in New Zealand when the second shock (1978) came. In New Zealand the period was also marked by uncertainty follow-

¹⁵ Paraguay's imports from New Zealand at NZ\$ 11 million in constant dollars, represented 15% of LACs total imports from New Zealand in 1974. The Paraguay imports from New Zealand, consisting of machine tools and printed matter, however were registered only for one year, and the market collapsed with the oil shock (New Zealand Department of Statistics, 1975).

ing the loss of the UK market. The downsizing of export industries had set in a multiplier effect, with painful recessionary consequences. The second oil shock came in the middle of these ongoing difficulties and hampered the smooth recovery of bilateral trade.

The LACs' debt crisis of 1983-84 almost wiped out New Zealand's painfully built export efforts into this region. LACs' imports from New Zealand declined from NZ\$ 289 m in 1982 to NZ\$ 182 m in 1983.

Meanwhile, New Zealand's attempt at restructuring its trade was giving rise to trade agreements with Australia and Asia. These trade partners displaced some traditional LACs imports, important examples being sugar from Australia and coffee from Indonesia. Consequently, the commodity composition of New Zealand imports from LACs started changing.

New Zealand, nevertheless, continued trying to improve ties with the LACs¹⁶ as a part of its global diversification strategy, and continued to develop diplomatic and commercial representation. These efforts began to produce results after the middle of the 1980s. For example, by 1986 the value of LACs' imports from New Zealand increased to NZ\$ 340 m, from a level of NZ\$ 182 m, to which it had slumped in 1983 (see Table 3.3).

Commodity composition

In 1974, the LACs' imports from New Zealand were almost four times (NZ\$ 112 m) New Zealand's imports from LACs (NZ\$ 33 m). These imports from New Zealand consisted of dairy products (to Brazil, Chile, Colombia, Peru, Costa Rica, Panama); meat and meat preparations (to Chile, Peru and Panama); apples (to Panama and Peru); animal and vegetable material such as seed of clover, rye grass

and other pastures (to Argentina, Colombia, Ecuador); and dairy machinery (to Argentina, Colombia, Ecuador) (New Zealand Department of Statistics, 1975). These continued to remain the principal imports from New Zealand throughout the phase.

The most important change in New Zealand's import composition was the reduction of oil imports from LACs. Other primary product items remained in place, and a few more were added. Thus in 1980, New Zealand was importing a wide range of commodities, valued at NZ\$ 31 m. These commodities ranged from the traditional to light industrial products: coffee (Brazil, Colombia and Costa Rica); cocoa (Brazil); miscellaneous chemicals, leather, textiles (Colombia, Paraguay); emeralds and travel goods (Colombia); alcoholic beverages (Mexico, Brazil); printed matter, jewellery, tobacco (from Brazil and Paraguay); and electrical machinery, road vehicles and footwear (from Brazil) (New Zealand Department of Statistics, 1981).

Bilateral Trade in Phase III

Phase III began, with trade policy adjustments in New Zealand and the LACs. The recovery in the LACs started in 1987, when Mexico began its New Economic Policy. In the 1990s, a combination of factors -such as the rescheduling of external debt, moves towards democratic and market-oriented institutions, and a general opening up- helped turn the region into one of the world's fastest growth areas (Korporaal, 1992). In general the LACs began to move to policies that encourage trade and reduce the government's role in the economy.

¹⁶ See Trade: New Zealand and Latin America (1987).

During this phase, Mexico ranked as New Zealand's biggest trade partner in the LACs followed by Brazil, Venezuela, Peru and Argentina. Nearly 80% of total bilateral trade was conducted with these five countries in Phase III. This pattern is a continuation of the earlier evolution of trade relations and institutional development.

Commodity composition

There has been marked change in the composition of trade, reflecting changing industrial structures and comparative advantage. New Zealand's imports, though still containing traditional items, now include more value-added products and finished industrial products. Imports in the 1990s are plastics in primary form (Mexico), coffee (Colombia and Brazil), bananas (Ecuador), photographic paper, plastic polymers, textile yarn and thread, clothing, footwear, chemicals, steel, copper tubing and aircraft (Brazil) (Pheasant, 1992).

New Zealand's exports to LACs, while still containing the traditional items like dairy products, apples and meat, have also diversified. The diversification is in several directions. There are now more value-added products from the primary sector, such as processed dairy products and pasture seeds. Dairy related machinery is an important addition from the manufacturing sector. And finally, there is a move to increase export of services, like dairy technology and consultancy.

Values of import and export between New Zealand and the group as a whole in constant NZ dollars are presented in Table 3.3. Disaggregated data for all the seventeen LACs' trade with New Zealand are reported in the Appendix, and visual presentation is added there for easy reference.

3.5 Bilateral Trade from a Regional Integration Viewpoint

It was argued above that each of the LACs has a different bilateral trade profile with New Zealand. This section examines features of trade with several regional Latin American trade blocs, but concludes again that there is diversity even within these trade blocs.

The idea of a LACs trading bloc has existed for generations¹⁷. Only in the 1960's, however, did regional economic integration begin in the LACs. In the 1990s, the integrationist efforts have generated numerous trading blocs and agreements, many of which have been unstable or lacking in real commitment, but which nonetheless reflect the fact that the LACs are trying to consolidate the region's free market (McCrary, 1993; Edwards, 1993). The goal is a vast, unified market with LACs linked to the US and Canada. That ultimately is expected to produce a free-trade area stretching from Alaska to Argentina (Werrett, 1993). US President Bush in June 1990 announced the Enterprise of the Americas Initiative (EAI), expected to strengthen Latin American economies through increased trade liberalisation, investment, and reduction of official debt to the US (Pastor & Wise, 1995)¹⁸.

Integrationist initiatives between the LACs currently include bilateral and multilateral agreements. Regional trade ties are likely to increase as other countries join NAFTA. Discussions have taken place about the possible expansion of NAFTA to include Chile, the Andean Pact and the Southern Cone Common Market "*Mercado Comun del Sur*" (MERCOSUR) (Anderson et al, 1997). We will

¹⁷ For example, the political and ideological leaders, such Simon Bolivar "El Libertador", in the nineteenth century dreamed about a unified bloc.

focus here on trade between New Zealand and the multilateral blocs: MERCOSUR, the Central American countries (CACs) bloc, and the Andean Pact (APCs).

MERCOSUR and New Zealand

In August 1990, Argentina, Brazil, Uruguay and Paraguay adopted a wide assortment of free market economic policies and signed a treaty for the creation of MERCOSUR¹⁹. The aims of MERCOSUR are to harmonise tariffs, industrial and transportation standards, intellectual property and consumer protection codes and to institute similar tax regimes. This bloc links markets of more than 193 million people, with a total gross regional product of constant NZ\$ 1,274 billion in 1992 (see Table 2.1).

In the last three decades, New Zealand imports from these countries have been growing. During the last 15 years, MERCOSUR countries have provided more than 40% of New Zealand imports from LACs. In contrast, these countries' imports from New Zealand, which started in 1969, have been unsteady (Figure 3.3).

Two members of MERCOSUR (Argentina and Brazil) have been particularly important trade partners of New Zealand since 1985. Brazil, however, has been the most relevant MERCOSUR market for New Zealand imports during the whole period of study (Fig 3.4). In 1996, a New Zealand mission to Brazil and Argentina sought to increase the export of New Zealand educational services (high

¹⁸ As at the end of the study period, the EAI had not yet been put in place.

¹⁹ This followed a series of five trilateral meetings between Presidents of Argentina, Brazil, and Uruguay between 1986 and 1988, during which they signed several tariff-reduction agreements and discussed a long-term framework for regional economic integration.

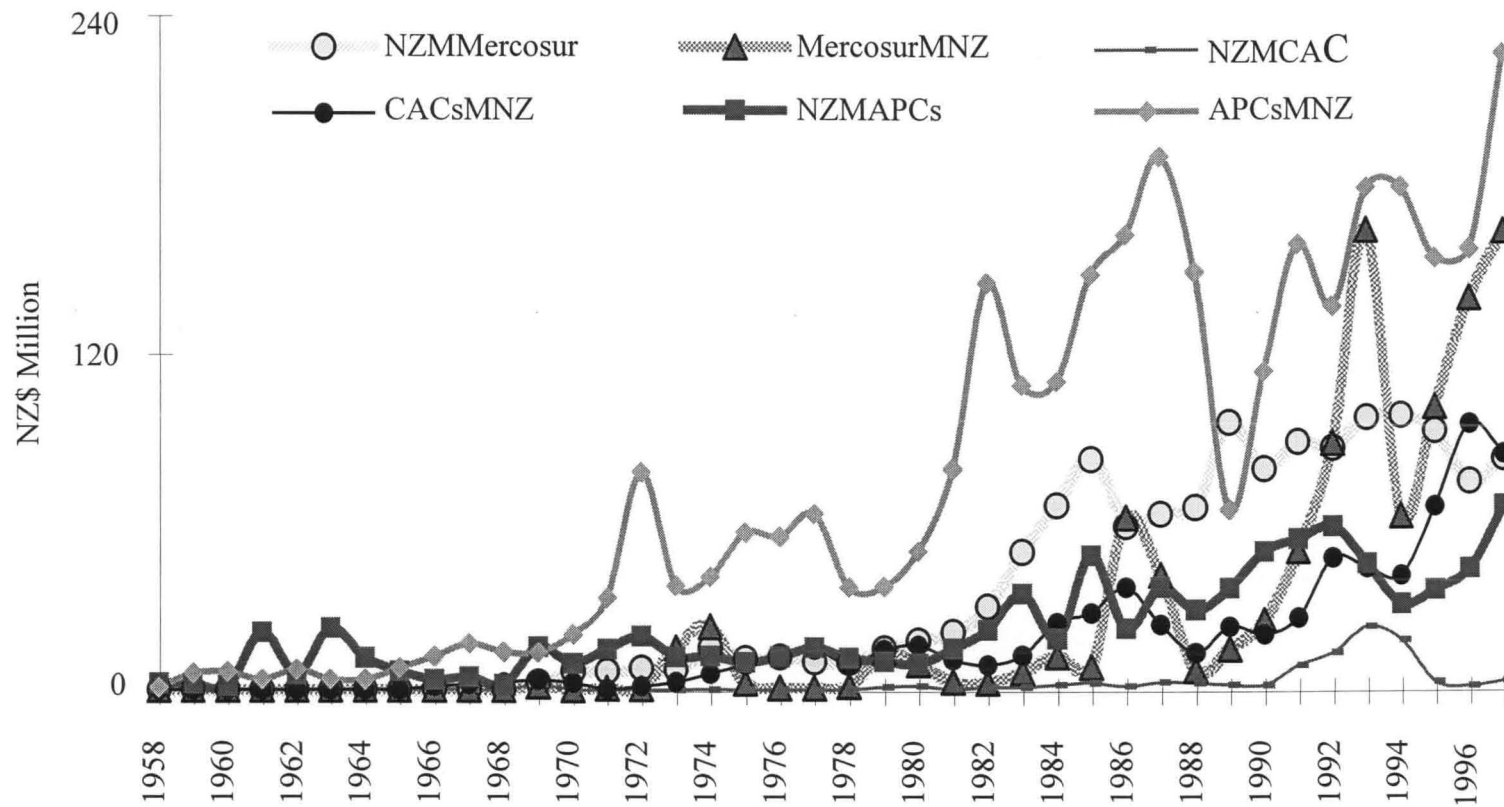


Figure 3.3 Trade Between NZ and LAC Blocs (1990 NZ\$)

schools, polytechnic, private language schools, colleges and universities) (Mission sets sights on South America, 1996).

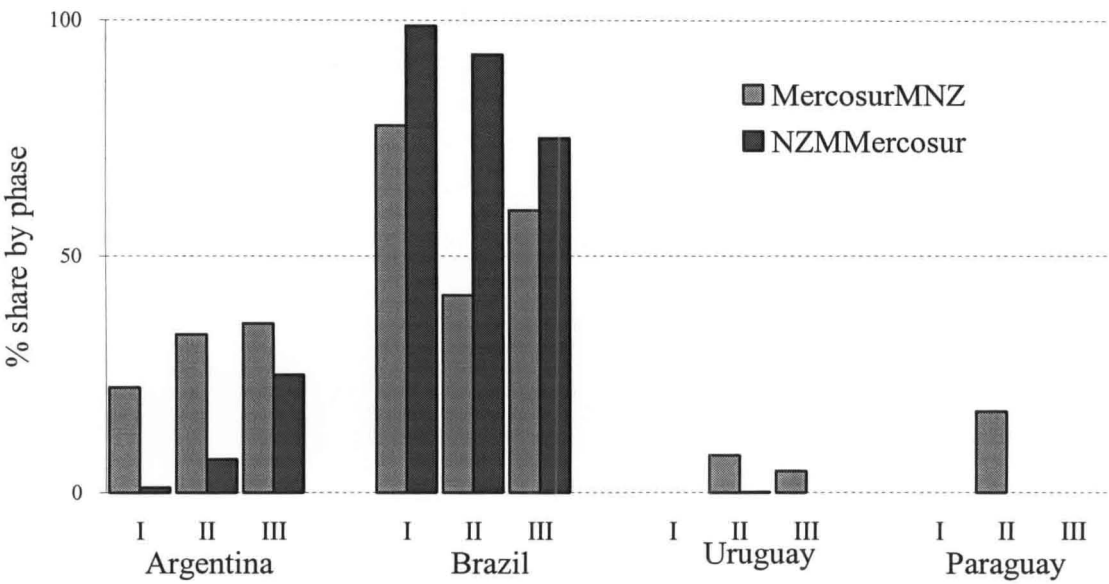


Figure 3.4 Share of Trade between MERCOSUR and New Zealand by Phase

Central American Countries and New Zealand

The Central American Common Market (CACM) was launched in the 1960s. It was close to collapse in the 1980's (Bulmer, 1998). In 1991, the CACs negotiated a new regional free-trade agreement (the Central American Economic Bloc). This agreement aligns the region's macroeconomic policies, reduces tariffs, promotes exports and helps to attract foreign investment. It has not, however, been a very stable agreement.

With respect to New Zealand’s imports from CACs, Costa Rica was the largest trade partner during Phase I and Phase II. Panama, however, overtook Costa Rica during the Phase III (Fig 3.5).

The relationship became significant only after 1976. In the early years New Zealand- CACs trade was unsteady and during 1971-1972 it almost fell by a half. Though Panama has always been an importer from New Zealand and ranked first among the CACs over Phase I and Phase II, its participation over time has been decreasing. On the other hand El Salvador’s and Guatemala’s trade with New Zealand has been growing over time (Fig 3.5).

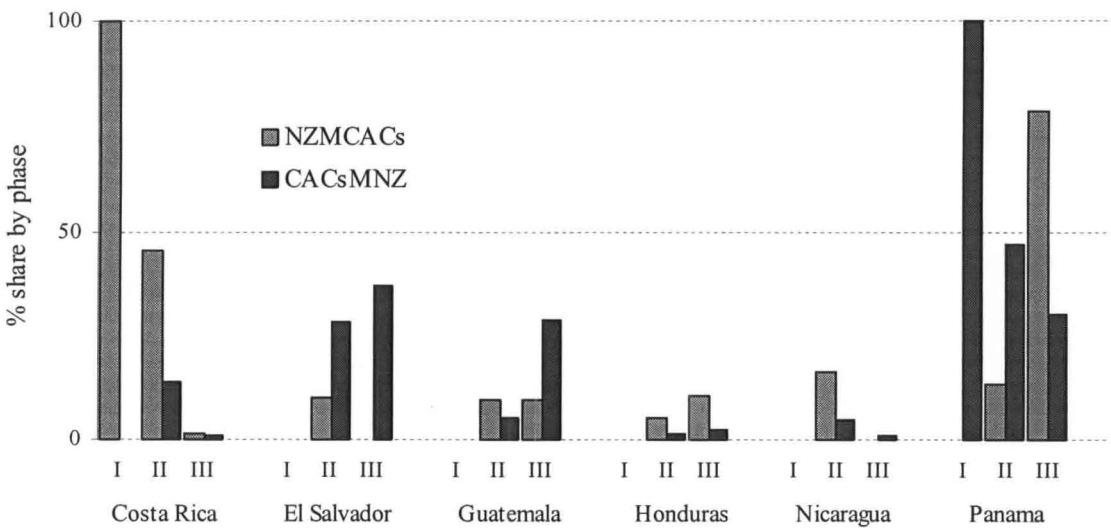


Figure 3.5 Share of Trade between CACs and New Zealand by Phase

Central American countries are significant for New Zealand, being in the Pacific area and close to NAFTA countries. They are, however, the smallest group of the LACs (2.5% of the total area and 7.1% of the population of the LACs), with the lowest per capita income. It seems that they are not a large enough market for

New Zealand to send diplomatic or trade representatives to the region. Increasing numbers of New Zealand promotions have, however, occurred in the area. In the 1990s and latter the New Zealand Embassy in Mexico has been in charge of this region. Diplomatic and trade relations between New Zealand and other CACs have been restarted since 1987. Yet the percentage contribution of the region in total New Zealand-LACs trade has never exceeded 15%.

Andean Pact Countries and New Zealand

The Andean Pact countries (APCs) represent 22.6% of the population of the LACs and 23.8% of its area. The Andean Pact is in dialogue with MERCOSUR over establishing a free trade area between the two blocs.

The countries of the Andean Pact group include some of the oldest LAC markets for New Zealand: Peru and Venezuela. These two countries were major importers from New Zealand until recently (contributing 82% in 1962 and 37% in 1973 of the total LACs' imports from New Zealand). In 1958, the total APCs' imports from New Zealand were NZ\$ 0.9 million (43.7% of total LACs imports from New Zealand in this year). In contrast, in 1994, the total APCs' imports from New Zealand were NZ\$ 182.9 millions (34% of total LACs' imports from New Zealand). Their ranking as New Zealand trade partners among the LACs has fallen over the last four decades, though the volume has significantly increased.

During Phase I, New Zealand imports from the APCs included imports from Colombia, Ecuador, Peru and Venezuela. During the last two Phases of trade, however, New Zealand imports from the APCs have been concentrated in commodities from Ecuador (more than 78%), fresh fruits (banana). Peru and

Venezuela both import from New Zealand, but Peru's imports have been decreasing while Venezuela's increasing. Prior to 1993, Bolivia was the only one of the LACs that had no registered trade with New Zealand (Figure 3.6).

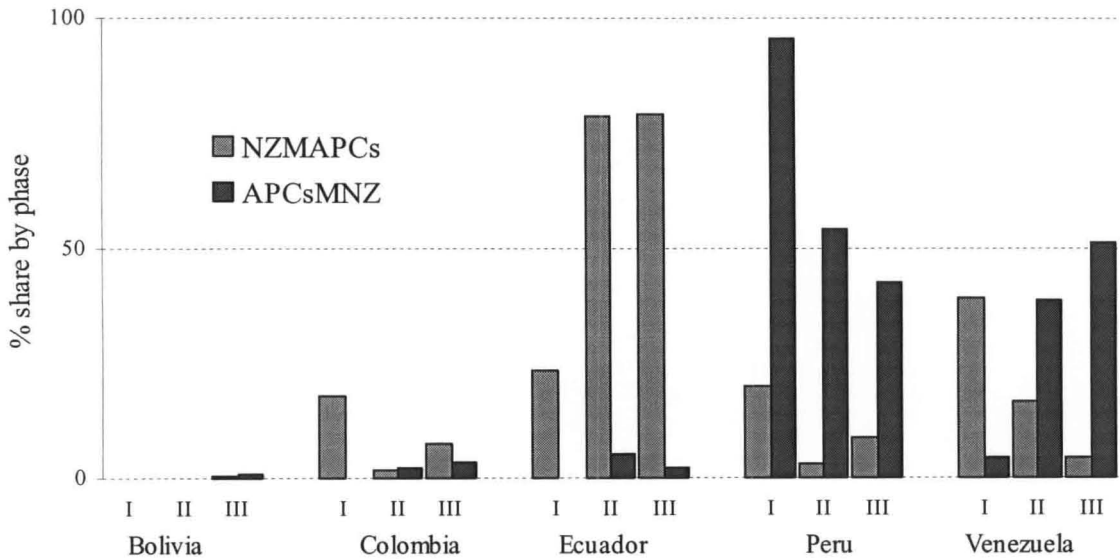


Figure 3.6 Share of Trade between APCs and New Zealand by Phase

3.6 Summary and Conclusion

The chapter presented a broad historical survey of the evolution of the global trade of New Zealand and the LACs and the bilateral trade between the seventeen LACs and New Zealand.

The discussion of overall trade performance in the first part provided a background for the discussion of bilateral trade in the latter part of the chapter. A useful finding of this chapter is the neat division of the long historical period into three phases showing qualitatively different trade performance. The phases coincide with identifiable domestic and international events. Similarity of trade behav-

ious within a phase and dissimilarity across them encourages us to suggest that some of the factors that defined the phases (e.g. policy events or political shocks) have been instrumental in shaping the overall nature of trade.

The main points arising from the discussion in chapter 3 are:

- 1) Trade during 1958 to 1997 is characterised by three distinct phases: 1958-72, 1973-85 and 1986-97. The relatively tranquil first Phase in the LACs was characterised by official adherence to the ECLA philosophy of import substitution. New Zealand also had import and exchange rate controls and a limited amount of import substitution. Because of the overwhelming importance of foreign trade in economic life, the regime of substitution was never very rigid. The second Phase (1973-85), disturbed by the two oil shocks and, for New Zealand, the loss of the UK as its most important export market, is characterised by intense search for trading opportunities and alternative trade policy to escape the rigours of these shocks. During the last Phase (1986-1997), the LACs and New Zealand have liberalised their trade and foreign investment regimes and are trying to remove domestic distortions on trade. New Zealand's reforms have thus far been more complete and more thorough. These changing phases have left their mark on the trade performance of both sides.
- 2) The real value of bilateral trade has increased over the 40 years from a trivial quantity to a significant amount. They are currently growing at rates comparable to and often faster than the global trade of either New Zealand or the LACs.

- 3) Significant shift in the product composition of trade has taken place over the period. While both sides still exchange primary products complementing natural and climatic endowments, there is a shift to more value-added products related to the primary sector. The more diversified of the LACs have also increased their export of manufactured products to New Zealand, which in turn has increased exports of services and machinery related to its specialisation areas of dairying and pastures.
- 4) Bilateral trade with New Zealand is mostly concentrated among a few LACs. There has been some shift in the country composition reflecting perhaps the change in the commodity composition of trade during the period.
- 5) Trade commitments between New Zealand and the LACs are traditionally weak and are strongly influenced by competition from other areas, such as Australia, South East Asia and the Middle East. There is, however, evidence of steadily growing partnership in the most recent phase.
- 6) Regional integration in LACs is an important recent feature. However, integration is often incomplete, or unstable, and the diversity of the LACs also appears within the regional trade blocs. There are no specific patterns of trade between all members of regional grouping and New Zealand.

CHAPTER 4

BILATERAL TRADE AND GRAVITY MODELS

4.1 Introduction

The evolution of trade is a historical process, shaped by economics, politics and social characteristics of the countries involved. All of these factors may have influenced New Zealand-LACs trade over the period 1958-1997. However, most of international trade theory tends to focus on only economic factors affecting bilateral trade.

International trade theory traditionally focused on differences in production conditions among countries. Theories such as comparative advantage and factor proportions theory have been directed mainly to the question of specialisation of trade. The theory of comparative advantage tries to explain the product composition of exports and imports in terms of a country's factor endowments and the intensity of the use of these factors in traded goods and services. However, empirical identification of comparative advantage, as opposed to stylised theoretical models, is an arduous task, because even the major tradable product-groups run into thousands, and factors and resource endowments used for their production are also many.

The focus of our research is on the quantity of bilateral trade, as opposed to the specialisation of the participating countries. This aspect cannot be properly handled within the set of theories cited above. Gravity models seem to be suited to our work, both because their focus is on trade volumes and also because they lend themselves easily to empirical study. This chapter begins with a review of the literature on

gravity models in Section 4. 2, and separately discusses the theoretical developments and empirical work in this tradition. Thereafter in Section 4.3, we discuss the rationale for the variables in our study. Section 4.4 introduces the empirical model used for estimation. In Section 4.5 we briefly discuss the alternative modelling strategy using a VAR model. Finally, Section 4.5 provides a summary.

4.2 Gravity Models

Variants of gravity equation have been used in the social sciences since 1860s, when H. Carey applied Newtonian physics to the study of human behaviour (Cheng & Wall, 1999). However, the earliest attempt to use the gravity equation for analysing trade patterns seems to be made by Isard & Peck (1954) and Beckerman (1956), cited by Ratnayake & Townsend (1999).

The economic meaning of “gravity” is not clear. The name ‘gravity’ is due to a supposed analogy between the interaction between cosmic bodies through gravitational pull of their masses and a retarding effect of the distance between them, and trade interaction between countries through a number of attracting and retarding factors. Leamer & Stern (1970) describe this approach in the following words

“(It) appealed to physical laws of gravitation and electrical forces to arrive at the conclusion that the flow of goods from country i to country j equals the product of the potential trade capacity measured by F , the values of the foreign sector at the two points ($F_i \times F_j$), divided by the resistance or distance (perhaps squared)” (Leamer & Stern, 1970, 158).

Along these lines, it is presumed that some factors influence bilateral trade positively (attracting variables, such as the size of an economy measured by national income), while others influence it negatively, representing resistance to

the process. A simple gravity equation, for example, can be specified following Deardorff (1995):

$$T_{ij} = A (Y_i Y_j / D_{ij}) \quad (1)$$

where export from country *i* to *j* is simply related to the product of the two countries' GDP and the distance between them.

Theoretical foundation

Gravity models first appeared in the empirical literature without serious attempt to justify them theoretically (Deardorff, 1984, 1995). Later on, some scholars did attempt to provide some rationale, for example Anderson (1979), Bergstrand (1985, 1989, 1990), Hummels & Levinsohn (1995) and Feenstra et al (1998). Recently, several attempts have been made to develop a theoretical foundation. Evenett & Keller (1998) and Deardorff (1995) evaluate the usefulness of gravity models in providing alternative explanations for trade. Frankel (1998, p.2) also refers to the theoretical foundations and comments that the gravity model has "gone from an embarrassment of poverty of theoretical foundations to an embarrassment of riches." Some scholars refer to the recent popularity of the gravity model. For example, Eichengreen & Irwin (1996, p.33) describes it as the "workhorse of empirical studies of (regional integration) to the virtual exclusion of other approaches."

We preferred the gravity model because it can be rationalised by or derived from different theoretical frameworks including Ricardian, H-O and increasing return to scale models (Anderson, 1979; Bergstrand, 1990; Deardorff, 1998; Evenett & Keller, 1998; Wall, 2000).

The leading modern theory of international trade derives from the work of E. Heckscher and B. Ohlin (HO). The HO factor proportion theory is based on the interaction between factor input requirements and factor endowments (e.g. land, labour and capital). A country would export those goods whose production requires relatively large amounts of its abundant resources. And, it will import those goods requiring relatively large amounts of its scarce factors (Lindert, 1982; Leamer 1987; Helpman 1989; Krugman & Obstfeld 1994). In 1995, Deardorff derived the value of bilateral trade in terms of income and trade barriers from two extreme cases of the HO model and showed that the gravity model was theoretically consistent with the HO model.

Since World War II, a number of world trade models have been developed to analyse different aspects of the international economic system. These models have been classified by Taplin (1967) as: (1) constant share analysis, (2) structure of world trade and (3) short-run transmission mechanism. Models of type (1) and (3) do not attempt to estimate individual flows between countries. Models of type (2) study the structure of world trade looking at the individual flows directly, and can be related to gravity models.

It has been recognised that gravity model studies have achieved some empirical success in explaining bilateral trade patterns. Some studies have also used gravity models for estimating the impact of policy variables and trade distortions (Cheng & Wall, 1999). These effects have been modelled as deviations from the volume of trade predicted, and their influences are captured by dummy variables.

Intra-industry Trade

The usual correlates of bilateral trade as visualised in the gravity approach require to be supplemented by additional variables if there is significant amount of intra-industry trade. During the last two decades intra-industry trade is increasing especially among OECD countries. Intra-industry trade occurs when a country exports and imports goods in the same industry. Recently, New Zealand-Australia intra-industry trade has been estimated at 56% of total trade and for OECD countries around 60% with a projected tendency to increase (Bano, 2002). Intra-industry trade exploits economies of scale, and if there is significant intra-industry trade the gravity model needs to use supplementary explanatory variables. However, the LACs as developing countries are expected to have only a low share of intra-industry trade (Evenett & Keller (1998). This was confirmed by an examination of the product composition of LACs' imports from and exports to New Zealand.

Empirical Models

Empirical study of bilateral trade flows using a gravity model was initiated by Tinbergen (1962) and Pöyhönen (1963), based on the suggestion that trade between two countries is determined by their national incomes and their geographical distance (Taplin, 1967). Pulliainen (1963) included resistance/enhancement variables affecting the flow of goods among the members of the market-area. The trade flow model used by Tinbergen (1962), Pöyhönen (1963) and Pulliainen (1963) has later been labelled as the gravity model.

Linnemann (1966) modified the basic model by incorporating the population of the trading countries, relative factor endowments, and natural and artificial resistance factors like government actions (artificial impediments which

can be manipulated), distance (proxy variable for natural trade resistances) and trade preferences. He also tried to build a theoretical justification in terms of a Walrasian general equilibrium system, but, as Deardroff (1995) observes, the Walrasian model includes too many explanatory variables for each trade flow to be easily reduced to the gravity equation.

Several limitations to the Tinbergen- Pöyhönen- Linneman approach have been pointed out by various authors:

- (1) It is static and does not consider the development of trade over time (Taplin, 1967);
- (2) It seems that the import flow is more important than the export flow;
- (3) It excludes price variables (Leamer & Stern, 1970).

The early Tinbergen- Pöyhönen- Linneman approach was modified over time to account for these shortcomings. Waelbroeck (1976) introduced an aggregate price index to the model. Geraci & Prewo (1977) found that preferential trading group membership and common language have a significant impact upon trade. In the trade flows, the income of the exporting country reflects the supply potential and the market size, and the income of the importing country reflects the demand potential. The most common variables used as a proxy of resource endowments are capital stock, expenditures on research and development, and geographical variables, e.g. area, average temperature¹ and average rainfall (Pulliainen, 1963).

Factor endowment differences and non-homothetic tastes were incorporated by Bergstrand (1985). He assumed perfect international product substitutability and derived a gravity equation (including prices and tariffs) from a

¹Pulliainen (1963) states that differences in resource endowments are associated with different mean temperatures.

general equilibrium world trade model. Several other scholars have developed similar theoretical foundations, e.g. Bikker (1987) with his Extended Gravity Model (EGM) derived from a supply and demand system and Ogudelo & MacPhee (1994).

Thursby & Thursby (1987) added absolute per capita income differences to a generalised gravity equation without population. Rebecca (1989) developed a gravity type model of U.S bilateral trade, including economic and political variables and excluding price and exchange rate variables. Rebecca introduced a measure of the potential import demand and potential export supply.

The core of the general approach is best exemplified by the formulation with which Leamer & Stern (1970) started their study. They defined a trade potential or a value of the foreign sector F_i as a function of several economic variables

$$F_i = f_i (Y_i, E_i, U_i, R_i) \quad (2)$$

where i is a subscript indicating country; F = value of the foreign sector; Y = gross national product; E = resource endowment, U = utility or demand structure and R = general resistance to trade (transport cost, tariffs, etc).

F_i and F_j , the potentials of the two countries, then determine the actual trade flows V_{ij} , so that

$$V_{ij} = h (F_i, F_j) \quad (3)$$

Substituting from equation (2),

$$V_{ij} = h [f_i(Y_i, E_i, U_i, R_i), f_j(Y_j, E_j, U_j, R_j)] \quad (4)$$

If f_i is interpreted as the probability that an international transaction has originated in country i , then $N B f_i f_j$ denotes V_{ij} where N is the number and B the average size of transactions comprising global trade. Leamer and Stern's version equates this with $(F_i F_j) / T$, where T is total world trade.

$$V_{ij} = N B f_i f_j = (F_i F_j) / T \quad (5)$$

In other words, the value of the foreign sector F_i is taken to determine the probability that an international transaction picked up at random originates in country i . We may take equation (4) as a very general statement of the core of a gravity formulation and then adapt it by using appropriate variables specification. For empirical exercises using this core idea, the most common formulation is exemplified by Sanso et al (1993):

$$M_{ij} = A Y_i^{\beta_1} Y_j^{\beta_2} L_i^{\beta_3} L_j^{\beta_4} D_{ij}^{\beta_5} e^{u_{ij}} \quad (6)$$

where

- M_{ij} = sales from country i to country j
- A = constant
- Y_i = country i 's income
- Y_j = country j 's income
- L_i = population of country i
- L_j = population of country j
- D_{ij} = distance between i and j
- u^{ij} = a normally distributed random error

Typically in equation (6) additional variables are introduced, depending on the specific bilateral context. The equation is then linearised and the linearised version estimated by the OLS method. Interestingly, though these models started with the notion of attraction and resistance to trade, and a set of pre-chosen variables to represent them, empirical studies found that variables could not always be categorised as attracting or resisting trade flow *a priori*. For example, income and population of a pair of countries, the most commonly used variables expected to represent the attracting potential, do not necessarily return positive coefficients in empirical estimates based on equation (6). Table 4.1 is a summary of the commonly used variables and the signs of their estimated coefficients.

Table 4.1 Variables in Gravity Equation and Estimated Signs

Variables	Expected sign	Reference
GDP (Y)	(+) (-) (+ or -) OPEC* (+) (+) for importers only (+ or -) for exporters (+) (+) (+)	Rebecca (1989) Sanzo et al (1993) Marquez (1990) Bergstrand (1989) Thursby & Thursby (1987) Thursby & Thursby (1987) Cheng & Wall (1999) Feenstra et al (1998) Ratnayake & Townsend (1999)
Population	(-) (-) importer country (+) exporter country (-) importer and exporter	Rebecca (1989) Cheng & Wall (1999) Cheng & Wall (1999) Ratnayake & Townsend (1999)
Per capita income	(+) (+)	Bergstrand (1989) Sanzo et al (1993)
Ratio of per capita incomes	(+) (-)	Linder (1961) Thursby & Thursby (1987)**
Cultural similarities	(+) (+)	Rebecca (1989) Cheng & Wall (1999)
Political instability	(-)	Rebecca (1989)

* The estimated income elasticity for imports from OPEC is either negative or not significantly different from zero. The majority of the countries have coefficient >1 and <2 , except the less developed countries.

** In Linder the structure of demand of the trading countries are similar while in Thursby & Thursby they are dissimilar, and the signs are explained by referring to this difference.

Though we are not aware of any empirical study of New Zealand-LACs bilateral trade, there are several empirical studies separately on the trade of LACs and of New Zealand. Giles et al (1976) used a gravity model to explain the pattern of New Zealand's trade, taking into account the effects of New Zealand and Australian Free Trade Agreement during 1970-1971. This first attempt in New Zealand presented some difficulties related to the presence of multi-collinearity between income and population variables. The authors re-estimated the model during the 1980s (Giles & Hampton, 1982). Later, Ratnayake & Townsend (1999) used a gravity model to analyse the geographical pattern of New Zealand's international trade, using pooled cross-section time-series data for the period 1987 to 1992. In the LACs, gravity models have been used by Thoumi (1989) to analyse intra-regional trade in Latin American and Caribbean countries.

Our work is a study of bilateral flows involving New Zealand on the one hand and LACs on the other. We estimate a variant of (6) with an appropriate choice of variables. The following section discusses the choice of variables.

4.3 Choice of Variables

New Zealand's trade with several LAC's is not well established and is subject to high volatility² or annual fluctuations not explained by shocks in economic variables in either New Zealand or in the LAC. In the absence of a well-established bilateral relation, trade has often been governed by considerations of immediate contingencies. A political or policy regime change, for example, has sometimes opened up temporary advantages, motivating discontinuous increase in trade volumes. Similarly, withdrawal of these advantages by a regime reversal has

reduced trade discontinuously. In countries where the bilateral relation was not well-established, there was no institutionalised ongoing relation that could maintain continuity in the face of frequent regime changes.

From casual empiricism it appears that the volatility of trade could be related to frequent change of government policy³ and political régimes. We thought it worthwhile to test if the inclusion of suitable non-economic variables would improve the explanation of bilateral flows. In the section below, we describe the set of variables used in our work.

Per Capita Income and Population

In gravity models an appropriately defined income variable and population are generally used as two basic explanatory variables. This leads to choosing either the pair: income and population, or a single variable: per capita income. The choice is driven by the *a priori* belief that income and population should count as attracting variables for trade. However, as remarked earlier, empirical studies show that their estimated coefficients are not necessarily positive (see Table 4.1). The diversity of estimated signs of income, per capita income, and population present a puzzle.

One possible way of explaining the puzzle is to hypothesise two distinct effects of population growth. Given the level of income, population growth reduces per capita income, and this might have an adverse impact on trade through income effect. In this sense, the per capita income of an importing country is a proxy for consumers' budget constraints. On the other hand, population growth *per se* might lead to urbanisation and rise of new centres of

² Apart from very high standard deviation around the trend, LACs' imports from New Zealand also appear volatile to casual observation. In many years real imports from New Zealand are very low or near zero, and they rise to relatively high levels in the following year.

³ The LACs' have been through a number of political and policy shocks in the recent past.

economic activity, causing a pure demographic, and positive, effect on trade. Further, the income effect and the demographic effect need not necessarily act in the direction we just outlined here. For example, an expansion of the budget set resulting from per capita income growth may lead to import of goods with higher income elasticity of demand, reducing the import from earlier source countries. In this case, per capita income of the importing country might have a negative estimated coefficient. Similar variation can also be expected for the result of population growth resulting in urbanisation.

In view of these two (possible) separate effects, we decided against using either per capita income as a single regressor, or income and population as two separate regressors. Instead, we use both per capita income and population as explanatory variables. Also we do not have an *a priori* expectation about the signs of either variable. Per capita income figures are in real terms, converted into constant 1990 US dollars.

Exchange rate

Use of exchange rate as an explanatory variable requires explanation. In the orthodox context of gravity equations, the attracting and repelling factors determine the quantity traded. Exchange rate should be considered an outcome of this process rather than a determining variable. However, when there is significant imperfection in the goods and exchange rate markets, as is implicit in the use of non-economic variables in our model, this need not be the case. Exchange rate need not adjust to its equilibrium value, and its observed disequilibrium value may produce some effects on the trade itself. We therefore included exchange rate in the set of variables, though, as it turns out, it does not show as a significant variable in the majority of cases.

The LACs' exchange rate has been defined here as the number of the LAC's currency units that can be bought by 1 NZ dollar. The New Zealand exchange rate is defined as the number of the New Zealand dollars that can be bought by 1 unit of LACs' currency. The calculation of real bilateral rates is based on 1990. We use the Consumer Price Index series based on 1990 wherever available. In other cases, the available series is repositioned on base 1990 by chain linking.

In three cases, Argentina, Brazil and Peru, the exchange rate series could not be used for meaningful econometric analysis, because of drastic change in exchange rate régimes and / or changeover to new currencies.

Qualitative Variables

D_1 : The dummy variable D_1 separates two periods of a sample at the point where a structural break occurs, if any. Import data for most countries show on visual observation two clearly identifiable shifts during the sample period. This led us to test for structural stability, initially, of the import data as a pure time series process. We found the existence of one structural break in the data for most countries. Given this result, we allowed for a possible break in the regression relation for each country and identified it endogenously where it exists.

D_2, D_3 : As we have argued above, political and military factors appeared relevant in the context of Latin American trade. Given that most of the imports from New Zealand consist of food products, and the political role of imported food products in situations of excess demand for these items, imports from New Zealand are expected to be influenced by changes in political regimes and policies. Similar views have been expressed by other scholars too. For example, Streeten (1987) mentions that one of the objectives of the LACs' policy-makers in food price

intervention is to avoid political disturbances and riots or the loss of political support from powerful urban groups. The binary variable D_2 has been used to differentiate a year of political change through constitutional means from one with a continuing government. We expected this variable to isolate the influence of an election year effect, if any, on food and milk imports. D_3 is a dummy for a one-period lagged effect of a constitutional political change.

D_4, D_5 : While constitutional political changes may affect food and related imports because of election year effects, a violent political change like a *coup d'etat* can create disruption to imports for a part of the year. It could be because of the failure of transport and trading institutions or their temporary suspension and so on. The effect might be also positive in exceptional cases. We use a qualitative variable D_4 to distinguish a year of violent political changes from normal years. D_5 captures its one-period lagged effect. D_4 and D_5 do not feature in the estimation exercises for Colombia, Mexico and Venezuela, because during the sample period these countries did not face a violent change of government.

Our variable set does not include several variables used by other authors. Distance is a meaningful variable in gravity models. In our work, geographical distance has not been used simply because we estimated a different equation for each LAC, rather than estimating a single equation with all countries. For any given equation, distance is not a variable in our case⁴. However, it may be argued that distance measured in cost terms changes between a given pair of countries, and could be a useful explanatory variable in a time-series exercise. As a proxy of economic distance indices are constructed from air, shipping, insurance, telephone and mailing costs. Since satisfactory data on these items are difficult to get,

⁴ Until recently gravity equations were used in cross-section analysis where geographical distance between countries appears as an important variable.

generally indices are constructed for a few points on the sample and values assigned to the rest by interpolation assuming continuous behaviour between observed points. But this method appeared unusable in the case of LACs where economic distance is affected, *inter alia*, by political and violent events as well. This makes economic distance move discontinuously from one year to another making interpolation an unsatisfactory option. To use it as a variable we need to work out costs for each year, or else a cost series would introduce unwarranted noise. Constructing costs for each year was infeasible in our case. We expect that the secular tendency of costs to fall over time due to technological advance to be contained as a time trend, and the disruptions in the cost series from year to year to be captured by our qualitative variables.

Some variables used by other scholars are directly related with the objective of their specific studies (for example: membership of an economic area, customs union or free trade agreements) and do not concern our work. Also, we do not explicitly use price levels as variables, because we work with deflated data series.

The openness of an economy, measured by total trade (imports + exports) as a proportion of GDP, has been used as a variable in several studies. It is also relevant for the LACs' trade in an *a priori* sense. We also used this variable in our exercises, but it failed to appear as a significant variable in any equation. A possible explanation is that political change used as a qualitative variable pre-empted the effect of trade openness. We therefore do not mention it either in the list of variables or in the tables that present summary results.

4.4 The Adjusted Gravity Model

In view of the time series nature of the study and the use of qualitative variables, we would refer to this model as an adjusted gravity model.

As stated previously, the model is a time series version of the basic formulation given by equation (6), augmented with appropriate variables. the model used in this work is Denoting by M^*_{nit} the equilibrium value of imports from New Zealand (n) by country i in period t , we write the non-linear form of the equation as:

$$M^*_{nit} = A y_{nt}^{\beta_1} y_{it}^{\beta_2} L_{nt}^{\beta_3} L_{it}^{\beta_4} Exr_{nit}^{\beta_5} e^{\beta_6 D_1} e^{\beta_7 D_2} e^{\beta_8 D_3} e^{\beta_9 D_4} e^{\beta_{10} D_5} e^{\varepsilon_i} \quad (7)$$

where:

- A = constant
- β_j = elasticity of the explanatory variables, $j = 1, 2, \dots, 5$
- β_j = coefficient of the dummy variables, $j = 6, 7, \dots, 10$
- y_{nt} = New Zealand's per capita income in period t
- y_{it} = country i 's per capita income in period t
- L_{nt} = population of New Zealand in period t
- L_{it} = population of country i in period t
- Exr = real exchange rate

e is the exponential and ε_i is an independently distributed error term with fixed variance and zero mean.

Binary variables: D_1 differentiates years separated by structural breaks; D_2 and D_3 for contemporaneous and one-year lagged effect of constitutional political change and D_4 and D_5 for contemporaneous and one-year lagged effect of violent change of regimes.

We transform (7) to a linear form by logarithmic transformation⁵:

$$\begin{aligned} \ln(M_{nit}^*) = & \beta_0 + \beta_1 \ln(y_{nt}) + \beta_2 \ln(y_{it}) + \beta_3 \ln(L_{nt}) + \beta_4 \ln(L_{it}) \\ & + \beta_5 \ln(Exr_{nit}) + \beta_6 D_1 + \beta_7 D_2 + \beta_8 D_3 + \beta_9 D_4 + \beta_{10} D_5 + \varepsilon_t \end{aligned} \quad (8)$$

Equation (8) has been used for each country separately with D_1 being determined endogenously. The econometric procedure is discussed in Chapter 5.

For each equation we have also tried to estimate another equation with lagged import terms. This is an *ad hoc* formulation though it can be derived from an error correction model. The purpose is not to estimate error correction equations but to see if last year's imports have any short-run impact. Given that in many countries trade with New Zealand was not well-established, we wanted to explore if trade of one period has effect on next year's because of the market initiatives created in the previous year. We report these equations as well when significantly different from the long-run equations.

4.5 A Vector Autoregression Model

Recently some scholars have suggested using VAR models to study trade with a block of similar countries with interactive system variables and allowing shocks of one member to influence the trade of others. This also allows for endogenous determination of the explanatory variables. In the case of LACs trade with a country outside the block this is an attractive modelling strategy.

We encountered three types of problems in using a VAR modelling strategy. The first is that the data series start at different dates for different countries. A VAR model would then be estimated over the smallest period over

⁵ Some authors, e.g. Bergstrand (1985,1989), use a log-linear function in their basic formulation. Some others, e.g. Sanso et al (1993), begin with a very general nonlinear equation and transform it with Box-Cox transformation.

which all series overlap. This reduces the degree of freedom significantly. The second is that the endogenously identified structural breaks on the import series show that different countries are expected to have different dates for structural breaks. Endogenous identification of a structural break in the VAR system would identify a single date for the vector and this we thought would preclude any realistic commentary of the individual country's experiences. The third problem is with the exchange rate series. There has been changeover from one currency regime to another in several countries. These changes are drastic, and the chain linking of real exchange rate to a base year has been done with a number of simplifying assumptions. The resulting noise in the data series would affect the entire VAR system, while in the single-country models they would remain contained within the country's equation.

4.6 Summary

This chapter presented the version of gravity model estimated in this work. The explanatory variables fall into two groups. Economic variables are per capita real GDP, population, and the real bilateral exchange rate. Qualitative variables are used to account for constitutional and violent change of governments, and for structural breaks in the equations. Among the qualitative variables, those for structural breaks are identified endogenously, while others are taken from exogenous sources. VAR modelling strategy was considered as an alternative strategy but we did not pursue it because of certain practical and theoretical reasons. We report the estimation results in the next chapter.

CHAPTER 5

EMPIRICAL RESULTS

5.1 Introduction

The purpose of this chapter is to report on the results of the empirical exercises. The chapter has the following structure. Section 5.2 discusses the sources of data, results of diagnostic analysis of the data and outlines the empirical procedure. Section 5.3 presents and explains the results of the estimation exercises for import functions for LACs. Section 5.4 presents those for New Zealand imports. Section 5.5 discusses the short run equations with a lagged import term. Because of the nature of the material in this chapter, there is no concluding section. Implications of the results are discussed in Chapter 6.

5.2 Data and Procedure

Data and information have been obtained from several sources. The main sources are IMF (IFS and DOTS) and the United Nations (Yearbooks of International Trade Statistics). Chapter 3, Section 3.2 has a complete explanation of these sources. Dummy variables for political and military changes have been worked out using sources such as historical texts, periodicals and journals.

The software used is Shazam 8 for Windows.

Test for stationarity

The series for the economic variables were first tested for stationarity. These tests were carried out by using first the Dickey-Fuller test, and then by the Phillips-Perron procedure. The two tests which have identical critical values provided very similar test statistics, and the unit root hypothesis was either rejected or accepted for each series by both tests.

Table 5.1a reports on the Phillips-Perron tests for all time series variables used for Latin American import equations. The first column reports on Latin American imports. For LACs imports the hypothesis of unit root was rejected for all countries except Guatemala and Mexico. For Guatemala and Mexico, the first differenced variables were then tested for unit roots. The unit root hypothesis was rejected by both the series at this stage. Other columns of the table report on per capita income and population of the importing country and New Zealand. 'Rejected' means the rejection of the null of unit roots. In cases where the null was not rejected, first differencing made the series stationary.

Thus we have two types of situations; either the import series and all regressors are $A(1)$, or the import series is $A(0)$ with either all regressors $A(1)$ or some $A(1)$ and some $A(0)$.

For imports into New Zealand, we restrict the analysis to only seven countries because of unavailability of import data classified by origin. The Phillips-Perron tests are reported in Table 5.1b. For imports the hypothesis of unit root was rejected for Colombia and Peru, while for Argentina, Brazil, Chile, Ecuador and Mexico it could not be. The series of first differences for the latter countries were further tested, and found stationary. For other variables, when the unit root hypothesis could not be rejected, we tested the hypothesis on their first differences,

and found them stationary. Thus for New Zealand import equations too, we have situations involving $A(0)$ and $A(1)$ import series with regressors either $A(0)$ or $A(1)$.

Table 5.1a Unit Roots (Phillips-Perron) Tests: Imports to LACs

Country	M_{LACs}	Y_{NZ}	Y_{LACs}	L_{NZ}	L_{LAC}
Argentina	-2.94	-1.33	-1.03	-0.09	-2.83
	Rejected	Not rejected	Not rejected	Not rejected	Rejected
Brazil	-3.17	-1.28	-2.40	-0.23	-3.57
	Rejected	Not rejected	Not rejected	Not rejected	Rejected
Chile	-2.71	-1.33	0.93	-0.09	-1.87
	Rejected	Not rejected	Not rejected	Not rejected	Not rejected
Colombia	-3.46	-0.82	-1.36	0.99	1.09
	Rejected	Not rejected	Not rejected	Not rejected	Not rejected
Ecuador	-3.67	-0.78	-3.37	1.64	-2.59
	Rejected	Not rejected	Rejected	Not rejected	Rejected
El Salvador	-2.78	-0.82	0.99	0.99	-1.65
	Rejected	Not rejected	Not rejected	Not rejected	Not rejected
Guatemala	-0.60	-0.85	-0.99	1.69	-1.70
	Not rejected	Not rejected	Not rejected	Not rejected	Not rejected
Mexico	-1.27	-1.81	-1.70	-2.42	-4.11
	Not rejected	Not rejected	Not rejected	Not rejected	Rejected
Panama	-2.75	-1.00	-1.90	-0.13	-5.01
	Rejected	Not rejected	Not rejected	Not rejected	Rejected
Peru	-3.76	-1.81	-2.51	-2.42	-5.55
	Rejected	Not rejected	Not rejected	Not rejected	Rejected
Uruguay	-3.70	-0.82	-0.67	0.99	-0.25
	Rejected	Not rejected	Not rejected	Not rejected	Not rejected
Venezuela	-3.18	-1.71	-2.38	-1.88	-2.40
	Rejected	Not rejected	Not rejected	Not rejected	Not rejected

Table 5.1b Unit Roots (Phillips-Perron) Test: Imports to New Zealand

Country	M_{NZ}	Y_{NZ}	Y_{LACs}	L_{NZ}	L_{LAC}
Argentina	-1.58	-1.14	-1.02	-0.08	-3.66
	Not rejected	Not rejected	Not rejected	Not rejected	Rejected
Brazil	-2.42	-1.00	-2.45	-0.13	-3.78
	Not rejected	Not rejected	Not rejected	Not rejected	Rejected
Chile	-0.54	1.28	0.95	0.23	-1.42
	Not rejected	Not rejected	Not rejected	Not rejected	Not rejected
Colombia	-3.60	-1.28	-2.09	-0.23	0.43
	Rejected	Not rejected	Not rejected	Not rejected	Not rejected
Ecuador	-1.91	-1.28	-3.64	-0.23	-5.20
	Not rejected	Not rejected	Rejected	Not rejected	Rejected
Mexico	-2.50	-1.81	-1.70	-2.41	-4.10
	Not rejected	Not rejected	Not rejected	Not rejected	Rejected
Peru	-3.98	-1.58	-1.88	-0.16	-4.20
	Rejected	Not rejected	Not rejected	Not rejected	Rejected

Table 5.1c shows the similarity of the statistics for the Dickey-Fuller and the Phillips-Perron tests for import series of both LACs and New Zealand. The same pattern is repeated for other variables and we do not report them.

Table 5.1c Comparing Dickey-Fuller and the Phillips-Perron test statistics

	Imports to LACs			Imports to New Zealand		
Country	Dickey-Fuller	Phillips-Perron	H: unit root	Dickey-Fuller	Phillips-Perron	H: unit root
Argentina	-2.99	-2.94	Rejected	-1.61	-1.58	Not rejected
Brazil	-3.24	-3.17	Rejected	-2.35	-2.42	Not rejected
Chile	-2.68	-2.71	Rejected	-0.52	-0.54	Not rejected
Colombia	-3.40	-3.46	Rejected	-3.68	-3.60	Rejected
Ecuador	-3.66	-3.67	Rejected	-1.90	-1.91	Not rejected
El Salvador	-2.63	-2.78	Rejected	---	---	---
Guatemala	-0.70	-0.60	Not rejected	---	---	---
Mexico	-1.33	-1.27	Not rejected	-2.41	-2.50	Not rejected
Panama	-2.77	-2.75	Rejected	---	---	---
Peru	-3.79	-3.76	Rejected	-4.13	-3.98	Rejected
Uruguay	-3.70	-3.70	Rejected	---	---	---
Venezuela	-3.39	-3.18	Rejected	---	---	---

Estimation strategy:

Given the autoregressive status of the time series variables we can estimate OLS regression between the appropriately differenced variables. We considered this a default option because the equations with some variables in levels and others in first differences would be difficult to interpret using familiar economic terms.

Our preferred option was to check if appropriate cointegrating relations exist so that the import series could be expressed in terms of level variables as in equation (8) giving a stationary residual series. This would make the interpretations more meaningful. We have reported earlier that the import series for most countries have a structural break when viewed as a pure time series variable. Thus the exercise was to test for the existence of a cointegrating relation among regressors with a structural break endogenously determined.

5.3 Estimates for LACs' Imports

Below we report on the cases where such cointegration exists for the equations involving LACs' imports. Some of the regressors are not significant in the resulting equations. We suppress those variables in reporting the equations in Table 5.2 which reports the coefficients of the regressors including D_1 .

For countries where the cointegration occurs with a structural break, the date of the break is not generally the same. Table 5.3 reports on the dates for both LACs import and New Zealand import equations. Needless to say that not all equations have a structural break.

Table 5.2 LACs' Imports: Long Run Estimates

Variable	Argentina (1971-97)	Brazil (1969-97)	Chile (1971-97)	El Salvador (1973-97)	Mexico (1958-97)	Peru (1958-97)	Uruguay (1973-97)	Venezuela (1961-97)	Colombia (1973-97)	Panama (1966-97)
C		-130.83					-494.02			
<i>p value</i>		0.00					0.02			
Y _{nt}	-47.15		-4.08	-3.20		-1.99	41.24		-4.92	-1.24
<i>p value</i>	0.00		0.01	0.01		0.01	0.05		0.01	0.06
Y _{it}	29.32	10.89	14.50	2.98	1.32	2.65	37.17			
<i>p value</i>	0.00	0.04	0.00	0.02	0.09	0.01	0.01			
L _{nt}	-106.16		-57.46		-13.56			-23.30	110.41	15.84
<i>p value</i>	0.00		0.00		0.05			0.08	0.00	0.04
L _{it}	93.65	8.47		6.65	0.06	2.01	-170.69	10.94	-26.36	-6.73
<i>p value</i>	0.00	0.07		0.00	0.01	0.00	0.01	0.05	0.01	0.06
Ex. Rate					-0.77					
<i>p value</i>					0.07					
D ₁		4.72	-6.32			-0.85		-3.26	5.48	-1.90
<i>p value</i>		0.01	0.00			0.02		0.00	0.00	0.00
D ₂					0.50					
<i>p value</i>					0.02					
D ₃			-1.60		-0.37					
<i>p value</i>			0.03		0.08					
D ₄	-3.29									
<i>p value</i>	0.06									
D ₅	-2.83						-5.56			
<i>p value</i>	0.03						0.06			
adjusted R ²	0.68	0.49	0.65	0.41	0.24	0.71	0.38	0.58	0.53	0.57
F	11.32	10.06	17.81	32.06	3.36	444.31	4.63	24.47	7.94	66.35
<i>p value</i>	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00

Table 5.3 Dates of Structural Breaks

Imports into LACs		Imports into New Zealand	
Argentina	1979	Mexico	1965
Brazil	1975	Peru	1965
Chile	1981		
Colombia	1988		
Panama	1978		
Peru	1964		
Venezuela	1971		

To reconfirm the cointegrating relation identified earlier residuals for all estimated equations were again tested for unit roots and were found stationary. Table 5.4 reports on the unit root test on the residuals.

Table 5.4 Residuals Phillips-Perron Test

Residuals	Phillips Perron test	Critical value	H ₀ : unit root
Argentina	-5.68	-2.57	Rejected
Brazil	-8.04	-2.57	Rejected
Chile	-5.46	-2.57	Rejected
Colombia	-4.46	-2.57	Rejected
El Salvador	-3.36	-2.57	Rejected
Mexico	-6.92	-2.57	Rejected
Peru	-4.96	-2.57	Rejected
Uruguay	-6.18	-2.57	Rejected
Venezuela	-6.06	-2.57	Rejected
Panama	-4.76	-2.57	Rejected

The following is a brief description of the more notable features of these long run equations for LACs' imports. We postpone till the next chapter any interpretative discussion of the results.

1. Long run equations have been successfully estimated for ten countries. Six of the estimated equations show the presence of a structural break (D_1). Long run imports of Argentina and Uruguay show that they are influenced by military influence, while Chile and Mexico show the influence of political change.
2. The coefficient of per capita income of the importer country is positive whenever significant. New Zealand's income shows a negative effect for most cases. Population of the importer country is positive except in Uruguay, Colombia and Panama.
3. Exchange rate has significant effect only in the case of Mexico.
4. Import functions for Ecuador and Guatemala could not be identified. These two countries have the smallest data sets, 23 and 21 years of data, respectively.

5.4 Estimates of Imports to New Zealand

New Zealand's import data classified by country is not available for most (or all) of the sample period for a large number of countries. Accordingly we had to confine the estimates to only seven countries: Argentina, Brazil, Chile, Colombia, Ecuador, Mexico and Peru. The estimated equations are presented in Table 5.5, and the unit root tests for residuals in Table 5.6. The dates of structural breaks have been already shown in Table 5.3 above.

Table 5.5 New Zealand Imports: Long-Run Estimates

Variable	Argentina (1972-97)	Mexico (1958-97)	Peru (1958-97)
C <i>p value</i>	11.66 0.03		
Y_{nt} <i>p value</i>	-0.15 0.04	4.74 0.01	
Y_{it} <i>p value</i>		-4.45 0.02	-2.17 0.00
L_{nt} <i>p value</i>		-13.96 0.10	
L_{it} <i>p value</i>	-3.30 0.03	0.06 0.04	4.43 0.00
Ex. Rate <i>p value</i>			
D_1 <i>p value</i>		0.42 0.05	-3.50 0.00
D_2 <i>p value</i>			
D_3 <i>p value</i>			
D_4 <i>p value</i>			
D_5 <i>p value</i>	-0.91 0.01		
adjusted R^2	0.30	0.24	0.58
F <i>p value</i>	4.55 0.01	3.51 0.01	19.96 0.00

Table 5.6 Imports to New Zealand, Residuals Phillips Perron Test

Residuals	Phillips Perron test	Critical value	H ₀ : unit root
Argentina	-6.44	-2.57	Rejected
Mexico	-6.27	-2.57	Rejected
Peru	-5.19	-2.57	Rejected

Only three countries estimated a stable long-run function as reported in Table 5.5. In the case of Argentina alone, a lagged influence of military effects is significant. Political changes do not show significant effects. The effect of the economic variables is mixed across the countries, and exchange rate has no significant effects.

5.5 The Short Run Equations with Lagged Import

These equations were estimated with the same methodology, but allowing for a lagged import term among the regressors. The equation used is:

$$\begin{aligned} \ln(M^*_{nit}) = & \beta_0 + \beta_1 \ln(y_{nt}) + \beta_2 \ln(y_{it}) + \beta_3 \ln(L_{nt}) + \beta_4 \ln(L_{it}) \\ & + \beta_5 \ln(Exr_{nit}) + \beta_6 D_1 + \beta_7 D_2 + \beta_8 D_3 + \beta_9 D_4 + \beta_{10} D_5 + \beta_{11} \ln(M^*_{ni,t-1}) \varepsilon_t \end{aligned}$$

This equation can be derived as a reduced form of an error correction equation. The equations are in level variables, and the break point, if included, has been endogenously identified in the equation with stationary residuals. The lagged import is the variable of interest and unless it is a significant regressor, the equation degenerates to the long-run equation. Accordingly we report only the equations with significant lagged import terms. Tables 5.7 reports these equations for LACs'

imports, and Table 5.8 shows the test results on the residuals. No similar short-run equation could be identified for New Zealand imports.

Table 5.7 **LACs' Imports: Short-Run Estimates**

Variable	Argentina (1971-97)	Peru (1958-1997)	Chile (1971-97)	El Salvador (1973-97)
Y_{nt} <i>p value</i>	-49.36 0.00	-1.99 0.00	-10.96 0.00	-2.34 0.05
Y_{it} <i>p value</i>	27.61 0.00	2.47 0.00	25.59 0.00	2.17 0.09
L_{nt} <i>p value</i>	-105.09 0.00	4.60 0.00	-75.05 0.01	
L_{it} <i>p value</i>	103.79 0.00			4.79 0.02
Ex. Rate <i>p value</i>				
D_1 <i>p value</i>			-8.77 0.00	
D_2 <i>p value</i>				
D_3 <i>p value</i>			-2.17 0.00	
D_4 <i>p value</i>				
D_5 <i>p value</i>	-4.72 0.01		3.25 0.02	
$M_{int(-1)}$ <i>p value</i>	-0.39 0.05	0.44 0.00	-0.32 0.07	0.33 0.09
Adjusted R^2	0.63	0.76	0.73	0.46
F <i>p value</i>	9.01 0.00	551.09 0.00	17.71 0.00	27.15 0.00

Table 5.8 Tests on Residuals: Short-Run Equations.

	Phillips-Perron test	Critical value	H ₀ : unit root
Argentina (1971-97)	-5.56	-2.57	Rejected
Peru (1958-1997)	-4.16	-2.57	Rejected
Chile (1971-97)	-4.15	-2.57	Rejected
El Salvador (1973-97)	-6.22	-2.57	Rejected

1. Short-run equations have been identified for only four countries. In other countries, statistically meaningful linear regressions of current imports on economic variables and lagged import as regressors could not be established. Estimated short-run equations are qualitatively different from the long-run equations for the same countries and feature different variables. All four equations returned statistically insignificant values for the estimate of the intercept, and the estimates presented here are forced through the origin.
2. Of the four countries where short-run equations have been identified, Peru and El Salvador's estimates do not feature non-economic variables. In the other two countries, short-run imports show lagged influence of political and military events.
3. An importing country's income has a positive effect on its short-run imports in all the identified equations. Population, too, when significant, has a positive influence. The income of New Zealand shows a negative influence,

and its population has a positive or negative effect.

4. Exchange rate does not influence the short-run imports.

CHAPTER 6

LESSONS FROM THE GRAVITY MODEL

6.1 Main Themes that Emerge from This Research

This chapter points to the main themes that emerge from this research. The adjusted gravity model used in this research is a country-specific time series model, which includes some non-traditional variables. The model takes into account importer and exporter country variables. It is assumed that the importer country makes the final decision in bilateral trade. The model shows different behaviour for LACs' imports and for New Zealand's imports. This model is more useful for the LACs' imports than for the New Zealand imports.

The results of Chapter 5 indicate that both traditional and non-traditional economic variables have affected the dynamics of evolving bilateral trade. We find empirical evidence that the traditional gravity variables require the addition of at least one of the non-traditional variables to explain New Zealand-LACs bilateral trade relationship. We can argue that New Zealand-LACs bilateral trade has been affected by political and military influences only when those factors have persistence. Insufficient evidence has been found to support the hypothesis of political and military influence for the whole region. Nevertheless, the most stable democratic systems (i.e., Mexico and Chile) and the most stable military régimes (i.e., Chile and Uruguay) have been influenced by these two non-traditional economic variables.

The model shows that bilateral trade has been disturbed by structural breaks and some political and military events. The dummy for periods (D_1) shows the relevance of the structural breaks in the long run data. Political changes were relevant only in the LACs' imports. In contrast, military régimes were relevant in both LACs' imports and New Zealand's imports.

Latin American imports

The explanatory variables in the model jointly explain 57.30% (weighted average of the coefficient of multiple determination, see Table 6.1) of the total variation of the value of LACs' imports. In the LACs' imports, the traditional economic variables alone (income and population) only explain the import behaviour of one country, El Salvador, which represents 3.07% of the LACs' imports total value. All other countries require the inclusion of at least one of the non-traditional economic variables (dummies D_1 , D_2 , D_3 , D_4 and D_5) into their model. Brazil, Peru, Colombia, Panama and Venezuela feature the dummy for periods (D_1). Argentina and Uruguay feature military variables (D_4 and D_5). The countries with the closest relationship with New Zealand, that is, Mexico and Chile, require more than one of the non-traditional explanatory variables. Mexico's model includes exchange rate and political variables (D_2 and D_3). Chile's model includes a political variable (D_3) and the dummy for periods (D_1); and additionally in the short run, Chile also requires a dummy for military influence (see Table 6.1).

Table 6.1 Summary of The LACs' Imports

Country	Period	Years	Share of own total imports	Non-traditional explanatory variables					R ^{2**}
				Structural Breaks	Exchange rate	Periods	Political effects	Military effects	
Argentina	I	1971-97	0.064%	√				√	0.74
Brazil	I	1969-75	0.042%	√		√			0.55
	II	1976-97							
Chile	I	1971-81	0.365%	√		√	√	√*	0.71
	II	1982-97							
Colombia	I	1973-88	0.040%	√		√			0.59
	II	1989-97							
El Salvador	I	1973-97	0.425%						0.67
Mexico	I	1958-97	0.159%		√		√		0.34
Panama	I	1966-78	0.360%	√		√			0.61
	II	1979-97							
Peru	I	1958-64	0.974%	√		√			0.74
	II	1965-97							
Uruguay	I	1973-97	0.074%					√	0.48
Venezuela	I	1961-71	0.281%	√		√			0.61
	II	1972-97							

* represents a variable significant only in the short-run model.

** R² is the coefficient of multiple determination, represents the proportion of the total variation of the dependent variable that is explained by all the explanatory variables jointly.

New Zealand imports

In the New Zealand imports model, only Argentina, Mexico and Peru, which together represent 29.02% of the total value of New Zealand imports from Latin America, perform well with the gravity model. These three countries each require at least one of the non-traditional gravity variables to perform well. Argentina requires the dummy of lagged military influence (D_5) and Mexico and Peru require the dummy for periods (D_1) (Table 6.2). The explanatory variables in the model jointly explain 10.82% (weighted average of the coefficient of multiple determination, see Table 6.2)

Table 6.2 Summary of New Zealand's Imports

Country	Period	Years	Share of total NZ's imports	Non-traditional explanatory variables			R^{2**}
				Structural break	D_1	Military effect	
Argentina	I	1972-97	0.048%			√	0.38
Mexico	I	1958-65	0.097%	√	√		0.31
	II	1966-97					
Peru	I	1958-65	0.021%	√	√		0.60
	II	1966-97					

** R^2 is the coefficient of multiple determination, represents the proportion of the total variation of the dependent variable that is explained by all the explanatory variables jointly.

6.2 Determinants of Bilateral Trade

When examining the results of the model, it is important to take into account the following theoretical expectations:

Income

The signs and the values of the coefficients of income of importing and exporting countries represent the market size of bilateral trade, and the commodity composition of trade (type of goods) will affect the income response. From Chapter 3 we know that the LACs' main imports from New Zealand are dairy products. Although these products could be classified as primary commodities (and we will expect low income elasticity for these products), if a brand is developed in the respective market, such product differentiation will produce a change in the income elasticity, and dairy products can behave as differentiated products.

In our analysis we will take into account Krugman's (1980) "home market" effects and theoretical predictions of the coefficients of income made by Feenstra et al (2001). Krugman (1980) presents a framework for trade analysis that includes economies of scale, product differentiation and imperfect competition. He shows that a country with only one factor of production (labor) tends to export those goods for which they have relatively large domestic demand. His argument concerns economies of scale from concentrating production in one place. Home market effects refers to the argument that in the presence of increasing returns, countries tend to export the goods for which they have relatively large domestic markets. However, in a world of diminishing returns, if one country has strong domestic demand for a good, it will tend to be an importer (Krugman, 1980).

Feenstra et al (2001) gives theoretical predictions for the nature of the “home market” effects on the gravity equation, using the income coefficients. They suggest that different configurations of the income elasticities of exporter and importer country are possible for different assumptions about markets. They stated that models with free entry for imports are expected to have larger own income elasticity than the partner country’s income elasticity (see Table 6.3).

Table 6.3 Feenstra’s Theoretical Predictions of Income Coefficients

Model	Coefficients
Free entry	
Monopolistic competition	$\beta_i > \beta_j$
Reciprocal dumping with free entry	$\beta_i > \beta_j$
Restricted entry	
Armington national product differentiation	$\beta_i < \beta_j$
Reciprocal dumping with no entry	$\beta_i < \beta_j$

Source: Feenstra et al, 2001 p. 435. Note: This table shows the elasticity of bilateral exports with respect to own income (β_i) and with respect to partner income (β_j), obtained from various models.

Population

Population is an important traditional explanatory variable in gravity models, as it represents the physical size of a country and therefore is a measure of the

diversification of its economy. A bigger population usually means both a more diversified and more self-sufficient economy. However, while diversification tends to induce more international trade, self-sufficiency tends to restrict it. This variable cannot, therefore, be signed a priori.

The relationship between the coefficients of populations of the importer and exporter countries (β_3 and β_4) can partly explain the extent of reliance on imported goods.

After these brief theoretical considerations we will turn to examine our results:

6.2.1 Per Capita Income

LACs' imports

All the statistically significant income coefficients of the LACs' imports show that own per capita income is positively related to trade. In contrast, the coefficients of New Zealand income (as the exporter country) show a negative relationship with the LACs' imports, except for Brazil, Mexico, Venezuela and Uruguay (Table 6.4).

The values of own income coefficients obtained in the individual importer countries range between 37.17 (Uruguay) and 1.32 (Mexico). Therefore, if there is an increase of 1% in the Mexican GDP per capita (above the average growth rate of the time series, 2.2%), the increase of Mexican imports from New Zealand is expected to be 1.32%. On the other hand, if there is an increase of 1% in the Uruguay GDP per capita (above the average growth rate of the time series, 2.1%), the expected effect on the value of imports from New Zealand is a 37.17%

increase. This finding shows high and significant values for the countries with fewer imports from New Zealand (Table 6.4).

Table 6.4 Per Capita Income and LACs' Imports

	NZ partner	Own per capita income coefficients (importer) β_2			New Zealand per capita income coefficients (exporter) β_1		
Country	Rank*	Value	Rank**	Average % growth***	Value	Rank**	Average % growth***
Argentina	5	29.32	2	0.7	-47.15	1	1.1
Brazil	4	10.89	4	2.6	----	--	1.2
Chile	3	14.50	3	2.5	-4.08	4	1.1
Colombia	8	---	---	1.6	-4.92	3	0.9
El Salvador	7	2.98	5	0.4	-3.20	5	0.9
Mexico	1	1.32	7	2.2	----	--	1.5
Panama	6	----		1.9	-1.24	7	1.2
Peru	2	2.65	6	1.1	-1.99	6	1.5
Uruguay	9	37.17	1	2.1	41.24	2	0.9
Venezuela	2	-----		0.5	----	--	1.4

Source: Table 5.5

* Rank based on share of total value of LACs' imports from NZ.

**Rank based on value of per capita income coefficient.

***The average % growth of income is over the period of each country's sample.

LACs' own income coefficients (β_2), fall in four groups (Table 6.4):

1. Low values ($1.32 \leq \beta_2 \leq 2.98$): Mexico, Peru, and El Salvador
2. Medium values ($10.8 \leq \beta_2 \leq 14.5$): Brazil and Chile
3. High values ($29.32 \leq \beta_2 \leq 37.2$): Argentina and Uruguay
4. No statistically significant coefficients ($\beta_2 \approx 0$): Colombia, Panama and Venezuela.

Some features of these groups of own value income coefficients are discussed below:

The three countries with low own income coefficient have a high reliance on dairy imports from New Zealand. Mexico is an unusual case because trading takes place between single firms (Government related and supported) in each country. Mexico and Peru are net dairy importers (see Table 6.10) and imported dairy products behave as differentiated goods in both markets.

Comparing our results with those of other scholars (see Table 6.5), Mexico's own income coefficient as importer country (1.32 in our study) has a similar value to the coefficients from other studies (Ratnayake & Townsend, 1999). Medium value coefficients found in our model are comparable with Sanso et al (1993) in their restricted model (between 3.49 and 13.88). Argentina and Uruguay coefficients are higher compared to other studies (see Table 6.5).

There are several possible reasons why own per capita income coefficient in Colombia, Venezuela and Panama is not statistically significant ($\beta_2 \approx 0$). It is possible to suggest that the reason is that Colombia and Venezuela are oil exporter countries (see Table 6.6). The income of "petrodollars" produces economic distortions. Currencies are overvalued, and the price of imports is therefore low. As a result, the agricultural sector has been penalized. Investments in the agricultural sector are discouraged, and agricultural production is inefficient.

Table 6. 5 **Multilateral Trade Elasticities from Selected Studies***

Characteristics of the Models	Own income (imports)	Partner income (exports)	Own population	Partner population	R ²	Author
Differentiated goods	$1.02 \leq \beta_i \leq 1.15$	$0.62 \leq \beta_j \leq 0.72$	---		$0.48 \leq R^2 \leq 0.57$	Feenstra et al (2001)
Homogeneous goods	$0.44 \leq \beta_i \leq 0.55$	$0.76 \leq \beta_j \leq 0.86$	---		$0.34 \leq R^2 \leq 0.40$	
New Zealand-Australia trade	$1.22 \leq \beta_i \leq 1.34$	$0.86 \leq \beta_j \leq 0.98$	$-0.47 \leq \beta_i \leq -0.31$	$-0.07 \leq \beta_j \leq -0.28$	$0.64 \leq R^2 \leq 0.66$	Ratnayake & Townsend (1999)
New Zealand- Australia trade	$0.79 \leq \beta_i \leq 0.80$	$0.79 \leq \beta_j \leq 0.81$			$0.86 \leq R^2 \leq 0.88$	Giles et al (1976)
Including specific effects	0.48	0.68			0.85	Matyas (1997)
Without specific effects	0.75	0.35			0.69	
Unrestricted (OECD 1964-87)	$0.08 \leq \beta_i \leq 0.74$	$-0.21 \leq \beta_j \leq 0.49$			$0.81 \leq R^2 \leq 0.86$	Sanzo et al (1993)
Restricted	$3.49 \leq \alpha_i \leq 13.88$	$-2.99 \leq \alpha_j \leq 9.34$			$0.81 \leq R^2 \leq 0.85$	
Loglinear	$0.08 \leq \beta_i \leq 0.74$	$-0.40 \leq \beta_j \leq 0.49$	$-0.47 \leq \beta_i \leq -0.31$	$-0.07 \leq \beta_j \leq -0.28$	$0.78 \leq R^2 \leq 0.85$	
Australia IOR-ARC 1990-94	$0.25 \leq \beta_i \leq 0.44$	$0.25 \leq \beta_j \leq 0.40$				Kalirajan (1999)
APEC Total imports	$0.87 \leq \beta_i \leq 0.98$		$-0.17 \leq \beta_i \leq -0.18$		0.88	Polak (1996)
Major power nations** 1907-90	$0.30 \leq \beta_i \leq 0.42$	$0.55 \leq \beta_j \leq 0.69$	$-0.61 \leq \beta_i \leq -0.94$	$-0.10 \leq \beta_j \leq -0.45$	$0.77 \leq R^2 \leq 0.78$	Morrow et al (1998)
LDCs	0.40	2.26				Marquez (1990)
OPEC	1.07	-1.27				

* Studies use cross-section analysis

**The model includes the major power nations at the beginning of the twentieth century: the United States, Great Britain, France, Germany, Russia and Italy. The years 1914-19 and 1939-47 are excluded.

However, Panama with insignificant own income coefficient is not an oil exporter country. In addition, Mexico is an oil exporter and β_2 presents a different behaviour.

Table 6.6 Crude oil exports

	Colombia	Mexico	Venezuela
Year	(Thousand Barrels per day)		
1988	144.6	1,306.9	972.7
1990	192.0	1,279.4	1,242.0
1992	181.2	1,373.3	1,429.0
1994	188.7	1,307.3	1,696.4
1996	317.4	1,544.0	1,976.4
1997	325.0	1,721.0	2,211.0

Source: OPEC, cited by Wilkie et al (2001).

Another possible explanation for the behaviour of own income coefficients for Colombia, Panama and Venezuela is that all of these countries have drug trafficking. It is possible that the income series of these countries have therefore been underestimated. The behaviour of β_2 can be reflecting this distorting effect. Data on drug-related arrests (Table 6.7) demonstrates the existence of drug trafficking.

Uruguay and Argentina have high values of own income coefficients compared with the values found in other bilateral trade studies (see Table 6.4 and

Table 6.5). Uruguay and Argentina have different commodity composition of imports, by comparison with the rest of the LACs, because both Argentina and Uruguay are net exporters of the products they import from New Zealand. Uruguay's main imports from New Zealand are wool, seeds and live sheep for breeding. Argentina is a net exporter of dairy products with only occasional dairy imports (See Table 6.8). (Argentinean imports from New Zealand increased temporarily in 1992 due to bad weather conditions).

Table 6.7 Drug related arrests

Year	Colombia	Panama	Venezuela
1988	5,596	n.a.	741
1990	6,150	823	724
1992	1,700	517	1,022
1994	2,154	1,163	n.a.
1996	1,561	1,252	n.a.
1997	1,546	1,360	5,379

Source data: USDS cited by Wilkie et al (2001)

n.a.= no available data.

Argentina and Uruguay have the highest own income coefficients and the lowest share of total value of LACs' imports. In contrast, Mexico and Peru have the lowest own income coefficients and the highest share of the value of LACs' imports (Table 6.4). These results suggest that the high coefficients of income

(income elasticity of the LACs' imports from New Zealand) may reflect the fact that bilateral trade has not been fully developed; there is still good potential to develop these markets.

Table 6.8 Argentina and Uruguay: Milk and Wool Trade

Year	Argentina milk trade (volume metric tonne)		Uruguay wool trade (value US\$)	
	Exports	Imports	Exports	Imports
1989	50.4	n.a	300,097	5,839
1990	40.1	0.4	317,187	1,470
1991	19.2	24.9	256,309	5,575
1992	6.9	31.5	69,666	5,043
1993	20.5	10.7	60,833	4,596
1994	36.3	10.1	63,900	19,000
1995	74.3	8.4	48,900	42,900
1996	65.2	8.0	49,300	30,900
1997	82.3	11.6	55,600	21,700

Source data: FAO cited by Wilkie et al (2001),

n.a= no available data.

There are four different cases with respect to the values of the income coefficients of the exporter country, New Zealand (Table 6.4):

- 1) Low values ($-1.24 \leq \beta_1 \leq -1.99$): Panama and Peru
- 2) Medium values ($-3.20 \leq \beta_1 \leq -4.92$): Chile, Colombia and El Salvador

- 3) High values ($41.24 \leq |\beta_1| \leq 47.15$): Argentina and Uruguay. Argentina shows a negative relationship; in contrast, Uruguay shows a positive relationship between imports and income of the exporter country.
- 4) No significant coefficient ($\beta_1 \approx 0$): Brazil, Mexico, and Venezuela. These three countries are net importers of dairy food (see Table 6.10).

In Colombia and Chile, as self-sufficient milk producer countries, a change in the income of the exporter country (New Zealand) produces a negative effect on imports.

With respect to the relationship between the income coefficients of the importer (β_2) and the exporter countries (β_1), we found two situations:

- 1) $\beta_2 > \beta_1$: Brazil, Chile, Mexico, Peru, and Venezuela are more sensitive to their own income than to New Zealand's income. The biggest countries, Brazil and Mexico, are not affected by changes in New Zealand's income, $\beta_1 \approx 0$.
- 2) $\beta_1 > \beta_2$: Argentina, Uruguay and El Salvador are more sensitive to New Zealand's income (β_1) than to their own income (β_2). Possible explanations could be that they are net exporters of the products they import from New Zealand (for example, Argentina and Uruguay), or that these products are not differentiated in their markets (El Salvador), so that New Zealand's dairy products behave as a primary commodity in that market. In this last group ($\beta_1 > \beta_2$), we also include Colombia and Panama. As mentioned above, both of them have no significant own income coefficient ($\beta_2 \approx 0$), and in these two markets dairy products behave as homogeneous products.

Table 6.9 LAC's Imports: Commodity Composition

Quantity	Period	Argentina	Brazil	Chile	Colombia	El Salvador	Mexico	Panama	Peru	Uruguay	Venezuela
High >30%	1958-72			Dairy products			Milk, cream and casein		Milk, cream, butter and meat		Milk and cream
	1973-85	Pasture seeds (clover white)	Seeds, sausage casings and paper	Animal & vegetable materials	Cream, milk, pharmaceutical and medical	Milk and cream	Milk and cream	Milk and cream	Milk and cream	Sheep for breeding and seeds	Milk and cream
	1986-97	Milk, cream and containers	Milk, cream, live sheep and goats, chemicals, wood pulp	Milk		Milk and cream	Milk and cream	Milk and cream	Milk and cream, sheep meat	Wool	Milk and cream
Medium 10-30%	1958-72			Meat							
	1973-85	Peas, fish oil, machinery (air conditioning milking and textile), seeds and fruits	Live animals	Electric machinery	Vegetable materials and motor vehicles						Butter

Table 6.9 Continued

Quantity	Period	Argentina	Brazil	Chile	Colombia	El Salvador	Mexico	Panama	Peru	Uruguay	Venezuela
Medium 10-30%	1986-97	Fresh fruits, electrical equipment, seeds and textile machinery	Wool, pumps and butter	Cheese, curd and machinery	Barley, apparatus for radio telephony, aluminium foil		Butter, cheese, curd, casein and sheep meat			Fresh fruit, raw hides and skins	
Low < 5%	1958-72										
	1973-85	Fence controls, butter, cheese, paper, transmission and veterinary instruments, and electric transformers			Sugars, seeds, fat of animals, sawn wood, wire, meat, electrical apparatus and dairy machineries						
	1986-97	Butter, casein, curd, cheese, chemicals, paper, cartons, tools, milking and dishwashing machines		Coal, butter, trailers and semi-trailers, wood, seeds, fruits, spores and casein			Raw hides and skins, fruits and nuts, butter, milk, frozen beef, and iron or steel articles		Machinery for moving, grading, levelling scraping and excavating	Paper and weighing machines	Pumps for liquids and air vacuum pumps

Data source: NZDS

Table 6.10 Milk Trade of Net Importer Countries

	Brazil		Mexico		Peru		Venezuela	
	(volume metric tonne)							
Year	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
1980	n.a.	62.0	3.0	185.0	0	27.0	0	89.0
1985	0.4	31.0	n.a.	198.0	0	28.0	0	75.0
1990	n.a.	50.9	40.1	287.9	0	19.1	0	21.6
1992	2.8	30.8	0.1	212.9	0	22.8	0	54.7
1994	0.4	86.5	5.6	186.6	0	40.7	0.1	56.8
1996	5.3	184.6	3.9	158.9	0	40.6	0.2	67.9
1997	1.0	139.0	6.6	174.4	0	40.0	2.1	56.4

Source: Wilkie et al (2001)

n.a= no available data.

Our results seem to fit with the Feenstra et al (2001) theoretical approach (see Table 6.3). In our model, we can deduce that the LAC markets which offer free entry to New Zealand products are: Argentina, Uruguay, Colombia and Panama. The countries with restricted entry to New Zealand products are: Mexico, Peru and Chile. Taking into account the “home market effect” (Krugman, 1980), Mexico and Peru are net importers of dairy products, and there is a higher sensitivity to their own income than to the New Zealand income. It appears that in Mexico, Peru and Chile, the New Zealand dairy products have been differentiated and do not behave as primary commodities.

Argentina, Uruguay and El Salvador are more sensitive to their own income than to New Zealand's income. That may suggest a monopolistic model with homogeneous primary goods. In contrast, as discussed above with respect to Mexico, Peru and Brazil, in differentiated goods a country's net exports are more sensitive to a partner's income.

LACs' imports are quite elastic with respect to own income in almost all the countries (except, as mentioned earlier, in Colombia, Venezuela and Panama). This means that an increase of the GDP per capita in the LACs will have a positive response in the value of the LACs' imports from New Zealand. In contrast, if the New Zealand GDP per capita increases, there will be no response in the value of imports into Brazil, Mexico and Venezuela. The effect in Argentina is expected to be a reduction of the value of imports from New Zealand. This reduction may be explained by the New Zealand advantage in production due to economies of scale (technology), but also by the fact that Argentina is also a producer with greater population and natural resources such as land. In Uruguay the increase of the GDP per capita will produce an increase in the value of imports from New Zealand.

The commodity composition of most LACs' imports from New Zealand can be categorised as homogeneous products (primary goods). However, in some countries for example Peru and Mexico, the NZDB invests in promotions and development of the Anchor brand. Therefore, this differentiates imports of dry milk from Anchor milk. Peru's and Mexico's imports can be partly explained by the strong advertising campaign by the NZDB. The Anchor brand is strong in Peru and Mexico.

New Zealand imports

In New Zealand as an importer country, its own income coefficient represents the demand potential and is expected to be positive. However, this happens only in the case of Mexico. For imports from Argentina, there is a negative coefficient with low value. For imports from Peru, there is no statistically significant coefficient. With respect to the income of the exporter countries, which represents the supply potential, the coefficient is negative in the cases of Mexico and Peru. For Argentina it is not statistically significant (Table 6.11).

Table 6.11 Per Capita Income and New Zealand's Imports

	NZ partner	New Zealand income coefficients (importer) β_2		Own income coefficients (exporter) β_1	
Country	Rank*	Value	Rank**	Value	Rank**
Argentina	2	-0.15	2	---	---
Mexico	1	4.74	1	-4.45	1
Peru	3	---	----	-2.17	2

Source: Table 5.6

* Rank based on share of total value of LACs' imports from NZ.

**Rank based on value of per capita income coefficient.

Comparing with other studies, we find that Mexico's own income coefficient is higher (Ratnayake & Townsend, 1999), and Argentina's own income coefficient is similar to those found by Sanso et al (1993) (see Table 6.5).

The commodity composition of New Zealand imports has been diversified. There are few items that are more than 30% of the total value of imports, and

there are many commodities that are a low percentage of the total value (see Table 6.12).

The income coefficients found in New Zealand imports may partly reflect implicit trade restrictions on Argentinean and Mexican exports to New Zealand. They may be related to phytosanitary controls on fruits and vegetables. In contrast, there is free entrance for the Peruvian exports to New Zealand, because they are mainly chemicals (calcium and phosphates) (Table 6.12).

Table 6.12 New Zealand Imports Commodity Composition

Quantity	Period	Argentina	Mexico	Peru
High > 30%	1973-85	Office machines		
	1986-97	Petroleum oils		Natural calcium and phosphates
Medium 10-30%	1973-85			
	1986-97	Sunflower seed, soy bean oil and automatic data processing machinery	Fluorides, fertilizers, organic chemicals, electric machinery and equipment	Molluscs and flours
Low < 5%	1973-85	Organic chemicals		
	1986-97	Electric motors and generators, wine, vegetable fats, tobacco, tea, medicines, jam, acids, ceramic flags, fruit juice, molluscs, gelatine, tanning extracts, carbides and leather	Gypsum and anhydrite, dates, figs, pineapples, avocados, beverages, spirits, vinegar	Meal and pellets, animal hair, wool, colouring matter, textiles, imitation jewellery, garments and animal products

Data source: NZDS.

6.2.2 Population

The values of the population coefficients for New Zealand are higher than the value of the population coefficients for the LACs ($\beta_3 > \beta_4$), in all the countries studied.

LACs' Imports

With respect to the value of the LACs' own population coefficients (β_4), there are four different groups (see Table 6.13):

1. Low values ($0.06 \leq \beta_4 \leq 2.01$): Mexico and Peru
2. Medium values ($6.65 \leq |\beta_4| \leq 26.36$): Brazil, El Salvador, Venezuela, Colombia and Panama
3. High values ($93.65 \leq |\beta_4| \leq 170.69$): Argentina and Uruguay
4. No statistically significant coefficients ($\beta_4 \approx 0$): Chile.

Own population coefficients of the LACs' imports are positive ($\beta_4 \geq 0.06$), for all countries except Uruguay, Colombia, and Panama. As importer countries, if there is an increase in the domestic population (demand for goods), the amount of imports is expected to increase. In contrast, the population coefficient of the exporter country is negative ($\beta_3 \leq -13.56$) (but not in the cases of Brazil, El Salvador, Uruguay, Peru, Colombia, and Panama). Four countries do not have statistically significant coefficients of their own population ($\beta_4 \approx 0$); these include the biggest countries (Brazil and Peru) and the smallest countries (Uruguay and El Salvador) in the region.

With respect to the value of the New Zealand's population coefficients (β_3), there are three different groups (see Table 6.13):

1. Medium values ($13.56 \leq |\beta_3| \leq 57.46$): Mexico, Chile, Venezuela and Panama

2. High values ($106.16 \leq |\beta_3| \leq 110.41$): Argentina and Colombia
3. No statistically significant coefficients ($\beta_3 \approx 0$): Brazil, El Salvador, Peru and Uruguay.

Table 6.13 Population and LACs' Imports

	NZ partner	Own population coefficients (importers) β_4			New Zealand population coefficients (exporter) β_3		
Country	Rank *	Value	Rank *	Annual % growth	Value	Rank *	Annual % growth
Argentina	5	93.65	2	1.5	-106.16	2	1.1
Brazil	4	8.47	5	2.1	----	--	1.1
Chile	3	----	---	1.7	-57.46	3	1.1
Colombia	8	-26.36	3	2.5	110.41	1	1.0
El Salvador	7	----	---	1.9	---	---	1.0
Mexico	1	0.06	8	2.7	-13.56	6	1.3
Panama	6	-6.73	6	2.5	15.84	5	1.1
Peru	2	2.01	7	2.5	---	---	1.3
Uruguay	9	-170.69	1	0.7	---	---	1.0
Venezuela	2	10.94	4	3.1	-23.63	4	1.2

Source data: Table 5.5

Some scholars (for example Linnemann, 1966; Leamer & Stern, 1970; Ratnayake & Townsend, 1999) have found population to have a negative impact on trade flows. In contrast, Matyas (1997) obtained a negative coefficient for population of the exporter country and a positive coefficient for the population of the importer country. Ratnayake and Townsend (1999) found that, in New Zealand trade, New Zealand population coefficient ranged between -0.47 and -0.31 and the partner country population coefficient values were between -0.07 and -0.28. Our findings are similar to a certain extent: the New Zealand population coefficient is high and the LAC's population coefficients are relatively small ($\beta_3 > \beta_4$).

New Zealand's Imports

New Zealand's biggest trade partners (Mexico and Peru) have positive own population coefficients. In contrast, in the case of New Zealand imports from Argentina, the coefficient (β_4) is negative. It seems that the more diversified economies in Mexico and Peru provide an opportunity for increased New Zealand imports as New Zealand's population grows. The coefficient of the importer country population (β_3) is negative for imports from Mexico.

If Mexico has an increase in 1% of population growth, the increase in the value of New Zealand imports from Mexico is less than proportional, only 0.06% (See Table 6.14). If there is an increase in the growth rate of New Zealand's population, the impact on New Zealand imports from Mexico is negative. It is interesting to note that the population coefficients for the Mexican imports and New Zealand imports are quite similar (Table 6.13 and Table 6.14). This may

partly reflect the fact that the import goods (commodity composition) of this bilateral trade are not produced to any great extent by the partner country.

Table 6.14 Population and New Zealand's Imports

	NZ trade partner	Own population coefficients (exporter) β_4			New Zealand population coefficient (importer) β_3	
Country	Rank *	Value	Rank*	Rate Growth	Value	Rank*
Argentina	2	-3.30	2	1.1	---	---
Mexico	1	0.06	3	1.9	-13.96	1
Peru	3	4.43	1	2.1	---	---

Source: Table 5.6

* rank.

6.2.3 Relationship Between Income and Population

With regard to New Zealand imports, Mexico and Argentina have higher population coefficients than income coefficients of the importer and exporter countries (β_3 and β_4) > (β_1 and β_2). Therefore, bilateral trade has a higher elasticity of populations than elasticity of income. This is not the case for imports into Brazil and Peru, where we find income elasticity higher than population elasticity ($\beta_2 > \beta_4$). New Zealand, as an exporter country, has income coefficients lower than population coefficients ($\beta_1 < \beta_3$) (see Table 6.4 and Table 6.13).

6.2.4 Bilateral Exchange Rates

Exchange rates were expected to provide significant explanatory variables. However, the exchange rate performed well only in the model of Mexico's imports. One possible explanation of the low performance in the model is the volatility of this variable in other countries (see Table 6.15). It is also possible that this variable does not work in our model as a proxy of price for a broad range of goods (see Table 6.9).

Table 6.15 Bilateral Exchange Rate Volatility

Country	Bilateral exchange rate (variance)
Chile	2461.49
Colombia	3340.33
El Salvador	11.37
Mexico	3.60
Panama	0.41
Uruguay	45655.43
Venezuela	716.87

As mentioned in Chapter 4, Argentina, Brazil and Peru were excluded from study of the exchange rate variable due to drastic changes in exchange rate regimes and change of currencies. Moreover, Uruguay, Colombia and Chile also presented high variance of exchange rates compare with Mexico (see Table 6.15).

Sarno and Taylor (2002) cited that there have been relatively few studies of the effect of real exchange rate on imports for developing countries. Other authors have found similar results to our bilateral exchange rate results. For example, Dell'Ariccia (1999) and Rose (2000) found evidence of small negative effect of exchange rate on bilateral trade flows using gravity model. In contrast, Wilson (2000) found that the real exchange rate does not have a significant impact on the real bilateral trade between Korea with respect to the USA or Japan.

6.2.5 Political Changes

The effect of the political changes variable is quite interesting. Only in Mexico and Chile was the dummy for political changes statistically significant. Presidential election campaigns and plebiscites in the LACs are relevant in both countries because they are characterised by relative stability as a result of the permanence of their governments (see Table 6.16 and Table 6.17). Mexico shows a positive contemporaneous relationship in its imports from New Zealand. However, the lagged variable presents a negative relationship in Mexico and Chile. The effect of an election period (lagged political variable) is extended into the future in a negative form.

Political stability can be related to the number of years that the Head of State stays in government (see Table 6.17). Mexico is a good example of stability, because only one party has been in government during the whole period of this study. In terms of trade with New Zealand, this stability has helped to build and develop some institutional linkages.

Table 6.16 Political and Military Stability over 50 years 1948-97

	Argentina	Brazil	Chile	Colombia	El Salvador	Mexico	Panama	Peru	Uruguay	Venezuela
1948	1	1	1	1	M ₁ -M ₂	1	1	1-M ₁	1	1-M ₁
1949	1	1	1	1	M ₂ -M ₃	1	1-2-3	M ₁ -M ₂ -M ₃	1	M ₁
1950	1	1	1	1-2	M ₃ -1	1	M ₁	M ₃ -2	1	M ₁ -2
1951	1	1-2	1	2	1	1	M ₁	2	1-2	2
1952	1	2	1-2	2	1	1-2	M ₁ -4	2	2-3-M ₁	2-M ₂
1953	1	2	2	2	1	2	4	2	M ₁	M ₂
1954	1	2-M ₁	2	2-3	1	2	4	2	M ₁	M ₂
1955	1-M ₁	M ₁ -3-4	2	3	1	2	4-5-6	2	M ₁	M ₂
1956	M ₁	4-5	2	3	1-2	2	6-7	2-3	M ₁	M ₂
1957	M ₁	5	2	3	2	2	7	3	M ₁	M ₂
1958	M ₁ -2	5	3	3-4	2	2-3	7	3	M ₁	M ₂
1959	2	5	3	4	2	3	7	3	M ₁	M ₂ -3
1960	2	5	3	4	2-M ₄	3	7-8	3	M ₁	3
1961	2	5-6-7-8	3	4	M ₄ -M ₅	3	8	3	M ₁	3
1962	2-M ₂	8	3	4-5	M ₅ -M ₆	3	8	3-M ₄	M ₁	3
1963	M ₂ -3	8	3	5	M ₆ -3	3	8	M ₄ -4	M ₁	3
1964	3	8-M ₂	3-4	5	3	3-4	8-9	4	M ₁	3-4
1965	3	M ₂	4	5	3	4	9	4	M ₁	4
1966	3	M ₂	4	5-6	3	4	9	4	M ₁	4
1967	3-M ₃	M ₂ -M ₃	4	6	3-4	4	9	4	M ₁ -4-5	4
1968	M ₃	M ₃	4	6	4	4	9-M ₂ -M ₃	4-M ₅	5	4
1969	M ₃	M ₃ -M ₄	4	6	4	4	M ₃ -M ₄	M ₅	5	4-5
1970	M ₃	M ₄	4-5	6-7	4	4-5	M ₄	M ₅	5	5
1971	M ₃ -M ₄	M ₄	5	7	4	5	M ₄	M ₅	5-6	5
1972	M ₄	M ₄	5	7	4-5	5	M ₄	M ₅	6	5
1973	M ₄ -M ₅	M ₄	5-M ₁	7	5	5	M ₄	M ₅	6-M ₂	5
1974	5-M ₆ -6	M ₄ -M ₅	M ₁	7-8	5	5	M ₄	M ₅	M ₂	5-6
1975	5	M ₅	M ₁	8	5	5	M ₄	M ₅	M ₂	6

Table 6.16 Continued

	Argentina	Brazil	Chile	Colombia	El Salvador	Mexico	Panama	Peru	Uruguay	Venezuela
1976	5- M ₇ -M ₈	M ₅	M ₁	8	5	5-6	M ₄	M ₅	M ₂	6
1977	M ₈	M ₅	M ₁	8	5-6	6	M ₄	M ₅	M ₂	6
1978	M ₈	M ₅	M ₁	8-9	6	6	M ₄ -10	M ₅	M ₂	6
1979	M ₈	M ₅ -M ₆	M ₁	9	6- M ₇	6	10	M ₅	M ₂	6-7
1980	M ₈ - M ₉ -M ₁₀	M ₆	M ₁	9	M ₇	6	10	M ₅ -5	M ₂	7
1981	M ₁₀ -M ₁₁ -M ₁₂	M ₆	M ₁	9	M ₇	6	10	5	M ₂	7
1982	M ₁₂ -M ₁₃ -M ₁₄	M ₆	M ₁	9-10	M ₇ -7	6-7	10- M ₅	5	M ₂ -M ₃	7
1983	M ₁₄ -6	M ₆	M ₁	10	7	7	M ₅	5	M ₃	7
1984	6	M ₆	M ₁	10	7-8	7	M ₅ -M ₆	5	M ₃ -7	7-8
1985	6	M ₆ -M ₇	M ₁	10	8	7	M ₆ -M ₇	5-6	7	8
1986	6	M ₇	M ₁	10-11	8	7	M ₇	6	7	8
1987	6	M ₇	M ₁	11	8	7	M ₇	6	7	8
1988	6	M ₇	M ₁	11	8	7-8	M ₇ -M ₈	6	7	8
1989	6-7	M ₇	M ₁	11	8-9	8	M ₈ -11	6	7	8-9
1990	7	M ₇ -9	M ₁ -6	11-12	9	8	11	6-7	7-8	9
1991	7	9	6	12	9	8	11	7	8	9
1992	7	9	6	12	9	8	11	7	8	9
1993	7	9	6	12	9	8	11	7	8	9-10
1994	7	9	6-7	12-13	9-10	8-9	11-12	7	8	10
1995	7	9-10	7	13	10	9	12	7	8-9	10
1996	7	10	7	13	10	9	12	7	9	10
1997	7	10	7	13	10	9	12	7	9	10
# Pres.	7	10	7	13	10	9	12	7	9	10
# Mil.	14	7	1	0	7	0	8	5	3	2

Source: Skidmore and Smith (1997) and Calvert and Calvert (1990)

M_i represents military regimes,

the number alone i= 1, 2, 3..... represents elected presidents.

Table 6.17 Average Duration of Head of State over 50 years (1948-97)

	Elected Presidents		Military	
Country	Average years	Rank	Average years	Rank
Argentina	4.5	4	1.3	8
Brazil	2.3	10	3.9	4
Chile	4.7	3	17	1
Colombia	3.8	7	---	
El Salvador	4.0	6	1.5	7
Mexico	5.6	1	---	
Panama	2.5	9	2.4	6
Peru	5.0	2	3.0	5
Uruguay	2.7	8	8.7	2
Venezuela	4.1	5	4.5	3

Source: Table 6.16.

6.2.6 Military Régimes

In the LACs' imports, three countries (Argentina, Chile and Uruguay) have statistically significant coefficients of military influence. Argentina shows a lagged relationship between military influence (D_5) and the explanatory variable in the short run and a lagged and contemporaneous relationship (D_4 and D_5) in the long run. Chile has lagged military influence (D_5) in the short run model.

LAC's imports from New Zealand seem to be influenced by military regimes, when they are stable. In fact, Chile and Uruguay had the most stable military régimes in the region (Table 6.17). Chile had only one military regime (Pinochet) for 17 years, and Uruguay had three Heads of State during 26 years of military régimes. Argentina is an exception to this observation, as measured by the number of Heads of State in the sample period. But the Falkland Islands War might have had a strong negative influence.

While it is likely that military changes and resultant uncertainties might depress international trade, and part of the evidence supports this view, it is also possible that a stable régime can affect trade positively (for example, Chile in the short run).

Brazil, El Salvador, Panama, and Peru had military régimes during the period studied. In all of these countries the average tenure of Heads of State was less than four years. However, none of these countries showed a statistically significant coefficient of military influence as an explanatory variable.

Military intervention has a negative lagged effect in the LACs' imports. A possible explanation is that in the year immediately before the military coup, internal problems produced dissatisfaction with the regime, and the government possibly tried to reduce the people's dissatisfaction by reducing the imports of primary products (including New Zealand's dairy products).

6.2.7 Periods

The dummy for periods (D_1) can be positive or negative. With respect to New Zealand's imports, Mexico and Peru have the same break point (in 1965).

However, in the same year, the coefficient (D_1) is positive in Mexico and negative in Peru (see Table 5.5).

In the LACs' imports there are different periods of trade. The coefficient of time-period dummy coefficient (D_1) is positive in Brazil and Colombia. That coefficient suggests that, during the early years, Brazilian and Colombian imports were relatively higher than in the later period. On the other hand, Chile, Peru, Venezuela and Panama have a negative coefficient. This negative coefficient may be interpreted as the low initial value of imports from New Zealand during the first period, while in the later period (after the structural break), imports increased. These four countries -Chile, Peru, Venezuela and Panama- show similar trend of global imports and imports from New Zealand (see Table A3.1). In Panama the structural break in 1978 coincided with the transition from military rule to the democratic government. For Argentina's imports, we could not reject the hypothesis of a structural break in 1979 (Chow test); it was not, however, statistically significant in the model.

6.2.8 Lagged Dependent Variable

In the LACs' imports from New Zealand, $M_{int(-1)}$ is significant in only four countries (positively related in Peru and El Salvador and negatively related in Argentina and Chile). The sign of the lagged variable coefficients seems to be correlated with changes of dairy imports over time. Peru and El Salvador with positive coefficients have been increasing their dependence on imported dairy food. On the other hand, Argentina and Chile with negative coefficients are considerably reducing their dairy imports. Large lagged dependent variables coefficients could mean that past trade has the effect of encouraging trade in the

present. This possibility suggests a reason why only those four countries have statistically significant coefficients. It is possible that the New Zealand Embassy in Chile has been building strong ties with Chile, Argentina and Peru (neighbouring countries), and that the New Zealand Embassy in Mexico has had influence on El Salvador imports.

Brazil, Colombia, Mexico, Panama, Uruguay and Venezuela did not show a significant lagged import variable. In New Zealand imports from the LACs, the short-run model did not perform well.

6.2.9 Goodness of Fit

Goodness of fit (R^2) is higher for the LACs' imports than for New Zealand imports. Adjusted R^2 for LACs' imports is between 0.24 (Mexico) and 0.76 (Peru short run). For New Zealand's imports, adjusted R^2 is between 0.24 (Mexico) and 0.35 (Peru). In Mexico's case, the adjusted R^2 is equal for Mexican imports and for New Zealand imports.

The adjusted R^2 values obtained in this research are similar to those obtained for the New Zealand gravity equation, $0.64 \leq R^2 \leq 0.66$ (Ratnayake & Townsend, 1999) (see Table 6.5). However, these values are low compared with those found in other studies (Giles et al, 1976; Polak, 1996; Sanso et al, 1993).

CHAPTER 7

CONCLUDING OBSERVATIONS

In section 7.1 we discuss certain general issues related to this work. Thereafter in Section 7.2 we use them to generate some policy implications and suggestions that may be helpful for the future growth of New Zealand-LACs trade. In Section 7.3 we explore issues for future research related to the subject.

7.1 Some General Observations

1. The model suggests that in the LACs context non-economic variables have played a significant role in bilateral trade. Arguably this idea can be generalised to the trade between an OECD country and a developing country, if the latter is subject to frequent policy regime changes. At the same time, traditional economic variables, particularly, income and population are significant even after allowing for political changes and structural breaks.
2. In the LACs' imports, the significant non-traditional variables are political changes, military régimes, structural breaks and, in one case, exchange rate. The model captures the influences of political stability, be it a stable democratic system or a stable military regime.
3. One reason why policy affects LACs imports lies in the composition of import from New Zealand. For many LACs the major import from New Zealand is dairy products. Market for dairy products in many LACs is focus of intense political intervention. Most countries have few importer firms, with specific

regulations on quantities (e.g. Colombia) or tariffs (e.g. Peru). Mexico has a monopsonist importer, and Ecuador has banned dairy imports. These arrangements are related to political positions of the government and often change with the political cycle. At the same time, on the supply side New Zealand had a monopoly exporter during the whole period of study, namely the NZDB¹. Thus a large part of LACs' import from New Zealand is policy determined, and usual economic variables fail to capture the statistical variance.

4. Further, dairy products, depending on the particular item, can behave both as a commodity and as a differentiated product. When former, it is the interplay of economic variables that determine its quantity; when latter the quantity is primarily determined by promotional activities and brand development in the specific market. Dairy products exhibit both behaviours in the LACs: they behave as differentiated products in Mexico and Peru, and as a primary commodity in Argentina and Colombia.
5. Given the estimated income and population elasticities and the projected growth rates of some LACs, the LACs seem to have a large potential as importers from New Zealand. The countries with few trade restrictions seem to have good potential to increase imports from New Zealand (Argentina and Uruguay). Another good potential market for New Zealand is Brazil due to its large and growing population, growing income and its currently low trade volume with New Zealand. Mexico has been a good market, but, is

¹ Recently, the New Zealand government allows companies to export independently dairy products (Hill, 2000 and Edlin, 2001).

complicated by political intervention and market characteristics of dairy imports from New Zealand.

6. Exchange rate does not perform well in our model. In the orthodox context of gravity models exchange rate is expected to be determined by the attractor and resisting variables, and should not appear in the equation at all. Our inclusion of this variable was to allow for the possibility that exchange rate does not adjust fully or is partly administered. On the other hand, extreme volatility of exchange rate, abrupt revaluation of currency and change of exchange rate régimes have introduced an unknown amount of measurement error in the exchange rate series used for many countries. It is not possible to comment if or how much that has contributed to our results.
7. Two distinct patterns of trade between New Zealand and the LACs can be identified. One is based on the comparative advantage of New Zealand in its dairy and pastures. This is reflected in New Zealand-Mexico trade. The second is the trade between New Zealand and the LACs that share similar climatic, geographic and primary product orientation. To this group of countries, New Zealand's exports are technology, equipment and related services in the shared areas of production. This trade is driven by New Zealand having a more advanced technology in these areas.
8. As the estimated equations show, bilateral trade has been negatively affected by the changes in trade régimes due to political situations in Chile and Mexico and military influence in Argentina, Chile and Uruguay. Interestingly there are two exceptions to this negative effect: the political changes in Mexico in a contemporaneous relationship and the military influence on Chile in the short

run. Based on the timing of political and military intervention in the import of dairy products, it can be argued that import of food and dairy products buys popular support for politicians. On the other hand there are domestic producers' lobbies that are opposed to import. Internal political events may therefore cause variation in the import of dairy products.

9. While New Zealand appears to be fairly focused in its efforts to expand trade in some of the LACs, the converse may not be true. This could be because of the small size of the New Zealand market compared to the bigger LACs.

Why the model does better for the LACs than for New Zealand?

As noted previously, the estimated model 'works' better for the LACs than New Zealand. The model explains imports to ten countries in Latin America, while import into New Zealand from these countries could not be explained by it in more than half of those countries. The explanatory ability of the model in the LACs imports may be explained by:

1. The stability of the commodity composition of import from New Zealand (over 90% consist of dairy products) and the fact a high proportion of it goes to seven countries: Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela accounting for 91%. Thus for most countries we are effectively examining the import of a single product.
2. One monopoly exporter (NZDB) was in charge of all the promotions, advertising and strategic policies concerned with the LACs over the whole period studied generating a certain uniformity of the behaviour of imports.
3. Dairy products are sensitive political commodities, due to the impact they have on population with low income. Dairy production in the LACs is

particularly vulnerable to political upheavals, because most political events disrupt transport as a matter of agitational strategy, particularly between the rural areas and the cities. Given the rural location of production units and major urban consumption points of the dairy industry, a political shock easily upsets this market. It also appears reasonable to argue that other dairy related products, such as dairy equipment or consultancy, are affected in the process, because the income of the local dairy industry is affected more than others when there is a political disturbance. The qualitative variables in our formulation have therefore been able to account for the related variation quite effectively.

In the case of New Zealand imports the situation is quite different.

1. New Zealand imports include a wide range of products from the LACs (e.g. Mexico and Peru export to New Zealand, See Table 6.12). There is a mixture of primary goods, manufactured products, and technological goods, some quite sophisticated (for example, aircraft from Brazil). Because of this diversity, the value of aggregate import is sensitive to events in individual products or markets.
2. There have been also large outright shifts in import composition. For example, a major shift in New Zealand imports from the region took place over the second half of the 1960s, when New Zealand started buying petroleum from other sources. This shift quite clearly had nothing to do with either the resource position of the countries or cost differentials, but it was the result of New Zealand's shifting geo-political perceptions. Our model

shows a different behaviour in the LACs' imports and in the New Zealand imports.

3. It is possible that New Zealand import functions can be better specified than in our equations, for example, by including variables that account for the efforts of the NZDB to open new markets, its policies of promoting dairy products, and New Zealand trade policies.

7.2 Policy Implications

Trade between Latin America and New Zealand has been growing in importance. There are, however, potential problems for New Zealand trade with this market. Lessons partly from the estimated model and partly from the studies in the earlier chapters from which New Zealand and the LACs trade might benefit in the years to come, include:

1. Pursue (or, in the case of New Zealand, maintain) those success factors that made the trade work. The lack of continuing effort could be a major obstacle to the formation of any future trade relationship. New Zealand's major trade partners in the LACs - Chile and Mexico - are good examples that increasing diplomatic efforts in the region can be rewarding. Mexico and Chile were the only LACs where New Zealand had diplomatic representation until 2001.
2. The power of the political systems must not be underestimated. Imports of the main Latin American partners show statistically significant influence of political changes (See Table 5.2). The limitations imposed by political instability must be noted by any future trade effort. However, it is possible to diminish the influence of political changes. Any effort to establish new export

markets should concentrate on a politically stable economy to avoid political influences on bilateral trade. One possible solution to manage exports of primary commodities to politically unstable countries is Direct Investment.

3. The pattern of influence generated by political campaign, a government change and more violent changes and their lagged effects can be carefully studied for each country to derive important lessons for the timing of diplomatic/ promotional activities in specific countries.

There are some suggestions for the future trade:

Institutional Solutions

Political change has been identified by the model as an enduring obstacle to trade. In the 1990s, the relative stability of LACs sustained a steady growth of bilateral trade. However it may still be useful to explore ways to insure New Zealand exports against future policy shocks in the LACs, which are not entirely improbable. A possible approach would be to seek appropriate institutional solutions. A very good example is provided by NZDB's attempt to invest into a joint venture with a Mexican public sector company in the late eighties. The joint venture, incorporated in Mexico, successfully bid for the rights to be the sole importer of dairy products. This made dairy exports by NZDB immune to a range of domestic changes in Mexico. Another successful example is the strategy used by the NZAPMB to penetrate markets using investments and strategic alliances in Chile. Similar or other imaginative approaches to develop immunity or insurance against policy changes in the LACs may be useful.

A major factor currently impeding faster growth of trade seems to be the relatively indifferent attitude of the LACs towards exporting to New Zealand. The

reason, as we have suggested above, is that the New Zealand market is small compared to the larger LACs. If New Zealand wants to increase exports to the LACs, each of these markets must be treated as unique, and it is necessary to study their specific business protocols and traditional approach to be successful in the long run. The negotiation and maintenance of these markets includes a better understanding of the culture, language and political institutions. Without reciprocal interest in exporting to New Zealand, New Zealand exports will face natural limits to growth. There is, however, substantial scope for growth of LACs' exports indirectly through New Zealand. In fact, some of New Zealand's investments in Latin America seem to be aimed at third country export markets. LACs companies can involve New Zealand in joint ventures to get access to technology in forestry, pasturing, dairy and fruits and can use the venture for exporting to third countries. New Zealand can aggressively promote these ventures and ideas in countries like Chile, Argentina, Uruguay and southern Brazil. For their specialisation, New Zealand can provide useful technology of production as well as marketing, and joint ventures in these areas directed at exports to third countries can go a long way in increasing bilateral relations.

Finally, as we have argued in Chapter 3, the volatility of New Zealand exports to the LACs is heightened by local events because of its composition; in spite of some diversification in the recent past, milk continues to be the mainstay. On the other hand it is in the dairy sector that New Zealand has a significant comparative advantage, and it appears that there is no gainsaying that it should reduce the proportion of milk in its export basket. However, this may not be entirely true. One possible long-run solution would be to concentrate on the export

of dairy machinery, spares, services, technology, pasture seeds and other inputs to LACs suited to milk production, and to produce milk there in units jointly owned by New Zealand's firms and local corporations. Export of inputs and capital might be more stable than that of the final product. Secondly, milk produced inside Latin America can be exported to a number of markets in the region, thereby reducing the variability arising from the market behaviour of a single country.

Diplomacy and Bilateral Relations

While New Zealand has followed some markets quite aggressively and is currently reaping the benefits, it has also erred on a number of occasions. One major slip, in our judgement, is its low-profile diplomatic presence in the LACs. In the case of Mexico and Chile, success has been earned through diplomatic representation, sustained marketing, and commercial promotion efforts. Yet New Zealand seems to be unmindful of the importance of diplomatic as opposed to commercial promotion. A somewhat surprising case is Peru, which was the largest importer from New Zealand well into the middle of the 1980s (See Table 3.2). Following some decline in export to Peru, the New Zealand High Commission in Peru was closed down as a cost-cutting measure in 1990. It is strange, because Peru continues to be a significant importer, ranking fourth among the LACs, and can return the cost of diplomacy several times over, if efforts are focused. Until 1997, New Zealand had only two diplomatic posts in the entire region: Santiago and Mexico City².

High Commissioners to Mexico and Chile are cross-accredited to Argentina, Brazil, Uruguay, Colombia and Peru, but they are restricted in the attention they can

² In late 2001, New Zealand opened a diplomatic post in Brazil.

pay to those countries. Of the total of 265 staff posts of New Zealand's Ministry of External Relations and Trade in 1990, only five were located in the LACs.

The lack of diplomatic representation is also reflected in other areas of bilateral relations. During 1990-1991, the LACs were recipient of a paltry NZ\$533,000 bilateral development assistance out of a total NZ\$130 million (0.4% of total). The majority of New Zealand aid in the LACs has been by voluntary agencies such as the Christian World Service, Catholic Commission for Evangelisation, Justice and Development, Corso (Nicaragua and Panama) and Women's Council in Nicaragua. Neither official nor voluntary New Zealand agencies have any representation in Bolivia, Honduras, Panama and Paraguay. Official bilateral assistance however is an important agency for building up bilateral commercial relations as is evidenced by the history of European and US assistance to the developing world. It is worthwhile to have a comprehensive plan tying up bilateral assistance, commercial efforts and diplomatic representation in a single strategic vision in the interest of future promotion of trade and bilateral relations.

Recently there are encouraging signs that some LACs are getting more focused on bilateral relations with New Zealand. LACs' diplomatic representation in New Zealand has been increasing; in 2002, there are five LACs diplomatic representation in New Zealand (Argentina, Brazil, Chile, Mexico and Peru).

Promoting Cultural Exchange

A general lack of familiarity with Latin American culture, which appears in many ways alien to the entrenched Anglo-Saxon mode of life in New Zealand, is a serious impediment to meaningful diplomatic and commercial involvement in the LACs. It may be guessed that, from the Latin American side, too, the New Zealand

way of life and business would appear equally enigmatic. Accordingly, New Zealand should endeavour to increase the awareness of Latin American culture and life in general. This can be achieved by measures like promotion of Latin American tourism and attracting tourists from LACs, designing tertiary level courses in some New Zealand universities on LACs' history and culture and the Spanish language, and commercial promotion of cross-country cultural events and performances.

In 2000, about 5,600 New Zealanders visited LACs³. Given the total size of tourist traffic emanating from New Zealand, this number can be increased several fold by appropriate promotion. Brazil and Peru have the biggest potential for attracting New Zealand tourists; however, there is significant scope for developing the product to make it more attractive. Rather than waiting for the initiative to come from the tourism industry in the LACs, it may be worthwhile for New Zealand companies to try to develop appropriate tourist products in Brazil and Peru. This would obviously need investment in joint ventures with local promoters.

7.3 Shortcomings of The Present Study and Further Research

International trade research involving developing countries must provide answers to a variety of basic questions in the interest of future trade development. When trade involves developing countries, quite often the received theories, with their implicit locale of developed economic and political institutions, tend to lose usefulness. Secondly, in the instance of the early development of trading relation, a host of factors like promotion, marketing, diplomacy and institutions become important determinants. Our work tried to look at two of these factors in the

³ Main trip destinations stated by New Zealanders (Statistics New Zealand, 2002).

context of New Zealand-LACs trade: political changes and military régimes. We are painfully aware of the many lacunae and shortcomings of this endeavour.

In the context of New Zealand-LACs trade, some of the issues that we have reported require more thorough investigation. While we have found links between trade and factors like régime shifts (See Table 5.2 and Section 6.2.5), the exact microeconomic or meso-economic route through which these factors affect the ultimate traded quantity remains a significant question. Answers to such questions are important not only for the sake of theory, but also in the interest of future trade.

An important question which we have not gone into is the role of cultural familiarity in the broadest sense, even though we have suggested that this has been an important factor inhibiting New Zealand-LAC's trade. Our suggestion is based on impressions provided by the media and people engaged in trade promotion activities in New Zealand. It is necessary to assess the extent of this influence more closely, for example to answer questions of the following kind: to promote trade, how much investment is worthwhile in cultural familiarisation (i.e. tourism, cultural exchanges etc)? Or, we may like to know what are the precise factors that led to a more vigorous growth of New Zealand-East Asian trade than New Zealand-LAC's trade, both starting around the same time? How much of the difference is due to cultural similarity between New Zealand and East Asia (including similarity of legal institutions, law, language, customs etc), and how much of it can be attributed to the stable policy régimes of South Asia? These questions, while interesting research agenda for economic sociology, have also practical importance in policy formulation.

The adjusted gravity model can be improved by using quarterly or monthly data. This model could be also validated with specific products. In fact, although most of the studies using gravity models have been estimated the total volume of bilateral trade. It seems that this model could be useful if it is used for the analysis of trade in specific goods.

Economic distance variable can be included in the modified gravity model to improve the results. It could be rewarding to study New Zealand trade relationship with similar countries in Latin America (Chile, Argentina, Brazil and Uruguay) using an intra industry framework.

A detailed case study of the marketing efforts made by the NZDB in the Mexican market in particular and in the LACs in general would be a useful research project. This could provide very useful material in cross-cultural marketing, while at the same time providing valuable information on the specifics of the LACs' markets and institutions.

Finally, some research is necessary for studying the implications for New Zealand of NAFTA extending further south, or of the formation of a Pan-American economic and/or free trade area. In particular, this research would provide an appropriate trade and investment strategy mix in view of the opportunities that might open up with these developments. Secondly, given the objective probability of these developments, as they are today, should New Zealand business and the government engage in any activities in anticipation?

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Table A.1

Global Exports and Global Imports of the LACs (Million US\$)

Year	Argentina		Bolivia		Brazil		Chile		Colombia		Costa Rica		Ecuador		Mexico		Panama	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
1958	994	1233	0	68	1243	1353	386	494	461	400	92	99	134	106	736	1129	33	108
1959	1009	993	0	55	1282	1374	495	492	473	415	77	103	141	99	753	1007	35	107
1960	1079	1249	51	61	1268	1462	488	626	465	517	84	110	146	114	764	1187	27	120
1961	964	1460	59	66	1403	1460	506	711	433	557	84	107	126	107	826	1139	30	136
1962	1216	1357	62	82	1214	1475	530	680	463	541	93	113	144	97	930	1143	40	160
1963	1365	981	67	88	1406	1487	522	663	446	508	95	124	120	129	985	1240	60	181
1964	1410	1077	97	87	1430	1263	592	723	548	586	114	139	144	151	1054	1493	70	181
1965	1493	1199	129	114	1596	1096	637	718	538	454	112	178	164	166	1145	1560	79	208
1966	1593	1124	127	118	1741	1496	817	892	507	675	136	179	155	174	1199	1605	89	235
1967	1465	1096	150	129	1654	1667	847	819	510	497	144	191	190	214	1145	1748	94	251
1968	1368	1169	152	130	1881	2132	858	852	559	643	171	214	226	256	1254	1960	99	266
1969	1612	1576	172	141	2311	2265	1075	1028	607	685	190	245	193	242	1430	2080	113	294
1970	1773	1694	190	135	2739	2849	1249	1063	727	843	231	317	190	274	1402	2461	110	357
1971	1740	1868	181	144	2904	3701	997	1110	686	929	225	350	199	340	1504	2407	117	396
1972	1941	1905	201	143	3991	4783	855	1086	808	859	281	373	326	319	1694	2719	123	440
1973	3266	2230	261	194	6199	6999	1231	1290	1169	1062	345	455	532	397	2250	3814	138	502
1974	3931	3635	557	364	7951	14168	2481	2148	1509	1597	440	720	1124	678	2958	6057	207	822
1975	2961	3947	444	532	8670	13592	1552	1525	1465	1495	493	694	974	987	2904	6580	283	892
1976	3916	3033	568	562	10128	13726	2083	1864	1874	1662	593	770	1258	958	3418	6028	238	848
1977	5652	4162	632	644	12120	13257	2190	2539	2403	1880	828	1021	1436	1189	4167	5489	251	861
1978	6400	3834	629	690	12659	15054	2478	3408	3010	2971	865	1166	1558	1505	6005	8109	256	942
1979	7810	6700	760	674	15244	19804	3894	4808	3411	3364	934	1397	2104	1600	8982	12086	303	1184
1980	8021	10541	942	574	20132	24961	4705	5797	3924	4739	1002	1540	2481	2253	15570	19460	358	1449
1981	9143	9430	912	828	23293	24079	3837	7181	2916	5201	1008	1209	2451	2246	19646	24068	328	1540
1982	7625	5337	828	496	20175	21069	3706	3989	3024	5480	870	889	2327	2169	21214	15128	371	1570
1983	7836	4504	755	496	21899	16801	3831	3085	3001	4963	873	988	2348	1487	21819	8023	321	1412
1984	8107	4585	725	412	27005	15210	3651	3574	3462	4498	1006	1094	2620	1616	24407	11788	274	1423
1985	8396	3814	623	565	25639	14332	3804	3072	3552	4141	976	1098	2905	1767	22112	13994	334	1392
1986	6852	4724	638	564	22349	15557	4191	3436	5102	3862	1121	1148	2172	1810	16347	11997	349	1229
1987	6360	5818	570	646	26224	16581	5224	4396	4642	4322	1158	1383	1928	2252	20887	12731	358	1306
1988	9135	5322	600	495	33494	16055	7052	5292	5037	5002	1246	1410	2192	1714	20765	19591	307	751
1989	9579	4203	822	563	34383	19875	8080	7144	5717	5004	1415	1717	2354	1855	23048	24438	318	986
1990	12353	4076	926	633	31414	22524	8373	7678	6766	5590	1448	1990	2714	1862	27131	29969	340	1539
1991	11978	8275	849	894	31620	22950	8942	8094	7232	4906	1598	1877	2852	2399	27318	38124	358	1695
1992	12235	14872	710	1005	35793	23068	10007	10129	6917	6516	1841	2458	3007	2501	27704	48998	502	2024
1993	13118	16784	728	1112	38597	27740	9199	11125	7116	9832	1995	2885	2904	2562	30241	50147	553	2188
1994	15659	21527	1032	1209	43558	35997	11604	11825	8419	11883	2243	3025	3820	3622	34530	60979	584	2404
1995	20967	20122	1101	1424	46506	53783	16024	15914	10126	13853	2844	3253	4307	4153	48430	46887	625	2511
1996	23811	23762	1137	1635	47762	56947	15405	17828	10587	13684	3014	3479	4900	3935	59084	61160	629	2780
1997	25516	30349	1128	1851	52987	65007	16923	19660	11522	15378	3281	3919	5221	4955	65268	76796	723	3002

Source: IMF (IFS) Yearbook

Table A.1

Continued

Year	Paraguay		Peru		Uruguay		Venezuela		El Salvador		Guatemala		Nicaragua		Honduras	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
1958	41	42	290	325	155	143	2326	1599	116	108	103	133	71	78	70	63
1959	34	32	314	292	108	173	2214	1578	113	100	102	118	72	67	69	62
1960	28	38	433	379	129	218	2305	1188	117	123	113	121	63	72	63	72
1961	30	41	496	469	175	211	2225	1197	119	109	110	121	68	72	73	72
1962	33	40	540	537	153	231	2342	1304	136	125	109	119	90	93	81	80
1963	39	39	541	557	165	177	2343	1238	154	152	152	171	107	111	83	95
1964	49	40	667	580	179	198	2472	1249	178	191	165	202	125	137	95	102
1965	56	55	667	730	191	151	2455	1421	189	201	186	229	149	160	127	122
1966	49	59	764	829	186	164	2373	1307	189	221	226	207	142	182	143	149
1967	47	71	754	825	159	171	3077	1445	207	224	198	247	152	204	155	165
1968	46	73	866	646	179	157	2779	1666	213	214	227	249	162	185	181	186
1969	50	82	866	613	200	197	3083	1720	202	209	255	250	159	177	168	18
1970	63	76	1048	623	233	231	3169	1869	229	214	290	284	179	199	179	221
1971	64	83	893	763	206	229	3124	2103	228	249	283	297	187	210	189	194
1972	85	83	944	797	214	212	3166	2463	273	272	328	324	249	219	205	193
1973	124	122	1112	1019	322	285	3298	2812	352	377	436	431	278	327	259	262
1974	167	198	1503	1531	382	487	11153	4148	463	563	572	701	381	562	289	382
1975	176	206	1291	2550	384	557	8800	6000	531	614	624	733	375	517	295	400
1976	181	220	1360	2037	547	587	9299	7663	743	735	760	839	542	532	400	456
1977	279	308	1726	1911	608	730	9551	10938	972	929	1160	1053	637	762	513	575
1978	257	383	1941	1175	686	757	9187	11767	848	1028	1090	1286	646	596	608	693
1979	305	521	3491	1820	788	1206	14317	10670	1223	1037	1241	1504	567	360	734	826
1980	310	615	3898	2500	1059	1680	19221	11827	967	966	1520	1598	451	887	829	1009
1981	296	600	3255	3482	1215	1641	20980	13106	797	986	1226	1688	508	999	761	949
1982	330	672	3259	3601	1023	1110	16590	12944	699	857	1120	1388	406	776	660	701
1983	269	546	3015	2548	1045	788	13937	6419	735	892	1159	1126	429	826	672	803
1984	335	586	3147	2212	934	777	15997	7774	717	977	1129	1279	386	848	725	893
1985	304	502	2979	1835	909	708	14438	8106	679	961	1057	1175	302	964	780	888
1986	233	578	2531	2909	1088	870	8660	8504	755	935	1044	959	247	857	854	875
1987	353	595	2661	3562	1189	1142	10577	9659	591	994	987	1447	273	827	791	827
1988	510	574	2701	3348	1405	1157	10244	12726	609	1007	1022	1557	233	805	842	940
1989	1009	760	3488	2749	1599	1203	13286	7803	498	1161	1108	1654	311	615	859	969
1990	959	1352	3231	3470	1693	1343	17497	7335	582	1263	1163	1649	331	638	831	935
1991	737	1460	3329	4195	1605	1637	15155	11147	588	1406	1202	1851	272	751	792	955
1992	657	1422	3484	4860	1703	2045	14185	14066	598	1699	1295	2463	223	855	802	1037
1993	725	1689	3515	4859	1645	2324	14686	12511	732	1912	1340	2599	267	744	814	1130
1994	817	2370	4555	6691	1913	2786	16089	9187	844	2574	1522	2604	352	875	842	1056
1995	919	3144	5575	9224	2106	2867	18457	12650	998	2853	2156	3293	526	962	1220	1643
1996	1043	3204	5897	9473	2397	3323	23060	9880	1024	2671	2031	3146	671	1142	1321	1840
1997	1089	3204	6814	10263	2726	3716	23070	14606	1359	2973	2344	3852	704	1532	1447	2048

Source: IMF (IFS) Yearbook

Table A.2 Deflators for converting US\$ nominal data to 1990 NZ\$

Year	Exchange rate		LACs		Bolivia	Brazil		Chile	Colombia		Peru	Venezuela		Ecuador	Costa Rica	Developing*	Oil exporters
	US\$/NZ	Index	Index X	Index M	Index X	Index X	Index M	Index M	Index X	Index M	Index X	Index X	Index M	Index X	Index X	Index M	Index X
1958	1.40	233.8	20.8	25.0	16.0	20.8	25.0	25.0	20.8	25.0	20.8	6.4	25.0	20.8	20.8	25.0	8.3
1959	1.39	233.7	20.8	25.0	16.0	32.0	25.0	25.0	36.7	25.0	20.8	6.4	25.0	20.8	20.8	25.0	8.3
1960	1.39	233.6	21.3	25.0	16.0	31.4	25.0	25.0	37.4	25.0	19.1	6.4	25.0	21.3	21.3	25.0	8.3
1961	1.39	233.1	22.8	25.2	17.5	33.0	23.5	25.2	37.2	25.2	17.8	7.4	25.2	22.8	22.8	24.9	8.3
1962	1.39	233.6	22.0	25.4	17.0	28.8	23.6	25.4	34.1	25.4	18.0	7.4	25.4	22.0	22.0	24.6	8.3
1963	1.39	232.9	22.0	26.0	16.7	28.7	24.2	26.0	29.9	26.0	19.4	7.3	26.0	22.0	22.0	25.2	8.3
1964	1.39	232.3	24.2	25.2	14.6	34.3	23.5	34.6	35.7	25.2	22.3	7.3	41.4	25.5	24.2	25.7	8.3
1965	1.39	232.6	24.1	29.1	16.7	34.6	23.8	28.6	33.3	29.1	24.8	9.6	43.8	24.2	24.1	26.2	9.3
1966	1.38	231.9	24.3	29.6	15.8	33.2	24.4	25.5	26.8	29.6	31.4	9.4	45.7	21.6	24.3	26.5	9.1
1967	1.36	227.1	24.6	29.6	15.0	33.1	24.9	23.5	32.5	29.6	29.9	9.4	47.0	24.4	32.5	26.3	9.1
1968	1.12	187.1	25.4	27.4	15.0	35.2	21.1	24.1	33.1	27.4	31.5	9.5	47.9	20.8	33.1	26.2	7.3
1969	1.12	186.8	25.6	28.1	16.3	36.2	20.7	26.4	33.5	28.1	35.2	9.2	48.9	16.1	33.5	26.5	7.2
1970	1.12	187.5	27.6	28.3	21.1	40.9	21.1	27.1	41.6	38.8	37.1	9.5	50.3	21.9	41.6	27.1	7.4
1971	1.14	191.2	29.4	30.0	17.1	39.4	22.0	30.6	39.5	39.4	32.1	12.1	52.9	22.7	47.3	28.3	9.2
1972	1.20	200.2	31.7	30.8	17.8	44.6	21.7	28.0	44.3	42.0	32.1	12.8	55.9	19.0	49.3	30.0	9.9
1973	1.36	228.1	43.2	39.7	40.8	61.3	29.4	55.4	55.7	49.7	57.3	19.1	60.2	24.1	55.6	37.7	14.0
1974	1.40	234.6	74.1	55.9	70.6	77.2	42.9	97.0	74.8	63.8	84.5	49.7	70.3	61.5	66.7	53.3	46.5
1975	1.22	203.7	74.9	59.2	66.8	77.2	46.7	63.9	73.9	68.2	55.6	53.1	79.1	60.9	75.8	58.1	48.7
1976	1.00	166.9	83.0	61.2	76.0	89.1	48.0	72.5	108.2	71.2	64.3	54.4	84.8	66.0	85.7	58.4	51.7
1977	0.97	162.6	98.9	66.0	97.8	108.7	49.9	87.8	158.9	75.3	73.4	61.6	91.1	74.6	109.6	63.6	56.6
1978	1.04	173.8	91.9	69.4	114.2	100.0	53.3	80.6	132.8	84.4	71.7	58.7	97.5	70.6	102.3	69.2	56.8
1979	1.02	171.4	109.1	79.4	136.8	109.8	63.9	97.0	131.0	93.1	102.2	86.2	104.5	115.5	107.1	82.0	93.4
1980	0.97	163.2	135.4	102.1	176.1	116.3	81.8	127.6	146.0	102.1	131.7	128.6	119.6	161.8	120.9	100.8	152.0
1981	0.87	145.7	134.4	109.5	176.5	109.5	90.9	133.2	130.6	108.3	113.6	142.3	135.6	157.0	110.6	102.7	169.7
1982	0.75	126.0	124.2	107.7	171.2	102.9	87.9	113.2	129.6	110.7	94.4	132.3	145.5	149.3	108.2	97.6	163.7
1983	0.67	112.0	116.0	106.3	174.2	97.3	83.2	118.9	130.0	108.3	101.8	122.0	154.1	129.0	107.1	94.8	142.8
1984	0.58	96.9	111.9	97.8	171.0	99.3	79.0	122.2	138.8	111.7	93.2	105.3	111.2	125.5	109.1	93.1	137.7
1985	0.50	83.5	101.1	97.2	166.0	93.6	74.5	115.8	129.8	105.5	80.3	98.8	119.4	127.9	108.8	88.7	132.1
1986	0.52	87.8	89.8	89.1	115.0	89.2	65.2	103.5	146.9	98.1	71.9	57.2	131.2	76.4	122.5	86.6	79.8
1987	0.59	99.2	88.7	88.9	108.8	98.4	67.9	100.7	112.8	97.6	86.2	60.8	121.6	86.1	103.5	90.5	81.6
1988	0.66	109.9	95.2	94.3	102.4	105.5	70.2	98.1	117.9	101.5	101.6	64.8	142.1	72.4	106.5	93.6	71.9
1989	0.60	100.3	98.1	100.3	115.0	103.8	88.1	99.1	96.2	104.3	107.6	81.1	112.5	85.2	104.0	95.3	81.2
1990	0.60	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1991	0.58	97.0	95.9	94.8	96.2	100.8	92.1	98.1	92.9	95.7	92.9	77.3	98.4	87.5	104.1	100.2	88.8
1992	0.54	90.2	98.7	91.1	76.2	114.3	86.1	97.2	78.1	85.7	93.6	74.4	96.2	89.1	104.4	99.6	89.1
1993	0.54	90.6	94.0	93.5	64.2	113.1	90.6	96.9	77.8	84.3	74.5	68.1	97.4	73.6	106.6	97.3	80.2
1994	0.59	99.5	100.4	105.3	66.0	119.2	112.5	99.2	103.7	93.7	86.1	68.1	107.6	83.2	100.4	101.1	80.5
1995	0.65	110.0	108.1	125.8	73.3	123.8	136.0	107.7	112.4	100.2	105.6	72.9	136.2	83.8	108.1	111.3	89.9
1996	0.71	115.20	116.0	123.1	71.0	124.7	126.1	114.3	105.0	101.3	107.3	91.9	123.4	96.0	96.0	109.6	103.0
1997	0.58	111.10	118	151.2	47.8	125	180.2	115	113	98.7	108.6	81	128.5	89.3	96	110	97.1

Source: IMF (IFS) Yearbook

* no oil exporters countries

Table A.3

Disaggregated data of Bilateral Trade (Million US\$ nominal)

Year	Argentina		Bolivia		Brazil		Chile		Colombia		Costa Rica		Ecuador		El Salvador		Guatemala	
	NZMAr	ArMNZ	NZMBo	BoMNZ	NZMBr	BrMNZ	NZMCh	ChMNZ	NZMCo	CoMNZ	NZMCR	CrMNZ	NZMEc	EcMNZ	NZMES	ESMNZ	NZMGU	GUMNZ
1958	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1959	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1960	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1961	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1962	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1963	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1964	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1965	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1966	n.a.	n.a.	n.a.	n.a.	0.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1967	n.a.	n.a.	n.a.	n.a.	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1968	n.a.	n.a.	n.a.	n.a.	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1969	n.a.	n.a.	n.a.	n.a.	0.8	0.5	0.1	0.0	2.3	0.0	0.5	0.0	2.1	n.a.	n.a.	n.a.	n.a.	n.a.
1970	n.a.	n.a.	n.a.	n.a.	2.1	0.0	0.1	0.0	1.2	0.0	0.0	0.0	1.7	n.a.	n.a.	n.a.	n.a.	n.a.
1971	0.0	0.1	0.0	0.0	2.3	0.1	0.2	6.2	1.4	0.0	0.0	0.0	3.4	n.a.	n.a.	n.a.	n.a.	n.a.
1972	0.1	0.1	0.0	0.0	2.9	0.1	0.4	23.4	3.6	0.0	0.0	0.0	3.8	n.a.	n.a.	n.a.	n.a.	n.a.
1973	0.2	0.1	0.0	0.0	3.7	10.7	0.5	21.7	0.1	0.4	0.0	1.1	6.0	0.0	0.0	0.3	0.0	0.0
1974	1.1	0.7	0.1	0.0	9.6	3.5	0.5	18.8	0.7	0.9	0.0	0.8	7.6	0.0	0.0	1.1	0.0	0.0
1975	0.7	0.4	0.0	0.0	7.2	0.7	0.4	0.3	0.0	0.1	0.0	1.2	6.8	1.2	0.0	1.2	0.0	0.0
1976	0.3	0.0	0.0	0.0	6.6	0.4	0.1	0.0	0.1	0.4	0.0	1.0	6.7	2.2	0.0	2.7	0.0	0.2
1977	0.3	0.3	0.0	0.0	5.9	0.1	0.3	0.1	0.1	3.8	0.0	4.3	8.7	1.7	0.0	2.2	0.0	0.2
1978	0.4	0.7	0.0	0.0	6.8	0.1	0.1	0.5	0.1	0.1	0.0	1.9	7.8	1.9	0.0	3.7	0.0	0.2
1979	0.2	9.7	0.0	0.0	11.5	0.4	0.1	0.8	0.1	0.1	0.6	1.6	7.7	3.7	0.0	5.3	0.1	0.5
1980	0.9	6.0	0.0	0.0	15.5	1.0	0.1	1.1	0.2	0.1	0.9	1.8	7.7	1.1	0.1	2.7	0.1	0.7
1981	0.8	0.9	0.0	0.0	16.6	1.1	0.1	1.0	0.2	0.2	0.0	0.2	10.9	0.3	0.1	1.1	0.0	0.8
1982	0.5	1.3	0.0	0.0	20.5	0.1	0.2	46.8	0.1	0.5	0.1	0.5	14.6	0.7	0.2	0.5	0.0	0.3
1983	2.5	1.4	0.0	0.0	27.2	1.8	0.8	5.8	0.2	0.3	0.2	0.1	10.1	3.5	0.1	0.6	0.1	0.3
1984	1.7	0.9	0.0	0.0	31.4	2.1	1.0	14.4	0.3	0.4	0.4	0.0	8.4	5.0	0.1	2.2	0.1	0.7
1985	3.9	0.3	0.0	0.0	30.6	2.3	2.2	5.6	0.3	2.4	0.4	0.0	11.1	4.2	0.0	3.1	0.1	0.8
1986	11.1	1.2	0.0	0.0	15.4	21.0	2.6	3.2	0.3	1.3	0.2	0.0	8.8	4.3	0.0	7.8	0.4	0.9
1987	12.6	3.4	0.0	0.0	22.0	15.0	3.0	16.0	0.8	2.2	0.2	0.0	13.0	0.3	0.0	4.8	0.3	2.0
1988	11.0	3.0	0.0	0.0	33.0	0.3	3.0	9.0	1.0	1.0	0.1	0.0	17.0	0.0	0.1	2.0	0.2	2.0
1989	17.0	1.0	0.0	0.0	41.0	7.0	10.0	7.0	1.0	0.0	0.0	0.0	19.0	1.0	0.0	5.0	0.1	2.0
1990	12.0	1.0	0.0	0.0	36.0	13.0	12.0	15.0	1.0	0.1	0.0	0.0	27.0	1.0	0.0	3.0	0.0	2.0
1991	11.0	20.0	0.0	0.0	40.0	7.0	7.0	16.0	1.0	4.0	0.0	0.0	29.0	1.0	0.0	5.0	0.0	2.0
1992	11.0	37.0	0.0	0.0	35.0	7.0	6.0	19.0	2.0	4.0	0.0	0.0	24.0	1.0	0.0	15.0	0.0	1.0
1993	12.0	20.0	0.0	1.0	40.0	65.0	5.0	23.0	2.0	1.0	0.0	0.0	18.0	1.0	0.0	4.0	0.0	11.0
1994	17.0	19.0	0.0	1.0	44.0	15.0	8.0	36.0	3.0	1.0	0.0	0.0	13.0	6.0	0.0	2.0	1.0	16.0
1995	13.0	26.0	0.0	3.0	57.0	42.0	19.0	59.0	3.0	3.0	0.0	4.0	21.0	1.0	0.0	7.0	1.0	19.0
1996	10.0	32.0	0.0	4.0	52.0	76.0	23.0	56.0	5.0	5.0	0.0	0.0	29.0	2.0	0.0	44.0	1.0	20.0
1997	9.0	35.0	1.0	3.0	45.0	63.0	22.0	48.0	4.0	17.0	0.0	0.0	29.0	2.0	0.0	19.0	1.0	18.0

Source: IMF (DOTS) Yearbook

Table A.3 Continued

Year	Honduras		Mexico		Nicaragua		Panama		Paraguay		Peru		Uruguay		Venezuela	
	NZMHo	HoMNZ	NZMMe	MeMNZ	NZMNI	NI MNZ	NZMPa	PaMNZ	NZMPr	PrMNZ	NZMPe	PeMNZ	NZMUr	UrMNZ	NZMVe	VeMNZ
1958	n.a.	n.a.	0.1	0.2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.9	0.3	n.a.	n.a.	n.a.	n.a.
1959	n.a.	n.a.	0.5	0.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.8	2.1	n.a.	n.a.	n.a.	n.a.
1960	n.a.	n.a.	1.1	0.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.5	2.3	n.a.	n.a.	n.a.	n.a.
1961	n.a.	n.a.	1.1	0.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3.2	1.3	n.a.	n.a.	4.3	0.1
1962	n.a.	n.a.	0.9	0.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.0	2.7	n.a.	n.a.	0.0	0.0
1963	n.a.	n.a.	1.0	0.2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.5	1.5	n.a.	n.a.	6.3	0.1
1964	n.a.	n.a.	0.5	0.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.0	1.5	n.a.	n.a.	4.1	0.1
1965	n.a.	n.a.	1.1	0.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.1	3.3	n.a.	n.a.	1.3	0.1
1966	n.a.	n.a.	1.3	0.7	n.a.	n.a.	n.a.	0.5	n.a.	n.a.	n.a.	4.9	n.a.	n.a.	1.3	0.2
1967	n.a.	n.a.	1.2	0.8	n.a.	n.a.	n.a.	0.7	n.a.	n.a.	n.a.	5.7	n.a.	n.a.	1.6	0.4
1968	n.a.	n.a.	0.4	1.0	n.a.	n.a.	n.a.	0.7	n.a.	n.a.	n.a.	3.6	n.a.	n.a.	0.5	0.1
1969	n.a.	n.a.	0.5	1.3	n.a.	n.a.	n.a.	1.0	n.a.	n.a.	n.a.	3.4	n.a.	n.a.	0.0	0.5
1970	n.a.	n.a.	0.5	3.2	n.a.	n.a.	n.a.	0.7	n.a.	n.a.	n.a.	4.9	n.a.	n.a.	0.0	0.9
1971	n.a.	n.a.	0.9	2.3	n.a.	n.a.	n.a.	0.1	n.a.	n.a.	0.1	10.8	n.a.	n.a.	0.0	0.0
1972	n.a.	n.a.	1.6	2.9	n.a.	n.a.	n.a.	0.6	n.a.	n.a.	0.1	32.9	n.a.	n.a.	0.0	1.1
1973	n.a.	n.a.	2.1	5.6	0.0	0.0	0.0	0.6	0.0	0.0	0.1	25.6	n.a.	0.1	0.0	0.9
1974	n.a.	n.a.	3.3	11.8	0.1	0.2	0.0	2.3	0.0	12.4	0.2	29.1	n.a.	0.4	0.0	0.3
1975	n.a.	n.a.	1.7	4.2	0.0	0.3	0.0	2.3	0.0	0.0	0.1	28.0	n.a.	0.2	0.0	1.9
1976	n.a.	n.a.	2.0	7.4	0.0	0.1	0.0	2.1	0.0	0.0	0.1	19.0	n.a.	0.0	0.0	5.5
1977	n.a.	0.1	1.7	5.4	0.0	0.0	0.0	1.1	0.0	0.0	0.2	11.9	n.a.	0.0	0.2	16.7
1978	n.a.	0.0	1.8	4.3	0.1	0.0	0.0	0.3	0.0	0.0	0.3	13.6	0.0	0.1	0.0	8.6
1979	n.a.	0.1	2.1	6.3	0.1	0.0	0.0	3.7	0.0	0.0	0.3	18.3	0.0	0.2	0.0	6.5
1980	n.a.	0.0	2.4	35.0	0.1	0.3	0.0	7.4	0.0	0.0	0.8	25.0	0.0	0.4	0.0	14.0
1981	n.a.	0.0	2.3	25.0	0.1	0.0	0.0	5.8	0.0	0.0	1.3	38.3	0.0	0.1	0.0	19.0
1982	n.a.	0.0	4.3	30.0	0.3	0.0	0.0	4.0	0.0	0.0	0.4	47.4	0.0	0.1	0.0	39.2
1983	0.0	0.0	5.6	20.0	0.1	0.8	0.0	4.4	0.0	0.0	0.3	22.8	0.1	0.0	10.1	28.4
1984	0.1	0.4	10.0	31.0	0.1	2.1	0.1	4.7	0.0	0.0	0.3	15.5	0.1	2.0	0.1	25.4
1985	0.1	0.3	13.0	32.0	0.0	0.0	0.4	5.2	0.0	0.0	0.2	16.9	0.0	0.2	8.5	27.4
1986	0.0	0.4	9.3	24.0	0.0	0.0	0.0	4.5	0.0	0.0	0.8	40.7	0.0	0.7	0.0	14.2
1987	0.0	1.1	17.0	23.0	0.0	0.0	1.0	3.8	0.0	0.0	0.2	38.0	0.1	2.2	6.2	55.3
1988	1.0	0.7	24.0	68.0	0.0	0.0	0.2	4.0	0.0	0.2	0.2	22.0	0.0	1.0	1.0	75.0
1989	1.0	1.0	21.0	125.0	0.0	0.0	0.0	6.0	0.0	0.0	1.0	14.0	0.0	1.0	1.0	25.0
1990	0.0	1.0	17.0	118.0	0.0	1.0	0.0	5.0	0.0	0.0	2.0	32.0	0.0	1.0	0.0	36.0
1991	0.0	2.0	6.0	85.0	0.0	0.0	3.0	5.0	0.0	0.0	1.0	23.0	0.0	0.0	0.0	59.0
1992	0.0	0.0	8.0	110.0	0.0	0.0	7.0	8.0	0.0	0.0	4.0	29.0	0.0	1.0	1.0	36.0
1993	0.0	0.0	9.0	167.0	0.0	0.0	12.0	8.0	0.0	0.0	4.0	47.0	0.0	2.0	0.0	45.0
1994	0.0	0.0	13.0	115.0	0.0	0.0	10.0	7.0	0.0	0.0	3.0	48.0	0.0	4.0	0.0	54.0
1995	0.0	0.0	20.0	73.0	0.0	0.0	1.0	18.0	0.0	0.0	3.0	59.0	0.0	6.0	0.0	47.0
1996	0.0	0.0	31.0	106.0	0.0	1.0	0.0	11.0	0.0	0.0	2.0	53.0	0.0	4.0	0.0	62.0
1997	0.0	0.0	42.0	126.0	0.0	1.0	1.0	14.0	0.0	0.0	5.0	49.0	0.0	3.0	4.0	69.0

Source: IMF (DOTS) Yearbook

Table A.4 Population LACs and NZ (Millions)

	Argentina	Bolivia	Brazil	Chile	Colombia	Costa Rica	Ecuador	El Salvador	Guatemala	Honduras	Mexico	Nicaragua	Panama	Paraguay	Peru	Uruguay	Venezuela	New Zealand
1958	19.38	3.59	65.74	7.14	14.48	1.15	4.11	2.32	3.61	1.75	33.70	1.33	1.00	1.68	9.48	2.46	6.83	2.28
1959	19.66	3.70	67.70	7.32	14.94	1.19	4.23	2.39	3.72	1.80	34.86	1.37	1.03	1.71	9.75	2.50	7.09	2.33
1960	19.92	3.82	69.72	7.58	15.42	1.25	4.36	2.45	3.83	1.85	36.05	1.41	1.06	1.75	10.02	2.54	7.35	2.37
1961	20.24	3.92	71.94	7.76	15.91	1.30	4.50	2.51	3.95	1.91	37.27	1.45	1.09	1.80	10.32	2.58	7.61	2.42
1962	20.54	4.02	74.17	7.95	16.42	1.35	4.65	2.63	4.06	1.97	38.54	1.50	1.13	1.85	10.63	2.61	7.86	2.48
1963	20.85	4.12	76.53	8.14	16.94	1.39	4.78	2.72	4.19	2.04	39.87	1.54	1.17	1.91	10.96	2.65	8.12	2.53
1964	21.17	4.23	78.73	8.33	17.48	1.44	4.93	2.82	4.31	2.11	41.25	1.58	1.20	1.97	11.30	2.68	8.40	2.59
1965	22.18	4.33	81.01	8.51	18.04	1.49	5.07	2.93	4.41	2.18	42.69	1.62	1.24	2.03	11.65	2.71	8.71	2.63
1966	22.49	4.45	82.93	8.68	18.47	1.54	5.22	3.04	4.5	2.26	44.14	1.66	1.27	2.07	12.01	2.75	9.03	2.68
1967	22.80	4.48	85.24	8.85	18.96	1.59	5.40	3.15	4.7	2.28	45.67	1.70	1.31	2.13	12.31	2.69	9.31	2.72
1968	23.11	4.51	87.62	9.03	19.46	1.63	5.58	3.27	4.84	2.31	47.27	1.74	1.35	2.18	12.67	2.70	9.62	2.75
1969	23.43	4.55	90.07	9.20	19.98	1.69	5.77	3.36	5.02	2.45	48.93	1.79	1.39	2.24	13.05	2.71	9.94	2.77
1970	23.75	4.58	92.52	9.37	20.53	1.73	5.96	3.44	5.27	2.64	50.69	1.83	1.43	2.30	13.45	2.73	10.28	2.81
1971	24.07	4.62	95.17	9.53	21.09	1.80	6.17	3.55	5.42	2.72	52.45	1.89	1.48	2.36	13.59	2.74	10.61	2.85
1972	24.39	4.64	97.85	9.70	21.67	1.84	6.38	3.67	5.58	2.81	54.27	1.95	1.52	2.43	13.95	2.75	10.94	2.90
1973	24.82	4.67	99.92	9.86	22.34	1.87	6.60	3.77	5.74	2.90	56.16	2.01	1.57	2.50	14.35	2.76	11.28	2.96
1974	25.22	4.75	102.40	10.03	22.98	1.92	6.82	3.89	6.05	2.99	58.12	2.08	1.62	2.57	14.75	2.77	11.63	3.01
1975	26.05	4.89	104.94	10.20	23.64	1.96	7.03	4.01	6.24	3.09	60.15	2.15	1.68	2.69	15.16	2.83	12.67	3.07
1976	26.48	5.03	107.54	10.37	24.33	2.01	7.24	4.12	6.19	3.20	61.98	2.24	1.72	2.78	15.57	2.85	13.12	3.09
1977	26.91	5.16	110.21	10.55	24.23	2.07	7.45	4.26	6.36	3.32	63.81	2.32	1.77	2.87	15.99	2.86	13.59	3.11
1978	27.35	5.30	112.94	10.82	24.91	2.12	7.67	4.35	6.54	3.44	65.66	2.41	1.81	2.95	16.41	2.88	14.07	3.11
1979	27.79	5.45	115.74	10.98	25.38	2.17	7.89	4.44	6.73	3.56	67.52	2.64	1.85	3.05	16.85	2.89	14.55	3.10
1980	28.24	5.60	121.29	11.14	25.89	2.25	8.12	4.51	6.92	3.69	69.66	2.73	1.96	3.15	17.30	2.91	15.02	3.11
1981	28.66	5.76	124.07	11.33	26.43	2.27	8.36	4.59	7.11	3.82	71.35	2.86	2.00	3.25	17.75	2.93	15.48	3.12
1982	29.09	5.92	126.90	11.52	26.97	2.42	8.61	4.66	7.32	3.96	73.02	2.96	2.04	3.36	18.14	2.95	15.94	3.16
1983	29.51	6.08	129.77	11.72	27.50	2.50	8.64	4.72	7.52	4.09	74.67	3.06	2.09	3.47	18.57	2.97	16.39	3.20
1984	29.88	5.78	132.66	11.92	28.06	2.57	8.87	4.78	7.74	4.23	76.31	3.16	2.13	3.58	18.99	2.99	16.85	3.23
1985	30.32	5.90	133.56	12.12	28.62	2.64	9.10	4.86	7.96	4.37	77.94	3.27	2.17	3.61	19.42	3.01	17.32	3.25
1986	30.77	6.02	134.65	12.33	30.02	2.72	9.33	4.95	8.19	4.51	79.57	3.38	2.21	3.72	19.84	3.03	17.53	3.28
1987	31.22	6.16	137.27	12.54	30.58	2.78	9.56	5.05	8.43	4.66	81.20	3.50	2.26	3.84	20.26	3.04	17.97	3.30
1988	31.64	6.29	139.82	12.75	31.14	2.85	9.79	5.09	8.68	4.80	82.72	3.62	2.30	3.96	20.68	3.06	18.42	3.32
1989	32.08	6.43	142.31	12.96	31.71	2.92	10.03	5.19	8.94	4.95	84.27	3.74	2.35	4.09	21.11	3.08	18.87	3.33
1990	32.53	6.57	144.72	13.10	32.30	2.80	10.26	5.03	9.20	5.11	82.59	3.87	2.40	4.22	21.55	3.09	19.33	3.36
1991	32.97	6.73	147.07	13.32	32.84	2.87	10.50	5.35	9.47	5.26	87.84	4.00	2.44	4.33	22.00	3.11	19.79	3.48
1992	33.42	6.90	149.36	13.54	33.39	2.94	10.74	5.48	9.74	5.43	89.54	4.13	2.49	4.45	22.45	3.13	20.44	3.51
1993	33.87	7.07	151.57	13.77	33.95	3.00	10.98	5.39	10.03	5.59	91.21	4.26	2.53	4.57	22.64	3.15	20.91	3.55
1994	34.32	7.24	153.73	13.99	34.52	3.27	11.22	5.53	10.32	5.77	93.01	4.40	2.58	4.70	23.09	3.17	21.38	3.60
1995	34.77	7.41	155.82	14.20	35.10	3.33	11.46	5.66	9.98	5.78	90.49	4.54	2.63	4.83	23.53	3.19	21.64	3.66
1996	35.22	7.59	157.87	14.42	39.30	3.40	11.70	5.80	10.24	5.79	92.72	4.55	2.67	4.96	23.95	3.24	22.31	3.71
1997	35.22	7.77	159.64	14.62	40.06	3.53	11.94	5.90	10.52	5.98	94.28	4.68	2.72	5.09	24.37	3.27	22.78	3.76

Source: IMF (DOTS) Yearbook

Table A.5 Per capita GDP 1990 in US\$

	Argentina	Bolivia	Brazil	Chile	Colombia	Costa Rica	Ecuador	Salvador	Guatemala	Honduras	Mexico	Nicaragua	Panama	Paraguay	Peru	Uruguay	Venezuela	NZ
1958	5277.8	0.0	0.0	0.0	0.0	0.0	0.0	929.4	622.8	580.1	1508.3	0.0	1096.9	0.0	348.6	2128.0	2144.4	7896.1
1959	4682.4	0.0	0.0	0.0	0.0	0.0	0.0	942.7	634.2	577.0	1501.3	0.0	1133.1	666.2	351.4	2017.9	2232.0	8031.3
1960	5134.7	487.4	0.0	1538.0	0.0	1157.4	0.0	956.9	631.0	560.7	1569.6	5674.3	1167.3	686.7	383.6	2098.5	2238.8	8374.0
1961	5558.9	481.3	0.0	1574.1	0.0	1103.7	0.0	966.9	638.1	558.1	1592.9	5930.5	1258.3	707.2	399.9	2127.4	2268.9	8472.8
1962	5477.7	480.6	0.0	1609.3	0.0	1149.4	0.0	1033.1	642.8	568.9	1612.6	6357.0	1313.8	701.3	420.7	2054.4	2397.2	8522.6
1963	4905.7	500.8	1683.3	1671.2	0.0	1169.8	0.0	1042.0	682.3	567.2	1683.2	6864.9	1377.3	679.2	423.1	2035.3	2482.1	8863.9
1964	4722.5	507.1	1679.3	1669.4	0.0	1176.0	0.0	1098.7	694.0	581.1	1817.4	7474.0	1402.3	684.3	437.5	2048.1	2630.7	9194.2
1965	5028.1	519.7	2008.7	1647.3	0.0	1248.3	593.8	1114.2	707.8	620.3	1869.7	7982.9	1481.4	701.9	445.3	2048.8	2690.5	9601.7
1966	5457.6	541.9	2030.3	1795.1	0.0	1302.8	590.8	1150.8	731.9	633.5	1933.5	8048.4	1556.1	696.1	468.2	2088.2	2659.7	9779.8
1967	5426.8	572.3	2081.4	1817.8	0.0	1333.1	610.4	1171.0	729.5	657.1	1986.5	8405.7	1637.6	719.4	474.1	2052.2	2678.1	9552.2
1968	5532.5	617.0	2244.1	1845.4	768.1	1410.6	614.5	1164.6	770.6	695.9	2075.1	8324.0	1699.9	728.0	462.3	2068.1	2718.6	9651.7
1969	5724.5	639.5	2396.3	1878.7	795.6	1435.2	608.1	1172.9	778.1	658.2	2131.5	8595.8	1790.4	736.0	465.7	2189.3	2748.5	10064.0
1970	5793.2	684.8	2393.9	1882.5	825.3	1507.2	626.7	1179.7	783.5	639.5	2199.9	8521.2	1861.4	761.2	478.3	2277.9	2890.3	10289.3
1971	5910.5	712.2	2590.9	2016.7	851.3	1546.8	643.3	1198.2	804.4	654.1	2214.6	8657.5	1971.5	774.4	493.2	2246.4	2885.1	10403.1
1972	5944.8	750.3	2821.4	1957.3	892.1	1636.9	711.9	1222.3	838.6	658.7	2322.1	8658.6	2007.6	790.8	494.2	2203.5	2874.4	10675.2
1973	6030.3	795.2	3148.3	1818.4	923.5	1734.8	862.4	1250.1	870.5	674.1	2432.5	9028.9	2047.9	823.9	506.3	2203.5	2962.1	11209.2
1974	6305.6	822.1	3321.9	1805.0	949.3	1783.3	888.4	1289.4	878.6	653.0	2494.3	9963.6	2033.3	867.5	538.1	2264.5	3047.0	11468.8
1975	6059.8	851.3	3410.2	1545.7	944.3	1783.6	909.9	1320.4	868.5	612.9	2545.3	9624.2	1994.8	881.2	541.4	2346.5	2966.8	11433.4
1976	5946.6	878.0	3668.6	1573.9	960.9	1835.2	965.1	1336.2	940.1	654.0	2574.6	9718.9	1980.8	912.5	537.4	2422.9	3116.4	11376.3
1977	6213.7	891.9	3756.2	1699.6	1005.0	1940.7	999.1	1370.6	986.5	695.8	2586.9	10172.5	1945.9	980.5	525.4	2442.8	3210.8	10993.2
1978	5914.2	897.5	3847.6	1793.3	1060.3	2013.7	1034.4	1428.3	1007.2	727.0	2721.6	9024.3	2089.3	1062.2	513.4	2553.4	3167.6	10963.9
1979	6244.2	888.8	4008.4	1913.5	1096.7	2064.5	1058.9	1375.3	1024.9	746.9	2889.0	6061.2	2136.4	1144.0	529.1	2701.6	3104.0	11279.8
1980	6238.7	869.9	4177.9	2032.8	1119.0	2006.1	1079.4	1236.5	1034.1	725.6	3033.4	6125.5	2309.2	1234.5	542.0	2843.9	2947.1	11364.3
1981	5794.2	853.6	3911.3	2109.3	1121.1	1943.5	1089.8	1114.3	1013.2	718.6	3196.9	6160.5	2465.0	1300.8	555.0	2878.2	2850.8	11877.7
1982	5528.8	794.3	3855.4	1782.2	1109.1	1690.2	1070.7	1036.1	949.3	683.6	3103.8	5904.1	2509.7	1245.8	539.6	2590.2	2787.2	12001.8
1983	5653.6	738.9	3659.6	1739.0	1104.8	1682.9	1036.9	1031.1	900.4	655.8	2908.5	5974.4	2412.4	1170.1	464.1	2422.2	2558.7	12543.6
1984	5685.7	772.5	3773.5	1818.5	1119.1	1768.5	1052.4	1041.2	878.9	661.6	2946.1	5694.8	2418.0	1169.0	477.4	2379.6	2454.9	13077.1
1985	5232.6	749.5	4042.1	1832.7	1131.3	1734.0	1070.4	1044.3	849.6	667.2	2957.2	5278.6	2494.0	1205.3	480.1	2398.7	2422.3	12967.9
1986	5533.3	716.3	4309.7	1902.3	1141.3	1776.1	1076.3	1031.8	826.9	651.2	2791.2	5054.8	2558.1	1169.8	516.8	2593.9	2545.0	13272.7
1987	5594.4	718.2	4376.7	1993.8	1180.6	1820.5	987.6	1038.6	831.8	668.2	2784.8	4847.0	2577.2	1182.3	548.4	2790.5	2594.6	13274.2
1988	5416.2	724.2	4294.3	2104.4	1206.4	1836.9	1065.6	1047.2	839.3	678.7	2769.3	4102.9	2199.3	1219.3	490.1	2772.0	2687.5	13393.8
1989	5009.8	728.3	4352.5	2274.7	1225.2	1894.4	1043.0	1037.8	847.0	686.6	2807.9	3901.8	2136.0	1249.0	424.1	2789.4	2417.9	13181.5
1990	4943.7	741.8	4084.8	2323.7	1254.3	2045.8	1050.3	1107.3	848.7	665.7	3184.2	3772.0	2246.6	1248.0	399.7	2805.0	2522.7	12963.8
1991	5312.0	762.3	4033.2	2451.2	1258.4	2041.1	1077.8	1078.2	854.6	667.8	3120.3	3644.8	2384.6	1246.3	402.9	2876.4	2703.8	12354.5
1992	5693.9	755.7	3938.6	2668.5	1287.7	2146.5	1091.3	1132.1	870.6	683.2	3172.1	3543.5	2505.3	1234.5	387.9	3083.2	2776.5	12252.3
1993	5957.3	772.0	4044.4	2859.8	1334.7	2236.9	1089.0	1236.0	879.3	705.0	3174.8	3422.9	2567.8	1251.9	409.0	3155.4	2721.5	12840.7
1994	6315.5	791.5	4511.9	2975.4	1389.1	2144.9	1112.3	1276.7	888.5	673.0	3250.8	3424.9	2611.5	1254.9	456.4	3334.2	2599.2	13343.0
1995	6202.6	803.9	4623.5	3242.9	1445.7	2155.7	1114.4	1327.9	964.7	700.4	3135.3	3457.0	2639.6	1278.7	480.8	3255.2	2661.9	13480.9
1996	6384.1	817.0	4699.9	3428.7	1317.7	2097.7	1123.5	1319.6	967.9	724.9	3218.3	3455.5	2663.1	1260.9	484.1	3374.2	2570.7	13681.9
1997	6919.8	831.5	4819.7	3620.6	1334.1	2085.1	1138.4	1349.1	979.8	733.5	3386.2	3527.5	2729.2	1228.7	510.1	3513.8	2644.9	13837.5

Source: IMF (IFS) Yearbook

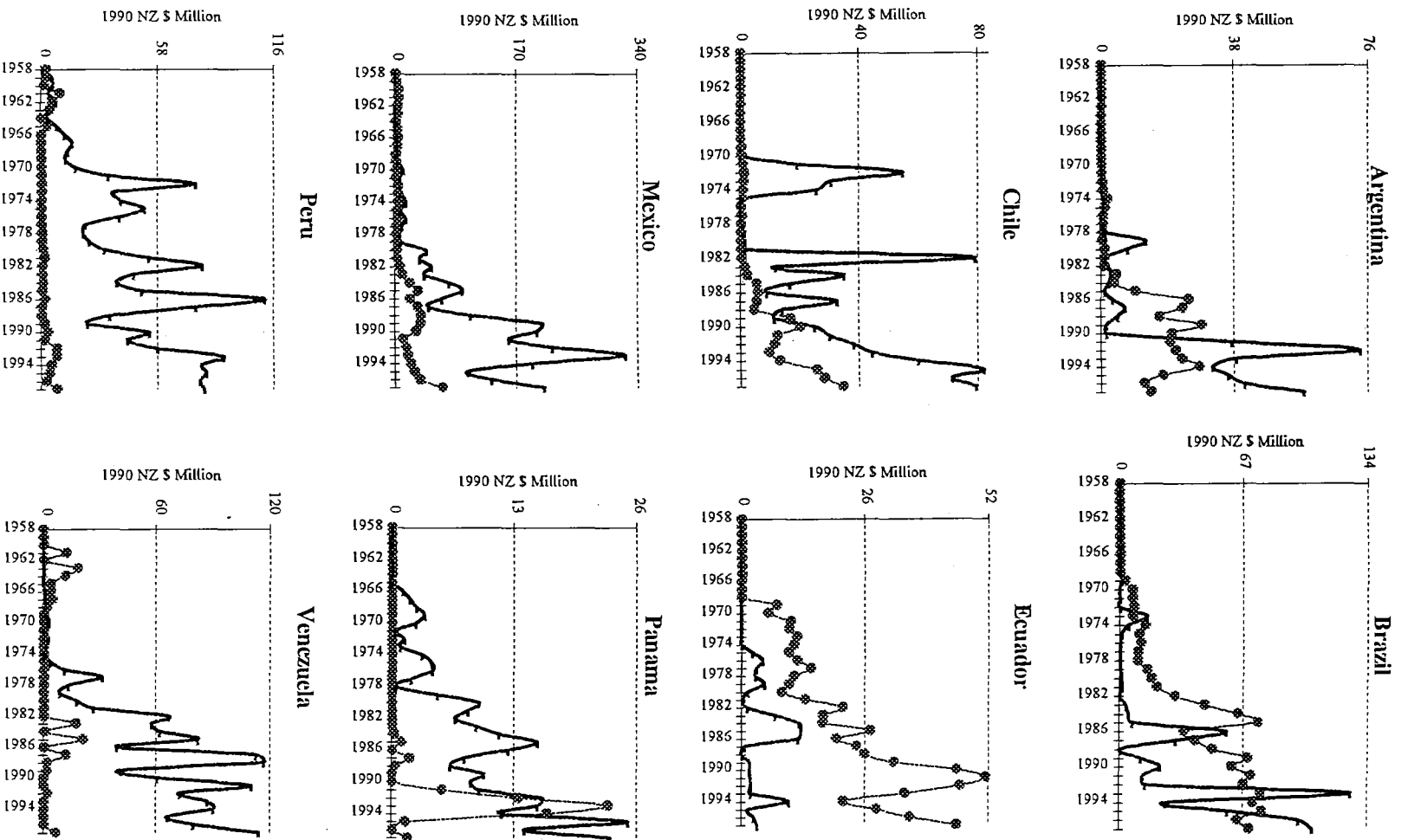


Figure A.1

Bilateral trade NZ-LACs by country

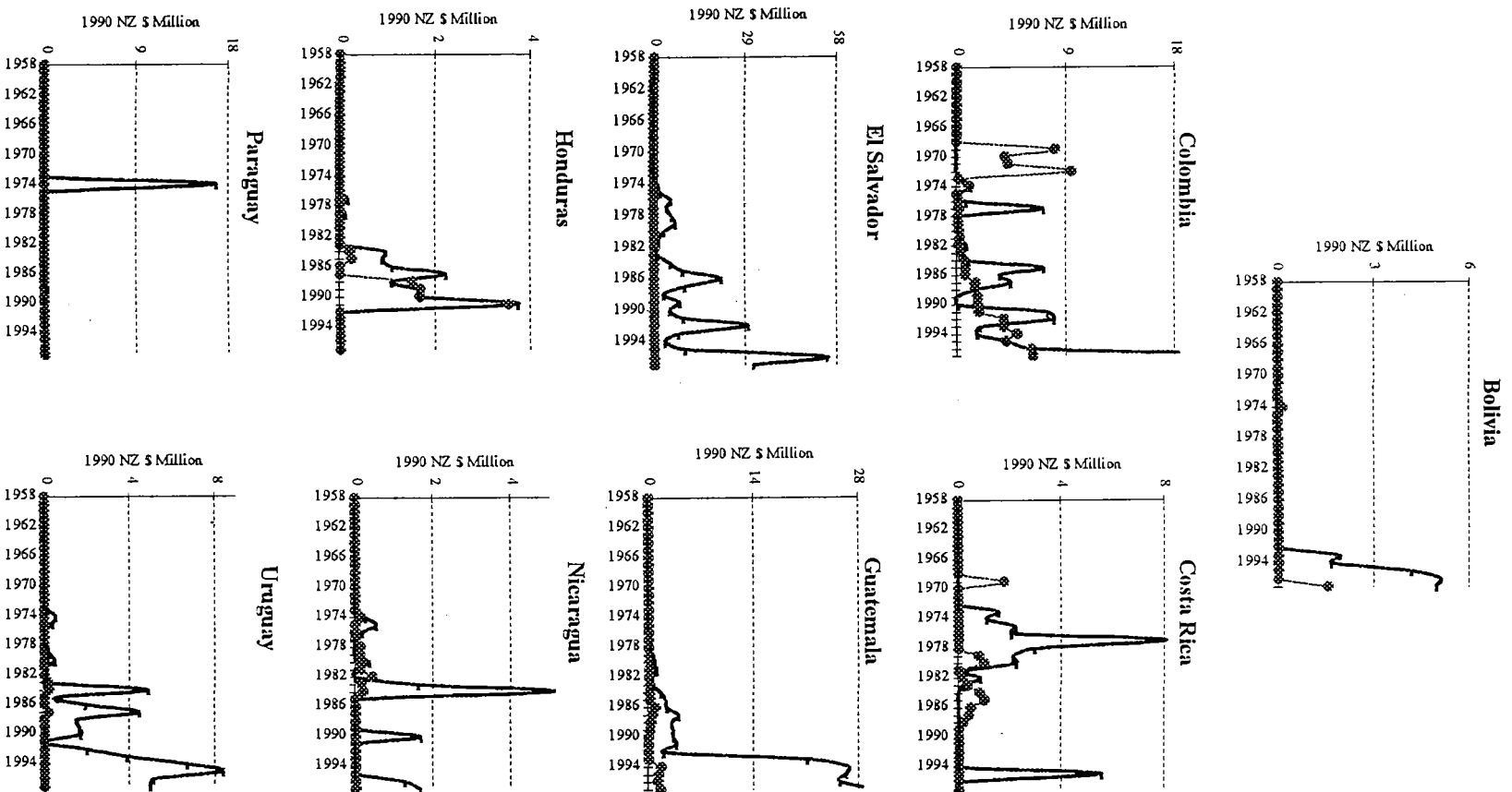


Figure A.1 Continued