To the Graduate Council:

I am submitting herewith a dissertation written by María Fernanda Meléndez entitled "The Logistics and Transportation Problems of Latin American Integration Efforts: The Andean Pact, A Case of Study." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Business Administration.

Dr. Gary N. Dicer, Major Professor

We have read this dissertation
and recommend its acceptance:

Dr. Frank W. Davis, Jr.

Dr. Barton Jennings

Dr. Robert Peterson

Dr. Esteban Walker

Accepted for the Council:

Interim Vice Provost and
Dean of the Graduate School

THE LOGISTICS AND TRANSPORTATION PROBLEMS OF LATIN AMERICAN INTEGRATION EFFORTS: THE ANDEAN PACT, A CASE OF STUDY.

A Dissertation
Presented for the
Doctor of Philosophy Degree
The University of Tennessee, Knoxville

María Fernanda Meléndez O.
May, 2001

In memory of Dr. Edwin "Pete" Patton
Teacher and friend

ACKNOWLEDGEMENTS

Many individuals have been helpful and encouraging during the pursuit of my Ph.D. program. I especially want to thank Dr. Gary N. Dicer for tutoring me along the program, for his support, patience and faith in me during all these years and for his work as the chair of my dissertation committee. I owe him much, and for all he has done, I am very thankful.

I thank each and every one of the members of my committee: Dr. Davis, Jr., Dr. Jennings, Dr. Peterson and Dr. Walker for their thoughtful reviews and suggestions. A very special thanks to Dr. Frank Davis, Jr., not only for leading me to discover a new and exciting view of business logistics but also for his kind friendship and quick responsiveness to help me to solve personal matters.

I also want to thank the L&T faculty members and classmates that I met at UTK, especially Bart Jennings, Dong Woo Ha, and Harry Sink for their valuable counseling and help during the program. The computing assistance I received from Don Broach and Ann Reed made possible the long and exhausting process of the data included in this research.

A very special note of gratitude goes to Sarah V. Jennings not only for her editorial assistance but also for her friendship, loving encouragement and help when I needed it the most. I am also very grateful for the invaluable support and encouragement received from Dr. George Phillipatos, Dr. Warren Neel and Dr. Roger Jenkins.

Also, I want to mention and thank two individuals from the Statistical Department of the United Nations Economic Commission for Latin America and the Caribbean, Luis Talavera and Gustavo Villouta, for providing the data needed for this research. Considering all this help, any errors that remain must be mine.

Finally, a very special note of thanks and gratitude to my parents, Luis and Cristina, who very early in life taught me to love learning; to my husband, Germán Sanhueza, who has provided the understanding, encouragement, and loving support necessary to complete this journey, and to my daughters, Francisca and Paulina, for the joy they have provided to my life. With you, my life and work have real meaning.

ABSTRACT

Logistics and transportation infrastructures are recognized as having a significant impact on making a regional integration scheme work as intended. The success of the European Community in bringing countries together is thought to have been achievable due to their integrated logistics and transportation infrastructures. Unfortunately, this is not the case for Latin American countries. Although many regional agreements have been in place for many years, their limited success in accomplishing the goals of integration is attributed in part to the lack of a regional logistics and transportation network.

To understand to what extent the logistics and transportation infrastructure has affected the integration of Latin American countries during the last thirty years, the case of the Andean Community is used in this study. The Andean Community is not a perfect union. For example, its geographical settings lack some of the economic advantages of other, more natural integration areas. This is one of the many reasons why its intra-regional trade has historically been so low. Only in the last few years has significant growth in the intra-Andean trade been accomplished.

The apparent lack of roads and the poor condition of the country infrastructure does not appear in this study have played a negative role in integration. As demonstrated in this study, the countries have used their roads, vehicles, vessels, and all natural means of transportation (rivers, lakes, and natural passes) to move cargo from one country to another.

This study has found that the archaic regulatory environment affects the efficient physical movement of goods more than the length or quality of the roads.

As we find through the analysis of the patterns of intra-Andean trade, the Andean Group has more than doubled its regional trade since the beginnings of the Nineties. This increase on trade is a consequence of the new trade liberalization policies, bilateral trade agreements and new orientation toward promoting growth through exports.

Further study is suggested in the areas of the impact of national legislation on regional trade and transportation, the role played by freight forwarders and multinational companies, and the role of multimodal transportation in the region.

TABLE OF CONTENTS

CHAPTER 1: Overview of the Problem 1

I Introduction 1
II Revival of Integration in Latin America and How it Differs from Past Efforts 3
III Latin American Integration Efforts 6
Historical Background 6
LAFTA: Latin American Free Trade Area 8
The Andean Group 11
CACM: Central American Common Market 12
Current Situation 15
LAIA: Latin America Integration Association 15
The Andean Pact 16
The Group of Three (G-3) 19
The Southern Common Market (Mercosur) 19
Central America Common Market (CACM) 21
IV Major Problems And Challenges 21
V The Andean Pact as a Case of Study 30
VI Research Objectives 34
VII Research Questions 35
Transportation Related 36
Logistics Related 37
VIII Potential Contributions of the Research 37
IX Limitations of the Study 38
X Organization of the Research 39

CHAPTER 2: Literature Review 41

I Introduction 41
II The Scope of Regionalism 41
III Theories Sustaining Regional Trade Integration 44
IV Levels of Economic Integration 49
V Regional Trade Integration Movement Among Less Developed Countries (LDCs) 52
VI The Role of Infrastructure in Latin American Economic Integration Efforts 55
VII Summary 69

CHAPTER 3: Methodology 71

I Introduction 71
II Data Collection and Analysis 71

Structure of the Study 71
Data Sources and Analysis 74

CHAPTER 4: Findings 81

I Geographical, Demographic and Economic Settings of the Andean Group 81
Northern Region: Geography, Demography and Resources 83
Venezuela 84
Maracaibo Lowlands and the Caribbean Coast 86
The Venezuelan Andes 87
The Llanos of the Orinoco Basin 88
Guiana Highlands 89
Summary 89
Columbia 90
The Cordillera Oriental 92
The Magdalena Valley 93
Central Cordillera and the Cauca-Patia Valley 93
The Occidental Cordillera or Western Columbia 95
The Caribbean Lowlands 95
Sierra Nevada de Santa Marta 96
The Orinoco-Amazon Plains 96
Summary 97
Ecuador 98
The Coastal Zone 100
The Andean Slopes or Sierra 100
The Eastern Zone 101
Summary 101
Summary of the Northern Region 102
Southern Region: Geography, Demography and Resources 103
Peru 104
The Western Coastal Plains 105
The Sierra 107
The Amazon Basin 108
Summary 109
Bolivia 109
The Highland Zone 111
The Eastern Lowlands 112
Summary 113
Summary of the Southern Region 114
II Patterns of the Intra-Andean Trade 115
Intra-Andean Trade Patterns 116
Intra-Andean Trade Country-by-Country Analysis 127
Northern Region: Venezuela, Colombia and Ecuador ... 127

Venezuela's Intra-Andean Trade Patterns 128
Venezuela's Intra-Andean Exports 128
Venezuela's Intra-Andean Imports 131
Colombia's Intra-Andean Trade Patterns 133
Colombia's Intra-Andean Exports 133
Colombia's Intra-Andean Imports 136
Ecuador's Intra-Andean Trade Patterns 137
Ecuador's Intra-Andean Exports 138
Ecuador's Intra-Andean Imports 141
Summary of the Northern Region's Trade Patterns. 144
Southern Region: Peru and Bolivia 144
Peru's Intra-Andean Trade Patterns 144
Peru's Intra-Andean Exports 145
Peru's Intra-Andean Imports 146
Bolivia's Intra-Andean Trade Patterns 150
Bolivia's Intra-Andean Exports 150
Bolivia's Intra-Andean Imports 152
Summary of the Southern Region's Trade Patterns. 155
Conclusions of the Patterns of the Intra-Andean Trade. 156
III Modes of Transportation Used to Move the Intra-Andean Trade 157
Northern Region: Venezuela, Columbia and Ecuador 158
Venezuela's Modes of Transportation 159
Venezuela's Modes and Flags of Modes for Intra-Andean Exports 159
Venezuela's Modes and Flags of Modes for Intra-Andean Imports 162
Colombia's Modes of Transportation 166
Colombia's Modes and Flags of Modes for Intra-Andean Exports 166
Colombia's Modes and Flags of Modes for Intra-Andean Imports 170
Ecuador's Modes of Transportation 174
Ecuador's Modes and Flags of Modes for Intra-Andean Exports 174
Ecuador's Modes and Flags of Modes for Intra-Andean Imports 177
Southern Region: Peru and Bolivia 178
Peru's Modes of Transportation 178
Peru's Modes and Flags of Modes for Intra-Andean Exports 179
Peru's Modes and Flags of Modes for Intra-Andean Imports 180
Bolivia's Modes of Transportation 180

Bolivia's Modes and Flags of Modes for Intra-Andean Exports 181
Bolivia's Modes and Flags of Modes for Intra-Andean Imports 182
Conclusions of the Modes of Transportation Used by the Andean Nations 183
IV Current Logistics and Transportation Infrastructure 184
Transportation Infrastructure of the Andean Group 184
Andean Road Systems 185
Problems Affecting Roads and Freight 187
Ongoing and Proposed Road Projects 187
Andean Railway Systems 188
Ongoing and Proposed Railroad Projects 191
Other Ongoing and Proposed Transportation Projects .. 191
Logistics Infrastructure of the Andean Group 192
Telecommunication Infrastructure 192
Ongoing and Proposed Logistics Projects 195
Logistics Findings 195

CHAPTER 5: Summary and Conclusions 196

I Introduction 196
II Summary of Main Findings 196
Findings from the Geographical, Demographics and Economic Settings 197
Findings from the Analysis of Trade 198
Findings from the Analysis of the Mode Used to Move the Intra-Andean Trade 198
Findings from the Analysis of the Logistics and Transportation Infrastructure 199
Other Findings 200
III Summary 200
IV Potential Contributions of this Study 203
V Limitations of the Study and Directions for Future Research ... 203
VI Priorities for Future Research 204

BIBLIOGRAPHY 206

APPENDICES 214

Appendix A 216
Appendix B 241

VITA 246

LIST OF FIGURES

Figure 4.1	Venezuela's Total Exports by Region	129
Figure 4.2	Venezuela's Intra-Andean Exports	129
Figure 4.3	Venezuela's Intra-Regional Exports by Product Categories	130
Figure 4.4	Venezuela's Total Imports by Region	131
Figure 4.5	Venezuela's Intra-Andean Imports	132
Figure 4.6	Venezuela's Intra-Regional Imports by Product Categories	133
Figure 4.7	Colombia's Total Exports by Region	134
Figure 4.8	Colombia's Intra-Regional Exports	135
Figure 4.9	Colombia's Intra-Regional Exports by Product Categories	135
Figure 4.10	Colombia's Total Imports by Region	136
Figure 4.11	Colombia's Intra-Regional Imports	137
Figure 4.12	Colombia's Intra-Regional Imports by Product Categories	138
Figure 4.13	Ecuador's Total Exports by Region	139
Figure 4.14	Ecuador's Intra- Regional Exports	139
Figure 4.15	Ecuador's Intra-Regional Exports by Product Categories	140
Figure 4.16	Ecuador's Total Imports by Region	142
Figure 4.17	Ecuador's Total Intra-Regional Imports	142
Figure 4.18	Ecuador's Intra-Regional Imports by Product Categories	143
Figure 4.19	Peru's Total Exports by Region	145
Figure 4.20	Peru's Intra-Regional Exports	146
Figure 4.21	Peru's Intra-Regional Exports by Product Categories	147
Figure 4.22	Peru's Total Imports by Region	148
Figure 4.23	Peru's Intra-Regional Imports	148
Figure 4.24	Peru's Intra-Regional Imports by Product Categories	149
Figure 4.25	Bolivia's Total Exports by Region	150
Figure 4.26	Bolivia's Intra-Regional Exports	151
Figure 4.27	Bolivia Intra-Regional Exports by Product Categories	152
Figure 4.28	Bolivia's Total Imports by Region	153
Figure 4.29	Bolivia's Intra-Regional Imports	154
Figure 4.30	Bolivia's Intra-Andean Imports	154
Figure 4.31	Bolivia's Intra-Andean Imports by Product Categories	155
Figure 4.32	Venezuela's Intra-Regional Exports by Mode of Transportation	160
Figure 4.33	Venezuela's Intra-Andean Exports by Flag of Mode: 1975-1990, Mode: 1 Ocean	161
Figure 4.34	Venezuela's Intra-Andean Exports by Flag of Mode: 1975-1995, Mode: 7 Roads	163
Figure 4.35	Venezuela Intra-Regional Imports by Mode of Transportation	163
Figure 4.36	Venezuela's Intra-Andean Imports by Flag of Mode: 1970-1995, Mode: 1 Ocean	164
Figure 4.37	Venezuela's Intra-Andean Imports by Flag of Mode: 1975-1995, Mode: 7 Roads	165

Figure 4.38 Colombia's Intra-Regional Exports by Mode of Transportation..... 166
Figure 4.39 Colombia's Intra-Andean Exports by Flag of Mode: 1970-1995, Mode: 1 Ocean..... 168
Figure 4.40 Colombia's Intra-Andean Exports by Flag of Mode: 1970-1995, Mode: 3 Lakes..... 168
Figure 4.41 Colombia's Intra-Andean Exports by Flag of Mode: 1970-1995, Mode: 7 Roads..... 169
Figure 4.42 Colombia's Intra-Regional Imports By Mode of Transportation..... 171
Figure 4.43 Colombia's Intra-Andean Imports by Flag of Mode: 1970-1995, Mode: 1 Ocean..... 172
Figure 4.44 Colombia's Intra-Andean Imports by Flag of Mode: 1970-1995, Mode: 3 Lakes..... 172
Figure 4.45 Colombia's Intra-Andean Imports by Flag of Mode; 1970-1995, Mode: 7 Roads..... 173
Figure 4.46 Ecuador's Intra-Regional Exports by Mode of Transportation..... 175
Figure 4.47 Ecuador's Intra-Andean Exports by Flag of Mode: 1970- 1995, Mode: 1 Ocean..... 176
Figure 4.48 Ecuador's Intra-Andean Exports by Flag of Mode: 1970-1995, Mode: 7 Roads..... 177
Figure 4.49 Ecuador's Intra-Andean Imports by Mode of Transportation..... 178
Figure 4.50 Peru's Intra-Regional Exports by Mode of Transportation..... 179
Figure 4.51 Peru's Intra-Regional Imports by Mode of Transportation..... 181
Figure 4.52 Bolivia's Intra-Regional Exports by Mode of Transportation..... 182
Figure 4.53 Bolivia's Intra-Regional Imports by Mode of Transportation..... 183

LIST OF TABLES

Table 1.1	Intra-LAFTA Trade Variation	9
Table 1.2	Andean Pact Profile	30
Table 4.1	Andean Group's Population	82
Table 4.2	Northern Region of Andean Group	83
Table 4.3	Venezuela's Major Civil Divisions	84
Table 4.4	Population of Venezuela Main Cities	85
Table 4.5	Colombia's Major Civil Division	90
Table 4.6	Population of Colombia's Main Cities	91
Table 4.7	Ecuador's Major Civil Divisions	99
Table 4.8	Population of Ecuador's Main Cities	99
Table 4.9	Export Concentration for Colombia and Venezuela	103
Table 4.10	Andean Group: Area and Population, 1995	104
Table 4.11	Peru's Major Civil Divisions	106
Table 4.12	Population of Peru's Main Cities	106
Table 4.13	Bolivia's Major Civil Divisions	110
Table 4.14	Bolivia's Population of Main Cities	110
Table 4.15	Intra-Andean Trade 1970-1995	117
Table 4.16	Intra -Andean Trade 1990-1995	119
Table 4.17	Intra-Andean and World Trade	120
Table 4.18	Intra-Regional Trade and the World	123
Table 4.19	Intra-Regional Exports '96	125
Table 4.20	Exports to Other Latin American Countries	126
Table 4.21	Analysis Exports '96	126
Table 4.22	Roads of Andean Countries	185
Table 4.23	Commercial Motor Vehicles in Use	186
Table 4.24	Development of Railroads in the Andean Group	189
Table 4.25	Railways in the Andean Nations	189
Table 4.26	Railway Freight Traffic	190
Table 4.27	Telephones	192
Table 4.28	Mobile Cellular Telephone Subscribers	193
Table 4.29	Import Values of Data Processing and Related Equipment	194

CHAPTER 1

OVERVIEW OF THE PROBLEM

I. Introduction

> "...integration in Latin America is less a defense than a necessity; the alternative to union is remain at low standards of living" (Urquidi, V. 1962, 116)

Logistics and transportation infrastructures are recognized as having a significant impact on making a regional integration scheme work as intended. The success of the European Community in bringing countries together is thought to have been achievable due to their integrated logistics and transportation infrastructures. Unfortunately, this is not the case for Latin American countries. Although many regional agreements have been in place for many years, their limited success in accomplishing the goals of integration is attributed in part to the lack of a regional logistics and transportation network.

To understand to what extent the logistics and transportation infrastructure has affected the integration of Latin American countries during the last thirty years, the case of the Andean Community (former Andean Pact) is used in this study. The case of the Andean nations is used to illustrate the potential problems the region may face in their efforts to integrate. It is recognized that one of the major problems the Andean countries have faced is an "...inadequate infrastructure to handle the trade." (Bamrud, 1994, 72).

Since the early 1990s the subject of economic integration has received a great deal of attention and interest worldwide. Europe, Asia, North America and Latin America have aggressively reacted to globalization trends and have formed regional blocs and signed trade agreements. A fever of bilateral, trilateral and regional agreements has swept Latin America. Several bilateral agreements such as Chile-Mexico (1991); Chile-Colombia (1993); Chile-Venezuela (1993); Colombia-Venezuela (1992); Argentina-Brazil (1986); and trilateral agreements such as the G-3 treaty (1992); and the Mercosur (1991), that joins Argentina, Brazil, Paraguay and Uruguay, were signed in the early 1990s. Similarly, old agreements have been revised and updated such as the Andean Pact (AP) and the Central American Common Market, as a natural reaction to the growth and consolidation of the European Community (EC) and the North America Free Trade Area (NAFTA). In fact, from 1990 to 1995, 31 international agreements were signed in Latin America to liberalize trade within the region (The Economist, Oct. 12, 1996, S4).

Additionally, President Bush's 1990 "Enterprise for the Americas Initiative" (EAI) was the U.S. recognition and encouragement of Latin America's ongoing economic reforms and the American desire to improve its own trade within the region (USITC, 1992). Other agreements, such as the Caribbean Basin Economic Recovery Act (1984) and the Andean Trade Preference Act (1991) were launched by the U.S. government to promote trade, investments and security in the region (USITC, 1992). The ultimate goal of all these agreements and the Initiative is to promote the formation of a hemispheric trade area for the Americas. Moreover, at the Americas Summits held in Santiago, Chile, in April 1998 and in

Miami in December 1994, President Clinton endorsed these integration efforts by supporting the creation of a Free Trade Area of the Americas (FTAA). At those summits, the 34 presidents of the countries of the Americas committed to laying the framework by the year 2005 for an effective integration that allows cooperation in transportation, communications, energy, and investments among the countries of the Americas (El Mercurio, 4/18/1998, Ediciones Especiales, 5).

Because of the Summits, several working groups in the U.S. and in Latin America were established to lay down the ground rules of a FTAA. In fact, these groups are studying the similarities and differences among the various integration schemes already in place in the region. Special attention has been given to "market access, customs procedures and rules of origin, investment, standards and technical barriers to trade, sanitary and phyto-sanitary measures, subsidies, anti-dumping and countervailing duties." (DFATA, 1997, 12)

To better understand this integration phenomena there are several questions that have to be answered. First, what is the reason for the revival of integration in Latin America?; second, how does it differ from the past?; third, what is the outlook for these integration efforts?; and, last, what are the main impediments and challenges of Latin-American integration efforts?

II. Revival of Integration in Latin America and How it Differs from Past Efforts

This section answers the first two of the above questions. Latin American countries have revived the regional economic integration movement motivated by the desire to

stabilize their economies and introduce free-market economic policies. The EC, NAFTA and WTO (World Trade Organization) discussions have concerned Latin American governments because they felt that their countries were being left out. These concerns have forced them to reassess their countries' economic policies and to reexamine possible economic cooperation with other countries in the region. Today, all Latin American countries are parties to some form of regional economic cooperation. Their goal is to open their economies to greater international competition by dismantling tariff and non-tariff trade barriers, and removing barriers to foreign investments. Moreover, their intention is to improve intra-regional trade and by that enhance regional competition as well as competition with countries outside the region; and to ultimately better the economic situation in their countries.

Since the early 1990s, economic integration has been viewed as a way of improving cooperation in the world, and not as a way of closing markets as it was during the 1950s and 1960s. Therefore, Latin American integration is seen as a way for the Latin world to be integrated into the world economy (Drucker, 1989). Drucker (1989) also emphasizes that "economic relations will increasingly be between trading blocks rather than between countries" and that reciprocity will be the "central principle of international economic integration." (19)

During the Sixties and Seventies, the inward oriented "import-substitution" model dominated the integration movement in Latin America. The inward-looking business culture in most countries and the ineffective export systems thus created discouraged producers from pursuing regional trading opportunities (DFATA, 1997). The largest countries of the region

such as Brazil, Mexico and Argentina, with large domestic markets, felt little attraction to a wider regional market. Several problems such as different levels of economic development, many exceptions to Most Favored Nation treatment, poor transportation and infrastructure, difficult topography and lack of large-scale capital development projects, were the most prevalent reasons for this lack of interest in regional trading (DFATA, 1997). Moreover, the political profile of many countries of the region during these two decades, with many military interventions and civil unrest, produced little political support to regional integration initiatives (DFATA, 1997). Under this scheme, the Andean Pact was established in 1969 to accelerate development of the country members through economic and social integration.

Since the early 1980s, most of the countries in the region have introduced profound economic and political changes to their economies, spurred by economic problems produced by the oil and debt crisis. The import substitution model was replaced by an "export-oriented" model. In this export-oriented model, foreign trade has been the driving force behind developing new markets (Massey, 1988). Massey, however, is not completely correct because the countries have not limited themselves to export policies but have attempted to establish a free market economy. In fact, most of the region's economic policies were centered on openness to trade, prudence in the administration of monetary policy, reduction or elimination of fiscal deficits, and transparency in prices. According to Rosenthal (1992), this convergence of policies among Latin American countries eases integration.

The continuity of the economic policies established during the 1980s fostered the process of integration among Latin American nations during the 1990s. Presently, most of

the nations are following policies that promote free market economies and competition. As a result, the goals of today that promote integration into the international community and market enlargement are very different from those of the 1960s that advanced industrialization through protectionism, trade, and common projects.

III. Latin America Integration Efforts

To address the third question, what is the outlook for these integration efforts, the historical and current situation of the Latin American integration efforts needs to be understood.

Historical Background

Latin American countries have attempted to integrate politically and economically ever since they obtained their Independence from Spain in the early 1800s. Federations in Central America, in Greater Colombia (formed by Venezuela, Colombia and Ecuador), and between Bolivia and Peru were attempted or proposed in the post-colonial period. However, these attempts were politically unsuccessful and had few economic implications (Urquidi, 1962). Before, during and after World War II, several Panamerican and smaller regional conferences took place to consider Latin America's economic integration. In 1939, Argentina and Brazil negotiated for a free-trade and industrial complementary agreement. Later, in 1941, these countries proposed the creation of a River Plate Customs Union (Urquidi, 1962; Grunwald, Wionczek & Carnoy, 1972). None of these proposals ever took

effect; however, they were used as models for subsequent economic integration propositions (Urquidi, 1962).

During the 1950s, Latin American countries began to give considerable attention to the formation of economic blocs and regional economic agreements in response to the European movements toward freeing their intra-regional trade; the formation of the Coal and Steel Community; and the creation of the European Economic Community (Urquidi, 1962; Krause & Mathis, 1970). Additionally, Latin American countries saw their integration as an alternative to achieve economic development and diminish their historical trade dependency with Europe and the United States of America (Krause and Mathis, 1970).

In 1958 and 1959, members of the Economic Commission for Latin America and the Caribbean (ECLAC) and the Organization of American States (OAS) met to outline the possible creation of a Latin America common market that would include countries linked by geographical proximity or by common economic interests (Urquidi, 1962). The Latin American representatives recognized the importance of the common market created by the European countries as a model for their own agreements and its possible negative impact on Latin American exports to Europe (Urquidi, 1962). Because of common external tariff (CET) disagreements, different levels of economic development, and the GATT provisions at that time, the countries opted for a free trade area as the first step toward later greater economic integration and the establishment of a Latin-American Common Market (Urquidi, 1962).

Because of these negotiations, by 1960 two major regional organizations were created in Latin America: the **LAFTA** (Latin American Free Trade Area) and the **CACM** (Central American Common Market). The historical evolution, problems, and trade patterns of these groups will be described in the following paragraphs.

LAFTA: Latin American Free Trade Area

LAFTA, the dominant organization, was created by the Treaty of Montevideo, signed in February 1960, by Argentina, Brazil, Chile, Mexico, Paraguay, Peru and Uruguay (Wionczeck, 1966; Krause & Mathis, 1970). The Treaty clearly explained that the ultimate goal for the countries in the region was to gradually achieve a common market. Furthermore, it established the mechanisms and a time frame for multilateral reductions of tariffs (Urquidi, 1962). The treaty granted a special moratorium to Bolivia, a participant in the negotiations, to officially join the group later; Colombia and Ecuador did not become members until 1961; Venezuela joined the group in 1966 and Bolivia in 1967 (Urquidi, 1962; Dell, 1966; Milenky, 1973; Morawetz, 1974).

Because of the gradual reduction of tariffs that LAFTA promoted, the trade between members of LAFTA rose significantly in the early years but started decreasing in later years. Indeed, between 1961 and 1970 the intra-LAFTA trade rose from $414 million to $1.2 billion, in absolute values; a peak was reached in 1967 when intra-LAFTA trade was $1.4 billion (Maritano, 1970). Table 1.1 depicts the percentage of variation of intra-LAFTA trade relative to 1961.

Table 1.1
Intra-LAFTA Trade Variation
(1962-1967)

Year	Rate of variation
1962	+18%
1963	+44%
1964	+83%
1965	+113%
1966	+122%
1967	+114%

Source: Maritano p.112

After 1967, intra-LAFTA trade gradually decreased to $1.2 billion by 1970 (SYLAC, 1993). Between 1970 and 1980 the intra-LAFTA trade rose exponentially. By 1980, the intra-LAFTA trade reached $10.9 billion (SYLAC, 1993). These figures, however, are partially deceiving because the increase noted was not necessarily due to the increase of actual trade, especially in the early and mid 1970s, but to exponential price increases of basic commodities, especially Venezuelan oil, that occurred during the period (Langhammer & Hiemenz, 1991). During the Eighties, the totals decreased due to the gradual decline of commodities prices and then increased in 1990 as trade expanded and reached $12.3 billion (SYLAC, 1993).

In analyzing the intra-LAFTA trade, several scholars, such as Aitken and Lowry (1973) and George, Reiling, and Scaperlanda (1977), have argued that more trade diversion than trade creation has been produced by LAFTA. Brazil, Mexico, and Argentina were the

major beneficiaries of this diverted trade (Langhammer & Hiemenz, 1991). During the period 1960-1990, the bulk of the trade between LAFTA countries consisted of raw materials and not manufactured goods, due in part to negotiated tariff preferences and in part to the desire of local consumers to purchase higher quality goods than those available from local and regional manufacturers (Maritano, 1970; Langhammer and Hiemenz, 1991).

In explaining the reasons of LAFTA trade diversion, Edwards (1993) adds that an important reason for the limited success of LAFTA was found in the type of goods included in the tariff concessions. He says that "most of the items included in the 'national lists' were either primary products (on which intra-regional trade had been traditionally based) or commodities that had never been produced in the region." (Edwards, 1993, 320) The necessary reforms were never advanced due to the macroeconomic fluctuations of countries such as Brazil and Argentina (Edwards, 1993).

Moreover, the relations between the members of LAFTA after the treaty was signed did not go as planned. Several lower and middle-income South American countries realized that the more developed countries of Latin America (Argentina, Brazil and Mexico) were accruing most of the benefits of LAFTA, while the rest were falling behind in industrialization and suffering trade deficits (García, 1992; Edwards, 1993). As a result, several of these countries decided to take matters in their own hands and the Andean Group was formed.

Over time, disparities between LAFTA member countries' economies and lack of adequate mechanisms for tariff reductions did not allow the association to work as proposed.

In June 1980, LAFTA was restructured to make it more adaptable to the wishes of its members. It was named **LAIA**, which stands for **Latin American Integration Association** or **ALADI** in Spanish (USITC, 1992).

The Andean Group

The Andean Group was founded in 1969 by Bolivia, Colombia, Chile, Ecuador, and Peru. Venezuela joined the Group in 1973 and Chile withdrew in 1976 to pursue an independent economic program (USITC, 1972). The concrete intention of the group was to overcome the LAFTA flaws.

The main political and economic goal of this subgroup was to protect local industries and make them as self-sufficient as possible. Other initial goals were the harmonization of their economic and social policies and the liberalization of trade within the region at a faster pace than the one established by LAFTA. In addition, they wanted to have a common policy for foreign investments (García 1992; USITC, 1992; Edwards, 1993). Indeed, they wanted a more development-oriented approach to integration.

These ambitious goals were not reached because the region was too small to achieve economies of scales; the lack of an adequate transportation infrastructure made trade extremely difficult and sometimes almost impossible between the countries; political problems occurred between the member countries; and the oil crisis of the 1970's and the high interest rates of the 1980's significantly hurt their economies and forced them to concentrate on other solutions (USITC, 1992). In addition, the Andean nations failed to carry out a

common external tariff (CET), and the regional industrialization programs failed due to frictions with problems of national sovereignty and big differences in economic systems (Langhammer and Hiemenz, 1991; Edwards, 1993). Due to these problems the integration process was almost paralyzed by 1985 (Edwards, 1993).

CACM: Central American Common Market

Central American integration efforts followed a different route than the South American countries. Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua started their independence from Spain as a confederation, and remained confederated until 1838 (Urquidi, 1962). Since then, they attempted to form a full or partial union, either political or economic or both (Urquidi, 1962). El Salvador promoted and signed a free-trade agreement with Honduras in 1917, which was not very successful because of political problems (Urquidi, 1962). In 1951, El Salvador began promoting bilateral free-trade agreements with its neighboring countries. As a result, and with the support of ECLAC, the five Central American countries outlined a program for economic integration (Maritano, 1970). Additionally, they formed the Organization of Central American States to promote political and cultural cooperation (Urquidi, 1962). Moreover, they expressed an interest in "the development of agricultural and industrial production and of transport systems in their respective countries so as to promote the integration of their economies and the expansion of markets by the exchange of their products, the coordination of their development programs and the establishment of enterprises in which all or some of these countries have an interest."

(Urquidi, 1962, 91-92) The ultimate goal of these proposals was the achievement of full economic and political integration.

After seven years of continuous deliberations, these five countries signed, in Tegucigalpa on June 10, 1958, the "Multilateral Treaty of Free Trade and Central American Integration and the Agreement on the Regime for Central American Integration Industries." (Urquidi, 1962, 93) The integration treaty defined their union as a free-trade area and specified that gradually it would become a customs union. Their industrial agreement was never carried out as Costa Rica did not ratify it (Urquidi, 1962). A year later, these five countries also signed an agreement on the Equalization of Import Duties and Charges to set the foundations of the common market designed to become a reality within a period of ten years (Urquidi, 1967). However, drastic changes happened in February 1960, when El Salvador, Guatemala, and Honduras signed a trilateral agreement establishing a free-trade area that in five years was expected to become a customs union with "common customs administration, equitable distribution of customs duties, and free movement of any kind of product no matter what is the country of origin." (Urquidi, 1962, 97)

To resolve the extant problems within the Central American Multilateral Agreement and to reintegrate most of the countries within one treaty, Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua created the Central American Common Market in 1961 (USITC, 1992). Besides promoting the normal common market goals, these countries wanted to eventually establish a customs union. The market was initially successful, then had a period of political and economic difficulties. Finally, after the establishment of a payment

mechanism for settling intra-regional trade accounts, trade between the countries started to increase again (USITC, 1992). Indeed, intra-regional trade rose from $33 million in 1960 to $1.1 billion in 1980 but decreased every year until 1986, when it reached only $421 million (Europa,1991). Since 1987, after the payment mechanism was settled, the intra-regional trade started to increase again and by 1989 reached $750 million (Europa, 1991).

The CACM almost disintegrated during the 1970s due to ideological differences among members. The 1969 war between El Salvador and Honduras caused Honduras to withdraw from the group in December 1970 (USITC, 1992). Honduras suspended any trade with El Salvador and signed bilateral agreements with the rest of the country members of CACM. Moreover, Costa Rica was expelled in 1972, due to trade disputes (USITC, 1992). By the end of the 1980s, most Central American countries had moved to open economies and redefined their integration movement. By that time, Honduras and Costa Rica had rejoined the group and the CACM started a new phase (USITC, 1992).

In sum, all the Latin American associations were ineffective because of economic difficulties, high inflation, disagreements between countries, the debt crisis, the oil crisis, and the global economic slowdown during the period. To respond to this situation and the need to get economic loans for their ailing economies from the International Monetary Fund and the World Bank, many countries set up austere economic measures. The new political, social, and economic situations of the 1990s, such as the consolidation and expansion of the European Community, changed the outlook in Latin America and as a result countries have redefined the existing regional groups and created new ones.

To completely understand the reasons behind the many problems these regional groups have had in order to reach integration goals, the logistics and transportation dimension needs to be included. This study looks at those dimensions for the integration efforts of the Andean Community.

Current Situation

As of December 1999, there were many trade agreements between the Latin American countries, but only the larger and more significant associations will be analyzed in this discussion. The association with the most members (eleven) is the LAIA: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, and Venezuela. Since LAIA and its predecessor LAFTA were not able to address all the desires of their member countries a variety of other agreements have emerged. Besides LAIA and the Andean Pact that have already been mentioned, the G-3 agreement and Mercosur were also created. The progress of these groups and that of the CACM in the Nineties will be discussed in the following paragraphs.

LAIA: Latin America Integration Association

As mentioned, LAIA replaced LAFTA in June of 1980. LAIA, like LAFTA, has as its long-range goal the creation of a Latin American Common Market. However, the method that it proposes to use to achieve it differs from the previous agreement (Langhammer and Hiemenz, 1991). LAIA established an area of economic preferences and not a free trade area.

In fact, LAIA promotes bilateral, sub-regional, and extra-regional trade and tariffs agreements instead of subsidizing new import-substitution industries through preferential treatment, as LAFTA did (Langhammer and Hiemenz, 1991). Another difference is that LAIA has not set a specific deadline for the reduction of tariffs (Langhammer and Hiemenz, 1991). Also, LAIA takes into consideration the level of economic development of each member country, and as a result those with larger economic problems or smaller industrial bases receive preferential treatment. This last feature of the new LAIA is very important since LAFTA was heavily criticized for a perceived big-country bias (Langhammer and Hiemenz, 1991; Exporters, 1994).

The main features of LAIA have been described since all the Andean Nations are members of LAIA, and therefore, it has an impact on the patterns of their intra-Andean trade as well.

The Andean Pact

The Andean Pact nations, pushed by the trade reforms emerging in Latin America in the late 1980s, started redefining their economic integration in the early 1990s. The presidents of the country members met in La Paz, Bolivia and signed the Act of La Paz on November 1990 (Edwards, 1993). This meeting was the first step toward a new economic integration (DFATA, 1997). They agreed on the following new goals:

- the implementation of a Free Trade Area;
- the agreement on new CET;

- the implementation of the CET;
- the liberalization of maritime and air transportation; and
- ease foreign investment and capital mobility within the group (Edwards, 1993).

Two other important meetings were held in 1991: an early one held in Caracas, Venezuela, and one held in Cartagena, Colombia, in December 1991. At the 1991 Caracas Summit, the members proposed a full implementation of a CET and the creation of the Andean Customs Union. They also agreed on the implementation of an "open skies policy which national airlines of member countries would be able to operate throughout the subregion without hindrance." (DFATA, 1997, 8) This open skies policy has resulted in more passenger traffic and better flight services (DFATA, 1997). Moreover, Colombia, Peru, and Venezuela agreed to establish a customs union, and they gave to Bolivia and Ecuador a two-year extension to join (DFATA, 1997). However, a general agreement on a CET has never been reached. In addition to that, Colombia and Venezuela agreed to join Mexico and formed a Free Trade Area (FTA) called the G-3 (DFATA, 1997). These events created great integration instability within the Andean group.

At the Cartagena Summit, the five Presidents of the Andean nations agreed, by signing the Act of Barahona, to liberalize trade and investment within the Pact (Garcia, 1992). The fact that each of the Pact members had already embraced free market economies eased the signing of this Act (Garcia, 1992; Exporters, 1994). As a first step, a free-trade area was

formed on January 1, 1992, between Bolivia, Colombia, and Venezuela (Edwards, 1993). At that time Ecuador and Peru were granted a six-month grace period and joined the group on July 1, 1992 (García, 1992; Edwards, 1993; Exporters, 1994).

The most salient features of the Act of Barahona include the liberalization of intra-regional trade; the establishment of a common basis for tariffs reductions; the creation of a common agricultural policy; the abolishment of exchange rates, financial and fiscal subsidies; and the implementation of common customs procedures (USITC, 1992; Edwards, 1993).

Little was achieved in terms of an Andean CET during 1992 and 1993. The tension increased during that time as Venezuela and Colombia continued negotiations with Mexico to consolidate the G-3. In addition, in April 1992 following President Fujimori's "auto coup d'é tat", Venezuela interrupted diplomatic relations with Peru (DFATA, 1997). In August 1992, Peru withdrew temporarily from the Andean Pact to pursue more vigorous free market policies (DFATA, 1997). Peru started bilateral free trade agreements with the rest of the Andean Pact partners. Bolivia started negotiations with Mercosur to seek economic association. Therefore, negotiations among the four remaining members for the implementation of an Andean CET moved on into 1994 (DFATA, 1997).

On November 26, 1994, a month later than Mercosur, the Andean Pact members finally agreed to establish the CET (Decision 370) (DFATA, 1997). A four-tier CET (5%, 10%, 15%, 20%) was established on 1 February 1995 but only Colombia, Ecuador, and Venezuela implemented it (DFATA, 1997). Bolivia joined the Customs Union but retained its two-tier tariff structure of 5% and 10% (DFATA, 1997). At that time, Peru refused to join

the Customs Union and continued to abstain from the Andean Pact activities (EIU, ILT Peru, February 1997, 3).

On March 9-10, 1996, in Trujillo, Peru, another important Andean Summit was held. Peru participated in that summit as it temporarily rejoined the Pact on December 1995, and the group's name was changed to the **Andean Community** (DFATA, 1997). The decisions made at the Trujillo Summit suggests the desire of the group to move toward a more comprehensive integration scheme, such as a Common Market similar to the European Union (DFATA, 1997). However, it is improbable that this goal will be achieved in the short term due to the great differences over issues such as the implementation of the CET.

All the Andean Pact members have already started to seek trade agreements with Chile, Mexico, and Mercosur members. The Pact permits members to negotiate trade accords, as a block or bilaterally, with other Latin American and Caribbean nations (Rebella, 1994). In fact, since 1991, members of the Pact have signed 19 trade agreements with members of Mercosur and Mexico (see list in Appendix B-1)(DFATA, 1997). If the Andean Pact Group merges with Mercosur, a South American Free Trade Area would be created with an estimated total population of 312 million and a combined GDP of 864 million dollars (Hasselt van, 1996).

The Group of Three (G-3)

The G-3 was formed by Venezuela, Colombia, and Mexico in the latter part of 1992 following the announcement by the G-3 presidents of the initiation of negotiations for a

trilateral free trade agreement and subsequent meetings. The main purpose of this group is to promote energy cooperation. The presidents of the three countries officially signed the free-trade agreement on June 13, 1994 (Wilson, 1994; BLA, 1994b). In the accord, which went into effect January 1, 1995, these countries agreed reciprocally to gradually eliminate tariffs over the next ten years, 12 years for vehicles (Wilson, 1994; BLA, 1994b). The G-3 has created a market of more than 145 million people with a combined GDP of $410 billion (Wilson, 1994).

Chile expressed interest in participating in the group and consequently signed a free trade agreement with Mexico in 1991 (MacNamara, 1992), and with Colombia and Venezuela in 1993 (DFATA, 1997).

The Southern Common Market (Mercosur)

Mercosur grew from a bilateral program of economic cooperation and integration between Argentina and Brazil in 1986 designed to cover specific industries. On March 26, 1991, the presidents of Argentina and Brazil invited Paraguay and Uruguay to become part of a new group, and signed the Treaty of Asuncion to form the Southern Common Market (Mercosur). Mercosur is the largest market in Latin America. The members of Mercosur have agreed to cut down import duties between them to zero on about 85 percent of goods and to eliminate quotas and non-tariff barriers, goals that should be accomplished over a period of ten years from its formation (BLA, 1994a).

The Central America Common Market (CACM)

In July 1991, CACM members agreed to remove all quantitative restrictions and to liberalize intra-regional trade in most goods (Dowling, 1992). Additionally, they proposed to "eliminate quotas on non-CACM imports of highly sensitive grains such as rice, maize, sorghum, and soybeans." (USITC, 1992, III-7) Furthermore, these countries have agreed to set up common external tariffs ranging from 5 percent to 20 percent (Dowling, 1992). Their goal is to establish free trade not only in manufactured and agricultural goods but also in services, and to allow free movement of capital and labor (Dowling, 1992; USITC, 1992).

As already mentioned, almost every Latin America nation is involved in a scheme of regional economic cooperation. However, to be able to increase intra-regional trade, they have to overcome a variety of political and economic obstacles. Most prominent among these are the logistics and transportation problems that each country and the whole region face. These problems must be recognized and resolved if the region expects to improve local trade.

IV. Major Problems And Challenges

This section answers the question about the main impediments and challenges of Latin American integration efforts stated in the introduction.

Trade liberalization among members of the different regional groups, including all of the American continent, will increase the demand for an improved infrastructure (Muller, 1992). An endemic lack of adequate road, rail and port infrastructure poses tremendous problems to intra-regional trade. This lack of an adequate infrastructure was recognized early

on by the presidents of the countries of the Organization of American States, who in a joint declaration at the meeting in Punta del Este, Uruguay, in April 1967, recognized that infrastructure is the lever of economic integration and committed themselves to "...lay the physical foundation for Latin America economic integration through multinational projects." (Krause and Mathis, 1970, 67) It was also accepted that economic integration demands not only an adequate land transportation network but also that other transportation and communications systems had to be developed or upgraded to facilitate the movement of goods and people throughout the continent (Krause and Mathis, 1970).

The lack of an adequate infrastructure is partially due to the difficult geography in the region. Enormous distances separate the main centers of production and consumption of the countries of the continent. Moreover, because of past trade patterns dating from Spanish colonial days, most of them have been developed along the coastline (ECLAC, 1987). The vast distances that exist between these coastal centers have hampered the political and economic unity of the continent (Cole, 1975). Moreover, because the trade routes were designed to service customers located either in Europe or in the United States there is a lack of regular and efficient shipping services between the coastline centers (Cole, 1975).

A major geographical barrier to adequate terrestrial trade among the countries in the region is the Andes. The Andes is a system of mountains formed of several ranges knotted together that range from 100 to 400 miles in width and stretch approximately 4,700 miles in length close to the western edge of South America (Whitbeck, 1940; Reinhard, 1992). This chain of mountains has peaks that reach more than 22,000 feet and on a worldwide scale are

second only to the Himalayas in average height (Reinhard, 1992). The Andes have only a few passes that are as low as 12,000 feet (Reinhard, 1992). There are also remote valleys, plateaus, detached mountain chains, active volcanos, salt flats, and some large lakes: the largest being Lake Titicaca (Bolivia), that lies at an altitude of 12,500 feet and covers an area of 3,200 square miles (Whitbeck, 1940; Butland, 1960; Blouet, 1997). The Altiplano, considered the second highest plateau in the world, is crossed by few roads and railroads, such as the Antofagasta and Bolivian Railroad that runs at an elevation of 13,000 feet (Whitbeck, 1940; Cole, 1975; Blouet, 1997). Moreover, road and rail routes are forced to make many detours to avoid excessive gradients and curves. A good example is the railway from Lima to Cerro de Pasco in Peru. In order to cover a direct distance of 185 kilometers (115 miles) a train has to travel 350 km (217.5 miles) and take more than ten hours due to many curves and zigzags (Cole 1975). The construction and operational costs of this type of transportation are prohibitive for most of the countries in the region.

In addition, impenetrable jungles such as the Amazon cover a significant part of Brazil, north-eastern Peru, and large portions of Ecuador, Colombia and Venezuela. This widespread tropical rain forest is the densest and most continuous mass of vegetation in the world (Butland, 1960; Blouet, 1997). Moreover, the main rivers that drain this area are of such dimensions that bridges are not feasible or huge investments are required (Butland, 1960, Cole 1975). At the opposite extreme, inhospitable deserts (with almost no precipitation, no vegetation, and bare rocks) crisscrossed by a variety of coastal mountain ranges are found in the coastal regions of Peru, northern Chile, and parts of the central Andes (Butland, 1960;

Cole, 1975). This variety of geographical settings has hampered the overland transportation of commodities produced in different regions of the continent and has escalated the cost to such a degree that often trading on an intra-regional level is more expensive than with partners abroad. Many products, such as the raw rubber produced in eastern Bolivia and Peru, and the coffee produced in eastern Peru, were rarely sent to neighboring countries or contiguous regions either on the Atlantic or the Pacific coast (Cole, 1975). For example, the "coffee produced in eastern Peru costs more to transport to Oroya in Central Peru than from that city to California." (Whitbeck, 1940, 16) This study will attempt to verify if situations like the ones described above are still taking place.

Besides these geographical issues, past economic policies have encouraged trade with countries outside the region; consequently, routes run to the coast rather than to the hinterlands (Krause and Mathis, 1970; ECLAC, 1987). Therefore, trading with countries outside their region has been easier, physically and economically, for the countries in Latin America than with their own regional neighbors (ECLA, 1987).

In addition to the natural geographical obstacles to intra-regional trade, historical and institutional forces have done much to bias Latin American trade toward outside areas. Grunwald, Wionczek and Carnoy (1972) have described this situation (1972). They stated:

> "The Latin American countries' production, transportation, and other trade mechanisms were developed by European and North Americans interested primarily in purchasing Latin American raw materials and agricultural commodities and in turn using Latin America as an outlet for their manufactures. Transportation systems were therefore geared mainly to external trade, connecting ports with the centers of primary goods production and with the capital." (Grunwald, et al., 33)

Moreover, these authors recognized that national security reasons have also played an important role inhibiting the development of regional roads. "...the fear of neighboring countries was so strong that transportation arteries along national borders were purposely neglected. Not only are there few roads crossing from one country to another, but those that do exist are left in disrepair." (Grunwald, et al., 33) For the same reason, "transshipments of cargo at the frontier points on railroads and highways, still required by national authorities (even when rail gauges do not differ), has imposed a heavy burden on intra-area trade." (Grunwald et al., 33)

In sum, from the examples described above it appears that land links between Latin American countries are substandard and little used compared with the sea and air links that exist. To remedy this problem many integrated systems have been proposed. For example, an integrated rail system was proposed during the 1800s, but national policies, physical obstacles, different gauges and great distances made this project unrealizable (Cole, 1975). The Pan-American Highway was the result of some renewed Latin American integration efforts of the Fifties; however, even though this project was finished, the distances involved make the movement of goods by road a very expensive proposition (Cole, 1975). Latin America lacks the sophistication of the road and rail networks found in North America or other developed nations. Each country has tended to develop its own transportation system in its territory and generally directed from the interior to the coast, creating great problems for the movement of goods across borders (Cole, 1975). Moreover, in many cases, roads have been built parallel to railroads, competing with and frequently to the disadvantage of the latter (Whitbeck, 1940).

Furthermore, during the last two decades, the upgrading and development of the existent infrastructure was neglected due to the debt crisis and budget crunches experienced by all the Latin American countries. ("Infrastructure," 1993). Today, many countries are rushing to upgrade their infrastructure; to open their economies to foreign investors and to give them a larger role in their economies; and to privatize public services to make them more efficient and to reduce their budget deficits and debt ("Infrastructure," 1993).

Indeed, several private projects have been approved to upgrade or develop new infrastructure projects: Colombia, for example, obtained a loan from the Andean Development Corporation (CAF), the financial institution of the Andean Pact, to finance $60 million toward a $1.7 billion, long-term project to improve its road and railway system (Wade, 1993). The Inter-American Investment Corporation (IIC) has approved several projects designed to improve the infrastructure in various countries of Latin America. For example, in 1989, the IIC approved a loan to a private Argentinean oilseed processing company to double the size of its port facility (Muller, 1992). In Peru the IIC has lent money for the establishment and operation of a very modern air cargo warehouse terminal, located next to Lima's International Airport (Muller, 1992). This new warehouse will provide customs-related storage dispatching of general merchandise, cold storage, a high-security vault and special handling areas (Muller, 1992). Additionally, the IIC has been participating in a multilateral project to built a "new and pioneering port facility on the Paraná about 190 kilometers north of Buenos Aires," (Muller, 1992, 31) in Argentina. Moreover, in May 1991, the Andean Group agreed to harmonize their transportation policies, including "an open sky policy eliminating all

restrictions on regional air travel and cargo for the shipping sector as well as on regional ground transportation of passengers and cargo." (USITC, 1992, 3-5)

In addition, to attract foreign capital and improve their infrastructure, many Latin American governments have promoted privatization of state owned railroads, airports, and ports, and granted long term concessions for private roads. For example, a private company is running a toll road connecting Caracas to its airport. This passing of road management to private hands is due mainly to inefficiencies and pilfering by the previous administration ("Infrastructure," 1993).

Most of the intra-regional Latin American trade has suffered from the insufficient quantity and poor conditions of international highways. This condition has resulted in missed business and investment opportunities. In fact, it can be posited that the poor infrastructure has hindered economic growth in many countries and has hampered their integration efforts. For example, the "...1992's severe power shortages in Colombia hit growth by as much 1% of GDP." ("Infrastructure", 1993, 40) The lack of adequate maintenance of roads during the 1980s, according to a recent U.N. report, will cost about $25 billion to correct. ("Infrastructure," 1993). But it is not only the bad conditions or lack of roads that has affected intra-regional trade. Problems with Customs, administrative, health and insurance requirements that apply to road transport have greatly affected the flow of merchandise between the countries of the region (ECLAC, 1987).

The many physical, legal, and administrative problems to moving intra-regional trade by roads has forced it to move by ocean transport. Indeed, about 90 percent of total foreign

trade in Latin America is carried by sea with the exceptions of Mexico and Bolivia (ECLAC, 1987). However, Latin American ocean transportation encounters two kinds of problems at ports: physical and institutional.

The physical problems are related to berth space, cargo-handling equipment, space for container handling and storage, and access to terminals. The institutional problems are created by obstructive legislation that deals with new technology, hours of work, paperwork and formalities, labor problems, port fees, and consular intervention (ECLAC, 1987). All these factors are still making ocean transportation in this region one of the most inefficient and expensive of the world (ECLAC, 1987). For example, "...while most of the world has moved to modern methods of handling cargo, most of Latin America's state-run ports.... have retained their labour-intensive ways" ("Infrastructure", 1993, 38); Colombia still "...does not have a dedicated container terminal..." (Wolf, 1993, 2C); "...antiquated road and rail systems are keeping the trade from developing the intermodal sea-land links common in mature trades." (Mongelluzzo, 1991. 1A). Also, as stated by Kuczynski (1992), many problems such as the "bottlenecks and stealing in public ports ... prevent on-time delivery of parts and supplies, causing accumulation of inventories that have to be financed at real interest rates of 20 percent or more." (23)

To solve these problems, many countries have rushed to modernize and solve problems at their ports. Ecuador achieved containerization a decade ago, "transforming Guayaquil into the center of the intermodal system of west-coast South American container traffic." (South America, 1988, 31) Chile started the modernization of its ports in the early

eighties while Venezuela, Colombia, Mexico, Argentina and Brazil began the process of privatizing some of their port sectors during the nineties ("Infrastructure," 1993; Wolf, 1993).

In addition, the World Bank along with the Inter-American Development Bank (IDB) are aggressively encouraging new investments in infrastructure. During 1992, the IDB approved "90 loans totaling more than $6 billion of which 21% went to physical infrastructure projects." (Inter-American, 1993, 9) Moreover, during the last three decades, "...intergovernmental and private agencies including the OAS, ECLAC, the General Agreement on Trade and Tariffs (GATT), International Maritime Organization (IMO), the International Civil Aviation Organization (ICAO), and LAIA, as well as the International Chamber of Commerce, the International Chamber of Shipping, and the Baltic and International Maritime Council, have conducted an active campaign to solve these problems....." (ECLAC, 1987, 68) As a result, many Latin American countries have eliminated visa requirements for air freight but these requirements still exist for sea-borne trade with most countries except Argentina, Brazil, Chile, and Venezuela (ECLAC, 1987).

In sum, the problems that Latin American countries face in their attempt to integrate are numerous, however, one of the most salient problems is their lack of an adequate logistics and transportation infrastructure. Although this statement seems to be innately accurate no scholarly attempt has been made to determine the actual impact that this lack of logistics and transportation infrastructure has had on integration efforts. This study will examine this important question.

V. The Andean Pact as a Case of Study

As of December 1995[1], the Andean Pact had as active members the countries of Bolivia, Columbia, Ecuador, Peru, and Venezuela. As shown in Table 1.2, the Pact comprises a total population of 85.6 million people and a combined GDP of 174.5 billion U.S. dollars.

Table 1.2
Andean Pact Profile

	1995 GDP US$ 1990 (Billions)	**1995 POPULATION Millions Of People at Midyear**
BOLIVIA	6.30	7.40
COLUMBIA	50.20	21.40
ECUADOR	14.00	11.50
PERU	47.20	23.50
VENEZUELA	56.80	21.80
TOTAL	**174.50**	**85.60**

Source: ECLAC, IMF, 1996.

The Andean Group was selected as the subject of the inquiry for several reasons. First, the Agreement of Cartagena, which created the Andean Common Market, was by far the most ambitious Latin American regional integration plan (Ferguson, 1980). This accord had several distinctive attributes that make it different from other regional economic

[1] Data for this dissertation were provided only for 1970-95, though the situation of the Andean Group was updated until December 1999

agreements among developing countries: the country members sought more than just the free trade zone that was set up by LAFTA (Hojman, 1981).

They originally, as already discussed, wanted to pursue a very special type of economic union. In addition, the Pact nations agreed to establish the regional mechanisms to coordinate commercial, industrial and financial policies, as well as technical cooperation among country members. Indeed, they created the respective institutions to manage and supervise these goals, such as the Andean Development Corporation, the Junta, and the Commission (Ferris, 1976). The most significant features of the Andean Pact were: the automatic process of reduction of trade barriers among them; the establishment of a common external tariff; the establishment of Decision 24 to regulate foreign investments; and the programs for industrial development (Grunwald, 1972; Ferris, 1976; Ferguson, 1980; Hojman, 1981).

Second, the group has a long history, based on its 30 years of existence. During this time it has gone through periods of success and disintegration. Recently, the integration scheme has been revised and redefined as all the countries are pursuing economic and political reforms to become integrated in the world economy. Consequently, many studies have been conducted to examine the political and economic achievements and problems of the group.

Third, the country members, Bolivia, Columbia, Ecuador, Peru and Venezuela, are fairly representative of the variety of economies in Latin America. In fact, Venezuela and Columbia, both oil-exporting countries, are the leading economies of the Group. In 1990,

they accounted for 71 percent of the Andean's total trade (USITC, 1992). By the end of 1993, Columbia accounted for 41 percent of the total intra-regional Andean trade, which totaled $2.9 billion, 30 percent higher than in 1992 (BLA, 1994d). During 1993, Venezuela sold to Columbia $765 million worth of non-traditional exports, excluding oil, iron, and steel, which represents a 64 percent increase from 1992 (BLA, 1994c). Bolivia and Ecuador, the smallest economies within the group, have been granted special treatment within the group.

Finally, the geographical settings of the Andean nations pose enormous challenges to their attempts to integrate their trade. Venezuela and Columbia are close neighbors as well as Columbia and Ecuador. Therefore, the movement of goods and people between these countries theoretically should not be a problem. However, the recently increased trade between Columbia and Venezuela, a result of their recent bilateral free-trade agreement, has created serious logistics problems. Trucks, carrying goods between these two neighbors, have to wait days to cross the border (Bamrud, 1994). These problems require a revision of the border crossing requirements that require either lengthy paperwork or transfer of goods from one truck to another because trucks are not permitted to cross borders.

On the other hand, countries who want to trade with non-neighboring countries not only have to face the mentioned border crossing problems but also great distances and a variety of other obstacles. For example, to trade with Venezuela, Bolivia's exports have to cross Peru, Ecuador and Columbia. Therefore, Bolivia trades less with its Andean partners and more with its closer neighbors: Brazil, Argentina, Paraguay and Uruguay (Bamrud,

1994). Bolivia's central location, nevertheless, may also become an advantage, because of the strong possibility that it can easily become a hub for the trade between the Andean Pact and Mercosur (Bamrud, 1994).

According to Grunwald (1972), one question still remains unanswered: "Are these natural barriers between the Latin American countries so prohibitively expensive that intra-regional trade would remain uneconomical even after tariffs and other institutional barriers were removed?" (33) The Andean intra-regional trade is very small when compared with the trade with other countries of the world. For example, the trade between the Andean nations and the U.S. in 1993 was approximately $23.7 billion (Bamrud, 1994). This figure was about seven times higher than the total intra-regional trade that totaled only $2.7 bission (Bamrud, 1994). The described situation is not new. Since the beginning of the Andean Group, the intra-regional trade has remained around 4 percent of the region's total trade (USITC, 1992). By the end of 1990, the Andean exports to the U.S. represented 47 percent of its total exports while imports from the U.S. were 38 percent of the total (USITC, 1992). The small percentage of trade among the Andean countries is attributed to the lack of an adequate logistics and transportation infrastructure and the cost of regional trade that makes it cheaper to trade with countries outside the Pact (USITC, 1992).

Transportation has been widely recognized as the facilitator for many basic regional goals, such as making the land productive, in marketing agricultural products, and making forest and mining resources accessible. It is also a significant element in the development of

industry, in the expansion of trade, in the implementation of social programs, and in national and regional integration (ECLAC, 1987).

However, in today's trade patterns, not only is transportation important but also the logistics functions that international trade implies. A suitable infrastructure is required for modern Intermodal transport of containers: paved roads, adequate railroads, bridges, and tunnels. Without these facilities, bottlenecks can occur and unitized cargo would be limited to the former port-to-port system, therefore losing many advantages that can be gained by multimodalism (ECLAC, 1987). In addition, land and rail transportation has to be modernized to serve containerized cargo and the paperwork that accompanies it, especially a streamlined bill of landing (ECLAC, 1987).

VI. Research Objectives

The overall objective of this research is to advance understanding of the role of logistics and transportation in a regional integration scheme. Given this scope, a number of conceptual and empirical objectives emerge. Conceptually this dissertation will:

1. Integrate insights related to economic integration and the role of logistics and transportation infrastructures that emerge from the literature review; and
2. Enhance and update the academic and practitioner literature in the topics of regional integration and logistics and transportation infrastructure.

Empirically, this study will:

3. Demonstrate whether and to what extent the lack or a poor infrastructure has impacted the Andean Group intra-regional trade and their integration efforts from 1970 to 1995.

These objectives will be accomplished by a review of the literature related to the economic theories explaining regional trade integration, the literature available linking the topics of regional integration and the role of infrastructure on this integration scheme, and the completion of the analysis of empirical data on trade and infrastructure for the countries of the Andean Group.

VII. Research Questions

As already stated, the overall purpose of this study is to investigate and describe the current status of the logistics and transportation infrastructure in the Andean Pact nations. This will be done to determine what the effect is of logistics and transportation infrastructure on their economic integration.

Specifically, the research question is:

"What is the effect of logistics and transportation infrastructure on the integration efforts among the Andean Pact countries?"

To facilitate the research of this broad question, it should be further divided into two groups of questions. One group will deal with transportation related issues and the other with logistics.

Transportation Related

1. Are the existing road connections among the Andean nationa able to service their intra-regional trade?
2. What role have the railways played in the Andean intra-regional trade? Specifically, has the lack of compatible rail gauges and a suitable rail network had a negative impact on intra-regional trade? How adequate are the existing connections in terms of quantity, degree of harmonization, frequency of service, availability of equipment, carrying capacity and quality?
3. Are any of the existing transportation projects going to improve the existing border connections or entry points of the Andean nations? Are the current Andean Provisions adequate to permit an efficient flow of trade (transbording) between neighboring countries?
4. What major challenges and difficulties are Andean nations facing if they attempt to establish a system of intermodal transportation?

Logistics Related

1. Is there a regional distribution center for the Andean countries?
2. What are the current customs procedures affecting intra-regional trade?
3. Are there any important legal restrictions affecting the commercial relations among the Andean nations? Are these procedures obstructing intra-Andean trade? Are they harmonized?

VIII. Potential Contributions of the Research

Little research work has been done linking the topics of logistics and transportation and regional economic integration in Latin America. The role of transportation in regional economic development has been studied mainly using the case of the United States, while little has been done studying the relation between transportation and regional economic blocs.

The present study will contribute to the understanding of the role of logistics and transportation in regional trading in general and the Andean Pact in particular. Specifically, it will outline the basic logistics and transportation requirements for the accomplishment of the goals of regional economic blocs. Moreover, by analyzing the existing problems of the Andean Pact it will offer suggestions about how the logistics and transportation infrastructure could be improved.

An up-to-date study will fill a void that exists in both the academic and the practitioner literature available today. Since the focus of this study is not limited to the

theoretical point of view, but also will take into account the needs of private business, it should be valuable to many users.

Although portions of transportation, such as ports, in the area in question have been well researched, the inclusion of the logistics issues in regional integration and a detailed study of land transports is completely new to any scholastic study conducted to date. The close and inseparable interrelation between logistics and transportation in the movement of goods requires that both be considered in any study of this type. The reduction of transportation and logistics costs to achieve greater competitiveness is a major issue in business today. Indeed, and improved management of logistics costs and finding solutions to the current logistics and transportation problems of the Andean nations is imperative for Andean nations to become competitive in today's global economy and to improve their intra-regional trade.

IX. Limitations of The Study

The main limitation of this study is the availability of transportation and logistics data for every country for the time frame of the study. Although extensive statistics exist to cover trade and intra-regional trade, transportation data for small countries such as the Andean nations is not available in the regular sources. The time frame of the study did not allow for obtaining primary raw data and information from every country. Therefore, this study relied on published secondary data using various sources.

Site visits to examine the conditions of the infrastructure and the crossing points would have been ideal, as would the opportunity to gather data and information from local sources.

X. Organization of the Research

This dissertation is divided into five chapters. Chapter 1 provides an overview of the research problem and highlights the importance of understanding the role of logistics and transportation in regional integrations. It also states the research main objectives, the research question, the limitations and the potential contributions of the study.

Chapter 2 summarizes the survey of the relevant literature in the fields of regional economic integration, international trade theories, and transportation and economic integration.

Chapter 3 provides an overview of the research methodology, including the data collected, the sources of data and the type of analysis used.

Chapter 4 describes the findings of the study. This chapter is divided into five sections to facilitate the analysis of the data used in the study. Section 1 describes the geographical, demographic and economic setting of every Andean country of the group. Section 2 goes into the analysis of the intra-regional trade as a group and then country by country to discover patterns and shifts. Section 3 shows the modes of transportation these countries used to move their goods during the period 1970 to 1995. Section 4 examines the ground transportation modes and the infrastructures for the region, and Section 5 outlines the

perceived logistics and transportation problems and challenges the country members have encountered during the examined period.

Chapter 5 contains a summary of the findings presented in Chapter 4, its implications, contributions and recommendations for future research.

CHAPTER 2

LITERATURE REVIEW

I. Introduction

To better understand the patterns of regional integration efforts of Latin American countries in general, and specifically the Andean Pact's evolution, a review of the related literature will be conducted as follows. First, a review of the classical and modern economic theories explaining regional trade integration will be conducted to understand the reasons behind the formation of the Andean Pact as well as its evolution as a model of economic integration in Latin America. Second, since the purpose of this study is to describe the role of logistics and transportation infrastructure in the economic integration efforts of the Andean Pact, a review of the available literature linking the topics of transportation and logistics infrastructure with regional trade integration will be done in order to understand the current logistical problems and challenges of these countries in fostering their economic integration.

The following sections of this chapter review the literature available in the following topics: the scope of regionalism, the theories about regional trade integration, the levels of economic integration, the regional trade integration of the developing countries, and the role of infrastructure in Latin America integration efforts.

II. The Scope of Regionalism

Current attempts to explain the patterns of international trade can be gathered into two groups. Many scholars, politicians, and businessmen agree that the world has become borderless as a result of the influence of modern technology, communications, and faster

transportation that have almost abolished the traditional borders (Sera, 1992; Graham, 1993; Arndt, 1997). It is argued, too, that trade and investment liberalization policies at country, regional, and global levels have promoted greater globalization of the world economy (Arndt, 1997).

As a result, globalization of the world economy has occurred as a response to the needs of the modern world: richer consumers, diversification of consumers' tastes, increased international trade, increased communications, and change in technologies (Sera, 1992). According to this position, greater globalization and freer trade is expected to happen to a great extent in the years to come.

On the contrary, the other position states that the world will head toward increased regionalization and as a result there will be increased protectionism of trade, restrictions on foreign investments, and formation of trading blocs (Krugman, 1992). Non-member countries fear that the country members of a particular regional group, such as the EC, NAFTA, and Mercosur, will create a fortress around them (Bergsten, 1997). This is to say that the members may be tempted to raise trade barriers against non-member countries at the same time they lower them between themselves (Vanston, 1993; Bergsten, 1997). Consequently many countries are pushing toward increased regionalization and the developed nations are quickly investing in the existing groups so they will not be left out.

Opponents to regional trade agreements argue that there are three main problems with them. First that trade may be diverted toward country members; second that country members lose interest in multilateral agreements; and third, that they create geopolitical regions (Bergsten, 1997).

On the contrary, proponents of regionalism argue that it creates free trade within the block and creates more than diverts trade. Second, they claim that regionalism increases the process of economic liberalization by pushing the members to follow the leader or leaders in the group. Finally, political risks are minimized as the countries concentrate on common interests (Bergsten, 1997).

In comparing globalization versus regionalization, Krugman (1992) states that even though the world has become smaller due to technology, the world is still larger due to the few links between non-neighbor countries (11). He also pointed out that integration is happening only within specific regions of the world as it has occurred with the EC, NAFTA and between Japan and some Pacific Rim countries (Krugman, 1992). Krugman predicts that those inside a trading bloc will "...have a stronger voice than those on the outside" (12) at the negotiation table. He concluded that world trade will be diverted "...from trade between blocs to trade inside the blocs" (13) and that countries will negotiate under the principle of reciprocity (Krugman, 1992).

Peter Drucker (1989), in his predictions for the 1990s, agrees with the latter statement. According to him, "economic relations will increasingly be between trading blocks rather than between countries" and reciprocity will be the "central principle of international economic integration." (19) Furthermore, Drucker states that through integration and the resulting larger trading blocks the third-world will become integrated into the world economy (Drucker, 1989). What Drucker means here is that third-world countries are forming or joining existing blocs to introduce the structural economic reforms and liberalize their trade and investment policies, so that they can compete in today's world.

To Dischamps (1993) these two positions that at first seem antagonistic in reality are complementary. He explains that globalization of the world markets has increased the international trade all over the world (Dischamps, 1993). Indeed, with increased speed and reduced cost of communications many products and services are being marketed worldwide thanks to the role played by multinational companies (Dischamps, 1993). On the other hand, he added, the countries of the world are rushing to follow the example of the European Community, forming regional trading groups between neighboring countries that are eager to use their geographical proximity to increase their trade and their economic development (Dischamps, 1993). The formation of NAFTA, Mercosur, and the revitalization of old agreements prove this point. It is also believed that although trade in goods will become more regionally concentrated, trade between regions will expand as nation members of the group reach higher levels of economic growth, and trade in services and investments will become global (Dischamps, 1993; Vanston, 1993).

Globalization and regionalization may be the likely scenarios for the years to come. In both cases, the role of logistics and the transportation infrastructure have to be acknowledged if the goals of either globalization or regionalization are to be reached in a cost efficient manner.

III. Theories Sustaining Regional Trade Integration

Jacob Viner (1950) made a major contribution to the theory of regional integration. He was one of the first economists to formalize the economic costs and benefits of an economic integration through a study of customs unions (Balassa, 1961). He concluded that

either negative or positive effects result when a group of countries forms a customs union (Viner, 1950). Under the classical theory of free-trade, a customs union will be considerated a good economic approach to economic growth only when trade creation is higher than trade diversion (Viner, 1950).

Trade creation is defined as a movement by each member country to form industries in areas where they have a comparative advantage. Trade diversion is when as a result of economic integration a country may end up buying higher cost goods from another member of the group and not importing these goods from countries outside the region that sell them at a cheaper price (Viner, 1950). Static analysis of regional integration concludes that economic integration is good when net gains from trade creation, within the region, exceed the net losses incurred from trade diversion (Viner, 1950).

Viner also pointed out that in general terms, free-traders and protectionists favor the formation of customs unions. Although they start from different postulates about international trade, they reach the same conclusions about this issue (Viner, 1950). Free-traders support the formation of a customs union as long as the reduction of barriers to trade permits a more efficient allocation of production, according to the comparative advantage theory, between the nation members. On the other hand, to protectionists, a customs union should enlarge and protect a market to reach economic development (Viner, 1950).

However, other beneficial results are obtained from a customs union. Larger markets and the resulting benefits of the economies of scale help even small countries. Moreover, there are incentives for future investments and a greater competition between regional industries that promote greater efficiency (Jacobson and Sidjanski, 1980). From all these scholarly

examinations of the integration efforts of countries, evidently more than just trade is affected when countries integrate.

In the early Sixties, Balassa presented a unified theory of economic integration, including the dynamic effects of integration and building the theoretical principles of different integration models. According to Balassa (1961), economic integration is a process that "..encompasses measures designed to abolish discrimination between economic units belonging to different national states..." (1) More importantly, he also distinguished between economic integration and international cooperation. He stated that the elimination of trade barriers between two nations is an act of economic integration while an accord on trade policies is only an act of international cooperation (Balassa, 1961).

More recently, scholars such as Langhammer and Hiemenz (1991) examined the models of integration applied by developing countries in their efforts toward regional integration. In their work, they also distinguished between integration and cooperation. For these authors, integration "aims at abolishing discrimination between local and foreign goods, services and factors." (Langhammer and Hiemenz, 1991, 1) To these authors the process of full economic integration can be viewed as a four-stage process: free trade area, customs union, common market, and economic union (Langhammer and Hiemenz, 1991). Cooperation, on the other hand, is a less restrictive process, that, according to these authors, involves collective action directed at reducing preferences in areas of common interest of the nations involved (Langhammer and Hiemenz, 1991).

Other scholars have also contributed to the explanation of today's integration phenomena. Ely and Wiley developed a theory known as "the theory of the evolving

integrated economy" that explains how national economic planning and land policy contribute to regional economic organization and integration (Vaughn, 1993). Vaughn applied the *Ely and Wiley Theory* and concluded that "individual economies of many developing nations are too weak to benefit from regional organization and integration." (Vaughn, 1993, 442) He added that "a nation's economy must have reached some level of agricultural, industrial, and commercial development and internal integration before regional or external integration can be effective." (Vaughn, 1993, 442)

Most of the theories already described are variants of the classical liberal economic thought that establishes that free trade would maximize production and thus economic well-being if specialization is maximized among countries. This classical doctrine dates from Adam Smith (1776), who, rejecting mercantilist ideals of accumulation as the base for economic progress, developed the classical theory of *Comparative Advantages* to explain how countries may achieve maximum economic growth through the production of goods in which each country has a comparative advantage, mainly cost advantages (Jenkins, 1948). This specialization would also lead to higher levels of efficiency and productivity (Jenkins, 1948; Nafziger, 1984). Smith also pointed out that free trade can maximize consumption possibilities, since no restrictions to imports or subsidies to exports operate (Jenkins, 1948; Nafziger, 1984).

David Ricardo's work strengthened Smith's theory through the development of the labor theory of value (Ricardo, 1948, 5-18). Hecksher-Ohlin (1933) fully completed the explanation of the comparative advantage theory. They looked at the resources with which countries were endowed, and developed the theory of factor endowments to explain why a

particular country has a comparative advantage over another. Comparative advantage, according to this theory, relies on resource endowments; therefore, countries specialize in the sectors where they have abundant resources, as the price of that resource will be comparatively low. (Hecksher and Ohlin, 1933)

Another scholar, Linder (1961), posited that trade of basic commodities follows Hecksher-Ohlin's theory, but that trade of manufactured goods depends on other factors rather than factor endowments (Linder, 1961). Indeed, Linder agreed that "...the moving force behind trade in primary products is price differences caused by differences in relative endowments of natural resources." (Linder, 1961, 102) However, the trade of manufactured goods lies in factors such as home demand structure, tastes, and levels of income of each country involved in the trade of manufactured goods (Linder, 1961).

More recently, other theories have been developed to explain patterns of today's international trade. Michael Porter, who developed the theory of *Competitive Advantage* did one of the most significant current works. Porter (1990) explains how an industry can gain competitive advantages in the global market. His theory relies not only on production cost advantages as the classical theory does, but includes complex factors such as: the education level of the work force; *infrastructure development*, defined as communications and transportation; and scientific and technological knowledge (Porter, 1990). Porter studied the cases of eighteen countries, such as Japan, Italy, Switzerland, and Germany, that have reached great levels of competitive advantage in industries where, according to the classical theory of comparative advantage, they did not have comparative advantages. Porter also pointed out that the quantity and quality of the home country demand for a specific product is another

factor that determines a firm's competitiveness (Porter, 1990). He added that the strength and prestige of related firms, especially the supplier, are key competitive hedges for today's firms (Porter, 1990). Finally, Porter analyzes the firm's managerial and competition strategies as key factors in determining international competitiveness. The greater the competition in the home market, the stronger the company will be worldwide (Porter, 1990).

For today's complex trading patterns, the classical explanations of the benefits and patterns of international trade based on comparative advantages and factor endowments are not enough. A more complex analysis including cultures and political differences, level of technology and education, is more appropriate.

IV. Levels of Economic Integration

There are different degrees of economic integration that range from the least to the most integrative. Classical liberal economic doctrine defines the types of regional economic integration as: **free trade area**; **customs union**; **common market**; **economic union** and **complete economic integration** (Balassa 1961; Jacobson and Sidjanski, 1980). A **free trade area** implies the elimination of tariff and trade barriers for the members of the area, and does not include a harmonization of the tariffs for goods being imported into the area (Balassa, 1961). In a **customs union**, besides eliminating barriers to internal trade, the countries adopt a uniform tariff for all imports (Viner,1950; Balassa, 1961; Jacobson and Sidjanski, 1980). A customs union has two potential advantages: one, when national markets are too small the integration allows members to achieve and benefit from economies of scale, and; two, the increased competition between industries in the region results to a degree in the reduction of

the formation of monopolies and the improvement of industrial competitiveness (Hangen, 1968).

According to the traditional theory, there are several requirements for making a customs union successful in promoting economic development:

- The greater the pre-union barriers to trade among country-members, the higher will be the trade creation produced by the union (Viner, 1950).
- The lower the custom union's trade barriers with nonmembers, the more trade diversion will be reduced (Salvatore, 1990).
- The larger the region in terms of population, per capita income, etc., the more low-cost producers will be prompted to set up facilities in the union (Salvatore, 1990).
- The more competitive rather than complementary the economies of the nations are with each other, the greater the specialization and trade creation will be in the area (Viner, 1950).
- The closer geographically the countries are, the less physical restrictions such as transportation costs will block economical trade (Hagen, 1968).
- The greater the pre-union trade and economic relation between the countries, the greater will be the benefits of their union (Salvatore,1990).
- The better the mechanisms for the fair distribution of the collected import tariff into the area, the better the chances for the survival of the union (Vargas-Hidalgo, 1979).

The EC's success is thought to be because as a group they have met in part most of the listed requirements (Salvatore, 1990). In comparison, regional Latin American groups have met only a few of these requirements when they formed customs unions and as a result they have faced a variety of political, economic, and physical problems. The Andean Pact countries, for example, because of large geographical distances and lack of an adequate infrastructure, have faced high transportation costs. They have also experienced a diminished interest for the actual formation of a large competitive market due to the large number of inefficient industries that they have (Hagen, 1968). Economists, such as Balassa, have concluded that the traditional theory of customs unions have limited applicability to the integration efforts of less developed nations (Balassa, 1966).

In a **common market**, on the other hand, not only are restrictions to trade eliminated but also restrictions on factor movements such as capital, technology, and labor movements (Balassa, 1961). Many regional groups formed during the 1960s in Latin America and some of the ones that are being formed today have as a goal the creation of a common market. Not all these attempts have been successful. To allow the free movement of production factors requires that certain levels of policy harmonization among nation-members of the common market have been reached (Balassa, 1961). Moreover a higher level of political maturity as well as economic well-being is required.

An **economic union** commits countries to an even higher plane of integration than a common market. According to Balassa, this form of integration requires some degree of harmonization of national policies to allow the free movement of production factors within the union (Balassa, 1961). Balassa, in contrast to many other scholars, does not stop at

economic union but includes an even higher level of integration that he calls **complete economic union** (Balassa, 1961). According to him, a complete economic union occurs when supranational institutions are established to coordinate economic policies for country members of the union (Balassa, 1961). Although Balassa does not mention it in his study, a complete economic union in the present would also require a variety of political supranational organizations to deal with subjects such as the environment, health, security, and so on; issues that affect more than one country.

In sum, the different levels of economic integration go from the lesser free-trade to a form of complete economic union. Every level has specific requirements that have to be achieved in order to go to a further degree of integration. The EC is an excellent example of economic integration that has progressed from a very simple economic cooperation scheme to a more complex model of economic union over a period of time.

An analysis of the evolution of the economic integration of the less developed countries of Latin America will follow to create an understanding of the problems that the Andean nations have had in their integration efforts.

V. Regional Trade Integration Movement Among Less Developed Countries (LDCs)

In their regional integration efforts, Less Developed Countries (LDCs) of Latin America originally did not follow the classical liberal economic doctrine that stresses the elimination of barriers to trade but were more concerned with protecting their markets from foreign competition. Furthermore, during the early stages they followed the ECLAC's doctrine of development known as *Import-Substitution-Industrialization* (ISI) that at the time

was espoused by its secretary Raul Prebisch (1949). This theory posited that it was necessary to wrest the mono-exporting economies of the countries in the region away from their dependency on developed countries and create large local markets by forming regional groups (Prebisch, 1949). Additionally, protection for regional infant industries was to be granted by erecting import barriers and subsidizing exports of new manufactured goods (Prebisch, 1949). Moreover, by producing many products locally fewer items would have to be imported. This idea of promoting industrialization by following import substitution policies and the rest of Prebisch's ideas were adopted by the Andean Pact members and maintained for most of their first two decades of existence. It was only in the late 1980s and early 1990s that they started moving toward more market oriented policies (García, 1992).

More recently, Langhammer and Hiemenz (1991), in their analysis of the integration movement among developing nations, concluded that developing nations trying to foster economic integration have normally tried to replicate the European model of integration without taking into consideration their own limitations and differences (Langhamer and Hiemenz, 1991). Inequalities in terms of intra-regional trade, foreign policies, income and industrialization status, among others, that in the case of the European Community members were not significant were not even taken into consideration (Langhammer and Hiemenz, 1991). Moreover, most of the developing nations did not take into account the tremendous logistical and transportation problems that exist in their regions and that limit the possibilities of trade between them. The authors posited that developing nations took some time to "become aware of the non-replicability of the European experience and to draw appropriate lessons for their own efforts at regional integration." (Langhammer and Hiemenz, 1991, 2)

They concluded that most of the schemes of integration among developing countries have failed to reach their original goals (e.g., increased intra-regional trade, promotion of industrialization, etc.) due to political and economic divergences between country members (Langhammer and Hiemenz, 1991). They examined the changes to the integration approaches during the 1980s and concluded that cooperation rather than integration is the driving force for all major regional groups formed by developing nations. They describe the changes as follows:

- Free trade areas, customs unions, or common market goals have been replaced by less ambitious goals such as bilateral agreements and cooperation projects (Langhammer and Hiemenz, 1991);
- A great degree of liberty is given to country-members of integration groups to liberalize their economies and negotiate bilateral agreements with countries sharing common interests (Langhammer and Hiemenz, 1991);
- Regional industrialization plans have been replaced by cooperation projects in areas such as physical infrastructure, mainly communication and transport, and in support areas such as education, health, environment, and research and development (Langhammer and Hiemenz, 1991).

Finally, Dietz (1992) posited that the neoliberal development thought and anti-state bias, "...is now driving the rush toward hemispheric economic integration with the United States (via the North America Free Trade Association and the Enterprise for the Americas), as well as through regional common market arrangements." (373-4) Unquestionably, the crisis that the Andean Pact Agreement has experienced and the revisions of the original

agreement have been driven by fundamental political and economic changes that the country members have made since the 1980s based on neoliberal policies.

VI. The Role of Infrastructure in the Latin American Economic Integration Efforts

In classical trade theory, it is assumed that trade takes place between countries that have no spatial dimensions (Balassa, 1961). The economist Viner (1950), who studied the customs unions, said, "it is not evident that contiguity or proximity has sufficient economic significance of itself to justify special sanction for tariff preferences on that score..." (122) The development and enhancement of economic integration theory incorporated locational aspects. For example, Balassa (1961) recognized and studied the influence of locational and spatial elements in the movement of goods between countries. He introduced the *Propinquity and Transportation Costs* factors into the theory of customs unions. Balassa wrote: "we have to consider how the propinquity of the countries participating in a union bears upon the economic effect of integration." (1961, 39) In addition, he outlined the benefits of propinquity as:

1. shorter distances to be traveled;
2. tastes are more likely to be similar, therefore facilitating the distribution process;
3. neighboring countries may have a common history, and common interests that make them more willing to coordinate policies (Balassa, 1961).

He concluded that "...the shorter the economic distance between any two countries, the greater are the potentialities of economic intercourse between them, and the more will the world benefit from their integration." (Balassa, 1961, 42) These factors have been very influential in the consolidation of the European Community and have been stressed in the regional movement of Latin America.

According to Balassa, the other major advantage of propinquity is that transportation costs are lower. He stated, "the cost of traversing the distance rather than the actual milage is relevant." (Balassa 1961, 41)

Balassa defined economic distance and distinguished it from geographical distance. Economic distance, he added, is determined by the geographical distance, the cost of transport, and the existence of facilities such as services at ports, airports, and rail stations (Balassa, 1961). He also recognized that it is very complex to measure the economic distance between countries; however, he reasoned, "low transportation costs associated with short economic distances will increase the positive production effects through the low degree of geographical protection and are likely to cause less trade diversion between the union and third countries." (Balassa, 1961, 42) This proposition may still be used today to evaluate current integration efforts in Latin America.

Balassa analyzed the propinquity and transportation factors for the European common market and other free trade areas proposed then. He concluded that for some European countries the economic distances are very favorable to the formation of regional groups using the propinquity criterion (Balassa, 1961). However, for Latin America, objections may be

raised if propinquity is used as a favorable factor for the formation of customs unions or common markets. In Balassa's words,

> "...the lack of adequate transportation facilities and the absence of continuous economic activity across national frontiers indicate large disparities between economic distances and geographical distances in Latin America." (Balassa, 1961, 43)

In addition, Balassa pointed out that South American countries, at that time, used mainly ocean transport for their intra-regional trade because of the poor conditions of land transport and inland waterways, and the lack of links between ports and the hinterlands (Balassa, 1961). However, Balassa claimed that the lack of overhead capital in the form of transportation equipment should not be used as an argument against the continent integration efforts, and he recognized that for many Latin American countries there was a high opportunity cost involved in infrastructure investments (Balassa, 1961).

Balassa concluded that weighing the advantages and disadvantages of the continent, some regional groups could be recommended to form such groups/unions in the "Southern Zone (Argentina, Bolivia, Brazil, Chile, Paraguay, and Uruguay), in the Northern Zone (Colombia, Ecuador, Venezuela), and also in Central America." (Balassa, 1961, 44) Balassa's suggestions for the formation of regional groups in Latin America coincide with some of the current regional groups such as Mercosur, formed by southern cone countries, and the G-3, formed by the northern countries of Venezuela, Colombia and Mexico, but not Ecuador.

The vital role played by transportation and infrastructure in the formation of regional groups was not only recognized by Balassa, but also by others scholars, such as Wythe (1946), Urquidi (1961), Angulo (1966), and Bawa (1980), who have studied the integration phenomena and/or the economic development of Latin America. Also, the Latin American infrastructure problems have been well outlined by geographers such as Whitbeck, Williams and Christians (1940), Butland (1960), Cole (1975) and Blouet (1997).

Several other scholars have agreed in including the geographic and/or the economic distance as an important factor when examining the effect of economic integration on trade flows (Aitken, 1973, Aitken and Lowry, 1973; Anderson, 1979; and Brada and Mendez, 1983). All have agreed on defining economic distance beyond the number of miles or kilometers that separated trade partners. Aitken interpreted economic distance as "natural trade resistance which in turn is a composite of transportation cost, transport time, and economic horizon." (Aitken, 1973, 882; Aitken and Lowry, 1973, 328)

Similarly, Brada and Mendez (1983) defined economic distance as "the resistance to trade and subsumes commercial policy, transportation costs, and the lack of knowledge about foreign market opportunities which presumably increase with distance between countries." (590)

More recently, Garman and Gilliard (1998) in analyzing the intra-regional trade patterns of the CACM, the Andean Pact and LAIA , used the *economic distance* between trade partners among other factors (national per capita incomes and domestic population) in the gravity equation to measure the success or failure of these economic integration schemes. They defined the distance variable as "a proxy for transportation costs and time, access to

market information, access to markets, and other factors that make it difficult for nations to engage in trade." (Garman and Gilliard, 1998, 4) Then, they calculated *"economic distance"* as the result of multiplying the geographical distance by a composite index of the relative level of infrastructure development of a country. To measure infrastructure development of a country, they used indexes such as the per capita index of roads, railroads, and telephones (Garman and Gilliarad, 1998, 4-5).

This dissertation looks at these infrastructure indicators for the integration case of the Andean Pact.

The lack of transportation connectivity at many of South America's borders has served to reduce the economic ties between the various countries. This connectivity status has served to economically distance the countries and to reduce the feasibility of commercial partnerships. Instead, the colonial-oriented transportation networks tend to encourage ocean trade where non-South American countries have many competitive advantages.

Robert Brown (1966), who did a comprehensive study of the transportation problems of the South American countries in their efforts for further economic integration, explains in great detail the relationship between transportation and economic integration for South America.

Brown's study,[2] addressed the question: "What is the relationship of transport to the economic integration of South America?" (Brown, 1966, 1) His study was motivated by the creation of LAFTA and the increased interest among South American countries in the

[2] The findings of Brown's study were published in his book: "Transport and the Economic Integration of South America."

formation of regional economic blocs during the 1960s as the means of achieving economic development. Brown describes in great detail the historical evolution of South American transportation modes and the roles played by each mode in the integration movement at that period of time. He centered his study on the role played by transportation in economic development because the integration efforts of the countries of the region at that time were oriented to pursue economic development as the ultimate goal (Brown,1966). He emphasized that, at the time his study was done, there were no economic studies of South America as a whole that included the spatial element. Those available either studied each country as a unit or South America as a whole, omitting the locational and spatial elements (Brown, 1961). Balassa also remarked on this issue, as already mentioned in the previous section.

Brown used a geographical regional approach to understand the transportation problems of South America at that time. This geographical regional approach consisted of dividing the South American continent into nine regions according to "...topography, population densities, levels of economic development and [his] conceptions about infrastructure of a developed South America should economic integration be successful." (Brown, 1966, 9) Brown justified this regional approach as the best way to understand the nature of transportation problems, as the relationships between regions can be better understood than looking at individual countries (Brown, 1966). From the geographical point of view, this approach is very useful for understanding the specific problems and characteristics of the region.

The nine zones into which the continent was divided are presented in Appendix A-1. Each zone would or would not include more than a country and not necessarily coincide with

the political boundaries of the countries involved. Each zone was analyzed by describing its geographical, climatic, and economic problems and challenges to transportation and also its setting from a historical perspective. For example, Zone I was comprised of the southern coastal part of Brazil, Uruguay and Argentina, including the main industrial cities of these countries (Brown, 1966). Zone II included most of the La Plata River System of Brazil, Argentina, Paraguay and Uruguay (see map, Appendix A-1). Zone III coincided with the whole country of Chile, while Zone IV consisted of the coastal and highlands of Peru and Bolivia (see map, Appendix A-1). Zone V encompassed the eastern slopes of the Andes, while Colombia and Venezuela formed Zone VI (see map, Appendix A-1). Finally, Zone VII coincided with Ecuador, Zone VIII enclosed the great Amazon Basin and northeast Brazil constituted Zone IX (see map, Appendix A-1). Again, these divisions were made based mainly on the economic geography of the continent at that time. This approach is still very valid to understanding the physical characteristics and the industrial and urban concentration of South America.

Once the regions were established, Brown concentrated on studying the patterns of international and intra-regional trade of the countries of the region and describing the main modes of transportation used for the trade at that time. Unfortunately, he could not find trade data that would fit the previously defined regions; therefore, he used trade data by countries (Brown, 1966). At this point, Brown studied the quality of the access between 45 pairs of countries by looking first at whether or not the countries were neighbors, and second, how good the connections were at that time (Brown, 1966). To determine the quality of the connections he asked: "Are there reasonably good highway, railway, or river connections

between the two countries?" (Brown,1966, 38) However, he did not define what is good or poor, or what criteria were involved in his classification as good or bad access. Brown found that "...where access is relatively easy, commerce tends to be relatively more intense." (Brown, 1966, 39)

He suggested that access could be improved through enhancing transportation, and consequently, trade between nations would be likely to multiply (Brown, 1966). This statement, although it appears obvious, may be not completely true for South American nations that have relied for many years on ocean transport for their intra-regional trade. Consequently, the proximity factor between trading partners loses significance (Brown,1966).

Brown also looked at the resource endowment of each zone and at the composition of their intra-regional trade, using the previous definition of regions (Brown, 1966). He concluded that to understand the patterns of the intra-regional trade it is very important to look at the access and resource endowment factors, which will determine the success of any Latin American integration efforts (Brown, 1966). He emphasized that knowledge about the quality and geographical distribution of the region's resources determine the transportation requirements, and that South American countries must provide an efficient transport for their exports and for their industrialization and regionalization needs (Brown, 1966).

Population concentration, and levels of income were later introduced into Brown's study. He found that the inclusion of these two factors "...is essential in a study of transport requirements for several reasons. The volume of trade between two geographical units, and hence the transport demand, may be affected by changes in the population and income of each." (Brown, 1966, 71) These two factors, and the concentration of population in a few

large urban centers of the countries of South America, have had an impact on the selection of transportation modes and it will influence future infrastructure investment plans.

The rest of the Brown study is dedicated to a detailed analysis of the role that each mode of transportation played in intra-South American trade. Because of the role played by maritime transportation in international and intra-regional trade, Brown dedicated a great part of his work to analyzing it. Shipping agreements, conferences, rate structures, and policies were analyzed under the consideration of the LAFTA maritime convention (Brown, 1966). Brown examined the rest of the modes, including their historical evolution, current settings and problems, as well as the amount of freight moved by each mode. Finally, Brown made some recommendations to solve the problems and to outline a transport policy for the economic integration of South America (Brown, 1966).

In sum, the major findings and conclusions of Brown's study were:

1. Intense road traffic of both passengers and freight existed in those adjacent regions where commerce had been developed, but only for short distances (Brown, 1966). He also pointed out that the South American land transportation network does not connect all the countries of the region, often due to the historical needs of each nation state to provide national security (Brown, 1966). Even in the cases where there is border connection, Brown pointed out that "...trucks from one country are not even permitted to enter a neighboring nation and costly transshipment is required at the frontier"

(200), therefore adding an additional burden to road transportation. He observed that to achieve the goals of economic integration within the continent "...the elimination of these artificial barriers is crucial..." (228)

2. Railway connections exist but are little used and often the gauges are incompatible, making international connections and traffic almost impossible (Brown,1966). (For a display of the major railways in the continent at that time, see the map in Appendix A-18, and for the type of rail connections between countries see the map in Appendix A-19). For example, in 1962, through the Transandean line that connect Buenos Aires, Argentina, to Valparaiso, Chile, only 79,500 metric tons, of which 75,400 tons were livestock, were moved by rail between these two countries (Brown, 1966, 190). The low traffic volume moved can be explained by the fact that transshipment at the frontiers in both countries was required (Brown, 1966). At that time, 14 international connections existed, five of which had different gauges. Moreover, even when gauges were the same at the borders, the railways changed gauges internally within the country, making transshipment mandatory (Brown, 1966).

3. Imports and exports to the world plus most of the intra-regional trade at that time were moved by ocean and river transport. Indeed, "in 1962, 99.3 percent of South America's foreign trade was transported by this mode. In that year, at least 96 percent of each country's exports and imports was transported by water...." (Brown, 1966, 44) This overwhelming reliance on maritime

transportation was in part due to the composition of trade at that time, which was mainly petroleum, transported by tankers, and minerals and grains, also transported by water (Brown, 1966).

4. Air transportation was beginning to have an impact on intra-regional trade easing the movements of goods between the countries and surpassing geographical barriers (such as the Andes) that make land transportation difficult. In Brown's words, "air transport offers a significant opportunity for economical and efficient transport. Between Region III (Chile) and Region I, the industrial heartland, for example, air transport provides a promising alternative to the slow maritime route around Cape Horn and to the costly land transport over the Andes and across the Argentine pampa." (209) This is also true in the trade between Venezuela and Peru, whose land transportation encounters significant geographical barriers. Air transportation offers a viable alternative for the trade of perishable products; however, the air freight carried from one country to another in the continent then was very small (Brown, 1966).

5. Administrative problems such as disagreements on the interchange of rolling stock, unrealistic freight rates, excessive paperwork on exports, delays and losses in customs and at transshipment points, aggravate the physical problems of interregional traffic (Brown, 1966). These problems were critical particularly for railroads and roads.

Finally, Brown gave some policy recommendations to improve the transportation infrastructure so that it helps the South America economic integration effort. He stated that "...economic meaning can be given to the integration of South America only when the spatial aspects of the different South American countries and the South American continent as a whole are considered." (Brown, 1966, 212) He stressed that the only way to conquer the many geographical disadvantages, which have shaped South America's trade configuration, is through "...regular, frequent and economic transportation..." (Brown, 1966, p. 213) As part of his conclusions, Brown outlined the investment priorities in transportation infrastructure both within and among the nine regions (See Appendix B-2). It is important to note that Brown excluded air transportation in this table, without giving specific reasons for his decision. From this analysis, he concluded that improvement in highways is a priority, along with rivers and railroads, especially in Regions I, II, and III (Brown, 1966). Brown's suggestions were directed to the transport planner, and based on speculations about the type of economic development that the continent could reach with further economic integration. He believed in the promotion of further industrialization of the countries of the region, the prominent idea of the 1960s in Latin America.

Another important recommendation of Brown's was related to improvements in general land connectivity among the countries of the continent. He stated that:

> "..it is essential that international land transport, principally by highways, be developed in South America. Only land transport provides the ease and flexibility of goods and passenger transport at an economic cost which is required to spread development spatially within each country while at the same time bringing these countries together." (Brown, 1966, 227)

Although the information that Brown presents in his study is dated, many problems that he points out are transferable to the situation that exists today, as it was described in Chapter 1. Moreover his geographical approach to the study of infrastructure is as valid today as it was in the 1960's. The regional geographical model established in his work is quite useful for the present study of the role that the logistics infrastructure plays in the integration efforts of the Andean Pact and in the overall economic development of the region. Moreover, Brown makes clear that land transportation is the mode that would help these countries to integrate. Therefore, taking his ideas into consideration, this study will concentrate on analyzing the roads, railroads and river transport for the Andean integration evolution.

Hampton Snell conducted a second study about transportation integration among the countries of South America (1969)[3]. He based his study on the Brown findings and added some policy suggestions to harmonize land transportation and develop the other modes more efficiently (Snell, 1969). His suggestions included improvements in railroads and ports, development of waterways, coordination between water and land transportation, and less reliance on ocean transportation for the movement of the goods between the countries of the region (Snell, 1969).

A more recent study, sponsored by the ECLAC (1987), outlines the problems of maritime transportation in Latin America and the Caribbean at that time. Although this study does not contemplate the economic unification of the continent as does previous studies, it does describe the most salient problems of the ports of the countries of the region in managing the international and intra-regional trade. It also describes the problems that affect

---

[3] This study was published in The Movement toward Latin American Unity in 1969.

shipping companies, freight rate systems and conferences operating in the region. This is a very comprehensive study that defines many basic concepts involved in Latin America's shipping business. The study describes the situation of the industry in Latin America from a developmental perspective. The most relevant problems outlined in this study are:

1. Great imbalances exist in the volume and type of cargo between the exports and imports in the region resulting in an under-utilization of space in at least one leg of the voyage (ECLAC, 1987, 99, 105). This paper states that "... exports from LAIA countries are four times the tonnage of their imports ... the composition of cargo groups also varies significantly." (ECLAC, 1987, 99)
2. Great traffic instability occurs as a result of the heavy reliance on external markets, variations in domestic production, and government interventions (ECLAC, 1987, 105-6).
3. Physical and institutional port deficiencies are increasing the cost of maritime transportation for the region. Among the physical problems are the lack of berth space, shallowness, lack of appropriate cargo-handling equipment, lack of space for container manipulation and storage, and congestion caused by lack of land access to ports (ECLAC, 1987, 107). The institutional problems include obsolete and inadequate legislation for dealing with unitized cargo, different work schedules for different port's sectors, excess paperwork and

formalities, and labor problems, such as inefficiencies and strikes (ECLAC, 1987, 107).

This study is important to the extent that historically maritime transportation moves about 90 percent of the international and a very important portion of the intra-regional trade of the countries of Latin America. However, for the purposes of this study it was taken as reference material to understand relations with the other modes, but not for upgrading it as it is beyond the scope of this research.

VII. Summary

Although, as discussed above, extensive literature deals with economic integration, there is a definite lack of adequate literature dealing with the problems that countries have in the areas of logistics and transportation infrastructure. Most of the studies address specific country problems and describe the infrastructure that exists but fail to link infrastructure with the integration efforts. The two major exceptions are the study by Brown, and Snell's examination of the infrastructures.

As already mentioned, their approach is certainly theoretically valid and usable in today's environment. Their data, however, needs to be updated and their approaches modified to fit the present situation in Latin America. Specifically what must be examined is the impact that the new free market approach is having on the opening of intra-regional barriers and on the improvement of intra-regional transportation. In sum, an updated model using the Brown methodology was used in this study to examine the logistics and

transportation infrastructure of the Andean Pact nations and to determine what impact it has on their regional integration and on their goals of economic development.

CHAPTER 3

METHODOLOGY

I. Introduction

The main objective of this study was to investigate and describe the status of the logistics and transportation infrastructure of the Andean Pact nations. This was done to find out the effects of the logistics and transportation infrastructure of the countries on their regional economic integration efforts. To reach this goal an analysis of the historical and current situation was conducted.

The purpose of this chapter is to familiarize the reader with the kind of data that were collected, the research procedures and methodology, and to identify the specific areas of information required.

II. Data Collection and Analysis

The methodology developed by Brown (1966), described in detail in the previous chapter, was used in this study for appropriate data collection and analysis of the logistical infrastructure of the Andean Pact nations. This research relied on data provided by the ECLAC and data obtained from a variety of secondary sources during the time frame of this study.

Structure of the Study

This study upgrades and enhances Brown's study for the Andean nations. Brown studied the South American transportation setting in the early Sixties from a geographical

perspective. His approach posits that geographic, demographic and economic factors have an impact on determining the demand and structure of the transportation system. This study also takes those factors into consideration. Therefore this study was organized in the following order.

First, the Andean countries of Bolivia, Peru, Ecuador, Colombia and Venezuela were divided into two regions. As explained in Chapter 2, Brown divided the South American continent into nine regions (see map of Brown's regions, in Appendix A-1). Since Brown's study examined the whole South American continent, his divisions do not follow the Andean Pact boundaries. As a result this study could not use his divisions, however his criteria were used in defining each region. The criteria he used to define regions includes: topography, population densities, and level of economic development. By using Brown's approach to examine the Andean Pact nations, two main regions could easily be identified: a northern one comprising the countries of Venezuela, Colombia and Ecuador, and a southern region including Peru and Bolivia.

Brown considered Ecuador as one region although there are no serious geographical barriers to isolate this country from its northern neighbor. His decision to separate Ecuador was based strictly on its economic development and the uniqueness of its coast. His reasoning, however, was based on data collected in the 1950's and 1960's, which is no longer applicable today. With the discovery of oil and other economic advances, Ecuador should be logically placed in the same region as Colombia.

Brown placed part of eastern Peru and Bolivia together as one region (Region V: Eastern Slopes of the Andes), while the coast and highlands of Peru and Bolivia formed

another (Region IV). Because of its unique geography the southern part of Bolivia was included in Region II that includes portions of Brazil, Paraguay, Uruguay and Argentina. These divisions have lost some of their significance because the construction of infrastructure within these countries has served to unite the countries in question. As a result, looking at Bolivia as a whole is easier and more correct than to subdivide it into three different portions. The same reasoning applies to Peru.

Second, the two established regions were extensively analyzed to establish the current geographical settings in terms of topography including mountains, lakes, river systems, natural harbors, and geographical reliefs of the region. Then, the location of the natural resources and centers of production by zones within the region were identified in order to study the current patterns of trade.

Third, the patterns of trade were investigated. To do this, the trade of the Andean nations within the region was analyzed to find trends and shifting. The types of imports and exports of each country and their origin and destination will be included in the study. In this section questions such as: What are they exporting?; What are they importing?; From where?; How much?; will be answered.

Afterwards, the modes of transportation used in the movement of intra-regional trade was examined. When available, disaggregated transportation data by type of commodities using a universal classification of products such as SITC or CUCI was used to study the movement of goods. At this point of the study the original questions were reexamined to decide if they needed any modifications.

Fourth, an analysis of ground modes of transportation was conducted to understand the current problems of the region, including historical development and current policies. Special attention was given to any international agreements that have an impact on regional international transportation. Furthermore, the infrastructure at the crossing points between adjoining countries was carefully considered. At this point, the identification of some criteria was established to evaluate these connections as adequate or inadequate. For example, the existence of compatible rail gauges from the point of origin to destination was considered as necessary for a rating of adequate. Moreover, the existence of a paved road at crossing points would also contribute to an adequate rating. In addition, the international movements of goods was analyzed under the Andean Pact Decisions to discover the legal and institutional framework.

At this stage of the study, a variety of transportation problems and challenges were identified. Moreover, as the transportation problems were discovered, a number of logistics problems became apparent because of the interrelation between the two.

Data Sources and Analysis

To collect trade data all published Statistical Yearbooks were consulted, particularly those that specialize in Latin America, such as the Statistical Yearbook for Latin America and the Caribbean (SYLAC) published by ECLAC, the Statistical Abstract of Latin America (SALA) published by the Center of Latin American Studies of the University of California, Los Angeles, and other general sources. To collect transportation data all published periodicals specializing in transportation statistics and related information were consulted,

such as Jane's World Railways, UN Statistical Yearbook, IRU World Transport Data, and the World Factbook, and those specializing in Latin America such as the SALA, and the SYLAC.

Extensive searches for information and data were performed in online databases. In addition, newspapers, magazines, and articles available on the W.W.W. were searched for information and data on the different issues of this study. However, very little was found linking regional economic integration and logistics and transportation issues. Morever, little useful information was available on the Andean Group or Pact and infrastructure, or the transportation and logistics, or any combination of these. Some information and data were available dealing with trade, economics, infrastructure and transportation for Latin America in general, and for the biggest countries of the region such as Brazil, Argentina and Mexico, but information had little relevance to the study.

Due to the reasons listed above, this study dealt with more abstract related data for the countries included in it. To help in part overcome this handicap, a search for official data and more reliable sources was pursued.

The researcher contacted the ECLAC after realizing that it is an official repository for economic and statistical data for Latin American and Caribbean nations. The ECLAC is a highly credible agency that sets and maintains high standards for data collection and reporting. This UN agency establishes systematic methods of data collection for Latin America. Indeed, its statistical reports are used by governments, publishers, and scholars to get official data for Latin America and the Caribbean.

Thanks to the McClure's financial support, the author was able to spend a month at the headquarters of the ECLAC in Santiago, Chile, while still a full-time student at the University of Tennessee. The visit provided the researcher with the opportunity to collect data from the original ECLAC's databases. In addition, as she was accepted in the ECLAC's Transport Unit as a fellow researcher, it was also possible to collect original documents regarding the Andean Pact legal framework, and valuable studies concerning different issues of regional transportation systems.

In order to obtain disaggregated trade and transportation data for the Andean nations for the period 1970-1995, a written agreement[4] with the Statistical Center of the ECLAC was signed, due to the sensitivity and confidentiality of the data requested.

The researcher asked for import and export data for specific years and products for 6 countries. The data were disaggregated by products for/to 5 digits of the SITC, for the mode of transport and the flag of the mode. It was the first time that the transportation mode and flag of the mode were requested for research. It was not guarantied that modes and flags were in the databases because the countries were not obligated to report that information at that time. An ECLAC statistician assumed the job of preparing the data and sending them to the author by electronic mail attachments. This was a voluntary job done after normal working hours.

The data arrived with considerable delay. Data files were obtained via e-mail as binary encoded and encrypted for transportability and security purposes (see copy of original format

[4] In this agreement the researcher promised to use the data for this study only and not to distribute them.

list in Appendix B-3). For each country two files were received: one for imports and one for exports.

Very little information was received concerning the methods used to create these files. Consequently, several file decompression applications were tested in an attempt to recreate the original ASCII files. The following steps were eventually employed to extract uncorrupted, readable data files:

1. Each file was exported to a UNIX system and stripped of all lines attached by e-mail using PICO text editor.
2. Each file was then unencoded using the UNIX uudecode program. Then the files were clean of some initial lines with the format of the records and instructions. The new clean files were saved with a different extension (namefile.zip)to keep the original files in UNIX. These new files were still zipped.
3. Then, the new files were downloaded as binary files to a PC using f.t.p.
4. The files were decompressed using the program pkunzjr. This procedure opened each file, giving for every country's imports and exports a file by year. For example for Venezuela imports we got: Venimp70, Venimp75, Venimp80 and so on til the last year of data. The same number of files were obtained for Venezuela's exports. In other words, we got 6 files for imports, six files for exports for each country. The recreated ASCII files contained a total of about 5M of data.

5. These file were then transferred by to UNIX with f.t.p. in order to use SAS to produce aggregated data analysis files.

These treatment of the data required a considerable investment of time and effort to produce a readable and useable file format.

The following steps were pursued in order to check the reliability of the data:

6. SAS 6.11 for Unix was used to read the unecrypted ASCII files to verify total values with data obtained from original databases from ECLAC headquarters in Santiago. The frequency, mean and print procedures were used in this step.
7. The number of total records, the total value and volume were checked for every country import and export by year. This was a very tedious but important step to verify the completeness of the data. Because of the volume of data for each country, this step took a considerable amount of time and programing.
8. When discrepancies were discovered, such as omitting one country as a trade partner, the office in Santiago was contacted via e-mail, and asked to modify the file and to resend it.
9. Due to the large number of discrepancies encountered, descriptive statistics and data tabulations were produced for all possible levels of data aggregation, such as by country and by year, by country by product, by product by mode, etc. This was again a tedious and time consuming step since the data files for each country exceed 28,000 records.

10. Many discrepancies were discovered during this process. For example, Venezuelan exports were missing since 1974 for Colombia and Chile records. Many results were puzzling too, as many exceptions needed to be included, as Chile's data was good only until 1976, as the country withdrew from the group that year. It was also discovered that differences existed between a number of records, values and volumes for some years or countries. These situations required frequent contact with the person in Santiago, again slowing the process of data preparation.

11. After having cleaned the data, SAS was used to produce the "analysis files". At this point, the tables and graphs to depict the patterns of trade and transportation were outlined. SAS produced a very extensive output that could not have been managed in a reasonable way. Therefore, SAS was used to aggregate data by summing across specific class variables .

12. The SAS outputs, transferred to a PC using f.t.p., were first managed using Excel. Unfortunately, the files were still too large and complex to run even using basic Excel procedures.

13. Another Statistical Package was tried: SPSS version 7.5 for Windows. In SPSS, the files were transformed into output such as tables and graphs by countries. It took considerable time to learn how to process and produce understandable outputs from SPSS.

14. To produce totals by the whole region continue data aggregation and further SAS programing was required. The original data files were country by country

and not by region. With some SAS "analysis files" to go into Excel or SPSS, crosstab tables and pivot tables were elaborated.

15. Finally, the total of final tables were checked by selected years with published aggregate data, for example with Statistical Yearbooks such as SALA. The grand totals matched those published.

The steps described above were done in order to ensure that the figures printed in this work are reliable enough to draw conclusions from them.

In sum, this study relied extensively on works done by the U.N. Economic Commission for Latin America and the Caribbean (ECLAC) in the areas of economic integration, the Andean Pact, and transportation in Latin America. The Decisions (law decrees) published by the Cartagena Agreement were considered in order to outline the legal framework in intra- regional transportation. The Agreements reached by the Conference of Transportation Ministries for the Integration of South America were also included in this study.

As the data collected included an extensive period (25 years), trends and changes in the intra-regional trade and in infrastructure development were summarized. This allows us to reach some important conclusions and generalizations regarding the role and the effects that logistics and transportation have played in the regional trade integration of the Andean Pact.

CHAPTER 4

FINDINGS

This chapter describes the logistics and transportation problems the Andean Group has faced during the examined period (1970-1995). The research findings are presented in five main parts as follows. The first part covers the geographical, demographic, and economic settings of the Andean Group. The second part describes the patterns of trade for each country of the group from 1970 to 1995. The third part depicts the mode of transportation these countries have used for their intra-regional trade separated by product, by mode and by flag of the mode. The fourth part examines ground modes of transportation for the region and the current infrastructure. Finally, the fifth part outlines the perceived logistics and transportation problems and challenges the group has faced during the time framework.

I. Geographical, Demographic and Economic Settings of the Andean Group

By analyzing the geographical, demographic and economic setting of the Andean Group, this section will help to understand the current patterns of trade; to discover what kind of natural resources the countries have as well as the main centers of productions and their location; and the main geographical barriers that may have an impact on their integration and on the logistics and transportation infrastructure as well.

As mentioned in Chapter 3, and for the purpose of this study, the Andean group was divided into two geographical regions: a northen region which comprises the countries of

Venezuela, Colombia and Ecuador; and a southern one including Peru and Bolivia. The countries of each region share a common history, geography and culture.

Geographically, the most distinct geographical feature for these five countries is the Andes, which runs from the Caribbean to Tierra del Fuego along the western margin of the continent (see Physical Map of South America, in Appendix A-2). Some of the highest Andes' peaks are located in Ecuador (Chimborazo, 20,577 feet), Peru (Huascarán, 22,205 feet) and Bolivia (Sajama, 21,391 feet) (SALA, 1998). The widest part is located in Bolivia, where two different mountain ranges create the Altiplano (Blouet, 1997).

Demographically, these countries also share population increases that are above the world average. As can be seen in Table 4.1, total Andean population has increased in twenty-five years by 81 percent, with Venezuela doubling its population during the period.

It is important to remember that the countries of Latin America have been ranked as countries with rapidly growing population, and historically with the highest population increase worldwide. It is important to consider this fact for transportation and trade policy making.

Table 4.1
Andean Group's Population

	Country											
	Bolivia		Colombia		Ecuador		Peru		Venezuela		Total	
Year	Millions	Index	Millions	Index	Millions	Index	Millions	Index	Millions	Index	Millions	Index
1970	4.58	100	20.53	100	5.96	100	13.45	100	10.28	100	54.8	100
1975	4.89	107	23.64	115	7.03	118	15.47	115	12.67	123	63.7	116
1980	5.60	122	25.89	126	8.12	136	17.30	129	15.02	146	71.93	131
1985	5.90	129	29.48	144	9.10	153	19.42	144	17.32	168	81.22	148
1990	6.57	143	31.72	155	10.26	172	21.55	160	19.32	188	89.42	163
1995	7.41	162	35.10	171	11.46	192	23.53	175	21.64	211	99.14	181

Source: SALA, 1998, Vol.34, Table 502.

Northen Region: Geography, Demography and Resources

The first region of the Andean Group is located in the northern part of the continent and occupies an area of 2,334,525 square kilometers (see Table 4.2) from the eastern to western slopes of northern South America. Table 4.2 shows the area and population density for each country of the region.

The total population of this subregion is 69 million inhabitants. Colombia is the largest country in terms of area, and Ecuador the most densely populated country of this subregion. Colombia ranks fifth in terms of area and fourth in terms of population among the twenty other Latin American countries.

The following sections are divided by country and include data and information on the present situation of each country of the subregion in terms of its economy, geography and other data necessary to understand the degree of development and role of each country in the integration process of the Andean Group.

Table 4.2
Northern Region of Andean Group:
Area and Population
(1995)

Country	Area (Km^2)	Population (T inhabitants)	% of Total Regional Population	Population Density (Inhabitants per Km^2)
Venezuela	912,050	21,845	32	24
Colombia	1,138,914	35,814	52	31
Ecuador	283,561	11,460	16	40
Total Northern Region	**2,334,525**	**69,119**	**100**	**30**

Source: SALA, 1998, Vol.34, from Table 100.

Venezuela

Venezuela is located in the northernmost part of the South American continent (See Physical Map of South America, Appendix A-2). Venezuela covers an area of 912,050 square kilometers (see Table 4.3). It faces the Caribbean Sea and borders Colombia to the west, Brazil to the south, and Guyana to the east. Venezuela is one of the most developed countries of the Andean group. The country is rich in oil and mineral resources (see location in maps of Western, Central and Eastern Venezuela in Appendices A-7 to A-9).

Venezuela's major civil divisions and population distribution are shown in Tables 4.3 and 4.4 respectively. Table 4.3 only shows the states that represent 5 percent or more of the total country area. Using this criterion, we find that only six states match it. The Federal District only represents 0.2 percent of the total country area (SALA, 1998). However, the Federal District holds 8 percent of the total country population and more than any other city in the country as is shown in Table 4.4.

Table 4.3
Venezuela's Major Civil Divisions

Divisions	**Area (km²)**	**% Total Area**
Total	**912,050**	**100.0**
States		
Apure	76,500	8.4
Bolívar	238,000	26.1
Guárico	64,986	7.1
Zulia	63,100	6.9
Potosi	118,218	13.0
Amazonas	175,750	19.3
Others	175,496	19.2

Source: SALA, 1998,Vol.34, Table 120

Table 4.4
Population of Venezuela's Main Cities

City/States	Population
Caracas, Federal District	1,964,846
Maracaibo, Zulia	1,207,513
Valencia, Carabobo	1,034,033
Barquisimeto, Lara	692,599
Cuidad Guayana	523,578
Maracay, Araqua	384,782
Petare	379,338
Cuidad Bolívar, Bolívar	2,531

Source: SALA, 1998, Vol.34, Table 527.

Table 4.4 only shows cities with population greater than 150,000 inhabitants. It is important to note that Caracas as a metropolitan area holds about four million people (Exporters 1997). The population is concentrated in the capital, which is the industrial, financial, and political center of the country, and in cities where petroleum activities are located, and/or near the main ports.

According to its physical geography, Venezuela can be divided into four main regions from north to south (see map of Venezuela's regions, Appendix A-6): the Maracaibo Lowlands and the Caribbean Coast, the Andes, the Llanos of the Orinoco Basin and the Guiana Plateau (Butland 1960; Blouet 1997). A brief description of each region outlining its own geographical characteristics and endowment of natural resources follows.

Maracaibo Lowlands and the Caribbean Coast

The Maracaibo Lowlands settle in the depression formed by the Cordillera Oriental to the west, and by the Cordillera de Mérida to the south and east (see map of the Western regions of Venezuela, Appendix A-7) (Butland 1960, Blouet 1997). Forest, ranging from equatorial selva in the south to dry scrub at the seaward margins of the basin, covers most of the lowlands south of the Maracaibo Lake and the edges of the mountains (Butland 1960, Blouet 1997).

To the north, the climate, contrary to the Caribbean islands, is dry. Indeed, "along much of the Colombian and Venezuelan Caribbean coast, conditions are dry." (Blouet, 1997, 332)

The hollowed Lake Maracaibo, located here, occupies 7,200 square miles and is Venezuela's most productive oilfield (see map of Western Venezuela, Appendix A-7) (Butland 1960, Blouet 1997). More than ⅔ of Venezuela's oil production comes from the Basin (Blouet, 1997; Butland, 1960). Much of the oil extracted in this region is transported by pipelines, and river and ocean vessels to the refineries and terminals located on the Gulf of Venezuela (Butland, 1960; Blouet, 1997).

To south of the Lake, cocoa, sugar, and coconuts and other subsistence staples are cultivated. Little coffee is grown on the slopes of the Cordillera de Mérida (Blouet, 1997; Butland 1960), whereas traditionally Maracaibo's port handles almost all the exports of coffee coming from the Andes' region. Maracaibo's port is also used for cocaine traffic (Blouet, 1997). In sum, this region is not important for its agriculture but for its oil production, which

has made Maracaibo the second largest manufacturing and service center of Venezuela (Blouet, 1997; Butland 1960).

The Venezuelan Andes

The Venezuelan Andes is a 750-mile mountain range, coming from north of Bogotá, Colombia, running "...northeastward and then eastward, across Venezuela to the Paria Peninsula, and out into the Caribbean Sea toward Trinidad." (Blouet, 1997, 333) It comprises three major massifs: the Cordillera de Mérida, the Central Highlands, and the Sierra de Cumaná (see map of Venezuela's regions, Appendix A-6) (Butland, 1960; Blouet, 1997). The altitude increases from east to west; the Sierra de Cumaná's peaks reach about 7,000 feet while the Cordillera de Mérida's reach more than 15,000 feet (Butland, 1960; Blouet, 1997). In the latter, coffee, corn, wheat, barley, and potatoes are cultivated at different altitudes (Blouet, 1997).

The Central Highlands, lying to the east of Barquisimeto, holds most of the population of the country due to economic activities and political power. Barquisimeto, the fourth largest city, located in the Sierra Mérida, is linked by road and railroads to Caracas (Butland, 1960; Blouet, 1997). In the broad Valencia depression, sugar, coffee, cotton, corn, rice, vegetables, and cattle are produced (Butland, 1960; Blouet, 1997). This region is linked by road and rail to Caracas and to the world by the Caribbean port of Puerto Cabello (Blouet, 1997). The city of Valencia, the third largest city of Venezuela (see Table 4.4), is one of the most important industrial, commercial, and administrative centers in the country (Blouet, 1997). Caracas, the capital, is located to the east of Valencia. It is a massive metropolitan

area that holds more than four million people, and remains the center of industry, commerce, banking and government offices (Blouet, 1997).

The Llanos of the Orinoco Basin

The Llanos of the Orinoco basin lies between the Venezuelan Andes and the Guiana massif and it covers about 100,000 square miles (see map of Venezuela's regions, Appendix A-6) (Butland 1960). The Llanos region constantly experiences droughts that curtail grazing and floods that sweep away pasture. These climatic conditions have required Venezuela to import large amounts of agricultural products (Butland, 1960; Blouet, 1997).

The Orinoco River, which runs throughout this region, originates in the Andes from many tributaries running north and west and from the Guiana Highland from the south (Butland, 1960; Blouet, 1997). The river is not a good navigation route, as its water levels change dramatically between the dry and the rainy season (Blouet, 1997). Puerto Ayacucho, on the Colombian border, and 750 miles up the river, is the main inland port at the Orinoco (Butland, 1960; Blouet, 1997). There are no regular, direct river boat services to the port from other downstream ports such as Cuidad Bolívar and Cuidad Guayana (Butland,1960; Blouet, 1997).

Until the mid 1940s, the only economic activities in this low density population region were pastoral activities. However, due to oil, natural gas, high quality iron-ore and bauxite deposits, the region is today a complex industrial center with cities like Cuidad Guayana holding more that half a million people (see Table 4.4) (Blouet, 1997). Most of the oil is transported via pipelines to Puerto la Cruz, east of Barcelona (Butland, 1960; Blouet, 1997).

Guiana Highlands

The Guiana Highlands, located in the south-southeastern half of the country, occupy about 200,000 square miles of mountainous plateau (Butland, 1960; Blouet, 1997). It is the most isolated and unexploited region of the country. This is due to the many geographical features of the region such as its erosional steep-sided and difficult to cross valleys; the rapids and waterfalls of its rivers; the dense forest that covers most of the area and its poor thin soil (Blouet, 1997). Moreover, the region is isolated due to the lack of roads except for a road connecting Cuidad Guayana to Manaus, Brazil (Blouet, 1997). Currently, Venezuela has border disputes with Guyana. The economic resources of the region include bauxite, gold, high-grade iron ore, and manganese.

Summary

Because of its oil reserves and exploitation, Venezuela is the wealthiest country of the Andean group. In addition, the country has other important mineral resources such as iron and aluminum. On the other hand, Venezuela's high dependency on oil exports make its economy vulnerable to the fluctuating oil's market price. Venezuela is a member of OPEC, therefore it agrees to curb its production when oil prices fall. High fluctuations in oil prices have caused periods of economic boom and periods of severe recession in the country. The country has not industrialized as other Andean nations have done. Venezuela shares common problems with its Andean partners: few urban cities with high concentrations of population and industry; extremely poor rural areas; and a high level of government corruption, which is associated in part with the traffic of illegal products.

Like many Latin American countries, Venezuela has slowly adopted neoliberal reforms, and privatized some previously state owned companies, except for oil companies.

Colombia

Colombia is located in the northwestern part of the South American continent (see Physical Map of South America, in Appendix A-2). It has a coastline of 3,208 kilometers (Exporters, 2-308) with access to both the Pacific Ocean and the Caribbean Sea. Colombia covers an area of 1,141,748 square kilometers (see Table 4.5) and has borders with Ecuador and Peru to the southwest, Brazil to the southeast, Venezuela to the northeast, and with Panama to the northwest.

Colombia's major civil divisions and population distribution are shown in Tables 4.5 and 4.6 respectively. Accordingly, the population of principal cities in Colombia is shown in Table 4.6, which only shows cities with populations greater than 500,000 people.

Table 4.5
Colombia's Major Civil Divisions

Divisions	**Area (km^2)**	**% Total Area**
Total	**1,141,748**	**100.0**
Departments		
Amazonas	109,665	9.6
Antioquía	63,612	5.6
Caquetá	88,965	7.8
Guainía	72,238	6.3
Meta	85,635	7.5
Vichada	100,242	8.8
Others	621,391	54.4

Source: SALA, 1998,Vol. 34, Table105

Table 4.6
Population of Colombia's Main Cities

City/Department	Population
Santa Fé de Bogotá, D.E.	4,176,769
Medellin, Antioquía	1,452,392
Cali, Valle de Cauca	1,369,331
Barranquilla, Atlántico	917,486
Cartagena, Bolívar	513,986

Source: SALA, 1998, Vol.34, Table 527.

As can be seen in Table 4.6, the population is concentrated in Bogotá, the capital of Colombia, and in cities that are centers of production or ports, such as Barranquilla and Cartagena on the Caribbean Sea, and Cali on the Pacific coast. These five cities hold 8.5 million people that represent 23.5 percent of the total Colombian population.

Geographically speaking, Colombia is a very difficult country to analyze due to the diversity of its climate and to the Andes ranges that cover most of its territory. Colombia is divided by the Andes into three main longitudinal ranges: the Cordillera Oriental, the Cordillera Central, and the Cordillera Occidental, which form seven different regions (see map of Colombia's regions, Appendix A-10) (Butland, 1960; Blouet, 1997).

The Cauca river flows between the Occidental and the Central cordillera and the Magdalena river between the Central and Oriental cordilleras (Butland, 1960; Blouet, 1997). These ranges of mountains constitute most of the western half of Colombia and it is here that most of the population live (Butland, 1960; Blouet, 1997). The other half of the country, the eastern part, consists of the occidental continuations of the Amazon and Orinoco steppes and

the Guiana plateau (Butland, 1960; Blouet, 1997). A brief description of Colombia's main regions follows.

The Cordillera Oriental

This range of mountains continues as the *Sierra de Perija* and Mérida, surrounding the Maracaibo Lowlands of Venezuela (see map of Colombia's regions, Appendix A-10) (Butland 1960, 161). It increases its width as approaches Venezuela's borders, where it reaches 150 miles in width (Butland, 162). Due to is mild climate, considered *"tierra fría" (cold land)* and large extensions of land, great population concentrations are found in this region (Butland, 1960; Blouet, 1997). Bogotá, the capital of Colombia, is located here with more than four million inhabitants (see Table 4.6). The main agricultural crops this region produces are maize, wheat, barley, and potatoes. Harvests occur twice a year, due to its seasonal cycles (Butland, 1960).

In lower elevations and more temperate lands, coffee, cocoa and tobacco is cultivated (Butland, 1960). To trade these products, there are good roads between the Bogotá region and the Magdalena valley (Butland, 1960; Blouet, 1997).

In addition, several industries are located in the region. The world's largest deposits of emeralds are found to the southwest of Chiquinquirá ((Butland, 1960; Blouet, 1997). Minerals such as iron ore, limestone and coal are found here, which is why many industries are located here (Butland, 1960; Blouet, 1997). Due to the discovery of oil in the northeastern part the Cordillera, this part of the region has been linked to the Caribbean through roads and pipelines (Butland, 1960; Blouet, 1997).

The Magdalena Valley

The Magdalena Valley, located between the eastern and central Cordilleras, constitutes a great transport route for products coming from hinterland cities along the Magdalena River (see map of Colombia's regions, Appendix A-10) (Butland, 1960). There are ten main river ports going upstream from the Cauca to the Magdalena confluence, along with roads and railroads that join interior cities with the central valley (see map of Colombia's Roads and Railways, Appendix A-20) (Butland, 1960). These ports "serve as refueling points and entrepots for distribution of goods arriving by river for the Cordilleran settlements, and as collecting centers for exports of their products." (Butland, 1960, 168)

Colombia's greatest oilfield is located in this zone, in Barrancabermeja. A "pipeline links this oilfield with Cartagena, following the Cartagena main stream throughout most of this distance." (Butland, 1960, 168) Coffee and cocoa are cultivated in and around Neiva and Girardot (see map of Colombia's coffee fields, Appendix A-11). From Neiva to Girardot, however, the Magdalena river increases its gradient, and only shallow-draught boats may navigate it, but only during some months of the year, making it a less important transport mode (Butland, 1960).

Central Cordillera and the Cauca-Patia Valley

Here, the Colombian Andes reaches its highest elevation, with some volcanos having permanent snow-peaks, and elevations of more than 18,000 feet (Butland, 1960). The lower altitude in this region averages about 8,600 feet (Butland, 1960). It has always been tremendously difficult to overcome some of the geographical barriers of this zone. Butland

(1960) states that "from the frontier with Ecuador northward to Sonsón it is a high narrow chain, with its peaks well above the line of permanent snow (15,000-15,500 feet), its slopes covered with ash and lava from several clusters of active volcanoes, and none of the passes through the range falling below 9,800 feet." (Butland, 1960,170). The narrow valley of this subregion, that in no way resembles the Magdalena Valley, runs along the western border of the Central Cordillera with the Cauca and the Patía running through the valley (Butland, 1960).

The population is settled in the south, in the Cordillera, in the Patía valley, and in the northern part. Apart from the natives, people have come to this region from the extension of Antioquía and migrations from Medellin (Butland, 1960). People have migrated to this region attracted mainly by the abundant minerals of the Cordillera (Butland, 1960). Back in the 1880s, immigrants from Antiquía introduced coffee into the area, and today it is one of the main coffee producers of the country (Butland, 1960). Indeed, the regions of Antiquía and Manizales, which are located south of Medellin, produce more than half of the total coffee of the country (Butland, 1960; Blouet, 1997).

The most important and industrialized city in this area is Medellin, which grew up as a result of population extension from Antiquía (Butland, 1960). Medellin is linked by road, rail, and air to Bogotá, and also to both oceans: the Atlantic and the Pacific (Butland, 1960). At present, Medellin is the second largest city of Colombia in terms of population (see Table 4.6).

Due to the high elevations, only subsistence products such as maize, potatoes, and wheat are harvested here. In the Cauca Valley, sugar cane, cocoa, and tobacco are cultivated

(Butland, 172). The Cauca Valley is not as good a transport artery as the Magdalena Valley, but the cities of Medellin and Manizales are well connected to the rest of the country (Butland, 1960; Blouet, 1997). Besides the longitudinal road following the Cauca most of its course, interior Cali, now the third largest city in the country (see Table 4.6) is linked to Buenaventura by rail and road (see map of Colombia's Roads and Railways, in Appendix A-20).

The Occidental Cordillera or Western Colombia

This range of mountains runs from the south of the Patía River to its northern sierras which extend onto the Caribbean plains (see map of Colombia's regions, Appendix A-10). Passes at 5,300 feet are lower than those in the Central Cordillera, and the foothills at the border with Panamá have an elevation of only 460 feet (Butland, 1960). Few big cities except Buenaventura, the main port in the south, and Bahía Solano in the north are economically important here. Gold centers are located in Buriticá in the northeast, and in the southwest above Barbacoas and Timbiqui (Butland, 1960). Coffee, with abundant plantations in the area (see map of Colombia's coffee cultivation areas, Appendix A-11), constitutes the main agriculture product of the area.

The Caribbean Lowlands

This region with its many tributary rivers to the Magdalena, is covered by swamps, marshes, and eternal lakes called *ciénagas* (Butland, 1960). The Caribbean Colombian coast that ends in the east at the Guajira Peninsula (see map of Colombia's regions, Appendix A-10)

is an "...area rich in coal, natural gas, and airstrips for the drug trade." (Blouet, 1997, 329). The most populated cities in the region are Barranquilla (917,486) and Cartagena (513,986), both important Colombian ports located in the Caribbean. These ports handle minerals and products cultivated here including cotton, sugar, bananas, and other vegetables (Butland, 1960; Blouet, 1997).

Sierra Nevada de Santa Marta

The extreme northeast of Colombia, formed by two remnants of the old Antillean continent, rises 19,000 feet in a triangular shaped massif that has little to do with the Andes (see map of Colombia's regions, Appendix A-10)(Butland, 176). The valleys around a number of rivers produce cocoa, sugar cane, and bananas, for which this region is well known.

The Orinoco-Amazon Plains

This area, also called *"Llanos Orientales"*, is the most vast and isolated area of all Colombia (see map of Colombia's regions, Appendix A-10). It covers about 60 percent of the total country area, and holds less than 5 percent of the total Colombian population (SALA, 1998). The region is drained from west-to-east by hundreds of small tributaries to the Orinoco and the Amazon Rivers (see map of Colombia's regions, Appendix A-10) (Blouet, 1997). These plains may be divided into the high plains and the lower and drier plains. The low plains have been historically used for raising cattle and the high ones for

agriculture. (Butland, 1960; Blouet, 1997). The region has taken a new economic role due to recent discoveries and exploitation of petroleum (Blouet, 1997).

Summary

Colombia is the second largest world producer of coffee, after Brazil, and the most important producer worldwide of mild coffees. The United States is the main buyer and consumer of Colombian coffee. Petroleum is the second most important legal export. Illegal exports[6] of products such as cocaine, marihuana and poppy exceed in value the total exports of coffee, albeit official figures are not available (Blouet, 1997). The country will shortly need to discover new oil deposits to avoid becoming a net importer of oil. The country also exploits other mineral resources such as coal, gold, iron, emeralds, natural gas, nonferrous ores, and semiprecious stones. Agriculture is very productive and based on small farms. Agricultural exports comprise more than half of the total value of exports (excluding illegal and non-reported exports) (Blouet, 1997). Textiles and apparel are well developed sectors. The country has also initiated promotion of non-traditional exports such as flowers, fruit, and vegetables. As can be seen, Colombia has a more diversified economy than, for example, Venezuela's.

[6] The economies of the majority of the Andean countries have become dependant on the traffic of illegal narcotics such as cocaine and marihuana. Producer countries such as Bolivia and Peru and refining countries such as Colombia get more revenue from these drugs than from traditional legal exports (Blouet, 1997).

Ecuador

Ecuador is located in the northwestern part of the South American continent, between Colombia and Peru, facing the Pacific Ocean and straddling the Equator (see Physical Map of South America, Appendix A-2). It covers an area of only 283,561 square kilometers (see Table 4.7), and holds a total population of 11.5 million inhabitants (see Table 4.2). As a result, Ecuador is the most densely populated country of this region. Ecuador's major civil divisions are shown in the following Table 4.7 while Ecuador's most populated cities are shown in Table 4.8.

Table 4.8 only shows Ecuador's main cities with a population greater than 150,000 people. Ecuador's population, like Colombia's, concentrates in the capital, Quito, and in the main production centers and ports. Guayaquil and Quito together represent 23 percent of the country's total population (see Table 4.8). There are no other cities with a total population greater than 150,000 people in the whole country. Ecuador, the smallest of all the countries of the Andean Group, is the most densely populated of the group.

Ecuador has three main distinctive regions: a coastal zone, the Andean slopes (sierra), and an eastern zone consisting of tropical lowlands (see map of Ecuador's regions, Appendix A-12). The majority of the country's population live in the Andes' high plateau, due to its benign weather (permanent spring), as opposed to the tropical climate of its coasts (Butland, 1960; Blouet, 1997).

Table 4.7
Ecuador's Major Civil Divisions

Divisions	Area (km^2)	% Total Area
Total	**283,561**	**100.0**
Provinces		
Esmeraldas	15,239	5.4
Guayas	20,502	7.2
Manabí	18,879	6.7
Morona-Santiago	25,690	9.1
Napo	33,931	12.0
Pastaza	29,773	10.5
Sucumbiós	18,328	6.5
Others	121,219	42.7

Source: SALA, 1998, Table109.

Table 4.8
Population of Ecuador's Main Cities

City/Province	Population
Guayaquil, Guayas	1,508,444
Quito, Pichincha	1,100,847
Cuenca, Azuay	194,981

Source: SALA, 1998, Vol.34, Table 527.

The Coastal Zone

The costal plains, which are crossed by two rivers, the Esmeraldas and the Guayas, consists of plains, hills, and the Andean foothills (Butland, 1960). The climate here varies greatly. To the north, the climate is equatorial and a tropical forest covers almost the whole region. Southward and close to Peru's borders, the climate is dry and arid. The desert that starts at the Gulf of Guayaquil runs along Peru's coast and ends in Chile, north of Valparaíso (see the physiographic regions of Latin America, Appendix A-3).

In the humid north and in the foothills of the Andes, products such as rice, sugar cane, bananas, cocoa, and coffee are cultivated (Butland, 1960; Blouet, 1997). In its warm coastal waters tuna, white fish and shrimp are fished. Mariculture techniques are applied to produce shrimp all year round at the mouth of the Guayas river (Blouet, 1997). Currently, shrimp exports, mainly frozen and shipped to United States, are the second largest value export for the country (Blouet, 1997).

In Guayaquil, the main city in this region, about 1.5 million people live, in an area of only 20,502 square kilometers (see Tables 4.7 and 4.8 respectively). The main economic activities in this city include food and raw-material processing, and textiles (Blouet, 1997).

The Andean Slopes or Sierra

The Andes run north to south in a double chain called Cordillera Oriental and Cordillera Occidental. These mountain ranges form a plateau, with heights ranging from 7,000 to 10,000 feet (Butland, 1997). Several volcanoes are located in this region, which have affected population allocation and transportation routes (Butland, 1960). Within the

volcanic area, there are three northern intermountain basins draining west to the Pacific and three draining south to the Amazon (Butland, 1960; Blouet, 1997). These are the settings of major population concentrations (Butland, 1960; Blouet, 1997). Major agriculture products for the sierra are maize, barley, wheat, corn, oat, potatoes, beans, and quinoa (Blouet, 1997). Also, cattle and horses are pastured here (Butland, 1960).

Quito, the capital, is located here. The cities of the region are linked by several roads and railroads that run through these basins (see map of Regional Transportation Network, Appendix A-22) (Blouet, 1997).

The Eastern Zone

The Ecuadorian Cordillera, which lies closer to the Equator and receives a lot of rainfall, is an enormous communication barrier. It is an isolated territory and the government has done little to improve communication with the rest to the country. Moreover, Ecuador lost most of its eastern territory to Peru in 1941 (Butland, 148), and recent border disputes have caused war between the two.

Summary

Ecuador is a small, densely populated country with an economy that is highly dependant on the fluctuating prices of its exports of basic commodities. The country does not have large manufacturing sectors, and the population lacks purchasing power. Historically, the agriculture patterns of the Coastal area have changed to adjust to world prices, resulting in a switch from cocoa to rice to bananas. However, recent development of

oil resources is placing Ecuador among the top of Latin America's oil exporters. Indeed, more than 2 million hectares in Ecuador's Amazon forest have been under exploration and drilling for oil (BLA, 1994c). Ecuador presented a stable political picture until recent government problems have set the whole political systems into jeopardy. Poverty and other social problems situate Ecuador among the poorest countries of the continent.

Summary of the Northern Region

The countries of Venezuela, Colombia and Ecuador are located in the northern part of the continent. The three are oil producers and net exporters of crude oil and oil products. In addition, they produce many similar agricultural products. Therefore, they compete exporting the same commodities to the world. They begin to differentiate in mineral extraction and other commodities where a particular country has competitive advantage, such as Colombia's coffee, Venezuela's oil, and Ecuador's bananas. Of the three, Ecuador is the most politically stable, while Colombia faces many problems with guerrilla, that attack production facilities, and with the narco-cartels. Venezuela's economy has not yet recovered from the fluctuation of oil prices and its internal political instability.

Table 4.9 depicts export concentrations for Colombia and Venezuela for 1990 and 1991 respectively. As shown in Table 4.9, Venezuela's economy depends on oil exports, while Colombia shows more diversification of exports. However, both are exporting basic commodities with prices that are highly sensitive to world market conditions and speculations.

Table 4.9
Export Concentration for
Columbia and Venezuela
The Five Main Export Products

Year	Country	Products	%
1990	**Venezuela**	Crude Oil	50.8
		Oil Derivates	29.7
		Aluminum & alum. products	4.2
		Aluminum Products	0.8
		Iron and Steel Sheets	0.7
		Rest	15.2
			100
1991	**Colombia**	Coffee	18.4
		Crude Oil	15.7
		Coal	8.6
		Bananas	5.6
		Flowers	3.9
		Apparel	3.4
		Rest	44.4
			100

Source: SALA, 1998, Table 505.

Southern Region: Geography, Demography and Resources

The second region of the Andean Group is located in the southern part of the continent, and is comprised of Peru and Bolivia (see Physical Map of the South America, Appendix A-2). These countries occupy an area of 2,342,865 square kilometers with a total population of almost 31 million people (see Table 4.10).

Table 4.10
Andean Group: Area and Population, 1995

Country	Area (Km^2)	Population (Thousand of inhabitants)	% of Total Regional Population	Population Density (Inhabitants per Km^2)
Peru	1,244,284	23,532	76	19
Bolivia	1,098,581	7,414	24	7
Total Southern Region	**2,342,865**	**30,946**	**100**	**13**

Source: SALA 1998, Vol. 34 Table 100.

Of the countries of this subregion, Peru is the biggest in terms of size and population. It is also more densely populated than Bolivia. Peru ranks fifth among the twenty Latin American countries in terms of population (SALA 1998).

The following sections are divided by country and include data and information to help in the understanding of the present situation of each country of this subregion in terms of economy and geography.

Peru

Peru is located on the Pacific Coast of South America. It shares borders to the northwest with Ecuador, to the northeast with Colombia and Brazil, to the southeast with Bolivia, and to the south with Chile (see Physical Map of South America, Appendix A-2). It occupies an area of 1,244,284 square kilometers (see Table 4.10). Peru ranks fourth in size, after Brazil, Argentina, and Mexico, among all Latin American countries (SALA, 1998).

Its size is comparable to the size of South Africa and it has 2,400 kilometers of the most arid shoreline of the world (Butland, 1960).

Peru's major civil divisions are shown in the Table 4.11. Only departments that represent more than 5 percent of the total area are shown in the table. Loreto is the biggest department of all with a total area of 368,852 square kilometers, followed by Ucayali with an area of 102411 square kilometers. The department of Lima, where the capital is located, only occupies an area of 34,802 square kilometers or 2.7 percent (SALA, 1998). However, the city of Lima has more than six million people, about a 30 percent of the total country's population (1991 estimates) (see Table 4.12).

Table 4.12 shows the main cities of Peru according to population concentration. Only cities with populations greater than 250,000 inhabitants are shown in the table. As in all Latin American countries, Peruvians concentrates in the capital of the republic. Other main cities are Arequipa, Trujillo and Callo each with more than half a million people. Of all Latin American countries, Peru ranks fifth in terms of its population and second among the Andean nations, only surpassed by Colombia (SALA, 1998).

Geographically speaking, Peru has three distinctive areas: a western coastal plains, the sierra or the Andes, and the Amazon Basin (see map of Peru's regions, Appendix A-13). A brief description including main economic features of each area follows.

The Western Coastal Plains

The continuation of Ecuador's desert runs throughout the Peruvian coast. However, this region is watered by about thirty rivers that run from the Andes to the Pacific (see map

Table 4.11
Peru's Major Civil Divisions

Divisions	Area (km2)	% Total Area
Total	**1,244,284**	**100.0**
Departments		
Arequipa	63,345	5.1
Cuzco	71,892	5.8
Loreto	368,852	29.6
Madre de Dios	85,183	6.8
Puno	71,999	5.8
Ucayali	102,411	8.2
Others	480,602	38.6

Source: SALA, 1998, Vol. 34, Table 118.

Table 4.12
Population of Peru's Main Cities

City/Department	Population
Lima, Lima	6,414,500
Arequipa, Arequipa	624,500
Trujillo, La Libertad	521,000
Callo, Prov. Constitucional Callao	515,200
Chiclayo, Lambayeque	448,400
Puira, Puira	306,500
Chimbote, Ancasti	314,700
Cuzco, Cuzco	302,700
Iquitos, Loreto	293,100

Source: SALA, 1998, Vol.34, Table 527.

of Peru's regions, Appendix A-13). Thanks to this water some oases were created and products such as cotton and sugar are cultivated in the region (Butland, 1997).

There are some important differences from the north to the south in this region. In the northern part, the finest cotton is cultivated, besides some other crops such as rice (Butland, 1960). In addition, on the border with Ecuador important oil reserves were discovered, which provide enough oil for the country and for exports (Butland, 1960; Blouet, 1997).

In the Central part, sugar, cotton, vegetables and fruits, and cattle are produced to provide Lima and other cities nearby with enough food (Butland, 1960). Lima and the port of Callao are located here, with the greatest population concentration of the country.

Toward the south, the plain narrows, and vineyards become more important. South of Pisco, the coastal plains disappear (see map of Peru's regions, Appendix A-13)

Fishing and fishing industries are located in this region with fish meal an important value export for the country's economy. However, this industry is severely affected by changes in the ocean currents, such the "El Niño" current.

The Sierra

The Sierra, home of the Inca and Pre-Inca civilizations, occupies the center of the country (see map of Peru's regions, Appendix A-13). The plateaus here reach 10,000 to 14,000 feet high (Butland, 1960). The same forty rivers that reach the coastal zone runs here with much more violence due to the mountain gradients, with few exceptions, causing severe erosion (Butland, 1960). Some tropical forest can be found along the river bands.

Survival agriculture and mining are the main economic activities developed in this region. Several products are cultivated here depending on the altitude. Between these mountains, in the Haullaga Valley, is the major coca-growing area of the whole continent (Blouet, 1997). As in other Andean nations, and part of Brazil, coca cultivation is as ancient as the Indians of the region, and they get more from coca than from any other crop (Blouet, 1997).

Many minerals such as copper, lead, zinc, silver and others are extracted from this region. Cerro de Pasco is the mineral center of Peru (Butland, 1960; Blouet, 1997). Cuzco (302,700) and Arequipa (624,500) located in the southern part of the sierra, are the most commercial and industrial cities of the region. Arequipa is the place where products from the high mountains are exchanged for products coming from the coastal strip (Blouet, 1997). Rivers such as Ucayali, Haullaga, Marañon, and Napo facilitate the transport of products to the lowland (Blouet, 1997).

The Amazon Basin

The Amazon Basin is the third largest region of Peru. It occupies more than half of the Peruvian territory. Early settlements located in Moyabamba, in the department of Loreto, due to sugar and tobacco cultivation, but recent rubber searches move people toward Iquitos, also in Loreto , presently with nearly 300,000 inhabitants (Blouet, 1997).

Of all the Andean nations, only Peru's government has made early efforts to utilize its Amazon basin (Butland, 1960). As we can appreciate in a map of transverse and longitudinal road systems of Peru (see Appendix A-21), in the early sixties, Peru constructed

and proposed new roads to link most of the cities of this region with the cities of the other regions of the country.

Summary

Peru ranks fourth in size after Brazil, Argentina and Mexico. Peru has a more diversified economy than the rest of the Andean nations. Its products run from minerals, oil, agriculture, to basic manufactured products. Some of Peru main manufactured products include: textiles, plastics, brewing, cement making, chemicals, food processing and oil refining (Blouet, 1997).

Peru is one of the Andean nations with high political instability and severe out of control rebel movements, such as the Shining Path. Fujimore's government has fought the group and some of its leaders are now in jail.

With Fujimore in charge of the government, the country is under neoliberal policies meaning tight economic adjustment for government expenditures, privatization of many state companies (especially in mining, electricity and telecommunication), and an export-oriented model for getting foreign exchange. However, a huge informal sector exists in the country, making government control difficult. This is due to high rural migration, which has made Peruvian urban cities overcrowded and with a misery belt around them.

Bolivia

Bolivia is located in the southeastern part of the Andean region (see Physical Map of South America, Appendix A-2). Bolivia shares borders with Chile to the southwest,

Argentina to the south, Paraguay to the southeast, Brazil to the east, and Peru to the northwest. It occupies an area of 1,098,581 square kilometers (see Table 4.13), ranking third among the other countries in the group in area. It is the only Andean country with no coast.

Bolivia has nine departments, of which only those with an area greater than 3 percent of the total country area are shown in the Table 4.13. The distribution of Bolovia's population is shown in Table 4.14. Only cities with more than 200,000 inhabitants are depicted in the Table.

Table 4.13
Bolivia's Major Civil Divisions

Divisions	**Area (km2)**	**% Total Area**
Total	**1,098,581**	**100.0**
Departments		
Beni	213,564	19.4
Cochabamba	55,631	5.1
La Paz	133,985	12.2
Pando	63,827	5.8
Potosi	118,218	10.8
Santa Cruz	370,621	33.7
Others	142,735	13.0

Source: SALA, 1998, Vol. 34, Table 102.

Table 4.14
Bolivia's Population of Main Cities

City/Departments	**Population**
La Paz, La Paz	784,976
Santa Cruz, Santa Cruz	767,260
Cochabamba, Cochabamba	448,189
El Alto	446,189
Oruro, Oruro	201,831

Source: SALA, 1998, Vol.34, Table 527.

Bolivia's population is concentrated in two cities: La Paz and Santa Cruz. This concentration is due to inheritance from colonial settlements and to the geography and allocation of natural resources of the country.

Geographically, two main regions are identified in Bolivia: a highland area and the eastern lowlands (see map of Bolivia's regions, Appendix A-15). A description of each region follows.

The Highland Zone

This consist of two mountain ranges, the Western and the Eastern Cordillera. Between the two, a high plateau, known as the *Altiplano*, is located to the east of the Western Cordillera.

The Western Cordillera is a great massif along the border with Chile. It has peaks more than 13,000 feet high and many active volcanoes (Butland, 1960). The northern part is covered by scrub vegetation and the southern part by barren rocks (Butland, 1960). Subsistence agriculture and pastoralism have been the main economic activities (Butland, 1960).

The Altiplano is the largest inland basin of the continent (see Physical Map of South America, Appendix A-2). Here, Lake Titicaca, the second largest natural lake in the continent, after Maracaibo, is located. It occupies an area of 3,200 square miles, with a depth of 922 feet, a length of 122 miles and an elevation of 12,500 feet (SALA, 1998). Its size is comparable to the size of Puerto Rico (Butland, 1960). La Paz, capital of Bolivia, is located to the south of the lake (see Physical Map of South America, Appendix A-2). Major

population settlements are found here in cities such as Oruro (201,831) and Poopo (SALA, 1998).

The Eastern Cordillera is the most impressive of all the Andes' ranges. It has permanent snow-capped peaks high above 20,000 feet such as the Illampu (SALA, 1998). This is an isolated region, especially its eastern section, bordering Brazil, which it is covered by jungle, rapids, and no means of transportation (see map of Bolivia's Regions, Appendix A-15) (Butland, 1960). In the western slopes of this cordillera the main mineral resource is tin, which is carried out by railroad to Oruro (see map of Bolivia's Regions, Appendix A-15). Unfortunately for the country's economy, the importance of tin has declined as plastic adoption has increased in canning (Blouet, 1998). Other mineral resources are lead, zinc, silver, bismuth, antimony, etc. Cochabamba (448,189), the third main city, (see Table 4.14) is located here and is the distributing center of the region (Exporters, 1997).

Regardless of its isolation, this region is very important for Bolivia's economy as many mineral resources are found here. Other important regional cities are: Sucre (144,994), and Potosí (123,327) (see map of Bolivia's Regions, Appendix A-15) (SALA, 1998).

The Eastern Lowlands

The eastern lowlands is an extensive area that covers a great part of Bolivia's territory. Its historic isolation has provided a good place for rebels (Blouet, 1997). The northern section is covered by equatorial forest with rubber as the main resource. The central part is drier, and more accessible. Crops such as sugar cane, rice and coffee have been cultivated since ancient times (Butland, 1960). The southern part, called "Chaco", semidesert

for nine months and a swamp for the other three, holds important oil fields (Blouet, 1997). Refining and exporting petroleum is a main activity in this region, among other economic activities such as ranching, growing coca, and subsistence agriculture (Butland, 1960; Blouet, 1997). There are few roads and railroads connecting this region with the other regions and countries, but some leads to Brazil, Argentina and Paraguay (see map of international roads, Appendix A-17 and map of international railroads, Appendix A-18).

Summary

Although Bolivia is the fifth largest country in South America in area, it is one of the less developed and poorest one. The country is rich in a variety of minerals such as lead, zinc, tin, silver, and others. However, as with many of its Andean partners, the economic dependency on minerals is its major weakness. Bolivia's difficult geography and population profile have slowed and sometimes hindered its economic development. Major economic reforms were introduced in the mid-1980s to fight inflation and to stabilize the economy.

For Bolivia's economy, the cultivation and marketing of coca leaves has become a serious issue. It is estimated that "the value of cocaine exports from Bolivia was twice that of all legal Bolivian exports in 1984 and 1987, and almost equal to that of all legal exports in 1989." (Bellone, 1996, 33)

Several programs, sponsored by the US and other international organizations, which aimed at replacing coca cultivation with other crops, have failed. Not only do the farmers get less money, but also major infrastructure changes are required to transport and preserve crops

other than dry coca leaves or cocaine paste (Bellone, 1996). Cocaine paste or dry coca leaves are non-perishable low weight cargoes.

Summary of the Southern Region

The countries of Bolivia and Peru are located in southwest South America. Bolivia, with no exit to oceans, shares with Peru the Altiplano and Lake Titicaca. In this region the Andes reaches its highest peaks, and a variety of climate and geographical barriers have maintained for centuries regions of Peru and Bolivia in complete isolation.

Both are rich in mineral resources but Peru has a more diversified economy. Indeed, Peru has a better developed and industrialized economy than its neighbor. Both countries have a high percentage of indigenous population with language and customs unchanged over time.

Moreover, Peruvian and Bolivian economies were badly affected by the 1980's debt crisis. To manage the crisis, both countries have embraced market oriented policies to revamp their economies. They have been successful in curbing the high inflation rates both countries experienced a decade ago.

In Peruvian and Bolivian eastern territory, major coca field are found. For both economies exports of some form of refined coca paste, which is shipped to Colombia for further refining, have provided more revenues for Bolivia and Peru than any other enterprise (Blouet, 1997; Bellone, 1996). Indeed, for Bolivia, according to "some economists, the size of illegal transactions is comparable to that of the official balance of trade." (Bellone, 1996, 38) It is believed that Bolivia receives US$0.8 to 1.5 billion a year and Peru about US$1.2

billion every year. (Bellone, 1996, 33). Peru also faces smugglering which is estimated in "US$0.5 -1 billion in goods are entering Peru without paying the sales tax." (Latin America Monitor, 1999, 8)

In addition, both countries, and especially Peru, have encountered severe social, political, economic, and guerrilla problems. Shining Path and other groups have constantly targeted government offices, industries, infrastructure and even civilians. These problems have damaged the countries' development and political stability in the long run.

II. Patterns of the Intra-Andean Trade

In order to understand the economic integration and the logistics and transportation problems of the Andean Group, the patterns of the intra-Andean trade should be analyzed. Historical tendencies, present levels, and the trade composition are all useful in predicting future trade flows. This analysis will also help to understand the logistics and transportation problems the countries of the Andean Community have faced in their efforts to integrate. This section was elaborated with data collected personally at the headquarters of the ECLAC in Santiago, Chile, and from data that ECLAC sent by file transfer via Internet. This part of the analysis is confined to country-to-country trade flows.

Intra-Andean Trade Patterns

Table 4.15 shows intra-Andean trade for the period 1970-1995.[7] Each entry of Table 4.15 is the sum of data of each country's corresponding f.o.b. exports to, and c.i.f. imports from, each of the other Andean countries. It is important to remember that Chile withdrew from the Group in 1976, therefore, its exports to and imports from are included only for the years 1970 and 1975 in all tables and graphs of this section. It also is important to mention that data are subject to some considerable errors. The exports to each of the other countries did not match at all the imports from the corresponding countries. The difference in value may be explained as the difference between f.o.b. and c.i.f. value, which was still present when analyzing the intra-Andean trade tonnage.

Two main conclusions can be drawn from Table 4.15. First, intra-Andean trade increased significantly from 1970 to 1975.[8] For all the countries but Colombia and Venezuela, their intra-Andean exports decreased from 1980-1985, and for all but Colombia their intra-Andean imports decreased for the same period. A significant improvement occurred in 1990 and beyond. Their trade revival is due to the bilateral agreements signed during the early Nineties and to the revamping process of the Cartagena Agreement initiated in 1989.

Second, intra-Andean trade is relatively small compared to the participant's international trade. Total intra-Andean exports in 1970 amounted to only $173 million

[7] The author elaborated this table and most of the others in this section with data obtained from ECLAC for the years 1970-1995.

[8] Venezuela did not report its oil exports in years 1975 and 1980 due to the oil crisis.

Table 4.15: Intra-Andean Trade
(Thousands of US$)
(1970-1995)

Trade with other Andean Countries	1970	1975	1980	1985	1990	1995
Bolivia						
Exports	6,067	25,708	42,545	16,853	59,950	221,757
Imports	6,336	37,894	29,838	27,544		111,034
Chile						
Exports	21,490	106,433				
Imports	45,318	204,087				
Colombia						
Exports	67,495	189,884	387,444	217,975	372,757	1,977,252
Imports	39,673	88,150	378,493	433,447	467,344	1,844,658
Ecuador						
Exports	14,587	209,285	147,247	73,764	188,515	358,992
Imports	29,369	68,382	139,195	140,219	118,585	704,917
Peru						
Exports	26,291	130,504	278,277	199,731	214,017	405,156
Imports	49,169	300,848	100,029	81,396	340,582	1,190,325
Venezuela						
Exports	37,589	25,560	72,646	174,396	429,305	1,886,628
Imports	20,722	125,447	305,519	161,050	210,337	1,015,991
Totals:						
Exports	**173,519**	**687,374**	**928,159**	**682,719**	**1,264,544**	**4,849,785**
Imports	**190,587**	**824,808**	**953,074**	**843,656**	**1,136,848**	**4,866,925**

compared to $6,443 million in international trade for the same year. Colombia and Venezuela supplied 60 percent of these intra-Andean exports. Of the total intra-Andean imports of $190 million, Chile, Colombia and Peru received 71 percent. Five years later, total intra-Andean exports amounted to $687 million, an increase of almost 4 times, considering that Venezuela was not reporting oil exports at all for that year. In 1980 total intra-Andean exports modestly increased to $928 million, and decreased to $682 million in 1985. By 1990, total intra-Andean exports grew by 85 percent to $1,264 million. Colombia and Venezuela supplied 64 percent of these exports. The total intra-Andean imports for the same period grew from $772 million to $1,176 million in 1990, an increase of 52 percent. Colombia and Peru received 69 percent of 1990 intra-imports.

As already mentioned, intra-Andean trade has grown significantly since 1990. Table 4.16 shows intra-Andean trade from 1990 to 1995 for each country of the Andean Community. As shown in Table 4.16 the intra-Andean exports grew from $1,264 million in 1990 to $4,850 million in 1995, with an average annual growth of 17.9 percent. Colombia and Venezuela continued to supply more than 50 percent of total intra-Andean exports every year. Intra-Andean imports followed similar patterns reaching a total of $4,867 million in 1995 from just $1,176 million in 1990, which means an average annual growth of an 18.6 percent.[9] Colombia and Peru received more than 50 percent of the intra-Andean imports every year.

[9] The average annual growth is calculated as the difference between the value of the last year minus the value of first year divided by the average of the sum of both values multiplied by 100/(n+1) where n is equal to the number of years in the period.

Table 4.16: Intra-Andean Trade
(1990-1995)[10]
(Thousands of US$)

Trade with other Andean Countries	1990	1991	1992	1993	1994	1995
Bolivia						
Exports	59,950	89,715	99,361	124,880	202,939	221,757
Imports		33,269	42,499	77,453	102,923	111,034
Colombia						
Exports	372,757	778,410	995,492	1,169,189	1,146,555	1,977,252
Imports	467,344	516,695	671,551	1,269,791	1,560,598	1,844,658
Ecuador						
Exports	188,515	203,706	175,954	282,912	393,263	358,992
Imports	118,585	172,280	173,642	181,366	510,710	704,917
Peru						
Exports	214,017	252,572	273,136	269,099	322,106	405,155
Imports	340,582	468,327	534,405	522,133	644,049	1,190,324
Venezuela						
Exports	429,305	443,890	665,840	1,045,422	1,420,291	1,886,628
Imports	213,227	389,228	605,870	561,547	489,854	1,015,990
Totals:						
Exports	**1,264,544**	**1,768,293**	**2,209,783**	**2,891,502**	**3,485,154**	**4,849,784**
Imports	**1,139,738**	**1,579,799**	**2,027,967**	**2,612,290**	**3,308,134**	**4,866,923**

Intra-Andean trade has grown significantly due mainly to the many changes in trade policies the countries of the group have put in place since the early Nineties. The improvement in trade is also the result of moving their economies toward free market and of lowering and/or eliminating trade barriers among them. Due to these changes, their trade with the rest of the world has also increased considerably.

Table 4.17 shows the Intra-Andean Trade and the trade with the rest of the world. As shown in Table 4.17, the percent of Andean trade is fairly small compared with trade with the rest of the world.

[10] Table prepared by author with data received from ECLAC; Exports: f.o.b.; Imports: c.i.f.; Chile excluded as Andean since 1980; Values are in current-year dollars.

Table 4.17: Intra-Andean and World Trade
(Thousands of US$)
(1970-1990)[11]

Trade: Andean and With the World	1970 Andean	1970 World	% Andean	1975 Andean	1975 World	% Andean	1980 Andean	1980 World	% Andean
Bolivia									
Exports	6,067	223,107	2.7	25,708	504,393	5.1	42,545	951,174	4.5
Imports	6,336	152,513	4.2	37,894	536,318	7.1	29,838	600,274	5.0
Chile									
Exports	21,490	1,212,055	1.8	106,433	1,589,172	6.7			
Imports	45,318	884,583	5.1	204,087	1,323,414	15.4			
Colombia									
Exports	67,495	668,162	10.1	189,884	1,275,302	14.9	387,444	3,488,957	11.1
Imports	39,673	796,496	5.0	88,150	1,402,030	6.3	378,493	4,191,148	9.0
Ecuador									
Exports	14,587	175,342	8.3	209,285	764,605	27.4	147,247	2,113,194	7.0
Imports	29,369	243,564	12.1	68,382	917,934	7.4	139,195	2,089,157	6.7
Peru									
Exports	26,291	1,021,559	2.6	130,504	1,184,092	11.0	278,277	3,076,960	9.0
Imports	49,169	572,591	8.6	300,848	2,078,736	14.5	100,029	2,533,927	3.9
Venezuela									
Exports	37,589	3,143,477	1.2	25,560	167,823	15.2	72,646	714,201	10.2
Imports	20,722	1,888,774	1.1	125,447	5,684,186	2.2	305,519	11,882,988	2.6
TOTALS									
Exports	**173,519**	**6,443,702**	**2.7**	**687,374**	**5,485,387**	**12.5**	**928,159**	**10,344,486**	**9.0**
Imports	**190,587**	**4,538,521**	**4.2**	**824,808**	**11,942,618**	**6.9**	**953,074**	**21,297,454**	**4.5**

[11] Table prepared by author with data received from ECLAC. Exports are f.o.b. while imports are c.i.f. Chile excluded as Andean since 1980. Values are current year dollars. Percent of Andean was calculated as a percentage over the total World Trade.

Table 4.17
(Continued)

Trade: Andean and With the World	Andean	1985 World	% Andean	Andean	1990 World	% Andean
Bolivia						
Exports	16,853	650267	2.6	59,950	829,234	7.2
Imports	27,544	639609	4.3			
Colombia						
Exports	217,975	3,312,977	6.6	372,757	6,228,246	6.0
Imports	433,447	3,644,572	11.9	467,344	5,022,245	9.3
Ecuador						
Exports	73,764	2,785,421	2.6	188,515	2,448,264	7.7
Imports	140,219	1,634,364	8.6	118,585	1,651,445	7.2
Peru						
Exports	199,731	2,643,981	7.6	214,017	3,041,949	7.0
Imports	81,396	1,637,940	5.0	340,582	2,204,915	15.4
Venezuela						
Exports	174,396	15,599,582	1.1	429,305	16,549,145	2.6
Imports	161,050	7,108,960	2.3	210,337	6,358,579	3.3
Totals						
Exports	**682,719**	**24,992,228**	**2.7**	**1,264,544**	**29,096,838**	**4.3**
Imports	**843,656**	**14,665,445**	**5.8**	**1,136,848**	**15,237,184**	**7.5**

However, intra-Andean trade has increased significantly since 1970. Intra-Andean exports in that year represented only 2.7 percent of world trade. Between 1970 and 1990 the intra-Andean exports experienced wide fluctuations that could only be explained by the oil crisis. During the oil crisis, Venezuela did not report its exports of crude oil and/or oil products.

From 1970 to 1975 intra-Andean exports grew from 2.7 percent to 13 percent of the total. By 1980, however, it decreased to 9.0 percent and further decreased to 2.7 percent in 1985. By 1990, it recovered slightly to reach 4.3 percent. Total intra-Andean imports presented more stable variations ranging from 4 percent in 1970 to 7 percent in 1975, decreasing to 4.5 percent in 1980. From 1980 on, intra-Andean imports grew consistently from 4.5 percent in 1980 to 5.8 percent in 1985, to 7.5 percent in 1990. This pattern might be explained by no having oil reporting involved in intra-Andean imports.

The patterns of the intra-Andean trade and trade with the rest of the world from 1990 to 1995 are depicted in Table. 4.18. Although the percent of intra-Andean exports had wide variations over the period, it increased from a small 2 percent to 14 percent in 1995. From 1990 to 1995, intra-Andean exports varied from 7 to 14 percent. Every country but Ecuador and Peru increased their intra-Andean exports over the period.

Regarding intra-Andean imports, the increase is also notable. Peru is the country that imports most from other Andean partners. The slow but steady increase in intra-Andean suggests that this tendency may continue in the future as many improvements have already been accomplished in trade and transportation in the region.

Table 4.18
Intra-Regional Trade and the World
(1990-1995)
(Thousands of US$)

Trade: Andean and with the World	1991 Andean	1991 World	1991 % Andean	1992 Andean	1992 World	1992 % Andean	1993 Andean	1993 World	1993 % Andean
Bolivia									
Exports	89,715	810,038	11.1	99,361	665,954	14.9	124,880	684,059	18.3
Imports	33,269	959,161	3.5	42,499	1,086,109	3.9	77,453	1,099,488	7.0
Colombia									
Exports	778,410	6,490,232	12.0	995,492	5,913,505	16.8	1,169,189	6,299,579	18.6
Imports	516,695	4,450,296	11.6	671,551	6,012,393	11.2	1,269,791	8,571,029	14.8
Ecuador									
Exports	203,706	2,647,695	7.7	175,954	2,866,334	6.1	282,912	2,737,090	10.3
Imports	172,280	2,155,596	8.0	173,642	2,327,667	7.5	181,366	2,371,363	7.6
Peru									
Exports	252,572	2,965,567	8.5	273,136	3,103,573	8.8	269,099	3,074,282	8.8
Imports	468,327	2,345,144	20.0	534,405	3,020,464	17.7	522,133	3,708,623	14.1
Venezuela									
Exports	443,890	14,332,917	3.1	665,840	13,341,525	5.0	1,045,422	14,162,714	7.4
Imports	389,228	9,648,327	4.0	605,870	12,062,187	5.0	561,547	10,705,077	5.2
Totals									
Exports	**1,768,293**	**27,246,449**	**6.5**	**2,209,783**	**25,890,891**	**8.5**	**2,891,502**	**26,957,724**	**10.7**
Imports	**1,579,799**	**19,558,524**	**8.1**	**2,027,967**	**24,508,820**	**8.3**	**2,612,290**	**26,455,580**	**9.9**

Table 4.18 (continued)

Trade: Andean and with the World	Andean	1994 World	% Andean	Andean	1995 World	% Andean
Bolivia						
Exports	202,939	921,293	22.0	221,757	959,456	23.1
Imports	102,923	1,093,422	9.4	111,034	1,285,226	8.6
Colombia						
Exports	1,146,555	7,770,279	14.8	1,977,252	8,339,791	23.7
Imports	1,560,598	10,376,490	15.0	1,844.658	12,018,421	15.3
Ecuador						
Exports	393,263	3,450,033	11.4	358,992	4,002,507	9.0
Imports	510,710	3,111,309.0	16.4	704,917	3,490,242	20.2
Peru						
Exports	322,106	4,066,795	7.9	405,155	5,034,545	8.0
Imports	644,049	4,765,768	13.5	1,190,324	6,109,270	19.5
Venezuela						
Exports	465,291	16,184,367	2.9	1,886,628	17,027,591	11.1
Imports	489,854	7,546,855	6.5	1,015,990	9,775,296	10.4
Totals						
Exports	**2,530,154**	**32,392,767**	**7.8**	**4,849,784**	**35,363,890**	**13.7**
Imports	**3,308,134**	**26,893,844**	**12.3**	**4,866,923**	**32,678,455**	**14.9**

The figures in Table 4.19 are estimates for 1996, and also show that intra-regional trade has kept constant with respect to 1995 levels. As shown in Table 4.19, Colombia and Venezuela remained the main exporters of the group. Both countries are main trade partners to each other. The great volume and value of trade between the two is due to the bilateral free trade agreement they have had in place since 1992.

The total of the intra–Andean trade is greater than the total of exports to the rest of the Latin American nations for any members of the group, but members of the LAIA. Table 4.20 details the exports from the Andean nations to other non-Andean countries for 1996. As can be seen from Table 4.20, Venezuela is the country that exported the most to other Latin American nations, with Brazil as the main buyer followed by Chile and Mexico.

Table 4.21 summarizes the total exports from the Andean Pact members to the Andean nations, to the rest of Latin American nations and the rest of the world. As can be seen from Table 4.21, the total of intra-regional trade represents 11 percent of the total exports of the group. Almost 20 percent of the total are with members of LAIA, which includes the Andean nations.

Table 4.19
Intra-Regional Exports '96
(Millions US$, FOB)

ORIGIN	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA	TOTAL
BOLIVIA		102	9	121	0	232
COLOMBIA	30		420	612	778	1,840
ECUADOR	5	333		44	35	417
PERU	101	120	70		126	417
VENEZUELA	0	1,305	155	64		1,524
TOTAL IMPORTS FOB	**136**	**1,860**	**654**	**841**	**939**	**4,430**

Source: Data obtained from ECLAC.

Table 4.20
Exports To Other Latin American Countries
(Millions US$, FOB)
1996

ORIGIN	ARGENTINA	BRAZIL	CHILE	MEXICO	PARAGUAY	URUGUAY	TOTAL
BOLIVIA	131	16	39	15	2	0	203
COLOMBIA	51	119	183	89	4	5	451
ECUADOR	109	54	225	62	1	24	475
PERU	38	239	123	96	2	5	503
VENEZUELA	112	1,044	313	234	1	64	1,768
TOTAL IMPORTS FOB	**441**	**1,472**	**883**	**496**	**10**	**98**	**3,400**

Source: From Data obtained from ECLAC

Table 4.21
Analysis Exports '96

TOTAL :	A. G.	L. A. C.	LAIA	TOTAL EXPORTS	% A.G.	% L.A.C.	% LAIA
ORIGIN							
BOLIVIA	232	203	435	897	26	23	48
COLOMBIA	1,840	451	2,291	10,574	17	4	22
ECUADOR	417	475	892	5,108	8	9	17
PERU	417	503	920	5,825	7	9	16
VENEZUELA	1,524	1,768	3,292	18,381	8	10	18
TOTAL IMPORTS BY REGION, FOB	**4,430**	**3,400**	**7,830**	**40,785**	**11**	**8**	**19**

Source: Original Data from ECLAC

In sum, the intra-Andean trade has grown significantly since the beginning of the Andean Pact. Moreover, the intra-Andean trade has received a big push since the early 1990s with many free trade agreements signed over these years for the liberalization of trade and investment in all the countries of the group.

Intra-Andean Trade Country-by-Country Analysis

A detailed country-by-country analysis of trade patterns and their composition follows. This section starts with a look at the general trade. Then the intra-Andean trade is analyzed by products for one level of SITC. As in the previous section, the countries have been grouped according to subregion. Recall that the first region, called the northern region, is comprised of the countries of Venezuela, Colombia and Ecuador. The second region, named the southern region, joins Peru and Bolivia.

Northern Region: Venezuela, Colombia and Ecuador

The analysis of each country starts by comparing the total trade (exports or imports) with the Andean trade, to see the relation for each country with its exports to the rest of the world. Then an analysis of the intra-Andean trade in terms of product composition follows. The graphs and tables were done with original data received from the ECLAC.

Venezuela's Intra-Andean Trade Patterns

Venezuela joined the Andean Pact in 1973; therefore, its intra-Andean trade is shown from 1975 on, to see if the patterns of the country's intra-Andean trade over the years have changed.

Venezuela's Intra-Andean Exports

The country's exports to the Andean nations have slowly increased over time, especially after bilateral trade agreements were signed with Colombia in 1992 and the implementation of a Free Trade Area for the Andean Group that went into effect in January 1992.

Figure 4.1 depicts the evolution of Andean trade in relation with non-Andean trade as a percentage of tons. The graph in Figure 4.1 shows that the volume of Venezuelan Andean exports have varied from a starting point of 13 percent in 1975 to 17 percent in 1995. When compared with the non-Andean exports, Andean exports are really not significant for the country's foreign trade. In terms of value, total exports to the Andean nations have varied greatly as is shown in Tables 4.17 and 4.18. From 1990 on, however, the volume has constantly increased.

When we look at the tendency of intra-Andean exports only, we can appreciate the constant increase of Venezuela's exports to the region. This tendency is depicted clearly in Figure 4.2.

Exports to the Andean nations have increased from 59,097 tons to 2,458,657 tons (see Table in Appendix B-4). The average annual growth rate for the period 1975-85 was 7.5

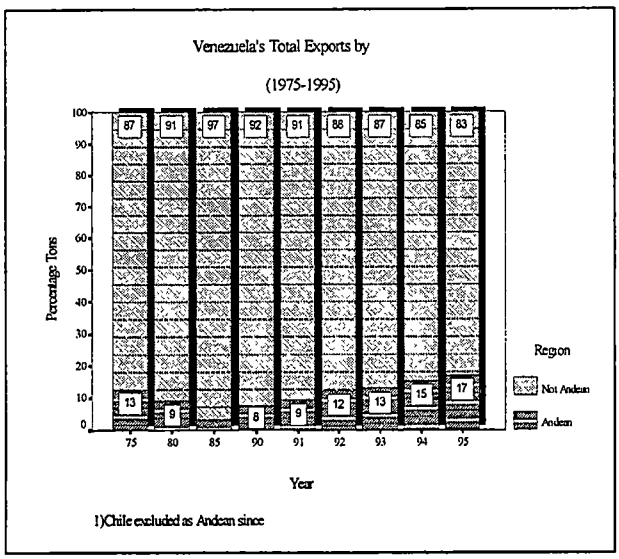


Figure 4.1
Venezuela's Total Exports by Region
(1975-1995)

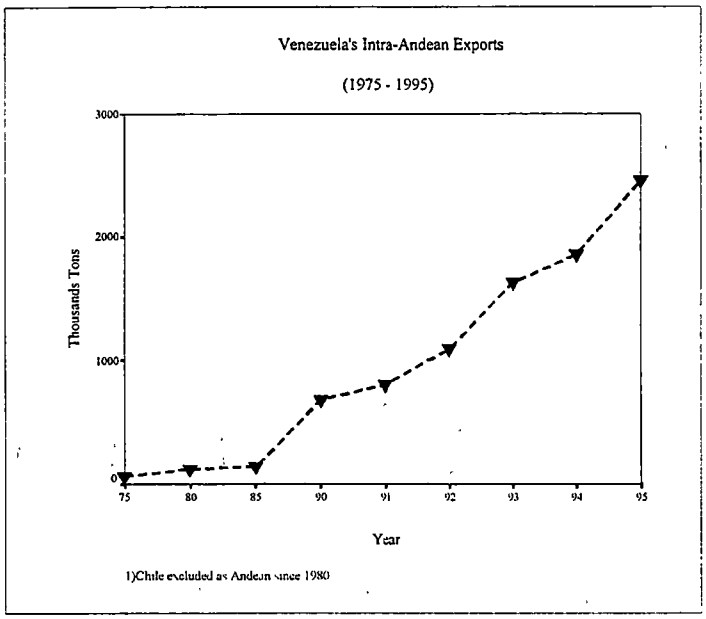


Figure 4.2
Venezuela's Intra-Andean Exports
(1975-1995)

percent. From 1985 to 1995 the average annual growth rate was 17.3 percent. The growth rate from 1975 to 1985 is not representative of any tendency as Venezuela omitted its exports of oil from 1974 until 1985.

In analyzing the composition of the country's intra-regional exports, we can notice a significant shift away from chemical products[12] toward manufactured products[13]. Figure 4.3 depicts this shift. In 1975 chemical products represented 64 percent of total tonnage exported while manufactured products were only 16.8 percent. In 1995, chemicals dropped to 17.7 percent and manufactured products rose to 48.8 percent.

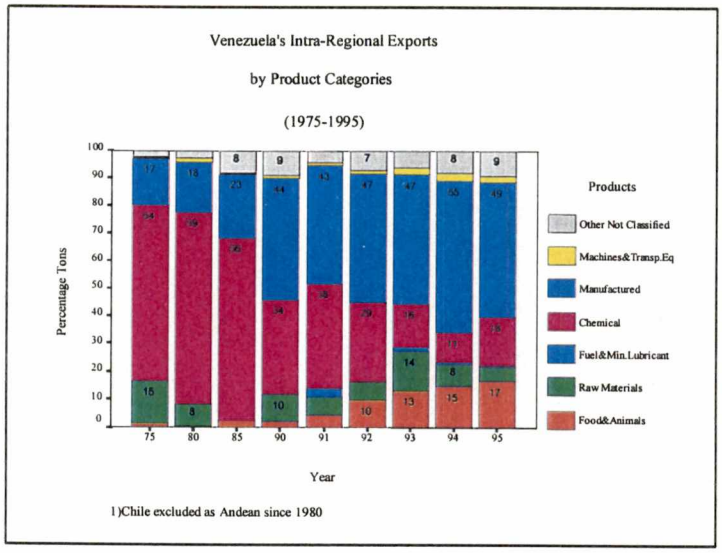


Figure 4.3
Venezuela's Intra-Regional Exports
by Product Categories
(1975-1995)

[12] (SITC 5): which include organic and inorganic chemicals, dyes and colorants, pharmaceutical drugs (medicines), perfumes, fertilizers, plastics in all forms, and other.
[13] (SITC 6): which include leather and leather products, rubber products, cork and wood products, cardboard and paper products, textile products, non-metal minerals products, iron and steel products, non-ferrous products, and others.

Another export product that has significantly increased its participation in Venezuelan intra-Andean trade is food and animals (SITC 0). Food and animals grew from 1.5 percent in 1975 to 16.7 in 1995.

Venezuela's Intra-Andean Imports

Venezuela has imported little from the other Andean nations. Figure 4.4 shows the ratio between Andean and non-Andean imports. The graph shows the percentage of imports in metric tons.

As can be seen in Figure 4.4 intra-Andean imports have been less than 10 percent of total imports. Most of Venezuela's intra-Andean imports have experienced wide variations.

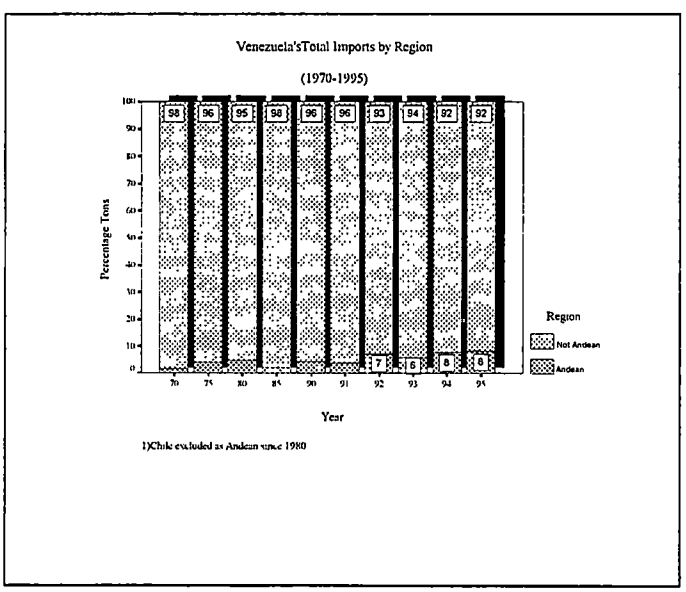


Figure 4.4
Venezuela's Total Imports by Region
(1970-1995)

The graph in Figure 4.5 shows imports in thousands of metric tons. As shown in Figure 4.5, Venezuela's intra-Andean imports have experienced ups and down over the period of 25 years. However, the long-term trend is to increase, especially since 1985. Venezuela is a net importer of food and agricultural products as its agricultural production and limited produce are not enough for the country.

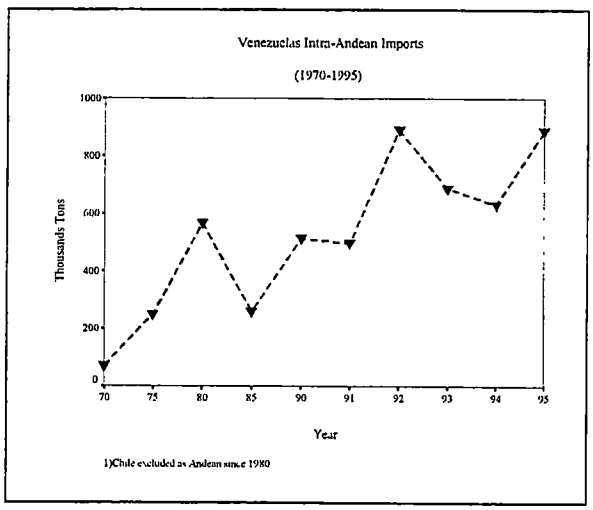


Figure 4.5
Venezuela's Intra-Andean Imports
(1970-1995)

The composition of Venezuela's intra-Andean imports from 1970-1995, as a percentage of tonnage, is shown in Figure 4.6. As can be seen, Venezuela has imported more food products and live animals (SITC 0) than any other product over the period. For the last few years, these imports have remained at about 40 percent of total intra-Andean imports.

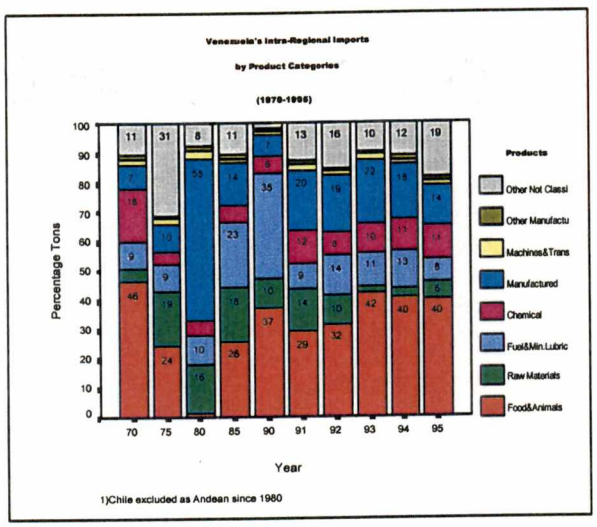


Figure 4.6
Venezuela's Intra-Regional Imports
by Product Categories
(1970-1995)

Colombia's Intra-Andean Trade Patterns

Most of Colombia's trade is with other regions of the world rather than with the Andean nations.

Colombia's Intra-Andean Exports

The country exports to other Andean nations are very small and have remained stagnated since 1985, in terms of volume. As can be seen in Figure 4.7, intra-Andean exports in terms of volume represented only 10 percent of total exports in 1995. The exports to Andean nations have remained very small in terms of volume.

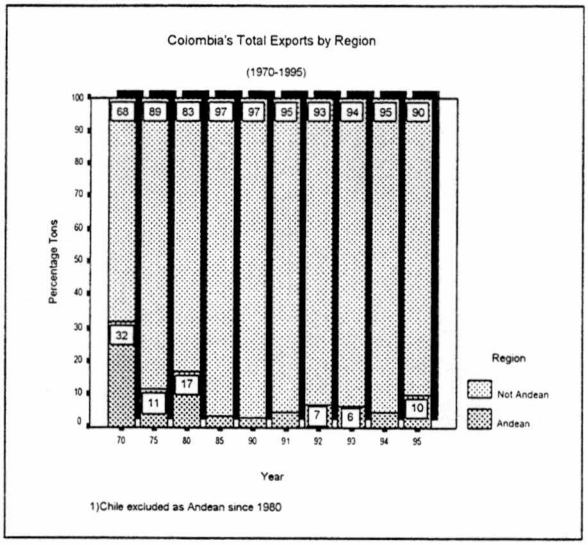


Figure 4.7
Columbia's Total Exports by Region
(1970-1995)

Figure 4.8 shows the historical evolution of Colombian intra-Andean exports in metric tons. As shown in the graphs, total intra-Andean exports decreased from 1970 to 1985, to increase from 1985 to 1992. From 1992 to 1994, intra-Andean exports slightly decreased, to reach a total of 4.1 million tons.

The composition of the intra-Andean exports is depicted in Figure 4.9. The graph in Figure 4.9 shows that Colombia exports mainly fuel and minerals except for the years 1975, 1985, and 1990, when they dropped significantly. These changes are in part due to not reporting exports of oil during the oil crisis, and in part from removing the database in the year 1980. Chile was an important trade partner for Colombia as well as for other Andean countries.

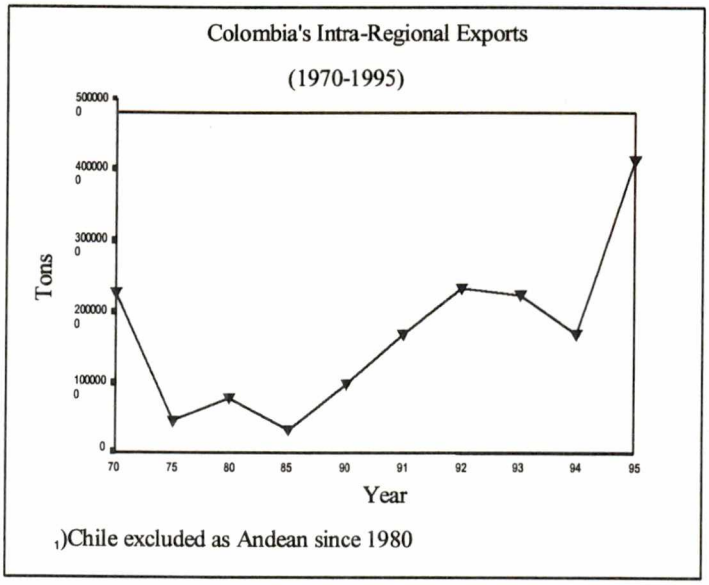


Figure 4.8
Columbia's Intra-Regional Exports
(1970-1995)

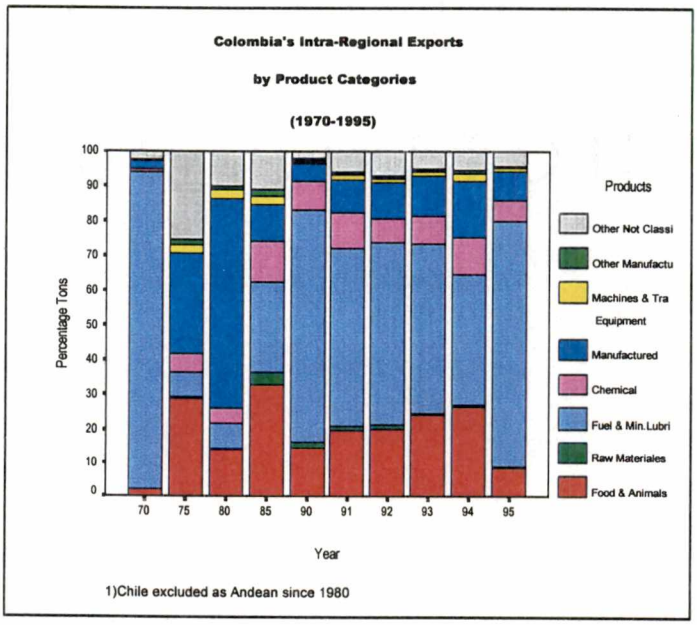


Figure 4.9
Columbia's Intra-Regional Exports
by Product Categories
(1970-1995)

Colombia's Intra-Andean Imports

Colombia has imported from Andean nations a more significant proportion than it has exported to other Andean countries. Figure 4.10 shows imports growing from 8 percent in 1970 to 27 percent of total imports in 1995. The country's intra-Andean imports reached 24 percent in 1985. From 1985 to 1990 they decreased to 15 percent, to start growing again in 1991 reaching 19 percent. From 1993 to 1995 intra-regional imports remained at about 25 percent of total imports.

The growing trend of Colombia's intra-Andean imports is clearly depicted in Figure 4.11. In 1970 Colombia imported from its Andean partners a total of 138,039 metric tons. In 1995, it imported 3,492,428 tons. Intra-Andean imports have grown at an average annual growth rate of 6.7 percent during the period.

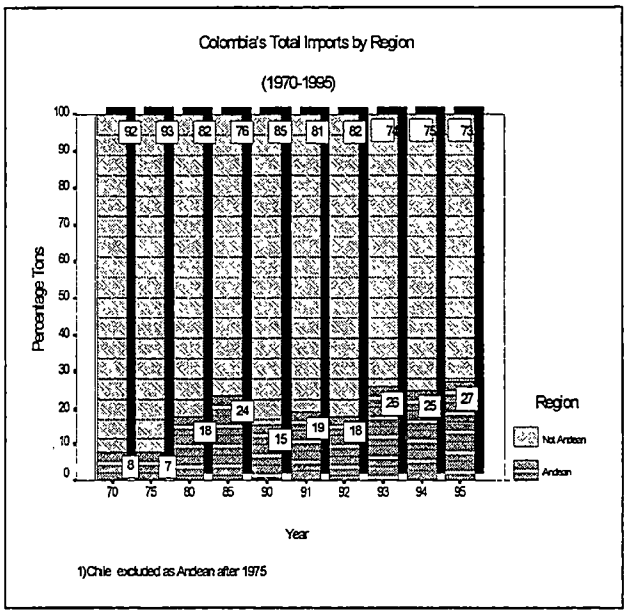


Figure 4.10
Columbia's Total Imports by Region
(1970-1995)

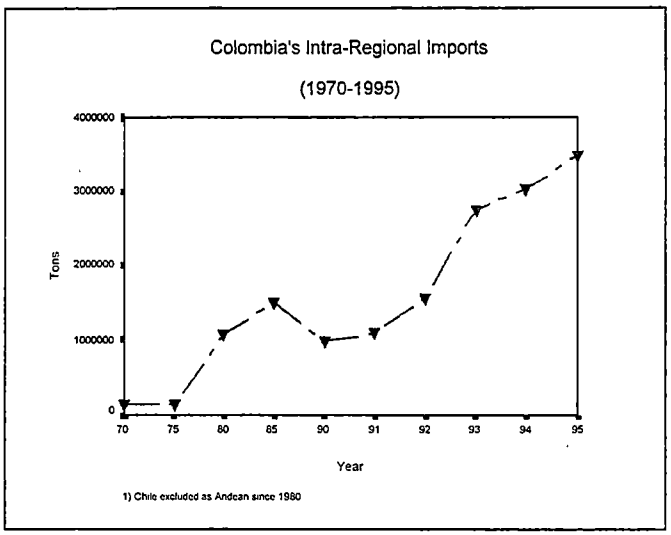


Figure 4.11
Columbia's Intra-Regional Imports
(1970-1995)

The composition of Colombia's intra-Andean imports, as a percentage of tonnage, is shown in Figure 4.12. As can be seen, Colombia's imports have moved away from fuel and minerals since 1990. Indeed, in 1980, fuel and mineral imports represented 72 percent of the total. In 1995, they only were 30 percent of the total intra-Andean imports. It is important to note that Colombia has not classified about 40 percent of its imports from 1992 to 1995, as the graph shows.

Ecuador's Intra-Andean Trade Patterns

Ecuador is one of the smallest and least developed countries of the Andean Group. As its Andean partners, the main proportion of Ecuador imports and exports is with other countries of the world.

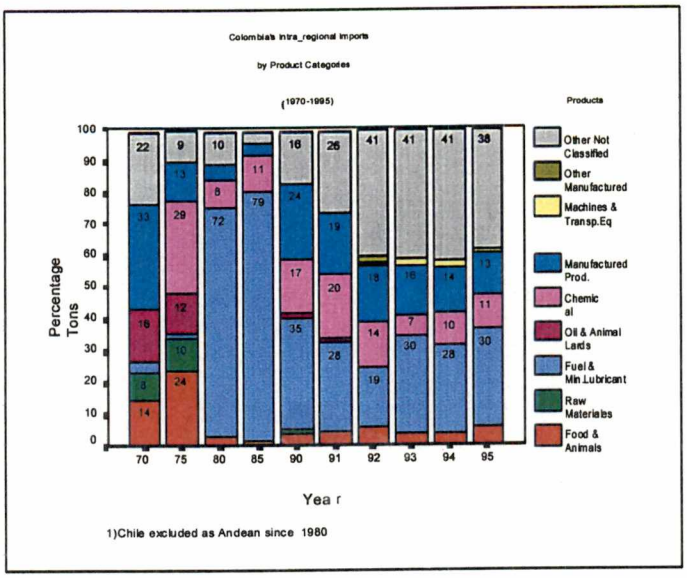


Figure 4.12
Columbia's Intra-Regional Imports
by Product Categories
(1970-1995)

Ecuador's Intra-Andean Exports

As indicated in Figure 4.13, Ecuador exports to the other Andean nations a small amount of its total exports. Except for a peak in 1975 when intra-Andean imports reached 23 percent of total, the rest of the years in the examined period imports have remained at about or below 8 percent of total.

Ecuador's total intra-Andean exports in metric tons have fluctuated around 200,000 metric tons, except for years 1975 and 1994 when they reached over 1.5 million tons.

The patterns for volume exports are shown in Figure 4.14 in metric tons for the 25-year period. Except for years 1975 and 1991, the level of exports to the other Andean nations is fairly small.

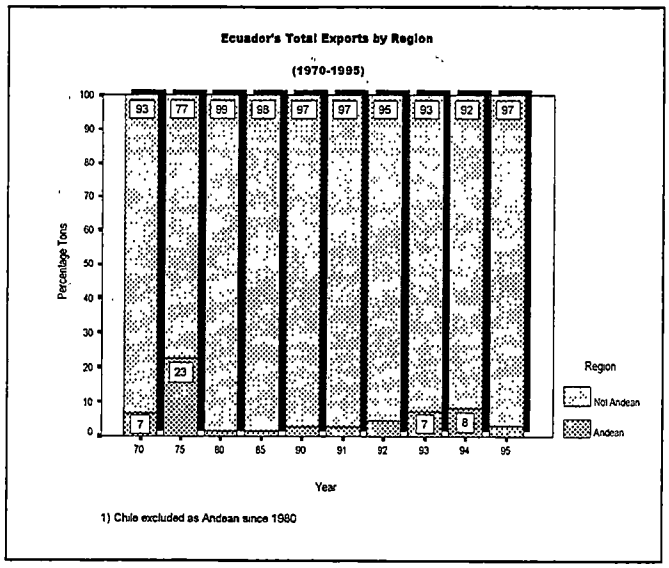


Figure 4.13
Ecuador's Total Exports by Region
(1970-1995)

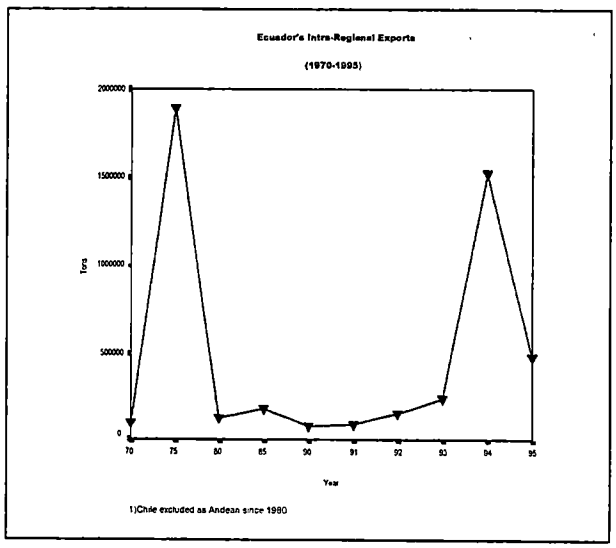


Figure 4.14
Ecuador's Intra-Regional Exports
(1970-1995)

The patterns for volume exports are shown in Figure 4.14 in metric tons for the 25-year period. Except for years 1975 and 1991, the level of exports to the other Andean nations is fairly small.

The average annual growth rate for the period was 5 percent, without considering the two years above the average (years '75 and '94).

The composition of Ecuador's intra-Andean exports, as a percentage of tonnage, is shown in the graph of Figure 4.15

As can be appreciated from the graph, the composition of Ecuador's exports to its Andean partners has changed over the period. Food and animals (SITC 0) remained at about 20 percent most of the years except for 1970, where it was 87 percent. Fuel and mineral exports were important in some years but not every year.

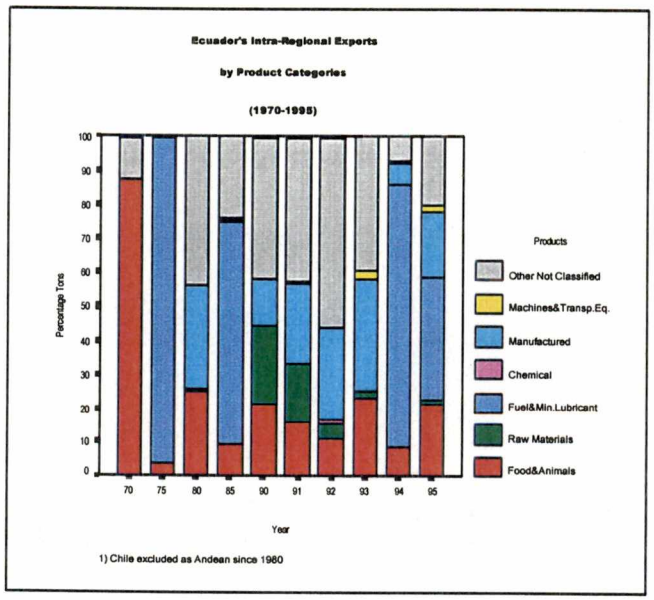


Figure 4.15
Ecuador's Intra-Regional Exports
by Product Categories
(1970-1995)

Indeed, in 1975 Ecuador exported 1.8 million tons of which Chile bought 763 thousand tons (See table in Appendix B-4). Ecuador sold fuel only to Chile in 1980, but as it can be seen, no fuel is shown in the graph because Chile was not included as an Andean trade partner anymore.

In 1985, Ecuador exported fuel and mineral lubricants to Peru, totaling 65 percent of its total exports for that year. In 1994, Peru bought from Ecuador 1,176,348 metric tons of fuel of a total of 1,528,343 metric tons of exports for that year (See Table, Appendix B-4).

The same year Chile bought 1.3 million tons of fuel from Ecuador, but as Chile is no longer a member of the group in this Figure it is shown here as part of Non-Andean exports.

Ecuador's Intra-Andean Imports

Ecuador's intra-Andean imports have decreased over the 25-year period. Figure 4.16 shows the pattern of its intra-regional imports. As can be seen, more than 50 percent of Ecuador's imports in 1970 came from other members of the pact. However, they declined reaching a low 8 of percent in 1990. Intra-regional imports remained at about that level until 1993.

In 1994 they reached 21 percent to increase in 1995 to a 27 percent. The patterns of the intra-Andean imports are shown in Figure 4.17.

Figure 4.17 shows the intra-Andean imports have declined from 872 thousand tons in 1970 to 209 thousand tons in 1990, which means an average annual decline of 5.8 percent.

The country imported about the same tonnage the next two years ('91 and '92) to reach a low of 143 thousand tons in 1993. After that year, tonnage increased to 613 thousand

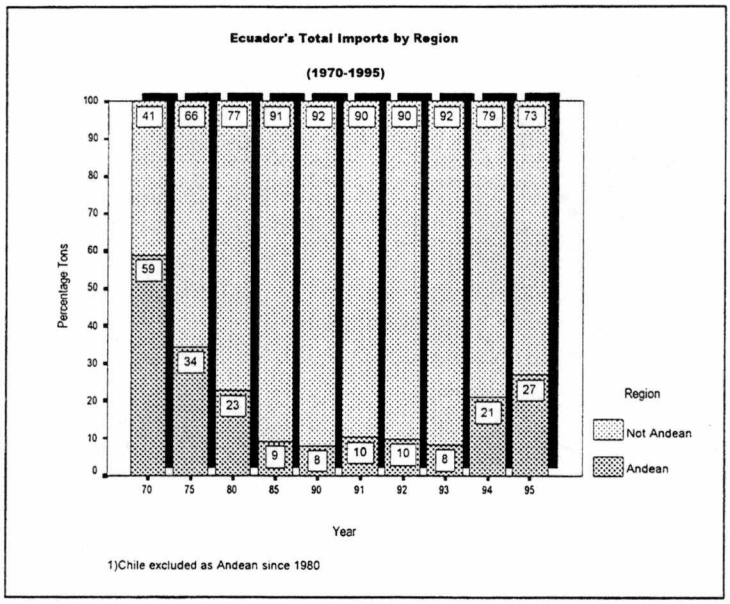


Figure 4.16
Ecuador's Total Imports by Region
(1970-1995)

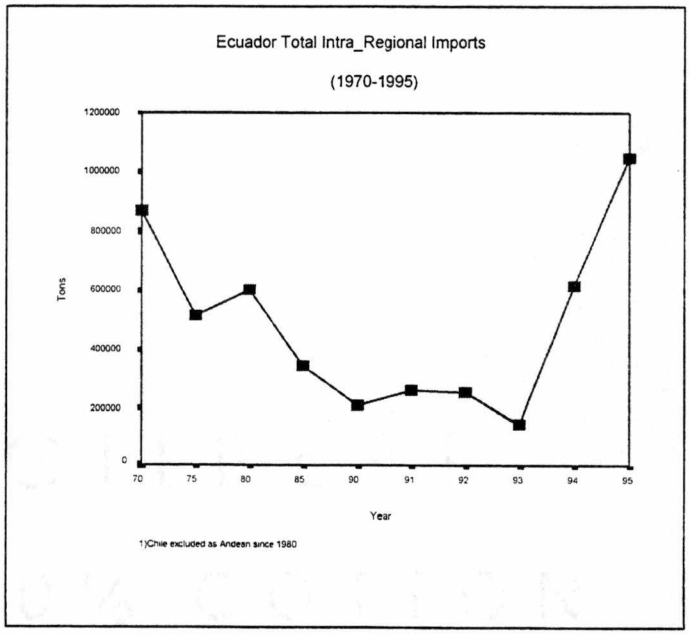


Figure 4.17
Ecuador's Total Intra-Regional Imports
(1970-1995)

tons, and to 1.05 million tons in 1995. These variations are explained by the fluctuations in the composition of the country's intra-Andean imports.

The country imported about the same tonnage the next two years ('91 and '92) to reach a low of 143 thousand tons in 1993. After that year, tonnage increased to 613 thousand tons, and to 1.05 million tons in 1995. These variations are explained by the fluctuations in the composition of the country's intra-Andean imports.

As Figure 4.18 shows, the imports have shifted from fuel and minerals to manufactured products and to chemical products. This is completely natural as Ecuador started oil exploration and production in the early Seventies. The country still imported a significant quantity of fuel and mineral lubricants in 1995, 39 percent of the total.

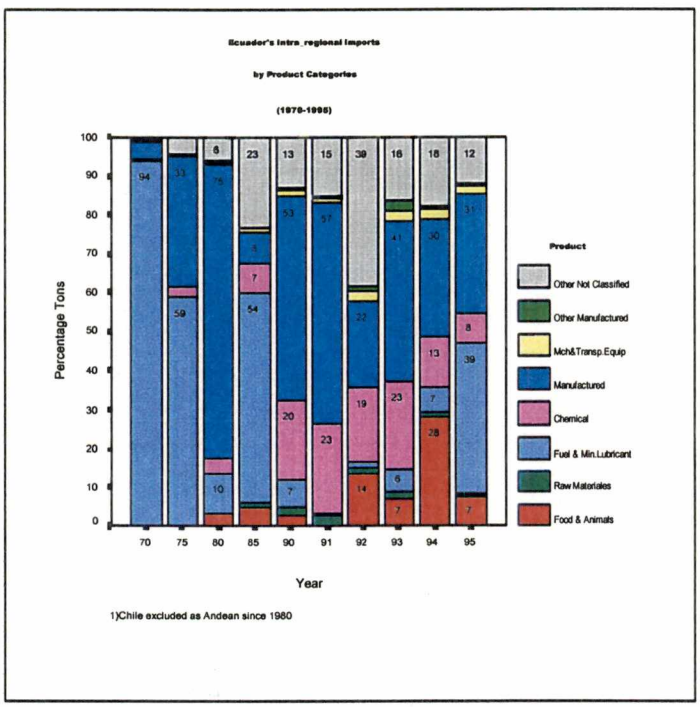


Figure 4.18
Ecuador's Intra-Regional Imports
by Product Categories
(1970-1995)

Summary of the Northern Region's Trade Patterns

If we look at the intra-Andean exports of the countries of Venezuela, Colombia and Ecuador, we find that these countries exported little in terms of tonnage to other member of the Andean Community, compared with what they exported to the world. This pattern may be explained as they are oil producers and what they need to buy from others are more capital and technology intensive goods. They do not produce these types of goods. Therefore, what they buy from one another are still basic commodities and few manufactured products as was shown in the previous graphs.

Southern Region: Peru and Bolivia

The trade patterns of the intra-Andean trade is analyzed country by country. The analysis of each country starts by comparing the total trade (exports and imports) with the Andean trade, to see the relation for each country with its exports to the rest of the world. Then an analysis of the intra-Andean trade in terms of product composition follows. The graph and table were done with original data received from the ECLAC.

Peru's Intra-Andean Trade Patterns

Peru was one the founders of the Andean Group. However, due to the implementation of new macroeconomic policies and disagreement with the CET, Peru restrained from active participation in the group summits since 1993. Finally, Peru withdrew as a member of the Andean Pact in 1997. As Peru was a member during the period covered in this study, the country's trade statistics with the patterns of its intra-Andean trade follows.

Peru's Intra-Andean Exports

Figure 4.19 shows the evolution of Peru's exports to the region. As can be seen, Peru has exported less than 10 percent of its total exports to the Andean countries. To better appreciate the pattern of Peru's intra-regional exports, the following graph in Figure 4.20 shows the tons exported by the country year by year. The peak in 1980 was due to exports of 624,527 tons to Ecuador. We cannot identify the products exported to Ecuador that year because Peru reported as code 9, which means goods not classed by kind.

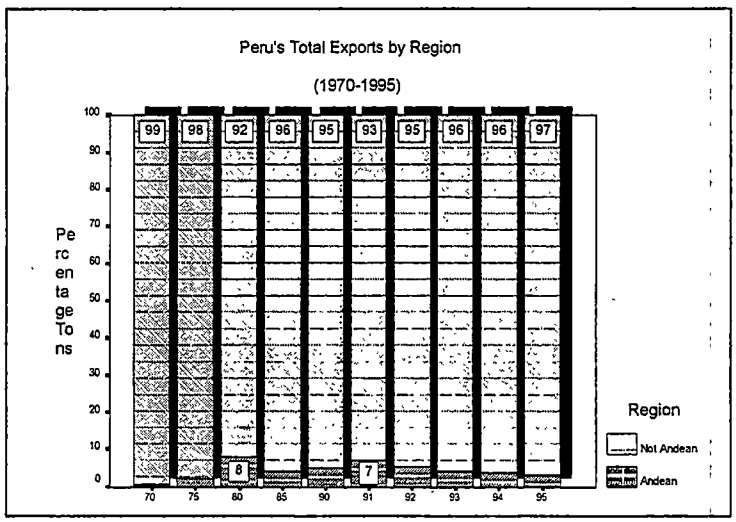


Figure 4.19
Peru's Total Exports by Region
(1970-1995)

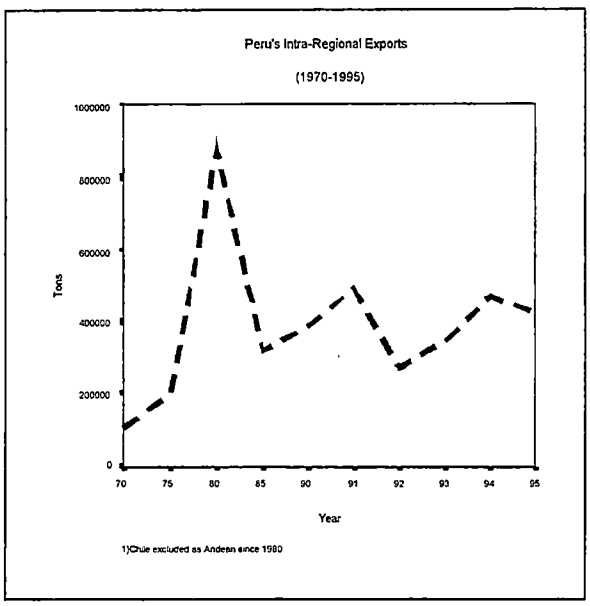


Figure 4.20
Peru's Intra-Regional Exports
(1970-1995)

The average annual growth rate for Peruvian exports to the Andean region from 1970 to 1995 was 4.5 percent.

The composition of Peruvian exports is shown in the following graph in Figure 4.21. As can be seen, the first 15 years, Peruvian exports were not classified. From 1985 on, we can observe an increase in chemical products and in manufactured products as main exports to the Andean region. Indeed, of 490,182 tons, 223,375 were manufactured products. Of that total, Colombia imported 112,625 tons, in other words, 50 percent of that tonnage.

Peru's Intra-Andean Imports

The evolution of Peruvian intra-Andean imports is shown in Figure 4.22. Peru did not report tonnage for the years 1990 and 1991. As can be seen in the graph, Peru's

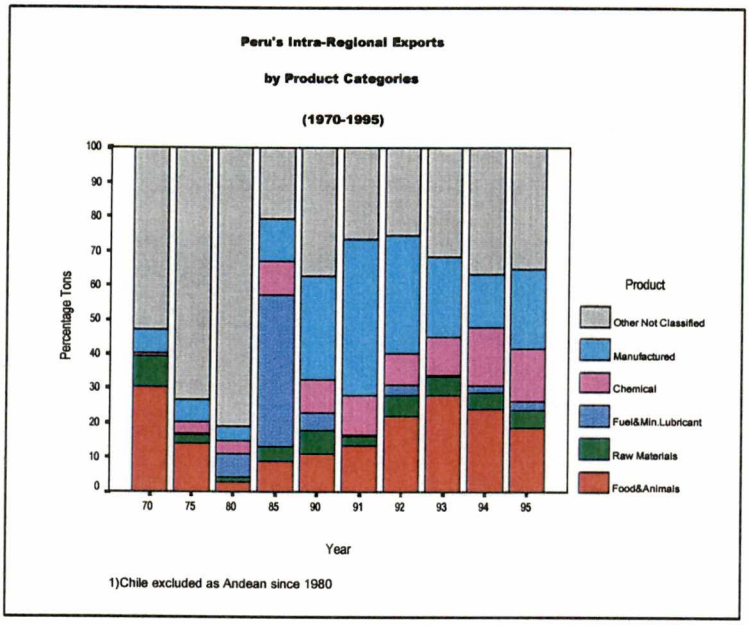


Figure 4.21
Peru's Intra-Regional Exports
by Product Categories
(1970-1995)

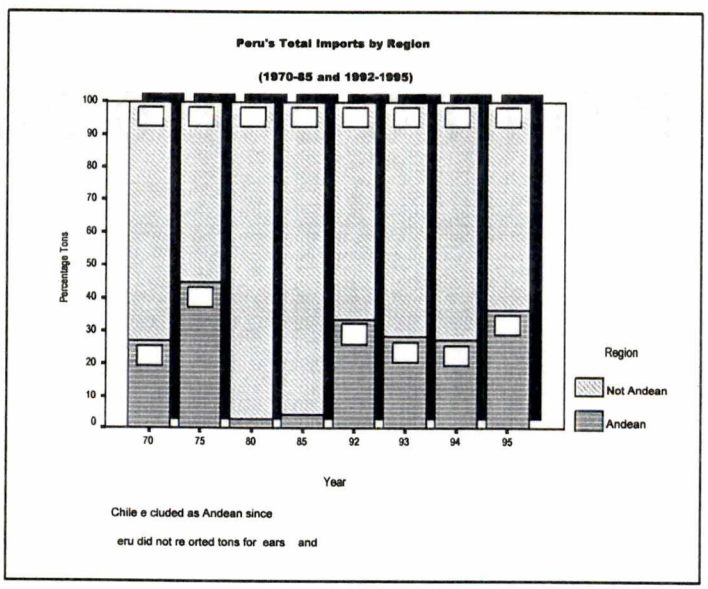


Figure 4.22
Peru's Total Imports by Region
(1970-85 and 1992-1995)

imports from other Andean countries were more significant in 1975 than in any other year of the examined period.

To better appreciate Peruvian intra-Andean imports, a graph showing total tonnage is shown in Figure 4.23.

In 1970 Peru imported 569,572 tons of which 53 percent came from Venezuela. Imports grew to 2.5 million tons in 1975 of which 45 percent came from Venezuela, and 51 percent from Ecuador. For the years 1980 and 1985 imports from Andean countries fell to nearly to 100 thousand tons. In 1992, 1993 and 1994 tonnage reached nearly 2 million tons, to grow in 1995 to almost 5 million tons.

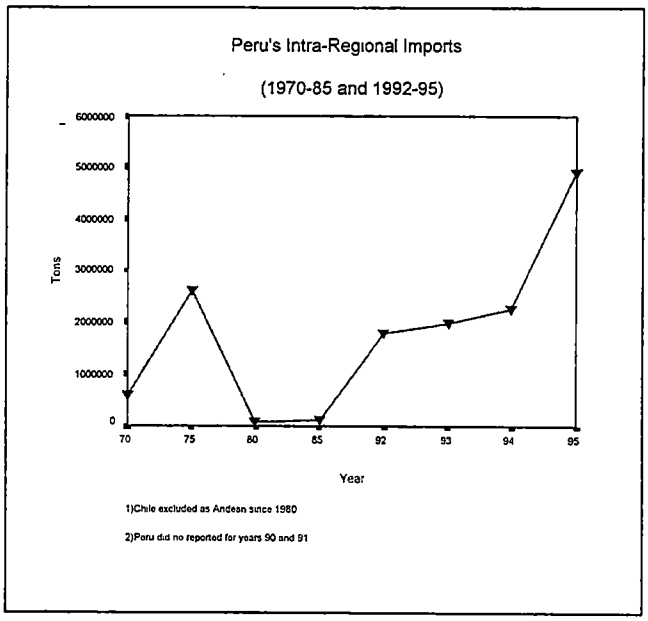


Figure 4.23
Peru's Intra-Regional Imports
(1970-85 and 1992-1995)

To see the composition of the changes on intra-Andean imports, Figure 4.24 was drawn. Peru's imports for the years '70 and '75 were mainly mineral fuels bought from Venezuela and Ecuador as stated in the previous paragraph. Mineral fuel remained a main intra-regional import for the years '92 to '95. The second most important product that Peru imported over the period was food and live animals. Indeed, in 1980 food and lived animals totaled 35 percent to fall to 27 percent in 1985. The rest of the years this commodity remained at about 10 percent.

It is important to mention here that there is a clear relation between the tonnage and kind of commodity imported and from where. Peru is not self sufficient in petroleum, therefore, it buys it from countries such as Venezuela and Ecuador. In the next section we will see the mode of transportation Peru used for its exports and imports.

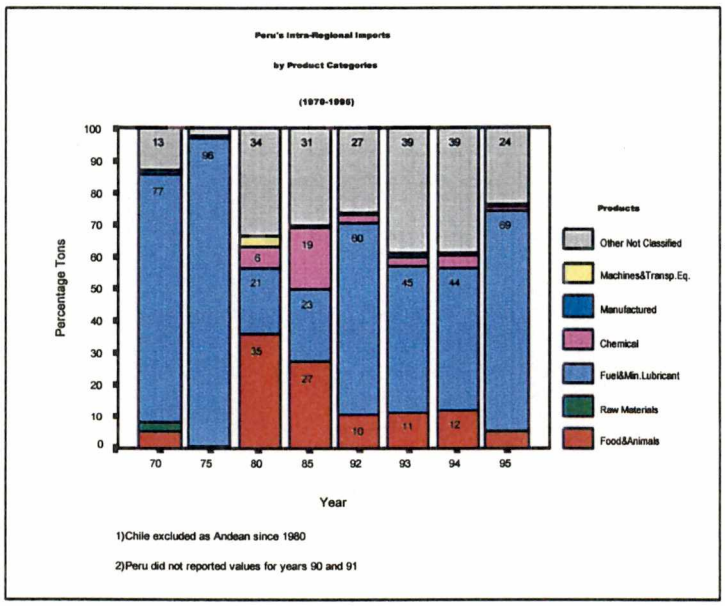


Figure 4.24
Peru's Intra-Regional Imports
by Product Categories
(1970-1995)

Bolivia's Intra-Andean Trade Patterns

Bolivia was one the founders of the Andean Pact along with Chile, Peru and Colombia. Bolivia has remained with the smallest economy in the group and as one of the poorest ones too. Bolivia's intra-Andean trade patterns are described in the following sections by looking at its exports and imports.

Bolivia's Intra-Andean Exports

The percentages of Bolivian intra-Andean exports to the total exports are depicted in Figure 4.25. As can be seen in the graph, intra-regional exports were very small percentage of the total. Bolivia exported to the other Andean countries no more than 6 percent of its total exports from 1970 to 1990. After that, its exports to the group slowly increased to reach 7 percent in 1991 and 14 percent of total exports in 1995. This growing trend is shown in the graph in Figure 4.26.

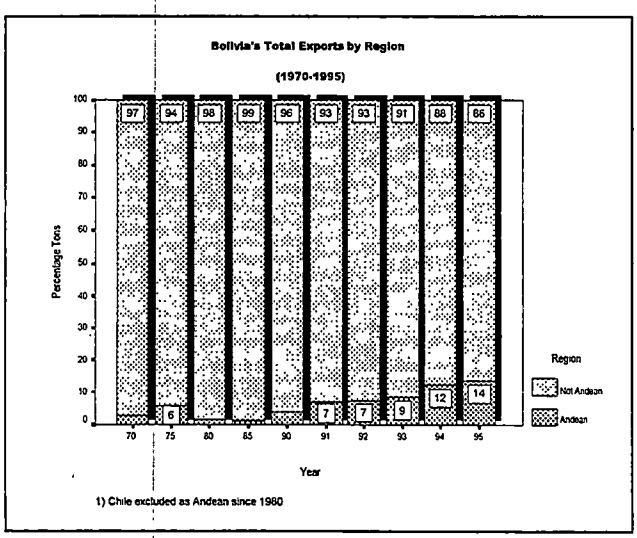


Figure 4.25
Bolivia's Total Exports by Region
(1970-1995)

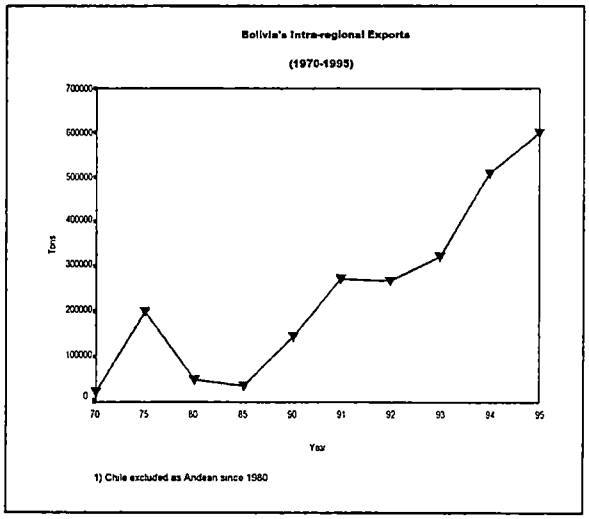


Figure 4.26
Bolivia's Intra-Regional Exports
(1970-1995)

As can be appreciated from the graph, the volume of Bolivian exports to the region started growing in 1985, when volume was 36,704 metric tons, to reach a high of 272,017 tons in 1991. It maintained that level in 1992, to growth at an average annual rate of 18.2 percent from 1992 to 1995, when they reached 600,898 tons. This is a significant growth for the country's intra-Andean exports, compared with the slow average annual growth rate of 7.8 percent for the previous 22 years.

The composition of these exports is shown in the graph in Figure 4.27. Starting in 1980, more than 50 percent of Bolivian exports to the Andean countries have been composed of food and live animals. Indeed the country has exported cereals and cereal preparations, sugar and its derivatives, and legumes, to countries such as Peru, Colombia and Chile over these years. For example, in 1980, of 49,950 tons exported to Andean nations, 27,193 tons, of which 22,515 where food preparation, went to Peru, 55 percent of the total exports. Exports to Chile totaled 79,376 tons of which 47 percent were food and

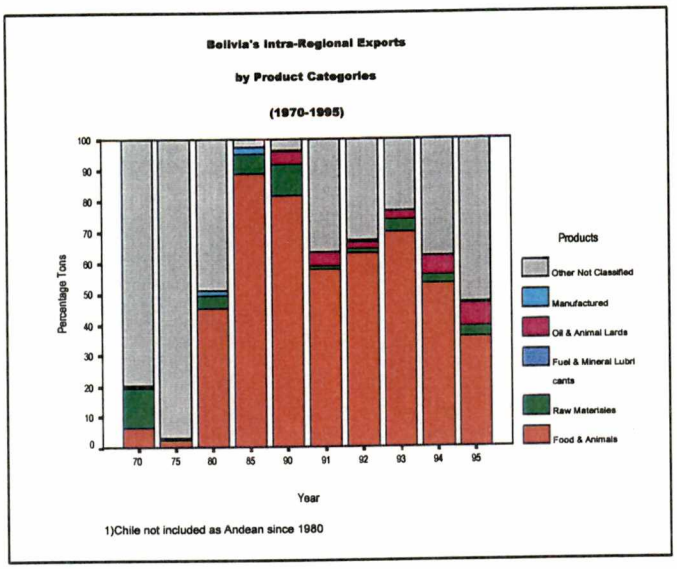


Figure 4.27
Bolivia's Intra-Regional Exports
by Product Categories
(1970-1995)

food preparation, but this figure was not included in the total of intra-Andean exports for the analysis as Chile withdrew from the group in 1976.

Moreover, in 1990, 89 percent of Bolivian intra-Andean exports were food and food preparations, and/or live animals. Peru bought a total of 138,194 tons, of which 84 percent were food and food preparation and/or live animals (see table, Appendix B-4).

Bolivia's Intra-Andean Imports

As shown in Figure 4.28, for all the years of the period 1970-1995, imports from Andean countries have been around 10 percent of the total imports. However, in 1990, intra-regional imports jumped to 51 percent of total imports. Indeed, that year, Bolivia imported an extraordinary amount of chemicals from Peru: 806,687 tons of chemicals worth 6.5 million dollars.

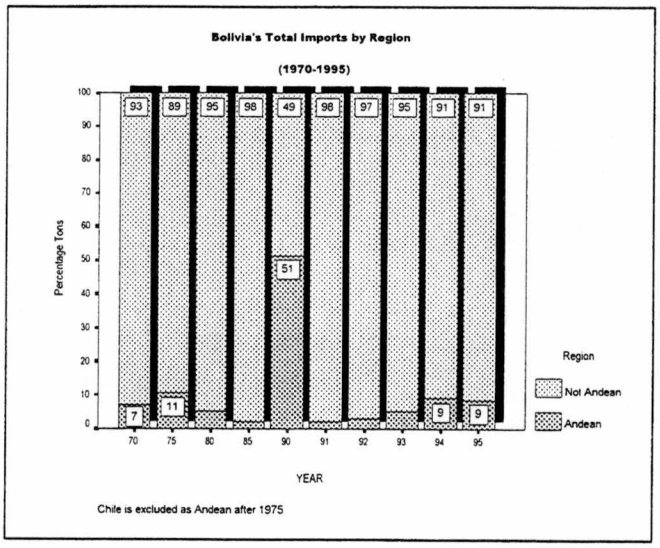


Figure 4.28
Bolivia's Total Imports by Region
(1970-1995)

The same year Bolivia imported from Chile 7 thousand tons of chemicals worth US$9 millions, but this figure was included as non-Andean import as Chile withdrew from the group in 1976.

To see the trends of the intra-Andean imports, the following graph in figure 4.29 was drawn. The peak in 1990 was explained in the previous paragraph. Without taking into consideration that peak, we observe that intra-Andean imports were growing very slowly from a start of 6.3 thousand tons to a 111 thousands tons in 1995.

The graph in Figure 4.30 was drawn taking out year 1990 to better appreciate the tendency of intra-regional imports. The average annual growth of imports from 1970 to 1995 was 7.1 percent.

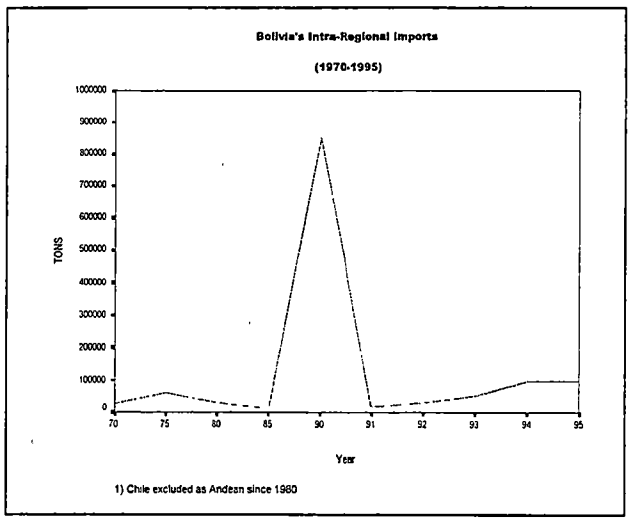


Figure 4.29
Bolivia's Intra-Regional Imports
(1970-1995)

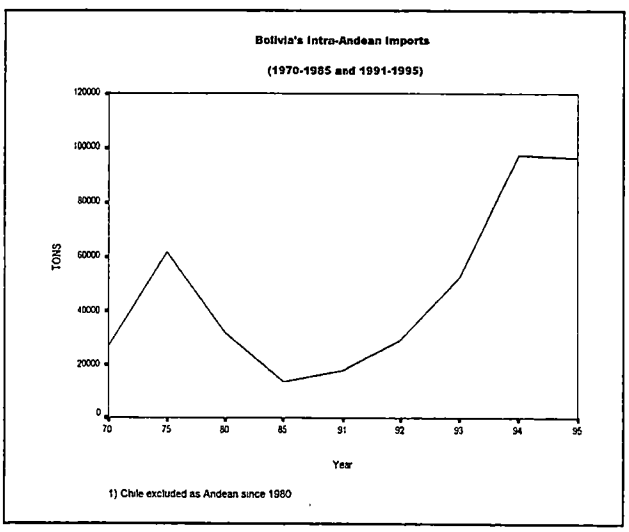


Figure 4.30
Bolivia's Intra-Andean Imports
(1970-1985 and 1991-1995)

The composition of Bolivia's intra-regional imports is shown in the following graph of figure 4.31. As can be seen, chemicals and basic manufactured products have been quite important imports during the examined period for Bolivia's intra-Andean imports. There was an important percentage of "not classified by kind" products over the period too.

Bolivia's imports were very diversified in the 25-year period, with concentration in three products: chemicals, basic manufactured goods, and mineral fuels.

Summary of the Southern Region's Trade Patterns

If we look at the intra-Andean exports of the countries of Peru and Bolivia we can conclude that they are fairly small compared to their exports to non-Andean countries.

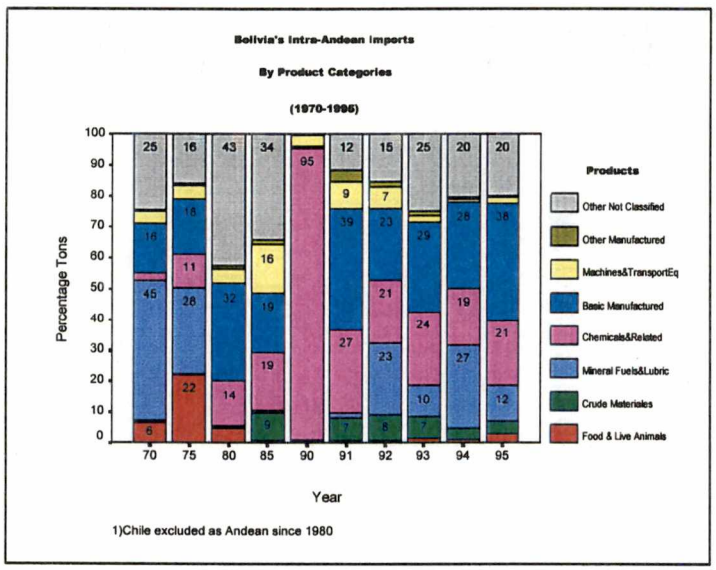


Figure 4.31
Bolivia's Intra-Andean Imports
by Product Categories
(1970-1995)

The composition of Peru's intra-Andean exports has slowly moved away from basic commodities to manufactured goods, while Bolivian's exports concentrated on food and live animals.

Their intra-Andean imports have not shown a clear pattern for both countries. Peru's imports have remained around 35 percent being fuel and mineral lubricants its main import from other Andean countries. In the case of Bolivia, intra-regional imports were quite small, around ten percent of total imports, being chemicals, basic manufactured goods, and mineral fuels the main intra-regional imports over the 25-year period.

Conclusions of the Patterns of the Intra-Andean Trade

As the tables and graphs of this section have shown, the intra-Andean trade has grown significantly since 1990. This growth is the result of the effects of the new trade agreements, signed among the members of the Andean Community in the early Nineties that have ease the flow of goods across borders. The improvement in intra-regional trade is also the result of moving their economies toward free market policies and/or eliminating trade barriers among them. Although the percentage of intra-Andean exports had wide variations over the examined period (1970-1995), every country of the Community, but Ecuador and Peru, increased their exports to the region.

On the other hand, intra-Andean imports increased significantly over the period. Peru was the country that imported the most from other Andean partners. The slow but steady increase in intra-Andean trade suggests that regional integration is working for members of the Andean Community. It also suggests that this tendency may continue in

the future as many improvements have already been accomplished in trade and transportation in the region.

It is important to note the composition of the intra-Andean trade to understand the nature of the transportation and logistics challenges that the Andean countries have faced when trading with their neighbors. As shown, the trade pattern of the countries of Venezuela and Colombia have slowly moved away from basic commodities toward a trade of basic manufactured good. The rest of the countries of the region still trade basic commodities and buy from other countries of the world capital intensive goods. What makes their intra-regional trade more difficult is the fact that the Andean countries produce about the same commodities and product leaving little to trade among them. Considering all these facts, it is amazing to see that the intra-Andean trade over the 25-year period has significantly grown.

To have a complete picture of the problems these countries face when trading among them, thee following section of this chapter describes the mode of transportation used by the Andean countries in moving their intra-regional trade.

III. Modes of Transportation Used to Move the Intra-Andean Trade

The previous section answered the questions about what and how much the countries of the Andean group have traded during the last 25 years, to see the shifts and patterns of their intra-regional trade. This section looks at the intra-Andean trade to answer the question about what mode of transportation was used by these countries during the same period. After answering the question about what modes were used to move the exports, the flag of the mode used was investigated for the main modes used.

The mode flags were grouped as "Andean", "Non-Andean", or "Not Reported" to facilitate the analysis.

This section intends to link what we have already discussed in section II. To better understand the modes these countries have used, the findings are presented in the same manner as in the two previous sections. This is, by subregions and within them by country. The data presented in this section were also obtained from ECLAC. The graph and tables were elaborated with those data by the researcher.

It is important to know that there was no obligation within the existent regional legislation or within the LAIA or former LAFTA rules, or even under the Pact provisions, for the countries to report the mode of transportation or the flag of the mode. Therefore, the reporting of the mode and the flag was completely voluntary and not consistent as we are going to see in the following analysis.

Northern Region: Venezuela, Colombia and Ecuador

The analysis of each country starts by looking at the mode used for moving the country's intra-Andean exports, and when reported at the flag of the mode if it was reported. This is important to discover relationships between the commodities they have traded among them and what modes have been used and if they are regional or international. Once we have answered the question about what modes were used to move the exports, we looked at the flag of the main modes used. Then the same was done for each country's imports.

Venezuela's Modes of Transportation

The analysis of Venezuela starts by looking at its intra-Andean exports. Trade data was disaggregated by type of product, by mode of transportation and by flag of the mode. The first aggregation was done to see the tonnage moved by each mode. Then, when modes were reported, we looked into the years to see if there was any flag of the mode reported

Venezuelan Modes and Flags of Modes for Intra-Andean Exports

The graph in Figure 4.32 shows that for the first 15 years intra-Andean exports were moved by ocean. During the same years Venezuela exported more chemicals than any other product to the Andean nations (see Figure 4.3). The chemical and related products category includes products such as alcohols, nitrogen, pesticides, dyes, polyethylene, herbicides, etc.

However, Venezuela did not report its oil exports from 1974 to 1985. Therefore, assuming that Venezuela exported crude oil and mineral fuels, which includes petroleum and petroleum products such as gas oils, gasoline oil, and fuel oil, to the other Andean nations that during those years did not produce enough for domestic needs, it is perfectly understandable that this country used ocean as a mode of transportation for its exports.

Roads become more important for moving intra-Andean trade during those years (1975-1985), too. As can be seen in the graph in Figure 4.32, 92 percent of total exports were moved by ocean in 1975 compared with 8 percent moved by roads. Ten years later, 65 percent of tonnage exported was moved by ocean and 29 percent of tonnage by roads.

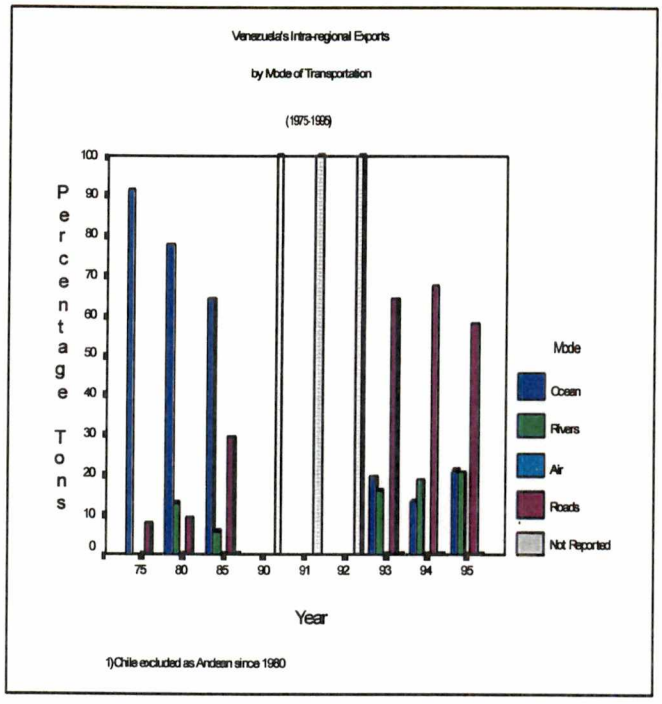


Figure 4.32
Venezuela's Intra-Regional Exports
by Mode of Transportation
(1975-1995)

If we look again at Figure 4.3, we can see that this is also comprehensible as manufactured products were increasing their participation in the country intra-Andean exports.

From 1990 to 1992 Venezuela did not report the mode of transportation at all. By 1993, the starting situation was reversed, as 64 percentage of tonnage exported was moved by roads and only 19 percent by ocean. If we again look at the composition of Venezuela's intra-regional imports in Figure 4.3, we can see that more manufactured products were exported that year.

The shift in trade has meant a shift in the mode of transportation, too. If more volume has been moved by roads, as opposed to ocean, it implies that the country has the necessary infrastructure in terms of roads and vehicles to have moved all this tonnage by roads. This trend in trade composition and mode used was maintained until 1995.

In sum, to move Venezuela's intra-Andean exports, the main two modes were ocean for the first 15 years and roads for the other years in the period. The next question to be answered is regarding the flag of the mode. As stated above, the flags were grouped by region: "Andean", "Non-Andean" and "Not-reported".

The following graph in Figure 4.33 shows the flags for ocean mode. As can be seen, Venezuela did not report the flag of the vessels used in years '75, '80, and '85 though it did report the modes as shown in Figure 4.32.

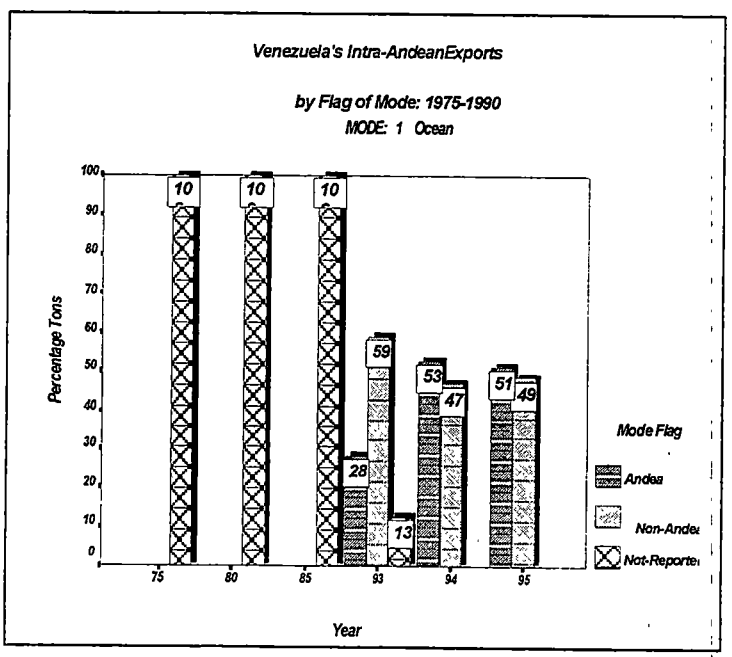


Figure 4.33
Venezuela's Intra-Andean Exports
by Flag of Mode (1975-1990)
Mode: 1 Ocean

From 1990 to 1992, it did not report the mode or the flag. In 1993 59 percentage of total export tonnage was carried by non-Andean flag vessels. In 1994 and 1995 more tonnage was carried by Andean flag vessels than non-Andean ones. The non-Andean flag that appeared in 1993 belongs to Chile, because before taking Chile out of Andean, all reported flags were Andean and non-reported.

The graph in Figure 4.34 shows Venezuela's Intra-Andean Exports carried by roads. As for roads, the flags were not reported except for years '94 and '95. In 1994, 77 percent of tonnage was carried by trucks of Andean flags, and for the rest the flag was not reported. In 1995 all tonnage was carried by vehicles of Andean flag. This is normal as in those years Venezuela exported more manufactured goods and most its trade was with Colombia.

Venezuelan Modes and Flags of Modes for Intra-Andean Imports

Venezuelan imports followed similar patterns as its exports. Figure 4.35 shows the main modes for the examined period. The first 15 years most of the imports were carried by ocean and by road. From 1985 to 1992 modes were not reported, and from 1993 to 1995 roads were the most important mode of transportation for imports.

If we look at Figure 4.6 for the composition of imports, we find that from 1970 to 1980, Venezuela imported an important quantity of crude materials, food, chemicals, and some refined fuels. This composition explains the two modes used during the period.

From 1993 to 1995, Venezuela's imports were composed of more manufactured goods, food and food preparations, and some chemicals and mineral fuels (see graph in

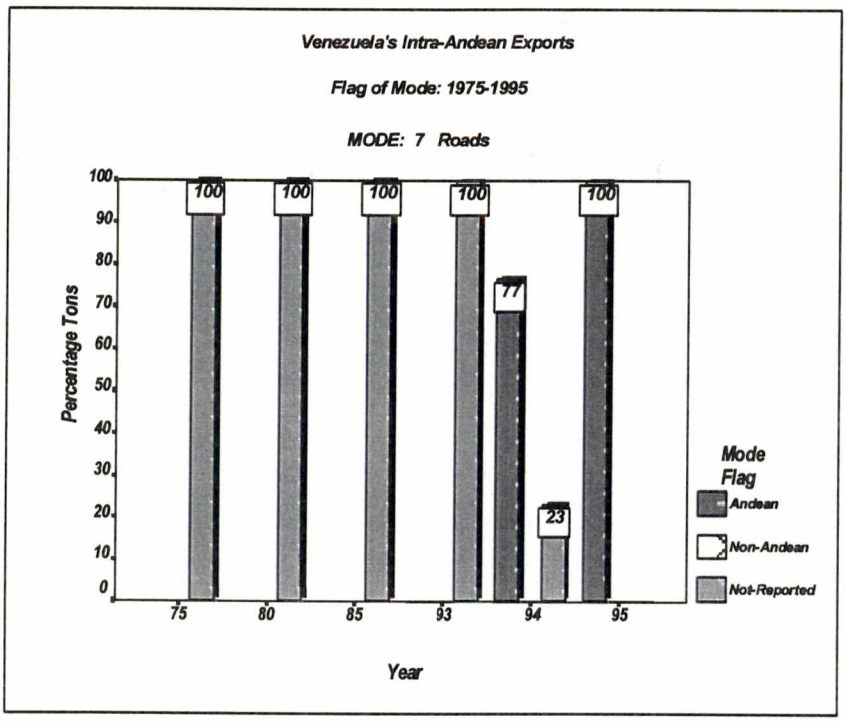


Figure 4.34
Venezuela's Intra-Andean Exports
by Flag of Mode: 1975-1995
Mode: 7 Roads

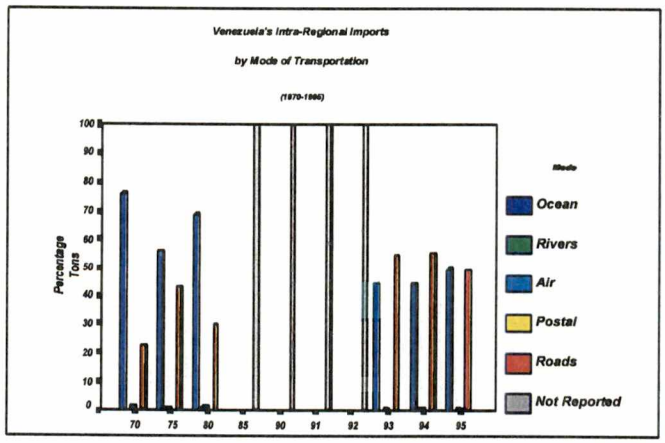


Figure 4.35
Venezuela's Intra-Regional Imports
by Mode of Transportation
(1970-1995)

Figure 4.35). Indeed, about 60 percent of the tonnage was carried by roads and about 20 percent of total tons were moved by ocean each year.

The flags of these modes were not reported for the years 1970 to 1980. Figure 4.36 shows the percentage of tons by flag of vessels for the period. As can be seen, flags were not reported for the first 15 years of the period. In 1993, 59 percent of total tonnage was carried by non-Andean flag vessels and only 28 percent of it by vessels under an Andean flag; 13 percent did not report the flag. In 1994, 53 of total tons were transported by vessels traveling under Andean flags and the rest for non-Andean flags. In 1995 the proportion was about 50/50 percent as the graph shows.

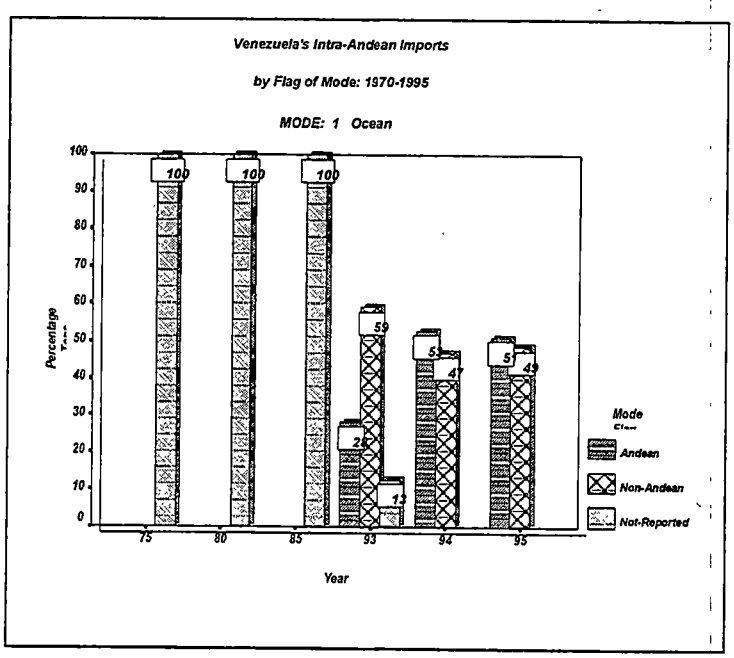


Figure 4.36
Venezuela's Intra-Andean Imports
by Flag of Mode: 1970-1995
Mode: 1 Ocean

During those years, more than 20 percent the total tonnage imported were chemicals and mineral lubricants, which were transported by ocean. Venezuela exports crude oil and imports refined oil as most refineries are located in Aruba and other Caribbean islands.

Figure 4.37 shows the flag of vehicles. Flags were not reported from 1975 to 1985. From 1990 to 1992 modes were not reported at all. In 1993, modes were reported but not the flags. In 1994, 73 percent of tonnage was carried by vehicles of Andean flags. For the remaining 23 percent flags were not reported. In 1995 Andean vehicles carried all the tonnage.

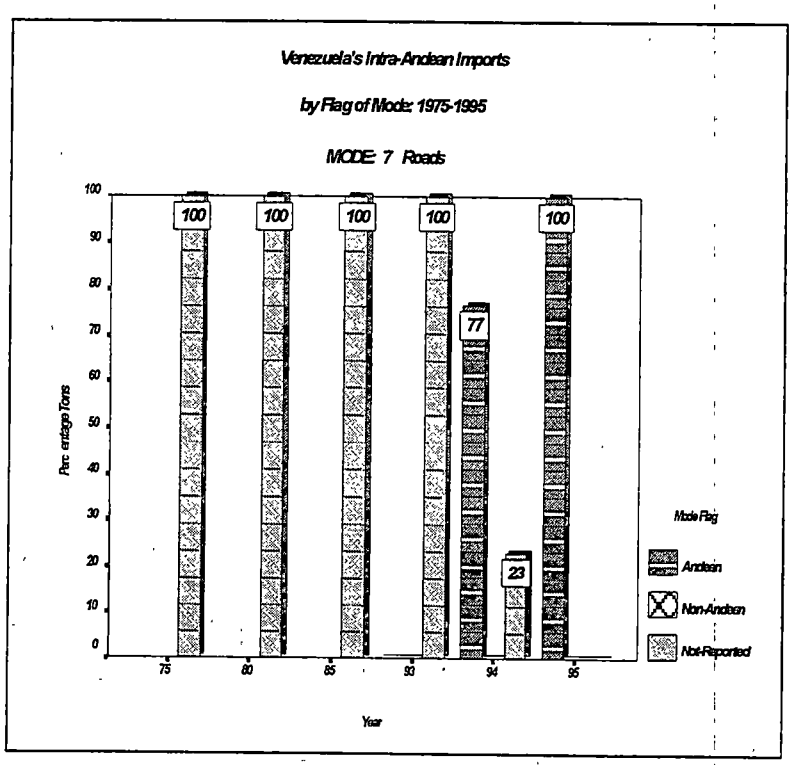


Figure 4.37
Venezuela's Intra-Andean Imports
by Flag of Mode: 1975-1995
Mode: 7 Roads

Colombia's Modes of Transportation

The analysis of Colombia begins by looking at the mode used to move its intra-Andean exports. Then the analysis of the flags of the two main modes follows.

Colombia's Modes and Flags of Modes for Intra-Andean Exports

The graph in Figure 4.38 shows that in moving its exports, Colombia used a variety of modes during the period. For example in 1970, 95 percent of the total export tons were transported by ocean. In 1975, only 49 percent was moved by ocean and 49 percent by roads. In 1980, 59 percent was moved by ocean, 39 by lakes, and 2 percent by roads.

In 1985, 55 percent of the total tons were moved through lakes, 7 percent through rivers, and 37 percent by ocean vessels. In 1990, 99 percent of export tons were moved by ocean, lakes, and rivers.

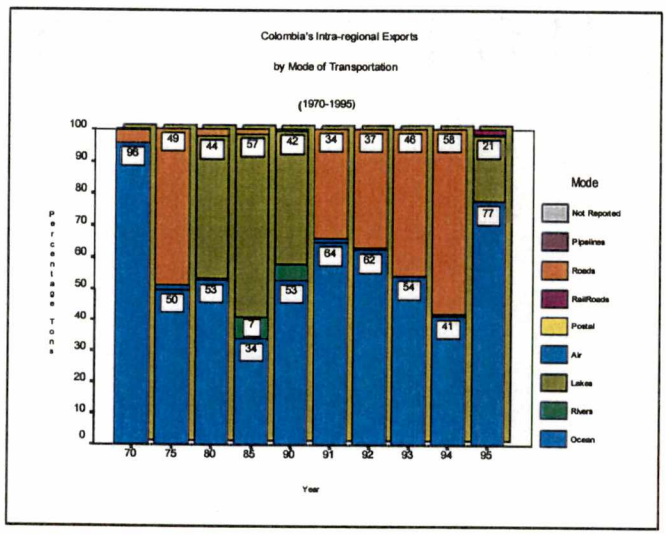


Figure 4.38
Columbia's Intra-Regional Exports
by Mode of Transportation
(1970-1995)

Recall that Colombia, as described in the first part of this chapter, has a well-developed inland waterway system that connects ocean ports with inland ports. Indeed, the Magdalena River system links interior cities to the Atlantic coast. Therefore, it is not surprising that lakes and rivers were reported as main transport means. However, this does not mean that the cargoes were moved all the way from Colombia to final destination through rivers or lakes because if we look at the map, it is not possible. What is happening here is that the first mode that handled the cargo was reported as the mode. This means that if cargo was picked up in an inland port, and then moved to another inland or ocean port and then transferred to a truck, for example, this intermodal movement is not reflected in the statistics.

Transportation by roads started playing a more important role in 1991. In that year, terrestrial vehicles moved 24 percent of exports. This percentage increased to 33 percent in 1992, 41 percent in 1993, and to 49 percent in 1994. The rest of the tons for those years were reported as moved by ocean vessels. In 1995, it was reported that 78 percent of cargo handled by ocean transport and 20 percent by lakes.

If we look closely at the composition of Colombia's intra-Andean exports for those years, we find that more manufactured products were exported (see graph in Figure 4.9). It is very probable that those goods were traded with Venezuela and transported by vehicles to the frontier. For the same years, chemicals and mineral fuels were also an important proportion of total exports (about 25 percent of total, see graph in Figure 4.9)

To examine the flag of the modes the following graphs were drawn. Figure 4.39 depicts the flag of ocean vessels, Figure 4.40 the flag of lakes and river vessels, and Figure 4.41 the flag of vehicles.

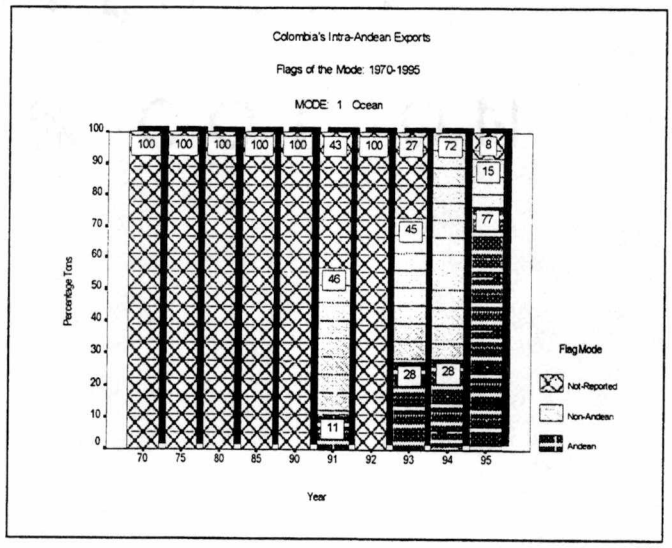


Figure 4.39
Columbia's Intra-Andean Exports
by Flag of Mode: 1970-1995
Mode: 1 Ocean

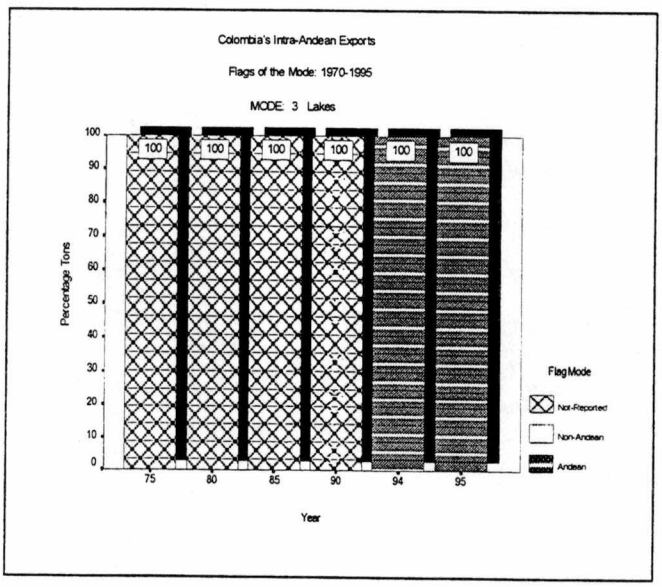


Figure 4.40
Columbia's Intra-Andean Exports
by Flag of Mode: 1970-1995
Mode: 3 Lakes

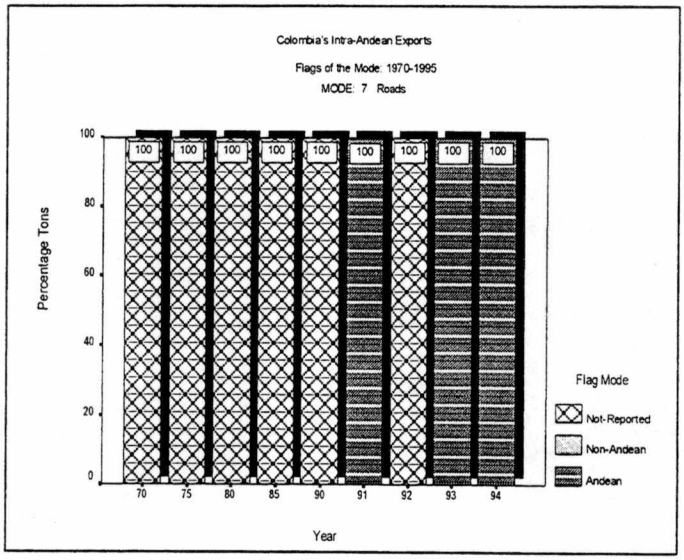


Figure 4.41
Columbia's Intra-Andean Exports
by Flag of Mode: 1970-1995
Mode: 7 Roads

As can be seen from the graph of Figure 4.39, from 1970 to 1990 flags were not reported at all. In 1991, the flag of ocean vessels were not reported for 43 percent of total carried tons. The same year, 46 percent of tonnage was moved by non-Andean flag vessels and 11 percent for Andean flag vessels. In 1992 flags were not reported at all. In 1993 the percentages were: 45 percent was moved by vessels under non-Andean flags and 28 by Andean flag ships; for 27 percent of cargo flags were not reported. In 1994, 72 percent of the total cargo was moved by Andean flag vessels and 28 percent by Andean flagships. In 1995, the situation changed completely, as 77 percent of total tons were moved by Andean flag vessels and 15 percent by non-Andean. That year 77 percent of Colombian exports were mineral fuels (see graph in Figure 4.9).

The flags of river and lake vessels are shown in Figure 4.40. As can be seen, no flags were reported from 1970 to 1990, although the mode was used during those years. In 1993 and 1994, all cargo was moved by Andean flag vessels.

Regarding the flags of vehicles, Figure 4.41 shows that from 1970 to 1990 and in the year 1992, the flags were not reported at all. Recall that the countries have no obligation whatsoever to report the mode when reporting statistics to international organizations such the United Nations offices. Particularly, with vehicles, it is difficult to track many essential data, as they are in private hands.

As can be seen, in the years 1991, 1993, and 1994, all tonnage moved by roads was carried by Andean vehicles. It is very likely that the cargo was accounted for the origin point when Colombian trucks took it to the frontiers. If they were changed to other trucks or modes, the statistics do not reflect those movements.

Colombia's Modes and Flags of Modes for Intra-Andean Imports

The graph in Figure 4.42 shows the main mode of transport used to import goods into the country. As can be appreciated, ocean mode has played the main role in transporting Colombia's intra-regional imports. Recall that Colombia imported during the period three main products: mineral fuels, chemicals, and basic manufactured goods. These imports came mainly from Venezuela.

Movements by ocean accounted for more than 80 percent of total tonnage in the years 1970 to 1985. Movements using roads were significant from 1985 to 1992, accounting for almost 50 percent of total tonnage. Movements through lakes, which the

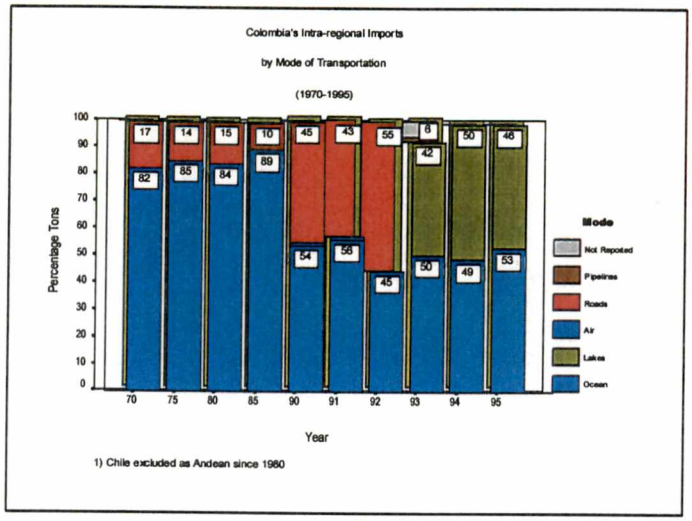


Figure 4.42
Columbia's Intra-Regional Imports
by Mode of Transportation
(1970-1995)

author believes, are through the river systems, accounted for almost 50 percent of the total tonnage from 1993 to 1995.

Movements by ocean accounted for more than 80 percent of total tonnage in the years 1970 to 1985. Movements using roads were significant from 1985 to 1992, accounting for almost 50 percent of total tonnage. Movements through lakes, which the author believes, are through the river systems, accounted for almost 50 percent of the total tonnage from 1993 to 1995.

The flags of the main modes are depicted in the following graphs. Figure 4.43 depicts the flags for ocean, Figure 4.44 for roads, and Figure 4.45 for lakes.

As can be seen in Figure 4.43, flags were not reported for years '85 and '93. In 1970, 16 percent of tons were moved by vessels of non-Andean flags, and 80 percent was not reported.

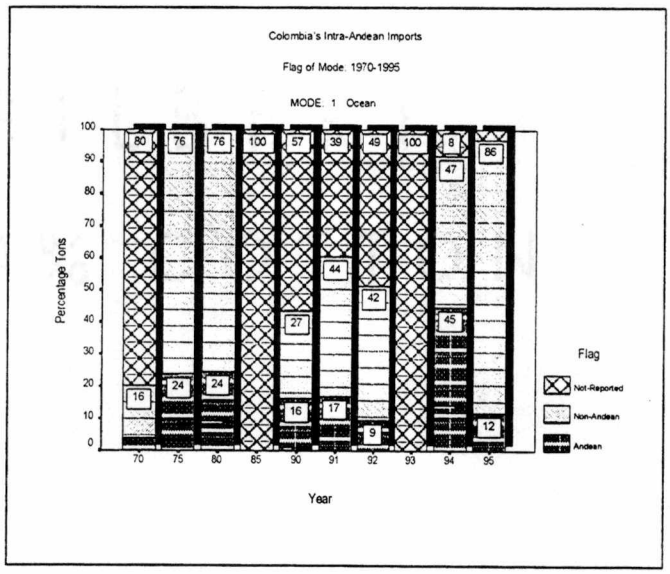


Figure 4.43
Columbia's Intra-Andean Imports
by Flag of Mode: 1970-1995
Mode: 1 Ocean

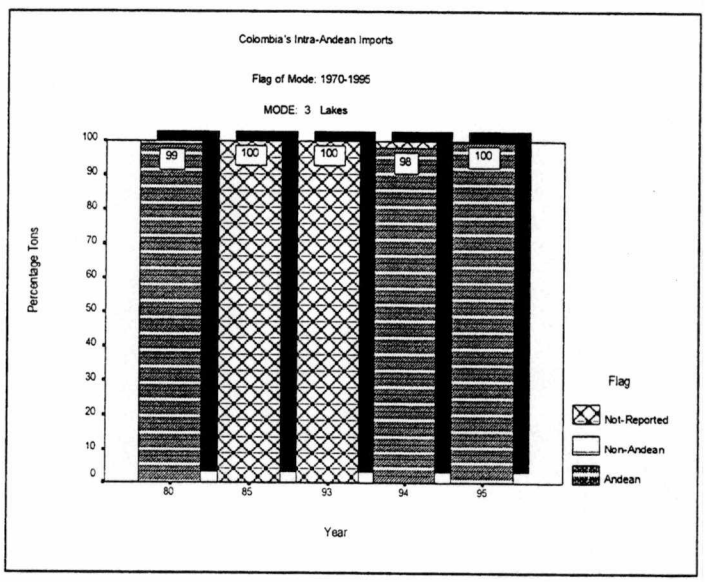


Figure 4.44
Columbia's Intra-Andean Imports
by Flag of Mode: 1970-1995
Mode: 3 Lakes

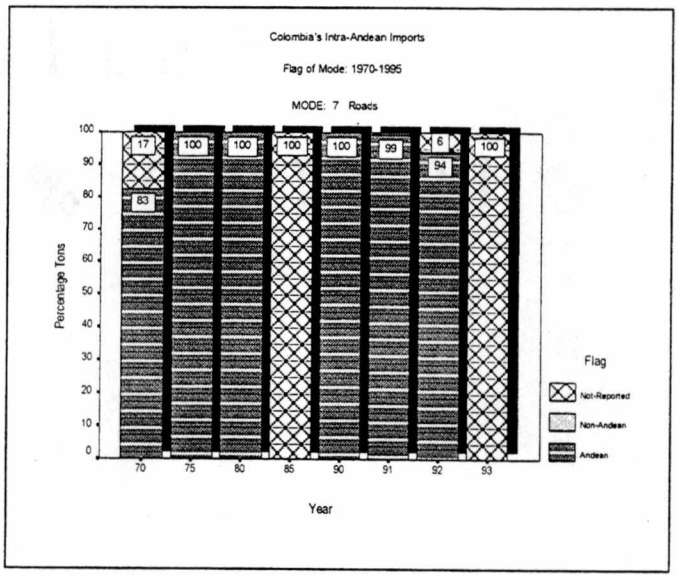


Figure 4.45
Columbia's Intra-Andean Imports
Flag of Mode: 1970-1995
Mode: 7 Roads

In 1975 and 1980, 76 percent of tonnage was carried by non-Andean flags while 24 was carried by Andean flagships. In the years '90, '91 and '92, for about 50 percent of the tonnage flags were not reported at all, Andean flags carried less than 20 percent of the tonnage and the rest was carried by foreign flag vessels.

In 1994, Andean flag vessels carried about 45 percent of the tonnage, and in 1995 only 16 percent.

The graph in Figure 4.44 shows the flags for lake (river) boats. Flags of river and lake vessels were Andean for all the years reported. For the years '85 and '93 flags were not reported.

Products moved from interior cities to ocean ports or to river ports were reported as being moved all the way by rivers, for the same reason given above.

The graph in Figure 4.45 shows the flag for cargo moved through roads. As can be seen, flags were not reported for the years '85 and '93. For the year '70, 83 percent of tonnage was moved by Andean trucks and, for the rest the flag was not reported. For the years '75, '80, '90 and '91, the flag was Andean. For the year '92, 94 percent was Andean and 6 percent was not reported.

In the case of Colombian intra-regional imports, we can observe that more flags were reported, indicating better recording procedures, when they were performed.

Ecuador's Modes of Transportation

The analysis of Ecuador's intra-regional mode of transportation begins by looking at the modes used to move its exports, analysis of the percentage of tons and then the flag of the mode used over the examined period. The same is done with Ecuador's intra-regional imports.

Ecuador's Modes and Flags of Modes for Intra-Andean Exports

The graph in Figure 4.46 depicts the main mode of transportation used by Ecuador when exporting to other Andean nations. As can be seen, the country did not report the mode of transportation from 1985 on. Therefore, no flag was reported either. For 1970 and 1975, ocean was the main mode of transportation for Ecuador's intra-regional exports, carrying about 90 percent of total tonnage. Those years, according to data reported in Figure 4.15, Ecuador exported food and mineral fuels as main exports.

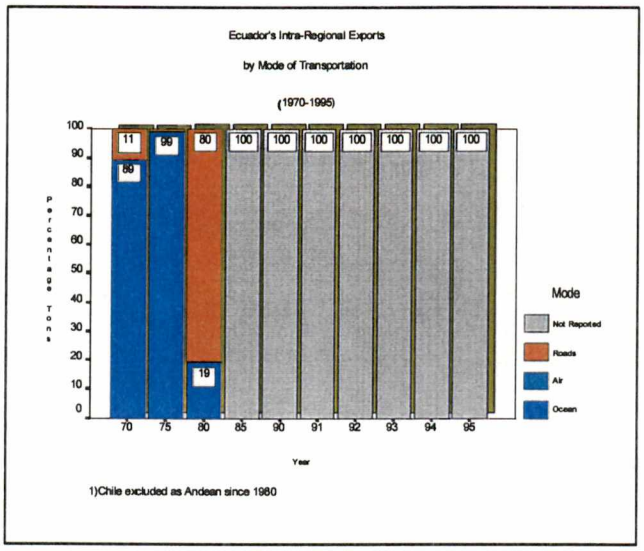


Figure 4.46
Ecuador's Intra-Regional Exports
by Mode of Transportation
(1970-1995)

In 1980, 80 percent of total tonnage was carried by roads. That year, according to data shown in Figure 4.15, about 30 percent of total tons exported to other Andean nations were manufactured goods. According to data, Venezuela bought 28,246 tons of manufactured goods worth 15 million dollars that year.

The flags of the mode reported for those years are shown in the following two graphs. Figure 4.47 shows the flags for ocean mode. As can be seen, in 1970 no flag was reported for this mode. In 1975, 61 percent of tonnage was carried by non-Andean flagships and 39 by Andean flags. Recall that this year 99 percent of all export tons was mineral fuels. In 1980 the Andean flags dropped to 22 percent while non-Andean rose to 78 percent. No fuels were exported to Andean nations these years (see graph in Figure 4.15).

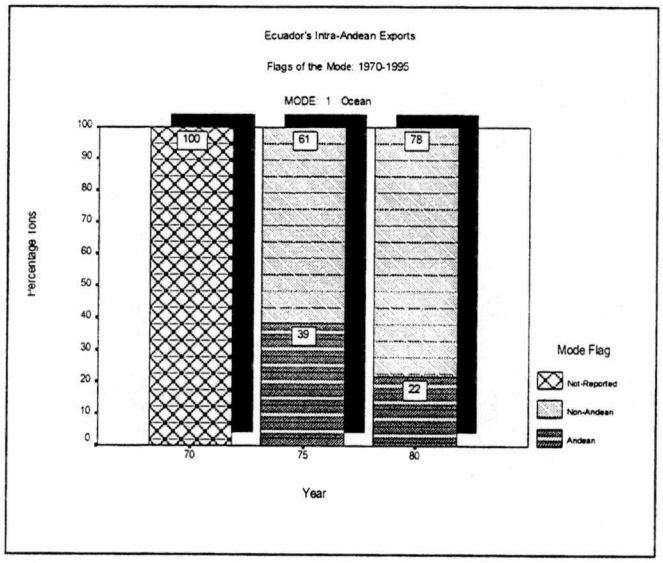


Figure 4.47
Ecuador's Intra-Andean Exports
by Flag of Mode: 1970-1995
Mode: 1 Ocean

Chile is an important destination of Ecuador's mineral fuels and it is possible that many of these exports were carried for Chilean flagships. As Chile was taken out of Andean in 1976, any movement by Chilean flag vessel was automatically classified as non-Andean.

The graph in Figure 4.48 shows the flag for vehicles. All flags were non-Andean in 1970 and Andean in 1975 and 1980. Recall that Ecuador did not report the mode of transportation since 1985 on. During the years where flag were for vehicles, Ecuador exported food, mineral fuels and manufactured goods in different proportions (see graph in Figure 4.15). In 1975 it was reported that trucks carried 19,512 out of a total of 1.8 million tons. In other words, trucks carried about 1 percent of total exports for that year. In that year, Colombia bought 18,635 tons of food and food preparation from Ecuador. As the countries are neighbors it is very possible that this cargo went by roads.

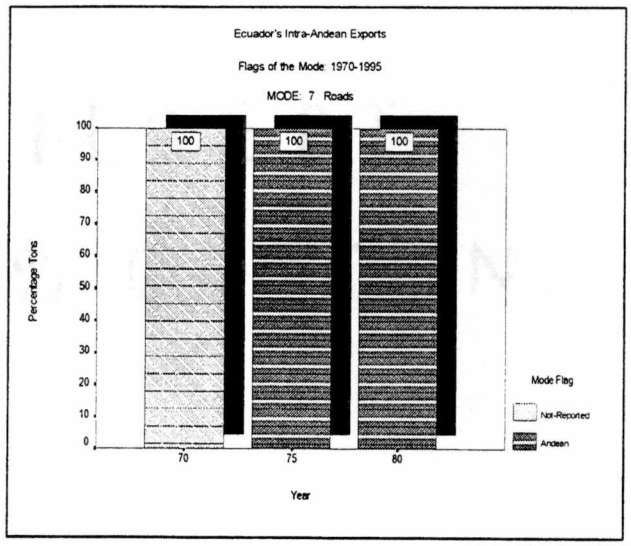


Figure 4.48
Ecuador's Intra-Andean Exports
by Flags of Mode: 1970-1995
Mode: 7 Roads

Ecuador's Modes and Flags of Modes for Intra-Andean Imports

The following graph in Figure 4.49 shows the modes used for Ecuador's intra-regional imports. As Ecuador's exports, modes used in intra-regional imports were not reported from 1985 by the country. In 1970, 99 percent of all import tonnage was carried by ocean vessels. In 1975 and 1980, ocean as a mode dropped to 76 and 22 percent respectively. Roads were used instead those years. If we look at the composition of imports, we find that imports of minerals were decreasing as Ecuador discovered and exploited oil resources in the early Seventies. In 1980, Ecuador imported 604,479 tons of which 476,336 came from Peru. Peru and Ecuador share borders so it is very probable that trucks were used for moving those tons. Indeed, of those tons, 426,705 were classified as SITC 6, which is manufactured goods.

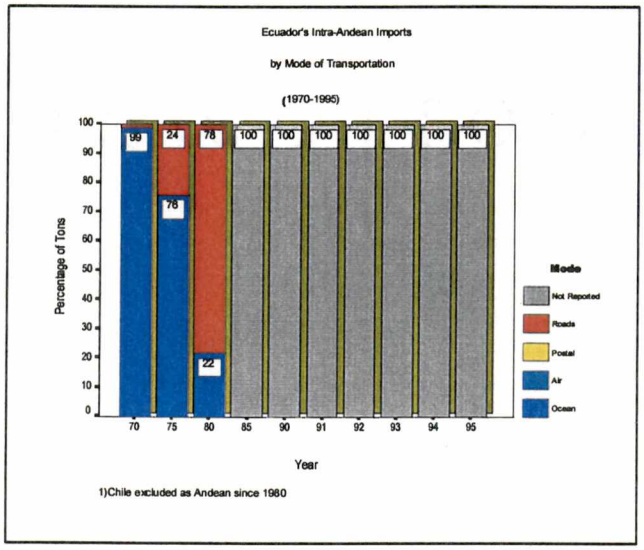


Figure 4.49
Ecuador's Intra-Andean Imports
by Mode of Transportation
(1970-1995)

Southern Region: Peru and Bolivia

The analysis of each country starts by looking at the mode used for moving the country's intra-Andean exports, and when reported at the flag of the mode if it was reported. This is important to discover relationships between the commodities they have traded among them and what modes have been used and if they are regional or international. Once we have answered the question about what modes were used to move the exports, we looked at the flag of the main modes used. Then the same was done for each country imports.

Peru's Modes of Transportation

The analysis of Peru starts by looking at its intra-Andean exports. Trade data was disaggregated by type of product, by mode of transportation and by flag of the mode.

The first aggregation was done to see the tonnage moved by each mode. Then, when modes were reported, we looked into the years to see if there was any flag of the mode reported. The same was done with Peruvian intra-regional imports.

Peru's Modes and Flags of Modes for Intra-Andean Exports

The graph in figure 4.50 depicts the modes of transportation used by Peru when exporting to other Andean nations. In 1970, 81 percent of its total intra-regional exports were carried by ocean. This changed in the early 1990s, as more than 50 percent of the total was moved by roads. However, by 1995, ocean mode moved more than 70 percent of its intra-Andean exports.

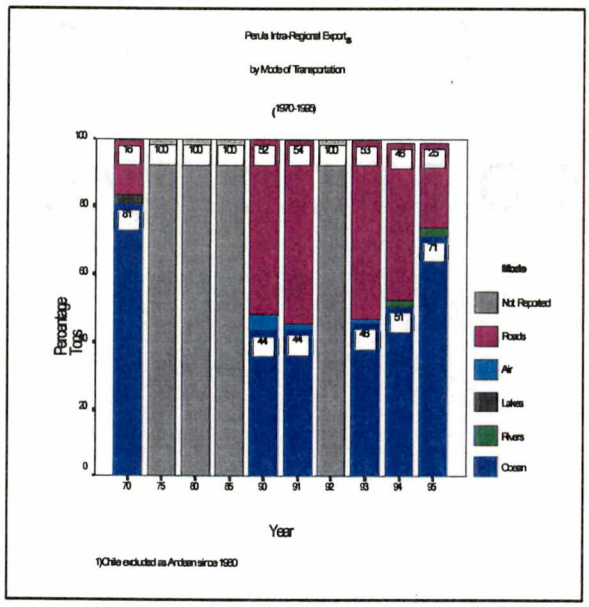


Figure 4.50
Peru's Intra-Regional Exports
by Mode of Transportation
(1970-1995)

In addition, the graph shows that Peru did not report the mode of transportation for the years 1975, 1980, 1985 and 1992. Peru did not report the flag of the modes used over the period.

As shown early in the graph of Figure 4.21, the composition of the exports may explain the mode used over the period. For example, in 1990, 30 percent of its total intra-regional exports were manufactured products. If we look at the mode used that year, we notice that products were moved mainly by roads which it may be explained by the type of products exported that year.

Peru's Modes and Flags of Modes for Intra-Andean Imports

The following graph in Figure 4.51 shows the modes used for Peru's intra-regional imports. Over the examined period, Peruvian intra-Andean imports were carried mainly by ocean. The composition of imports were mainly fuels and minerals as already explained in the previous section. These imports were moved mainly by ocean vessels and by roads. The flag of the modes were not reported over the period at all.

Bolivia's Modes of Transportation

The analysis of Bolivia starts by looking at its intra-Andean exports and then at its intra-Andean imports as we did for each Andean country.

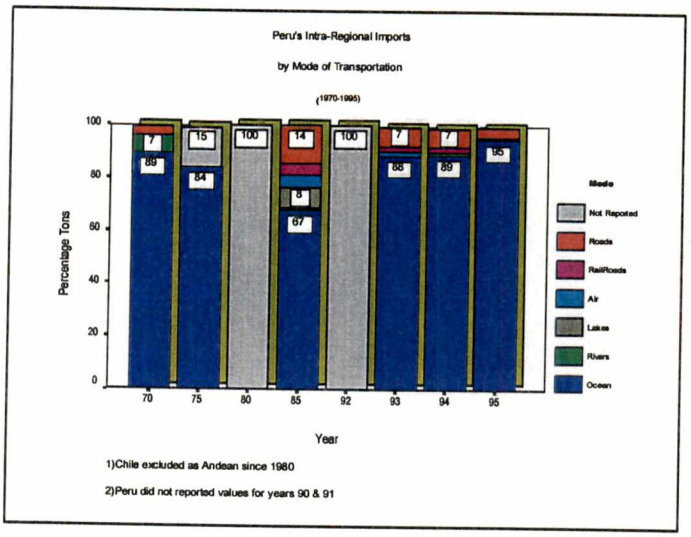


Figure 4.51
Peru's Intra-Regional Imports
by Mode of Transportation
(1975-1995)

Bolivian Modes and Flags of Modes for Intra-Andean Exports

The graph in Figure 4.52 shows that for the first 18 years, the modes of transportation used for moving the country intra-regional exports were not reported. Therefore, no flag was reported either.

For 1993 railroads and roads accounted for almost 85 percent of the total tonnage exported. In 1994, they declined to 73 percent of the total and in 1995 only reached 53 percent. These years, Bolivia exported mainly food and animals, raw materials, and oil and animal lards to other Andean nations as clearly depicted in the graph of figure 4.27. Bolivia did not report the flag of the modes over the examined period.

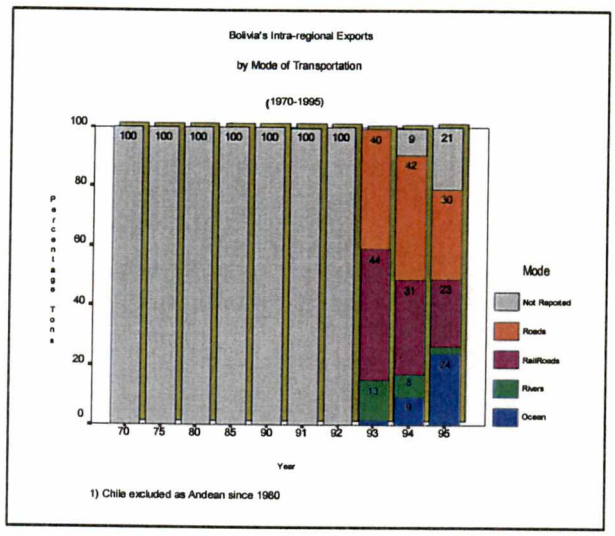


Figure 4.52
Bolivia's Intra-Regional Exports
by Mode of Transportation
(1970-1995)

Bolivia's Modes and Flag Used for Intra-Andean Imports

The graph in Figure 4.53 depicts roads as the main mode used for Bolivia to move its intra-Andean imports followed by ocean as the second mode used over the examined period.

The composition of Bolivian intra-regional imports was very diversified over the period making it to draw relations with the modes quite difficult.

The country did not report the mode used in 1990 and later in 1993. Additionally, Bolivia did not report the flag of the modes used over the examined period.

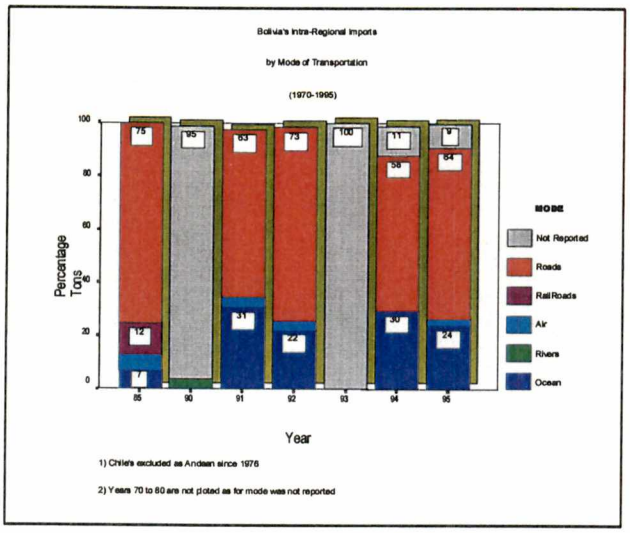


Figure 4.53
Bolivia's Intra-Regional Imports
by Mode of Transportation
(1970-1995)

Conclusions of the Modes of Transportation Used by the Andean Nations

As the graphs of this section have shown, the modes used by the Andean nations to move their intra-trade have not been consistently reported by every country. For all countries but Bolivia, ocean was the main mode used for moving their intra-trade. The flags were reported under voluntary basis as the countries had not obligation to report such information. However, when reported, the classification as Andean or non-Andean was used to aggregate the data and to show the tendency over time.

There is no general pattern for the modes used or for the flag of the mode reported. It seems that every country used its own mode and consequently the flag for that year was Andean or not reported. It also appeared that most countries switched to roads as the composition of their intra-trade moved to manufactured goods. This pattern is very clear in the cases of Venezuela and Colombia.

IV. Current Logistics and Transportation Infrastructure

This section answers the questions stated in Chapter 1 about the present logistics and transportation infrastructure. Specifically, this section looks at the roads and railroads of each country to see if they have been able to service their intra-regional trade and to foster the integration goals of the group. In addition to that, information about current and future infrastructure projects aimed at helping to integrate these countries is also included here. To answer the specific questions about the logistics infrastructure, information and data on communication networks, regional distribution centers, and legal procedures that may have affected intra-Andean trade were collected.

This section was elaborated with data and information from reports collected from a variety of secondary sources such as the JUNAC (Junta del Acuerdo de Cartagena), which is the main representative legal office for the Andean Group, the United Nations and its several branches, and from published Statistical Yearbooks.

To facilitate the reading, this section is divided into two parts. The first contains the transportation information and the second logistics data and information.

Transportation Infrastructure of the Andean Group

For the purposes of this study, the analysis of the Andean transportation infrastructure only covers roads and railroads. Data were collected country by country and then summarized for the whole group when appropriated.

Andean Road Systems

The Panamerican Highway links the countries of the continent from Panamá through southern Chile. In addition to this highway other highways cross the countries and link them as shown in the Network System Map in Appendix A-22.

The length and type of roads by country is shown in the table 4.22. As can be seen from the table, the countries have extensive roads in regard to length. However, the percentage of paved roads in every country is very small except for Venezuela that has 33,214 kilometers of paved roads which represent a 39 percent of the total roads.

The Venezuela's roads link all main cities of the country (see map, Appendix A-22). In Colombia, the Caribbean Trunk Highway links the cities of Barranquilla, Cartagena and Santa Maria with the main Atlantic Ports (see maps of Colombia's network, Appendix A-20 and A-23). In Ecuador the Panamerican Highway runs through the country linking southern Ambato to Quito all the way to Tulcan which borders Colombia, and then running south to

Table 4.22
Roads of Andean Countries
(Kilometers, est. 1996)

COUNTRY	Total	Paved	Unpaved
Northern Region			
Venezuela	84,300	33,214	51,086
Colombia	106,600	12,733	93,867
Ecuador	43,249	5,752	37,497
Southern Region			
Peru	71,400	4,783	66,617
Bolivia	52,216	2,872	49,344

Sources: The World Factbook, 1998;
The Exporters' Encyclopedia, 1998.

Cuenca and Loja (see map, Appendix A-24). The Peruvian principal roads are formed by the Panamerican, Camino del Inca, and the Marginal de la Selva highways; and also of the east-west portion of the Trans-Andean Highway (Exporters', 1998)(see maps of Transverse and Longitudinal Road System in Appendix A-21 and A-22).

The composition of commercial vehicles in use over the years is shown in the table 4.23. As can be seen from the table, the number of commercial vehicles have increased from 268 thousand vehicles to 1.8 million vehicles in the region. Colombia and Venezuela combined have a total of 1.1 million vehicles. This is an interesting finding as the countries have increased their bilateral trade about 12 fold.

Indeed, Venezuela started exporting to Colombia in 1970 about 80 thousand tons. By 1995, Venezuela's exports to Colombia were 1.8 million tons. Colombia started in 1970 exporting to Venezuela 64,360 tons and by 1995 exports reached almost 800 thousand tons. As we see in the previous section, most of the freight was carried by roads between the two.

Table 4.23
Commercial Motor Vehicles in Use
(Thousands)

Country	1960	1970	1975	1980	1985	1990	1993	1994
Bolivia	n/a	28.8	21.3	47.6	46.9	152.4	66.3	n/a
Colombia	82.9	83.5	88.4	294.9	390.9	665.0	672.6	n/a
Ecuador	19.0	36.4	77.2	112.2	176.0	207.3	231.4	243.4
Peru	65.2	117.5	145.0	176.0	220.3	237.4	288.8	316.6
Venezuela	100.7	198.2	369.4	718.3	418.0	464.0	460.0	n/a
Total	**267.8**	**464.4**	**701.3**	**1,349.0**	**1,252.1**	**1,726.1**	**1,719.1**	

Notes: Includes trucks, buses, and tractor and semitractor combinations, but excludes trailers and farm tractors.

Problems Affecting Roads and Freight

Several climatic conditions and geographical accidents constantly damage existent roads. For example, the El Nino (1997/98) destroyed almost all coastal roads in Ecuador, including eighteen bridges of which three were major ones (Exporters' 1998). Moreover, earthquakes, volcanic eruptions and land movements have constantly damaged the countries' roads.

Roads as a mean of transportation in some countries are also risky. In Colombia many trucks are assaulted in their ways to and from ports. This makes insurance very expensive. Guerrilla groups also attached trucks and infrastructure in countries such as Colombia, Ecuador and Peru.

Maintenance of roads was neglected for many years due to the many economic and financial crises the countries have encountered. In addition, government policies have focused on other priorities (social) and have not allocated enough funds to construction of new roads or the adequate maintenance of the existing ones.

In addition, the construction and in same cases the management of roads has been transferred to private hands from public administration. The countries of the group have invited private investors to acquire or have long term concessions on roads, railroads, ports, airports, and telecommunication companies.

Ongoing and Proposed Road Projects

Several important projects are under development or have been proposed in the region.

- In Bolivia, 8,000 kilometers of new roads, of which 50 percent will be paved roads, are still under construction. This ten-year project was initiated in 1990, at a cost of US$2.6 billion (Exporters', 1998).
- In Ecuador, a 450-kilometer new highway has been planned to connect Quito, the capital, and Guayaquil, the country's main port. This highway is planned to be four-lane and when finished it will be the most modern highway in the country.
- Venezuela initiated a road-use tax in Tachira, a state near the Colombian border, where most of truck traffic flows (EIU, 1994).

Andean Railway Systems

Table 4.24 shows the historical development of railroad in each country of the Andean Group. As can be seen from the table, until the 1960s all countries had increased the miles of coverage by railroads. The total for the group that year was 7,203 miles. After that year, railways have been retired for a total of only 6,003 miles in 1994.

Railways have played a significant role in integrating some countries with the continent and in moving interior products to ports. In some countries such as Bolivia, a landlocked country, railroads join Bolivia with Brazil, Argentina and Chile.

To better appreciate the type of railroads these countries have, table 4.25 depicts the length and type for them.

As can be seen from the table, the countries have all developed railway systems each with different gauges, making very difficult connections between neighboring countries. Due

Table 4.24
Development of Railroads
in the Andean Group

Year/Miles COUNTRY	YEARS 1900	1950	1960	1970	1980	1990	1994
Bolivia	796	1,914	2,156	2,041	2,068	2,300	2,298
Colombia	340	1,901	2,213	2,135	2,115	1,313	1,313
Ecuador	311	698	716	626	600	600	594
Peru	1,116	1,924	1,823	1,393	1,305	1,365	1,318
Venezuela	529	620	295	231	257	424	480
TOTAL	3,092	7,057	7,203	6,427	6,344	6,003	6,003

Sources: From 1900 to 1960, Brown, 1966, p.231; From 1970 to 1990 Janes' Railways and SALA, 1998, table 307.

Table 4.25
Railways in the Andean Nations

Country	Total (Km)	Types of Gauge (in meters) 1.435	1.067	1.000	0.914	0.760
Bolivia	3,691			3,652		39
Colombia	3,386	150			3,236	
Ecuador	1,067		1,067			
Peru	2,041	1,726			315	
Venezuela	584	584				

Sources: Jane's World Railways, 1997/98.

to the differences in gauges, transhipments are mandatory at borders. The system was built purposely different back in the last century, when national security was a priority over trade.

The freight moved by railroads is shown in Table 4.26. As can be seen from the table, freight has remained almost unchanged over the period. Indeed in 1970 total freight traffic measured in long ton-miles was about 1.5 billion long ton-miles and remained about the same until 1980. In 1985, it jumped to 6.5 billion long ton-miles, to decrease in 1990 to 1.2 billion long ton-miles. The researcher could not find any explanation for the 1985 increase. It looks like a reporting mistake as Ecuador had reported very little freight in the previous and following years. If the freight for Ecuador was 4.9 million instead of 4 billion, the total for the year would be 1.3 billion long ton-miles for the whole group, which seems normal for the group.

Table 4.26
Railway Freight Traffic
(Million Long Ton-Miles)

COUNTRY/YEAR	1970	1975	1980	1985	1990	1994	1995
Bolivia	301.4	310.8	435.0	302.7	357.6	429.8	n/a
Colombia	775.3	752.7	569.7	513.5	258.3	440.4	498.0
Ecuador	n/a	30.5	21.2	4,940.6	3.4	6.0	n/a
Peru	391.4	410.8	490.7	492.0	560.5	593.7	n/a
Venezuela	8.7	9.4	13.8	9.1	23.5	30.9	n/a
TOTAL	**1,476.8**	**1,514.2**	**1,530.3**	**6,257.9**	**1,203.3**	**1,500.7**	**498.0**

Nota: Original data were in net ton-kilometers. The *Long Ton-Mile* was obtained multiplying net ton-kilometers by coefficient .6611558
Source: SALA, 1998, Table 309

Ongoing and Proposed Railroad Projects

In Bolivia the World Bank authorized a $60 million project to rehabilitate tracks, facilitate better transport for exports, and acquire new rolling stock (IDB, 1998). In addition, several privatization projects have been proposed to shift control and management of railways to private investors.

Venezuela has a new national railway network planned at a cost of about 2.5 billion dollars (EIU, 1994). This railway expansion was approved by the government, allowing foreign participation in it. Funding for this projects has come from some Japanese and European banks, and through international joins ventures. Within this project, a 2,000-kilometer network connecting Venezuelan mining and industrial centers to ports is planned. This project is expected to be finished by the year 2005 (EIU, 1994).

Colombia and Venezuela have agreed to build an international railroad that will join the two country capitals. This is a major project as the tracks must cross the Venezuelan plains (see map of S.A. Network, Appendix A-22). Additionally, In Bolivia, the La Paz-Arica railway services have been privatized in a 80 percent (Enfasis, 1999).

Other Ongoing and Proposed Transportation Projects

Besides road and railroad projects, other projects have been launched in every country to improve ports, airports, and cargo facilities. For example, in Venezuela a $187 million dollar program was launched in 1994 to modernize the airports, buy new surveillance radars, tower control and air traffic control equipment, and construct new control towers and improve runaways (EIU, 1994).

Logistics Infrastructure of the Andean Group

The logistics infrastructure of the Andean group is formed by the communication network the country members have and also by facilities aimed at helping trade flow smoothly across borders. These facilities includes customs locations, regional distribution centers and the number of communication means available in each country. Moreover, this section looks into the legal procedures to move freight with the region.

Telecommunication Infrastructure

Over the period of existence of the Pact, the member countries have significantly improved the number of telephone lines, intra-corporate networks, and wireless and cellular mobile phones. Table 4.27 shows the changes in the number of telephones over the last 25 years.

Table 4.27
Telephones
(Thousands)

COUNTRY	1975	1980	1985	1990	1992	1994
Bolivia	N/A	N/A	182	184	193	234
PTI	N/A	N/A	2.9	2.6	2.6	3.0
Colombia	1,227	1,718	2,097	2,415	2,822	3,518
PTI	5.2	6.4	7.0	7.5	8.4	9.7
Ecuador	182	272	339	491	531	658
PTI	2.7	3.3	3.6	4.7	4.8	5.9
Peru	369	475	600	565	614	772
PTI	2.5	2.7	3.2	2.6	2.7	3.3
Venezuela	650	N/A	1,451	1,495	1,832	2,334
PTI	5.3	N/A	8.3	7.7	9.1	10.9

Note: PTI= Per Thousand Inhabitants

Source: SALA, 1998, Table 404.

As can be seen from the table, Colombia, Ecuador and Venezuela have doubled the number of telephones per thousand inhabitants in twenty years. This is important for speeding up services in all related areas of businesses. In addition, these countries have initiated efforts to put a satellite in orbit, without any success so far (El Mercurio, 1999).

Telephone companies have been transferred to private hands in countries such as Venezuela, Colombia and Peru (EIU, 1994). In addition, many investments have taken place to improve the telecommunication infrastructure, such as installing fibre-optic cables to increase capacity and capabilities (EIU, 1994). Joint ventures with giant multinationals have taken place all over the region. Firms operating in the region includes Ericcson (Sweden), MCI (USA), BellSouth (USA), Telefonica of Spain, and Northern Telecom (Canada) among others (EIU, 1994). These joint ventures have brought needed capital and modernization to the sector.

The legal framework has changed tremendously during the last ten years to allow privatization of major state-owned companies in the sector. All countries have passed laws to end state monopolies and to allow foreign investors to participate in strategic sectors.

Cellular and wireless systems have experienced an explosive growth in almost every country of the region. Table 4.28 shows the numbers of subscribers from 1990 to 1994.

Table 4.28
Mobile Cellular Telephone Subscribers

COUNTRY	1990	1991	1992	1993	1994
BOLIVIA	N/A	500	1,556	2,651	4,060
COLOMBIA	3,371	N/A	N/A	N/A	101,460
ECUADOR	N/A	N/A	N/A	N/A	N/A
PERU	1,650	5,700	21,550	36,300	52,200
VENEZUELA	7,422	16,600	78,560	182,600	319,000

Source: SALA, 1998; Table407

The countries of Colombia, Peru and Venezuela have experienced a tremendous growth in this sector. This growth is due to the inefficiencies of the traditional telephone systems. Moreover, for customer it is cheaper to have a mobile cellular phone than to pay the traditional monthly phone bill.

In addition, the countries embraced electronic data processing more than two decades ago. Table 4.29 shows data available for import values of data processing and related equipment. As can be seen from table 4.29, all the countries have imported a significant amount of data processing and related equipment. This is significant for networking, tracking, and data processing, all activities that are necessary to eventually improve efficiency in the way businesses are conducted in the region.

Table 4.29
Import Values of Data Processing And Related Equipment
Thousands of US$

COUNTRY	1990	1992	1994	1995
BOLIVIA				
A.D.P. EQP.	5,163	7,024	8,279	10,114
Digital Computers	5,163	4,235	4,538	5,304
Digital Central Proc.	N/A	N/A	N/A	N/A
COLOMBIA				
A.D.P. EQP.	84,002	89,772	295,556	339,843
Digital Computers	N/A	35,775	150,118	143,766
Digital Central Proc.	11,133	33,768	47,754	72,226
ECUADOR				
A.D.P. EQP.	12,797	23,962	40,392	45,909
Digital Computers	4,104	4,036	21,188	21,717
Digital Central Proc.	1,364	13,419	6,316	8,262
PERU				
A.D.P. EQP.	29,824	N/A	91,568	144,139
Digital Computers	29,824	N/A	35,916	61,432
Digital Central Proc.	N/A	N/A	N/A	N/A
VENEZUELA				
A.D.P. EQP.	129,707	193,388	123,256	218,801
Digital Computers	49,584	71,055	52,772	86,598
Digital Central Proc.	22,898	21,516	N/A	N/A

Source: SALA, 1998, Table 408.

Ongoing and Proposed Logistics Projects

In Colombia, the government has committed to upgrading and expanding the telephone systems by moving to digital infrastructure. It is estimated that when completed the country will have about 2.5 million lines (EIU, 1994). Others areas of telecommunications will be open shortly to foreign investors, such as satellite communications, transmission links, cellular services, etc (El Mercurio, 1999).

Logistics Findings

- All the countries have excessive paperwork to deal with imports. Colombia especially has excessive bureaucracy for handling imports.
- Road freight insurance is prohibitively high for many shippers (due to constant guerrilla assaults), that many shippers are forced to use expensive air freight (BLA, 1996) which increases the cost of doing business with Colombia.
- Financing is also very difficult in Colombia not only because of the high interest rate but also due to excessive paper work (BLA, 1996).

CHAPTER 5

SUMMARY AND CONCLUSIONS

I. Introduction

This study was done with several objectives in mind:

- to evaluate the role of logistics and transportation infrastructure for the country members of the Andean Group;
- to examine the trade patterns of the countries to discover trends and major shifts; and
- to upgrade the available literature in the topics of regional integration and logistics and transportation

The summary of the findings will provide the reader with an understanding of the evolution of the integration process of the Andean Group. This will be accomplished by looking into its physical, political, and social settings, the patterns of trade, the mode of transportation and the logistics and infrastructure problems of the Andean nations.

This chapter reviews the research questions stated in Chapter 1 and in Chapter 3 and summarizes the research findings described in Chapter 4. It also discusses the limitations of this study and suggests directions for future research.

II. Summary of Main Findings

The main findings are presented in the same manner Chapter 4 was organized. This is by following along its sections to ease the reading and help to summarize main points by sections.

Findings from the Geographical, Demographics and Economics Settings

The main findings from this section can be summarized as follows:

- The geographical settings do not provide to the Andean Group with some economic advantages of other more natural integration areas.
- The difficult geography of all the Andean countries is a major challenge for transportation and logistics planners.
- The Andes, the Amazon, and some rivers are major geographical barriers for terrestrial transportation.
- The countries produce similar commodities, with concentrations in mining, agriculture, energy, and basic manufactured goods.
- Past trade policies encouraged trade with countries outside the region.
- Past governments focused more on national security than on creating trade routes.
- Social and political issues have taken priority over physical infrastructures.
- The population concentrates in a few urban centers making distribution to rural and isolated cities a big challenge.
- Every country in the group is involved in the cultivation of coca and its refining process.

Findings from the Analysis of Trade

The main findings from this section are summarized as follows.

- Historical low intra-Andean trade.
- Only in the last few years, has significant growth in intra-Andean trade been accomplished.
- Trade is more significant with countries outside the region.
- Colombia and Ecuador are exporters of crude oil and its derivatives, but they import gasoline because they do not have refineries.
- Some countries of the region receive more revenue from illegal exports than from total exports.
- Smuggling is a big problem for local governments.

Findings from the Analysis of the Mode Used to Move the Intra-Andean Trade

The main findings from this section are summarized as follows.

- The countries did not consistently report modes used for moving intra-Andean trade.
- The flag of the modes was not reported consistently over the examined period.
- Modes have shifted away from ocean to roads as the main mode for moving intra-regional trade.

Findings from the Analysis of the Logistics and Transportation Infrastructure

The main findings from this section are summarized as follows.

- Roads and railways link the main centers of production to ocean ports for exports to the world.
- Few roads and railways connect one country with another in the region.
- Low percentage of paved roads.
- Climatic and conditions damaged roads frequently (floods and earthquakes).
- In general, the conditions of roads are not good. Few roads are paved, many lack bridges, and security is poor.
- Venezuela is the only country in the region that has acceptable roads.
- New legal frameworks allow participation of foreign investors in construction and management of roads, railroads, ports, airports and in the telecommunication and energy sectors.
- Railroads are being reactivated to reduce freight costs and to link mining and industrial centers to the ports.
- No regional distributions' centers operate in the region. Every country has its own facilities located near ports and airports. Colombia has initiated, due to the distances between its ports and centers of production, interior terminals and dry ports. These facilities provide consolidation of cargo, warehousing, and customs.

- Multimodal transportation is difficult and expensive for the Andean countries. There are few facilities to help provide the required services.
- Electronic Data Interchange is helping to connect the ports of the region with main world ports, but not with ports within the region.

Other Findings

- The extensive legal framework provided by the Cartagena Agreement encourages international ground transportation in all its forms, and also multimodal transportation. This study could not evaluate to its full extent the accomplishment of all these provisions.
- The Andean Pact provisions provide an extensive regulatory framework to harmonize procedures to facilitate ground transportation. In customs a harmonized unique document was proposed, but still is not fully implemented.
- Every country has its own regulations that affect transportation of goods between the countries.

III. Summary

The Andean Pact, now called, the Andean Community, is not a perfect union. Many problems have hindered the accomplishment of its ambitious goals. For example, its geographical settings lack some of the economic advantages of other, more natural integration

areas. This is one of the many reasons why its intra-regional trade has historically been so low. Only in the last few years has significant growth in the intra-Andean trade been accomplished. In addition, each country member has experienced a variety of economic and political problems during the existence of the group. They have also had several border disputes that have hindered their terrestrial integration.

However, and because the significant number of summits and meetings to solve their problems, the integration scheme of the Andean Group has survived for 30 years. Indeed, at the end of 1996, the Andean Pact was transformed into the Andean Community (AC) with a new and revised legal framework aimed at fostering their multidimensional integration. All the countries in South America and particularly the Andean ones are looking for a multidimensional integration scheme, which means that they want an economic, political and cultural integration. However, multidimensional integration will work only if the country members form a natural area of integration. A natural area of integration means that the members have to have common grounds on those three dimensions.

The Andean Pact, now AC, was conceived in 1969 as a very ambitious and broad integration scheme. Today, the Andean Community has explicit intentions on reaching a political union (similar to the EC). Indeed, a regional Parliament has been proposed for the Andean Community, with direct elections being call within five years, and regional justice systems is already in place (Di Filippo, 1998). The new agreement, according to many experts, is short on specifics to deal with the internal difficulties that have undermined the Andean Pact. For example, a CET has never been in place as Bolivia and Ecuador were always granted special exemptions. Peru suspended active participation in the group due to

disagreements with the Andean CET and finally retired from the group. Peru's trade with the Andean group has always fluctuated in the very low ranges compared with other members (see Tables 4.17 and 4.18).

Other problems also jeopardize the viability of the group. While intra-Andean trade has been growing (see Tables 4.17 and 4.18), a great proportion has been between just two members: Colombia and Venezuela. For their trade, they do not need the Andean agreements, but just their bilateral accords.

The apparent lack of roads and the poor condition of the country infrastructure does not appear in this study have played a negative role in their integration. As demonstrated in this study, the countries have used their roads, vehicles, vessels, and all natural means of transportation (rivers, lakes, and natural passes) to move cargo from one country to another.

This study has found that the archaic regulatory environment affects the efficient physical movement of goods more than the length or quality of the roads.

Further integration will be achieved in the whole region if the AC merges with Mercosur. Bolivia has associate status (1996), and Peru is applying for it. It is worrisome that Peru is no longer a member of the Community and that Bolivia is a special member of the Mercosur.

As we find through the analysis of the patterns of intra-Andean trade, the Andean Group has more than doubled its regional trade since the beginnings of the Nineties. This increase on trade is a consequence of the new trade liberalization policies, the bilateral trade agreements and new orientation toward promoting growth through exports.

IV. Potential Contributions of this Study

The findings of this study have the potential to provide some important contributions for:

- Enhancing and updating the available literature on the topics of regional economic integration in general, and in logistics and transportation in particular;
- Understanding the important role of logistics and transportation in any regional integration scheme; and
- Providing some important data and information on trade, geography, economics, logistics and transportation, and on policy issues for some small and developing Latin American countries.

V. Limitations of the Study and Directions for Future Research

The objectives of the study of the logistics and transportation challenges that the Andean Group has faced in the last 30 years were partially reached in this study. This is due to a number of reasons. First, primary data and information on strategic issues, such transportation infrastructures, were not always available to the researcher. Second, due mainly to time constraints, the scope of this research was limited to the study of only two modes of transportation: roads and railroads. In doing that, the findings of this study have their own limitations and cannot be easily generalized for the other modes. Third, data was obtained mainly from secondary sources, procedure that by itself poses limitations to possible generalizations.

Due to these limitations and constraints, the researcher suggests some priorities for future research.

VI. Priorities for Future Research

The findings and limitations of this study suggest a number of opportunities for future research. Although it is not intended in any way to give a complete list of all possible related research topics, a number of suggestions are listed below:

- It would be interesting to understand the role of national legislation in regional trade and transportation.
- It would be interesting to understand the nature, source and relative strength of other players in regional trade such as freight forwarders, and multinational companies.
- It would be interesting to understand the role of other modes of transportation not included this research (ocean and air) on the regional integration efforts of this group.
- It would be interesting to understand and investigate how other regional groups, such as Mercosur, have faced and planned to face the logistics and transportation problems of their own integration efforts.
- It would be interesting to understand the role, nature and challenges of multimodal transportation on the region.

In sum, additional research is necessary to examine the role of other modes of transportation and other agents on regional integration efforts. Any future research would further the contributions made by this study. It would also be interesting to compare the findings of this study with studies of other similar regional groups.

Bibliography

BIBLIOGRAPHY

Books

Angulo, H. Enrique. 1966. *"Transportation and Intra-Latin American Trade."* in Miguel Wionczek, ed., Latin American Economic Integration: Experiences and Prospects. New York: Frederick A. Praeger, Inc. Publishers.

Balassa, Bela. 1961. The Theory of Economic Integration. Homewood: Richard D. Irwin, Inc.

_____. 1966. *"Towards a Theory of Economic Integration."* in Miguel Wionczek, ed., Latin American Economic Integration: Experiences and Prospects. New York: Frederick A. Praeger, Inc. Publishers.

Bawa, Vasant K. 1980. Latin American Integration New Jersey: Humanities Press Inc.

Bellone, Amy E. 1996. *"The Cocaine Commodity Chain and Development Paths in Peru and Bolivia."* in Korzeniewicz, Roberto P. and William C. Smith ed., Latin America in the World Economy. Westport, Connecticut: Greenwood Press.

Blouet, Brian W., 1997. Latin America and the Caribbean: A Systematic and Regional Survey. New York: John Wiley & Sons, Inc., 3rd. Edition.

Butland, Gilbert J., 1960. Latin America: A Regional Geography. London: Longmans, Green and Co Ltd.

Brown, Robert T. 1966. Transport and the Economic Integration of South America. Washington, D.C.: The Brookings Institution

Cole, J.P. 1975. Latin America: An Economic and Social Geography. London: Buterworth & Co. (Publishers) Ltd.

Dell, Sidney S. 1966. *"The Early Years of LAFTA."* in Latin America Economic Integration: Experiences and Prospects by Wionczeck. New York: Frederick A. Praeger, Inc.

Grunwald, Joseph, Miguel Wionczek and Martin Carnoy. 1972. Latin American Economic Integration and U.S. Policy. Washington D.C.: The Brookings Institution.

Hangen, Everett E. 1968. The Economics of Development. Homewood, Ill: Richard D. Irwin, Inc.

Hecksher, Eli and Bertil Ohlin. 1933. Interregional and International Trade. Cambridge, Mass.: Harvard University Press.

Jacobson, Harold and Dusan Sidjanski. 1980. *"Regional Patterns of Economic Cooperation."* in W.J. Feld & G. Boyd, ed., Comparative Regional Systems: West and East Europe, North America, the Middle East, and Developing Countries. New York: Pergamon Press

Jenkins, Arthur H. 1948. Adam Smith Today: An Inquiry into the Nature and Causes of the Wealth of Nations. New York: Richard R. Smith

Krause, Walter and F. John Mathis. 1970. Latin America and Economic Integration: Regional Planning for Development. Iowa City: University of Iowa Press.

Linder, Staffan B. 1961. An Essay on Trade and Transformation. New York: John Wiley & Sons.

Maritano, Nino. 1970. A Latin American Economic Community. Notre Dame, Indiana: University of Notre Dame Press.

Milenki, Edwards S. 1973. The Politics of Regional Organization in Latin America: The Latin America Free Trade Association. New York: Praeger Publisehers, Inc.

Morawetz, David. 1974. The Andean Group: A Case of Study in Economic Integration among Developing Countries. Cambridge, Mass.: The MIT Press.

Nafziger, E. Wayne. 1984. The Economics of Developing Countries. Belmont, CA: Wasworth.

Porter, Michael. 1990. The Competitive Advantage of the Nations. New York: The Free Press, a Division of MacMillan, Inc.

Ricardo, David. 1948. The Principles of Political Economy and Taxation. London, England: J. M. Dents & Sons Ltd.

Salvatore, Dominick. 1990. International Economics. New York: Macmillan Publishing Company.

Snell, Hampton K. 1969. *"Transportation Integration: A Variety of Problems."* in The Movement Toward Latin America Unity ed. by Ronald Hilton. New York: Frederick A. Praeger Inc.

Urquidi, Victor. 1962. Free Trade and Economic Integration: The Evolution of a Common Market Policy. Berkeley and Los Angeles: University of California Press.

Viner, Jacob. 1950, The Customs Union Issue. New York: Carnegie Endowment for International Peace.

Whitbeck, R.H., Frank E. Williams, and W.F. Christians. 1940. Economic Geography of South America. New York: McGraw-Hill Book Company, Inc.

Whyte, George. 1946. An Outline of Latin American Economic Development. New York: De Pamphilis Press. Inc.

Wionczek, Miguel. 1966. Latin America Economic Integration: Experiences and Prospects. New York: Frederick A. Praeger, Inc.

Journals, Magazines, Periodicals, Reports and the World Wide Web

_____ (1999) April . *"Andean Group: Peru."* Latin America Monitor: 16 (4):8-10, ed. Business Monitor International Ltd. London: R. Londesborough and J. Feroze.

_____ (1998) April 18. *"Integración Económica y Libre Comercio: Para Unir a 750 Millones de Personas."* El Mercurio: Ediciones Especiales, p. 5.

_____ (1994a), Sept. 19. *"Mercosur: Give and Take."* Business Latin America: p. 4.

_____ (1994b), June 20. *Management Alert: Group of Three.; Ecuador.* Business Latin America: p. 8.

_____ (1994c), Jan. 24. *Management Alert.* Business Latin America: p. 8.

_____ (1994d), Jan. 10. *Management Alert: Andean Pact.* Business Latin America: p. 8.

_____ (1993), July 17. *"Infrastructure in Latin America: Public Services, Private Pesos."* The Economist: pp. 38, 40.

_____ (1993), June. *"Inter-American Development Bank's 1992 Loans to Latin America."* U.S./Latin Trade: p. 9.

_____ (1988), February. *"South America: A Trading Partner in the Making?"* Container News: pp. 29-33.

Aitken, Norman D., 1973, December. *"The Effects of the EEC and EFTA on European Trade: A Temporal Cross-Section Analysis."* American Economic Review: pp. 881-892.

_____, Norman D., and William R. Lowry. 1973, June. *"A Cross-Sectional Study of the Effects of LAFTA and CACM on Latin Ameican Trade."* Journal of Common Market Studies: 12: pp. 326-336.

Anderson, James E., 1979, March. *"A Theorical Fundation for the Gravity Equation."* American Economic Review: pp. 106-116.

Appels, Ton and Henry Strude de Swielande. 1998, *"Rolling Back the Frontiers: The Customs Claerance Revolutions."* The International Journal of Logistics Management: 9(1), pp. 111-118

Arndt, Sven W. 1997. *"Globalisation and Trade: A Symposium."* The World Economy: 20-5, pp. 695-707.

Bamrud, Joachim. 1994, March. *Andean Pact* U.S./Latin Trade: pp. 70-80.

Bergsten, C. Fred. 1997. *"Open Regionalism."* The World Economy: Especial issue on Global Trade Policy. 20-5, pp. 545-65.

Brada, Josef C. and Jose A. Mendez. 1983. *"Regional Economic Integration and the Volume of Intra-Regional Trade: A Comparision of Developed and Developing Country Experience."* Kyklos: pp. 589-603.

Dietz, James L. 1992. *"Overcoming Underdevelopment: What has been Learned from the East Asian and Latin American Experiences?"* Journal of Economics Issues: June, Vol. XXVI, p. 2.

Dischamps, Jean Claude. 1993. *"The European Community, International Trade, and World Unity."* California Management Review: Winter, 35(2), pp. 104-117.

Dowling, Jay. 1992, March 23. "Central America Economic Integration Proceeds", Business America: U.S. Department of Commerce: p. 5.

DFATA: Department of Foreign Affairs and Trade of Australia. 1997, "The Andean Pact: An Integration Pioneer." available on the World Wide Web: http://feedback@ljextra.com

Drucker, Peter. 1989, October 21. "Peter Drucker's 1990s: The Futures that have already happened." The Economist: pp. 19-24.

ECLA. 1987. *"Basic Concepts of Maritime Transport and its Present Status in Latin America and the Caribbean."* Cuadernos de la CEPAL. Economic Commission for Latin America and the Caribbean, United Nations. Santiago, Chile.

Edwards, Sebastian. 1993. *"The Latin American Economic Integration: A New Perspective on an Old Dream."* The World Economy: v16n3, pp.317-339, Cambridge, Mass.: Basil Blackwell Ltd.

Europa World Yearbook: 1991. 1991. London: Europa Publications, Ltd.

Exporters' Encyclopedia: 1994/95. 1994, July. Dun & Bradstreet Inc. Baltimore: Port City Press.

Exporters' Encyclopedia: 1998/99. 1998, July. Dun & Bradstreet Inc. Baltimore: Port City Press.

Ferguson, Yale H.. 1980. "*Latin America*". in Comparative Regional Systems: Chapter 10. New York: Pergamon Press Inc.

Ferris, Elizabeth. 1976. National Support for the Andean Pact: A Comparative Study of Latin America Foreign Policy. University of Florida (Unpublished). Chapter 2: pp. 39-69

García, Enrique. 1992. "*Reflections on the Andean Integration Process.*" Proceedings of the Fourth Biennial Conference: "Latin America: The New Economic Climate". Co-sponsored by the Inter-American Development Bank and the International Herald Tribune. Madrid, Spain: July 21-22. pp. 35-41.

Garman, George and Debora Gilliard. 1998, Summer. "*Economic Integration in the Americas.*" The Journal of Applied Business Research, 14: pp. 1-12.

George, R., E. Reiling, A. Scaperlanda. 1977. "*Short-Run Trade Effects of the LAFTA.*" Kyklos: 30, pp. 618-636.

Graham, Edward M. 1993, Summer. "*Beyond Borders: On the Globalization of Business.*" Harvard International Review: pp. 8-11.

Hasselt van, Juan and Claudia Fernandini. 1996, January/February. "*Andean Pact Struggles with Trademarks.*" available on the World Wide Web:

Hojman, David E. 1981, December. "*The Andean Pact: Failure of a Model of Economic Integration?*" Journal of Common Market Studies: 20(2), pp.139-160.

Krugman, Paul. 1992. "*A Global Economy is not the Wave of the Future.*" Financial Executive: Mar/Apr: pp. 10-13.

Kuczynski, Pedro P. 1992. "*Attracting Capital into Basic Infrastructure.*" Proceedings of the Fourth Biennial Conference: "Latin America: The New Economic Climate". Co-sponsored by the Inter-American Development Bank and the International Herald Tribune. Madrid, Spain: July 21-22. pp. 22-27.

Langhammer, Rolf and Ulrich Hiemenz. 1991. *"Regional Integration among Developing Countries: Survey of Past Performance and Agenda for Future Policy Action."* UNDP-World Bank: Occasional Paper 7. Washington, D.C.

MacNamara, Laurie. 1992, March 23. *"Andean Region Makes Integration Effort."* Business America. Washington D.C.: U.S. Department of Commerce.

Massey, John. 1988, February. "Trade Signs: Go South!" Container News: p. 50.

Mongelluzzo, Bill. 1991, October 7. *"Despite Intermodal Gaps, Latin Trades Developing."* Journal of Commerce: pp. 1A, 12A

Muller, Gunther H. 1992. *"Investment in Latin America: Better Off and Back in Fashion."* Proceedings of the Fourth Biennial *July* 21-22, 1992.: "Latin America: The New Economic Climate". Co-sponsored by the Inter-American Development Bank and the International Herald Tribune. Madrid, Spain: July 21-22. pp. 38-34.

Rubella, Jorge. 1994, June 27. *"Chile: Expanding Mercosur."* Business Latin America: p. 7.

Reinhard, Johan. 1992, March. *"Sacred Peaks of the Andes."* National Geographic: pp. 84-111.

Rosenthal, Gert. 1992. *"Latin American Integration: A Renewed Catalyst for Cooperation."* Proceedings of the Fourth Biennial Conference: "Latin America: The New Economic Climate". Co-sponsored by the Inter-American Development Bank and the International Herald Tribune. Madrid, Spain: July 21-22. pp. 78-81.

SALA: Statistical Abstract of Latin America. 1998. Editors: James W. Willie, Eduardo Aleman and Jose Guadalupe Ortega. Vol. 34. Los Angeles: University of California, Latin American Center Publications.

Sera, Koh. 1992, February. *"Corporate Globalization: A New Trend."* The Executive: 6(1), pp. 89-96.

SYLAC: Statistical Yearbook for Latin America and the Caribbean. 1993. U. N. Economic Commission for Latin America and the Caribbean (ECLAC).

USITC: United States International Trade Commission.1992, Publication 252:. June. U.S. Market Access in Latin America: Recent Liberalization Measures and Remaining Barriers. Washington D.C.: Chapters 3, 4, and 5

Vantine José G. and Clauudirceu Marra. 1997. *"Logistics Challenges and Opportunities Within* MERCOSUR." The International Journal of Logistics Management: 8(1), pp. 55-66.

Vanston, Nicholas. 1993, April/May. *"What Price Regional Integration?"* The OECD Observer: No. 181, pp. 4-7.

Vargas-Hidalgo, Rafael. 1979. *"The Crisis of the Andean Pact: Lessons for Integration among Developing Countries."* Journal of Common Market Studies XVII(3), pp. 213-226.

Vaughn, Gerald F. 1993. *"Ely, Wiley, and Land Economics in the Integrating Global Economy,"* Land Economics 69(4): pp. 438-442.

Wade, John. 1993, Nov. 15. *"Andean Pact: Changing with the Times."* Business Latin America: p. 3.

Wilson, Peter. 1994, July 25. *"The G-3 Takes a Hit."* Business Latin America: p.1.

Wolf, Kenneth. 1993, June 21. *"Port Privatization and Reform Attract Greater US Investment."* Journal of Commerce Special Report: Shipping and Ports: pp. 1C, 2C.

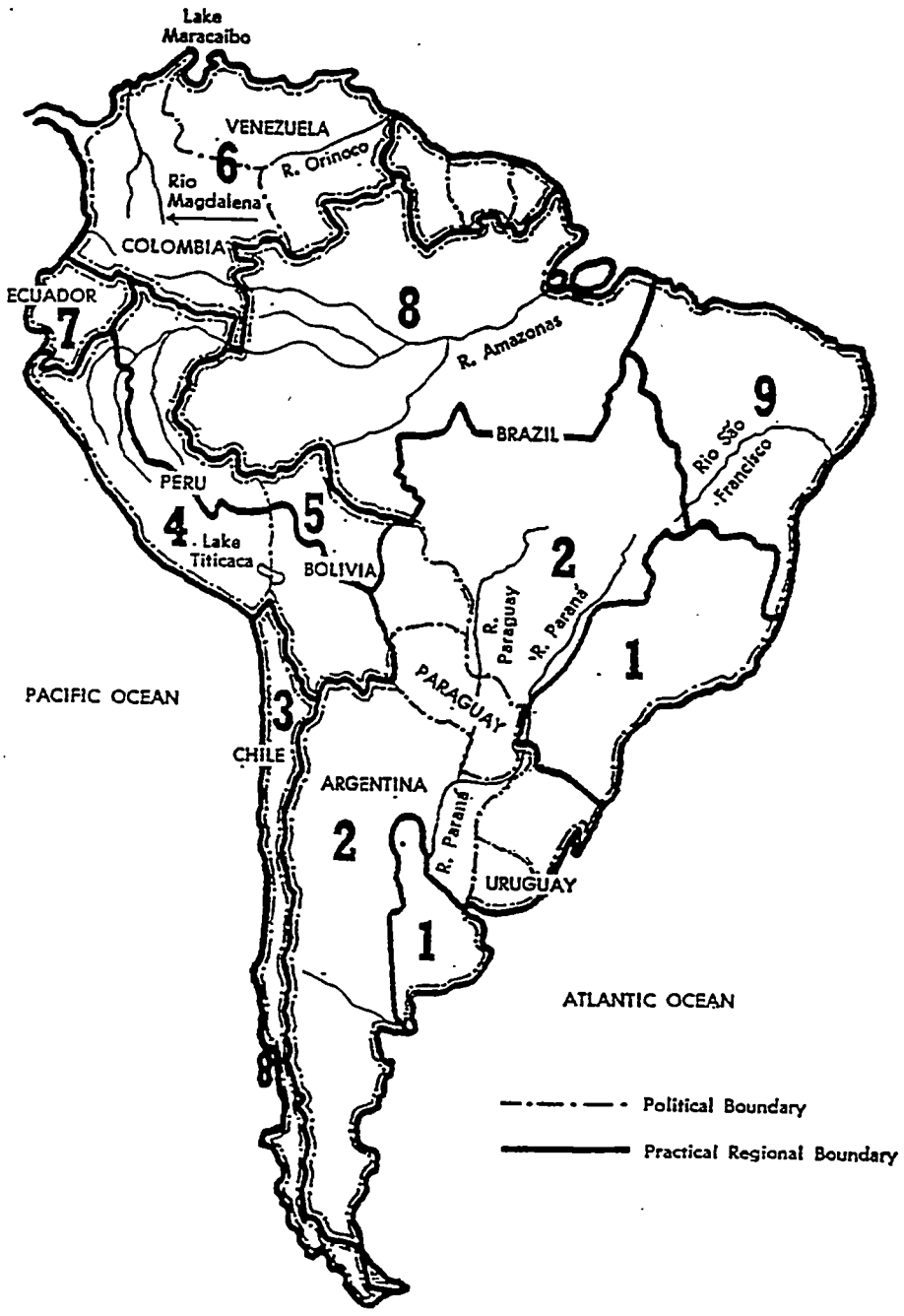
Zin, Walter. 1996. *"The New Logistics in Latin America: An Overview of Current Status and Opportunities."* The International Journal of Logistics Management: 7 (1), pp. 61-71

Appendices

APPENDIX A
Maps

A-1 Brown Divisions of South America 216
A-2 Physical Map of South America 217
A-3 The Physiographic Regions of Latin America 218
A-4 The Forests of Latin America 219
A-5 The Sedimentary Basins and Oilfields of Latin America 220
A-6 The Regions of Venezuela 221
A-7 Western Venezuela 222
A-8 Central Venezuela 223
A-9 Eastern Venezuela 224
A-10 The Regions of Colombia 225
A-11 The Distribution of Coffee Cultivation in Colombia 226
A-12 The Regions of Ecuador 227
A-13 The Regions of Peru 228
A-14 The Departments of Peru 229
A-15 The Regions of Bolivia 230
A-16 INCA Highway Network 231
A-17 The International Road Links of Latin America 232
A-18 Major Railways in South America 233
A-19 International Railways in South America 234
A-20 Roads and Railways in Colombia 235
A-21 Transverse and Longitudinal Road System of Peru 236
A-22 Regional Transportation Network of the Andean Nations 237
A-23 Regional Transportation Network: Ecuador, Colombia and Venezuela 238
A-24 Regional Transportation Network: Peru and Ecuador 239
A-25 Regional Transportation Network: Bolivia 240

FIGURE 1. *Regions of South America*



A-1: Brown's Divisions of South America
Source: Brown , 1996, p. 68



A-2: Physical Map of South America, Courtesy of Dr. Lydia Pulsipher, Department of Geography, The University of Tennessee, 1999.



Fig. 3. The physiographic regions of Latin America
This attempts to convey the major types of landscape, based on relief and vegetational cover

A-3:The Physigraphic Regions of Latin America
Source: Butland, 1960.

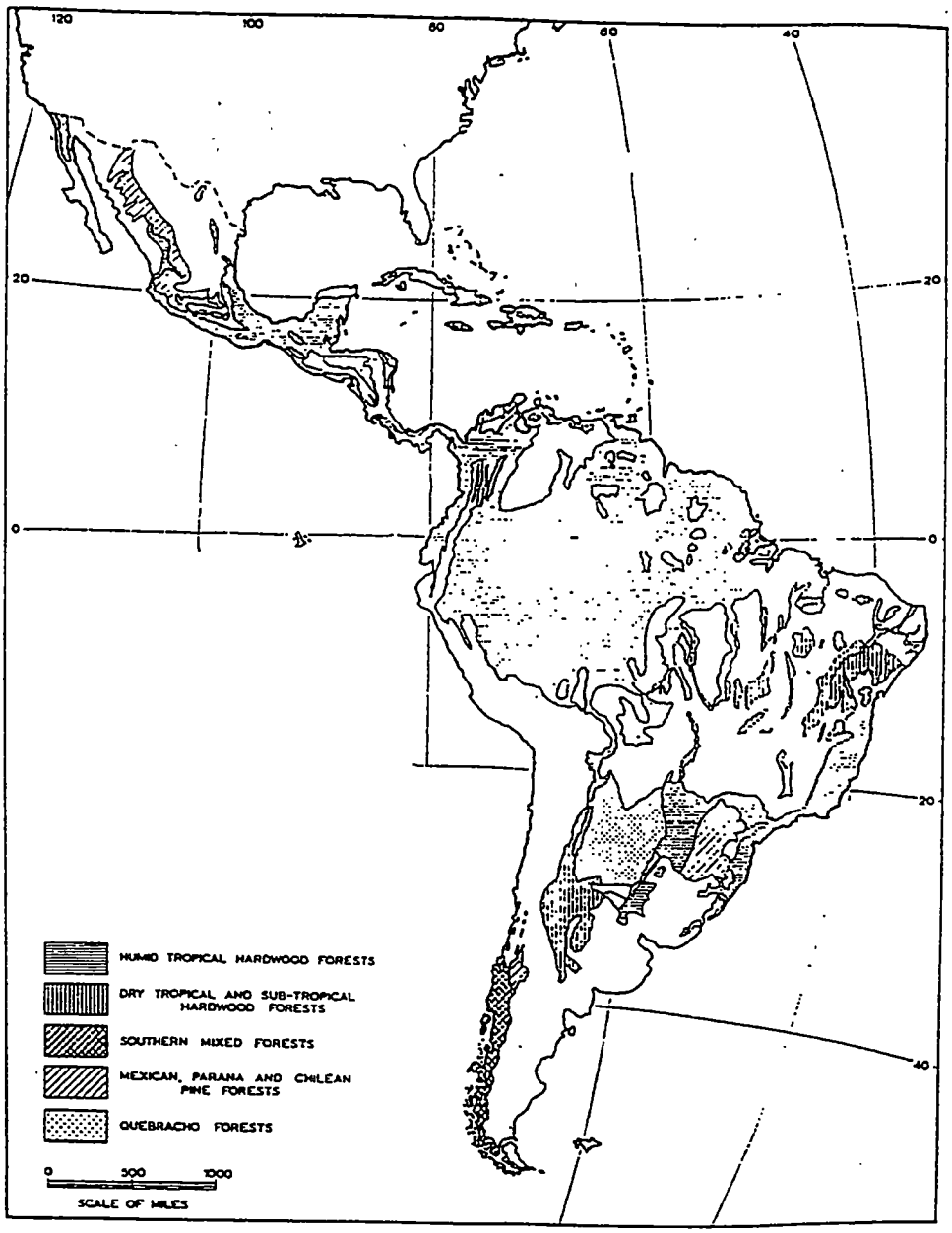


Fig. 4. The forests of Latin America
Vast expanses of hardwoods cover much of the continent

A-4: The Forests of Latin America
Source: Butland, 1960

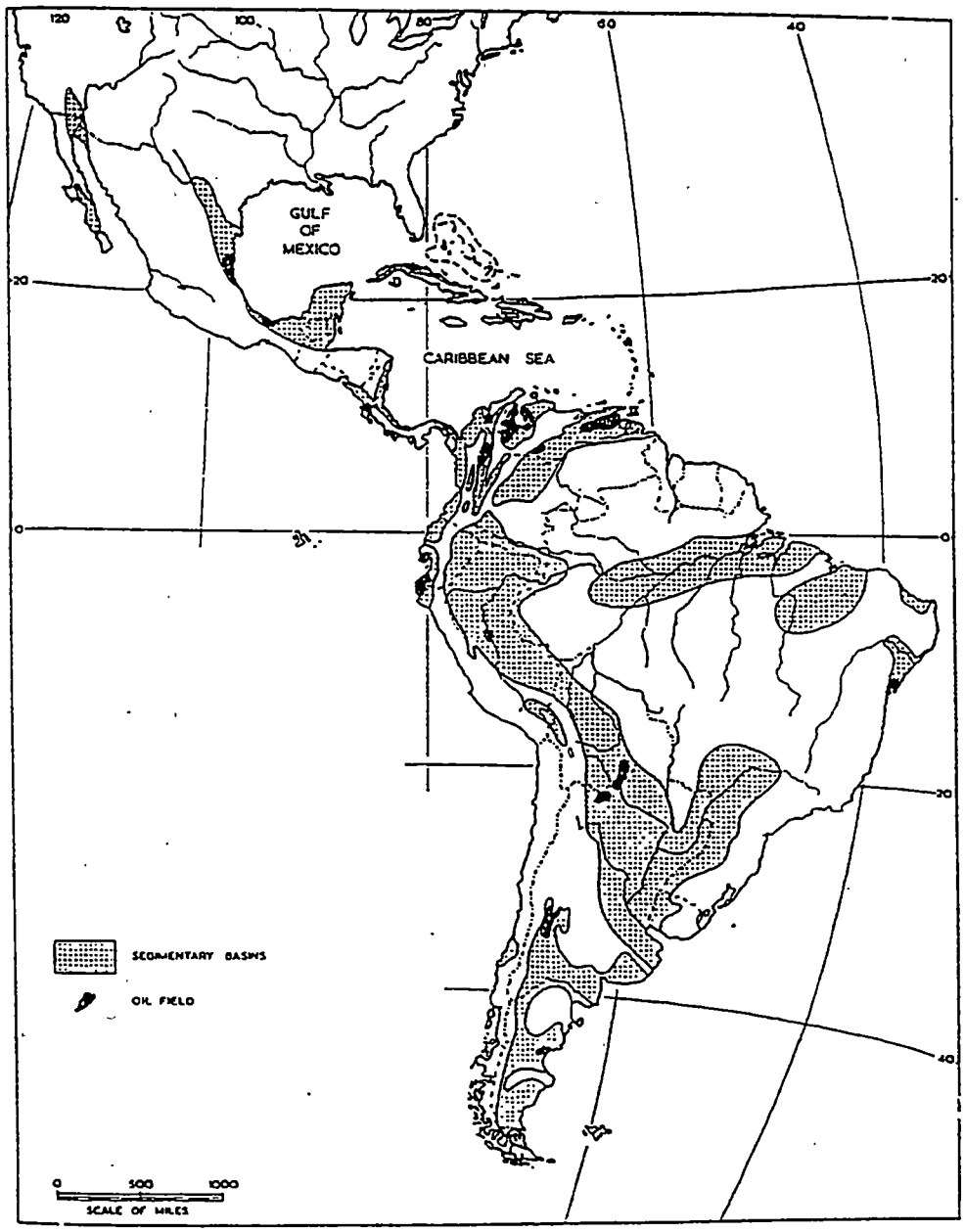


Fig. 5. The sedimentary basins and oilfields of Latin America
The basins are potentially petroliferous. The areas of the oilfields have been exaggerated to indicate their location

A-5: The Sedimentary Basins and Oilfields of Latin America
Source: Butland, 1960

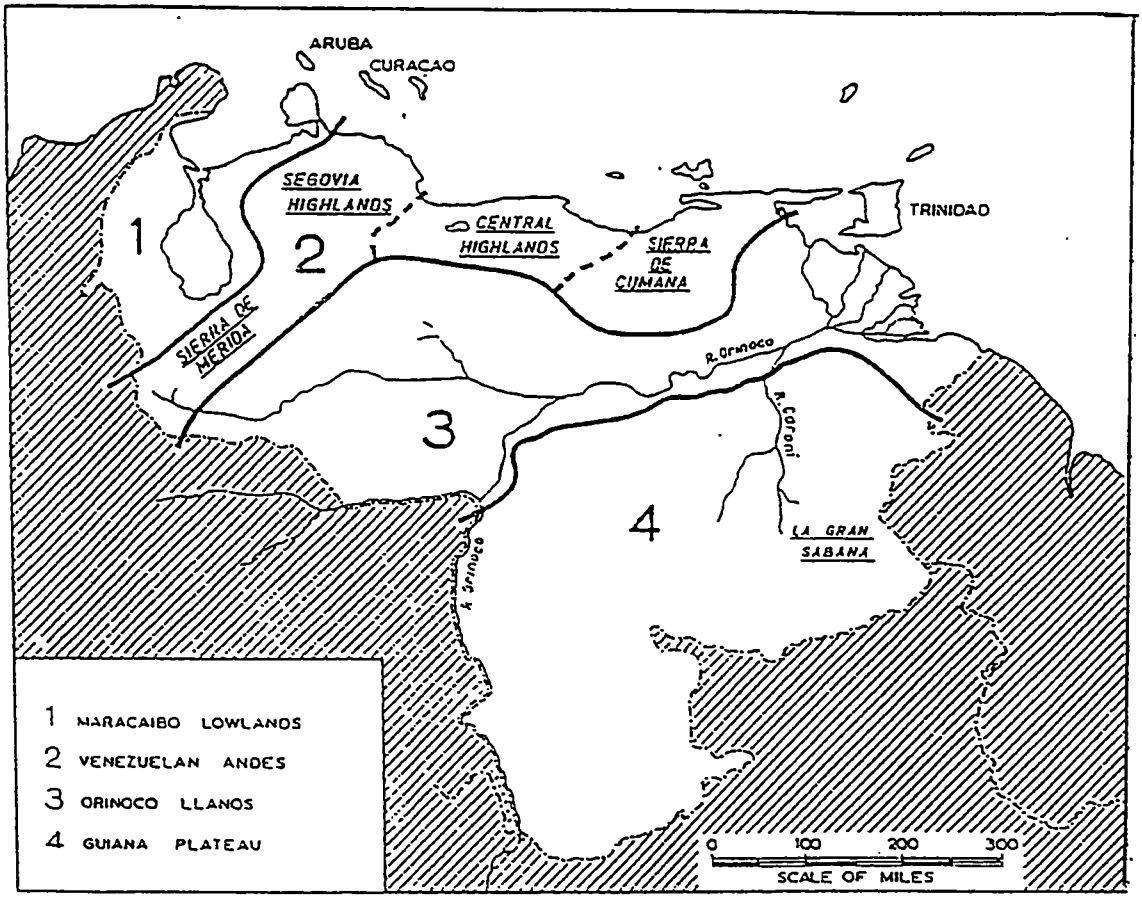


Fig. 27. The regions of Venezuela

A-6: The Regions of Venezuela
Source: Butland, 1960

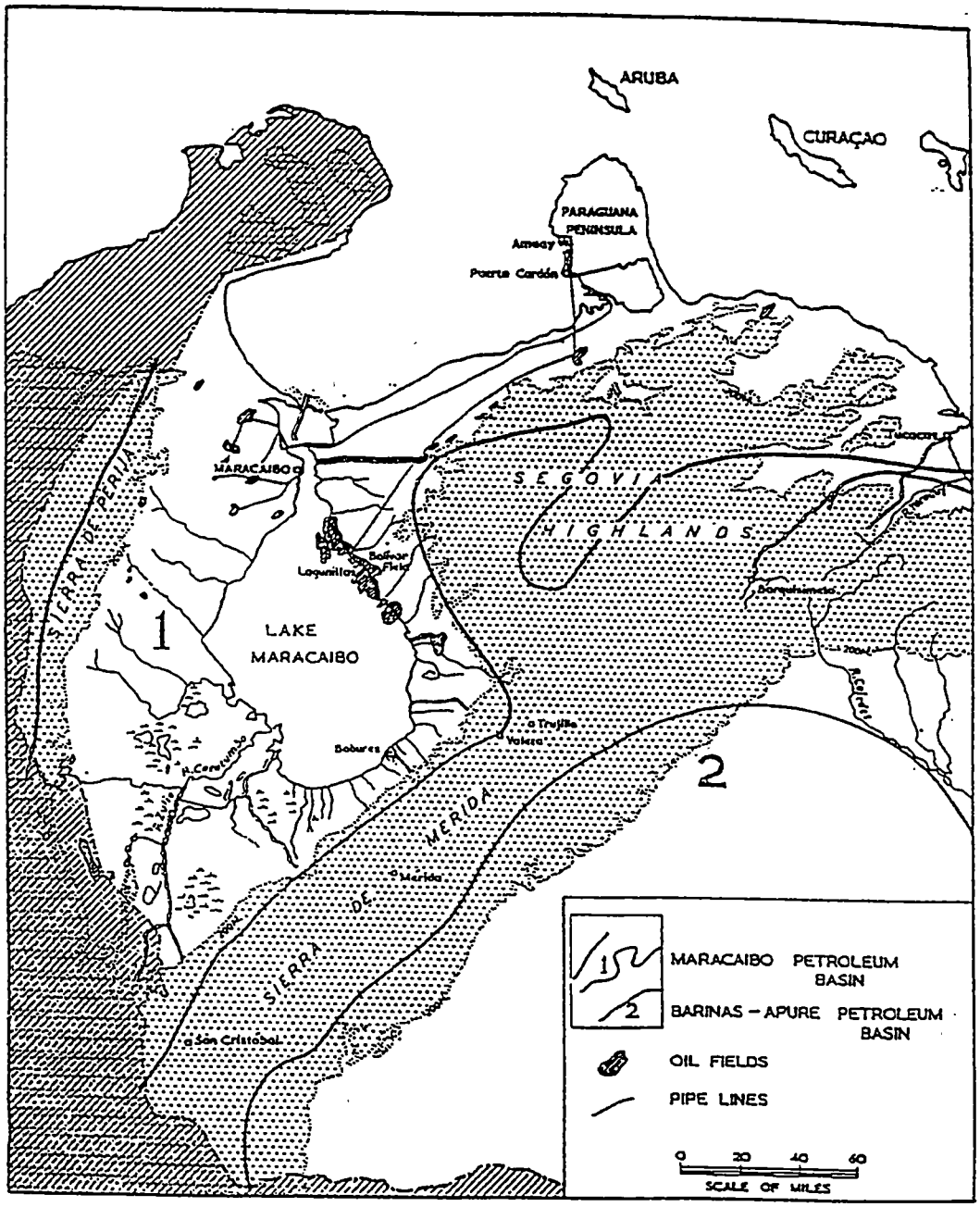


Fig. 28. Western Venezuela

A-7: Western The Regions of Venezuela
Source: Butland, 1960

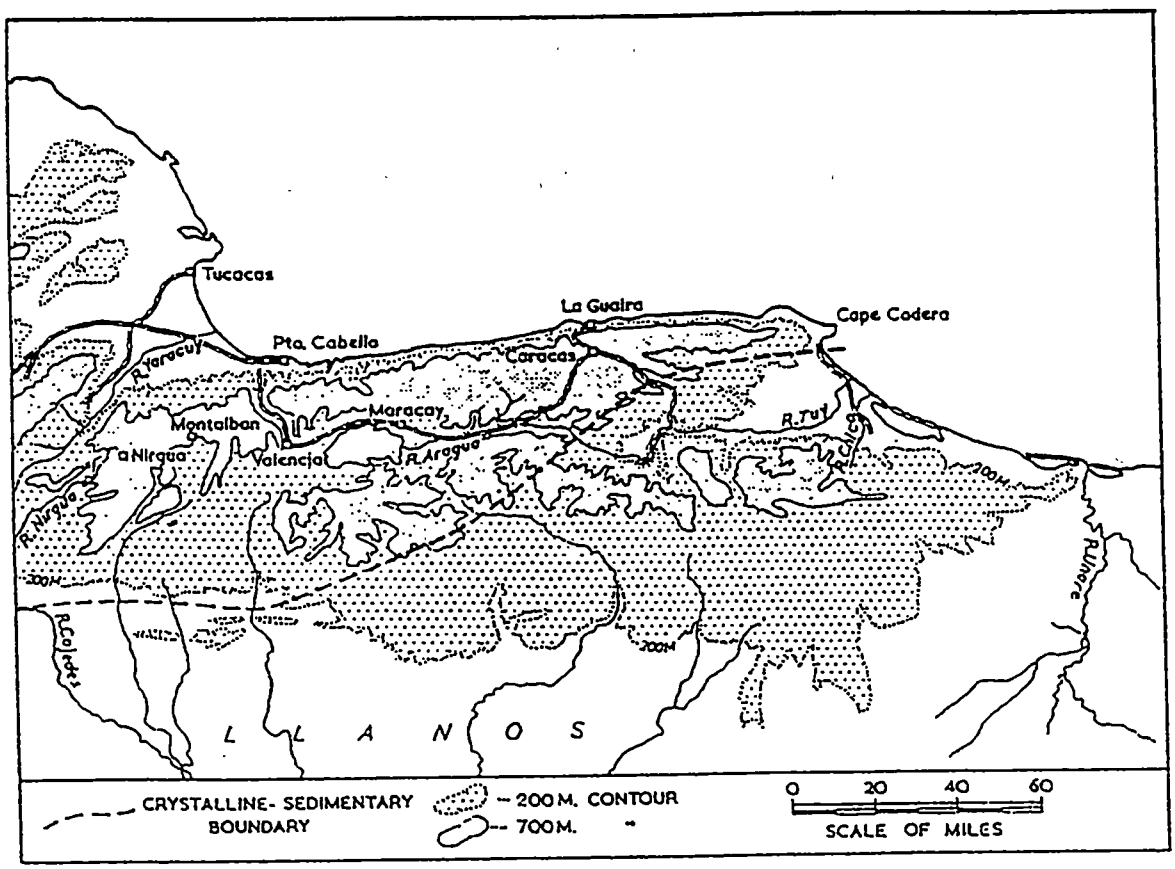


Fig. 30. Central Venezuela
The core of Venezuelan settlement

A-8: Central Venezuela
Source: Butland, 1960

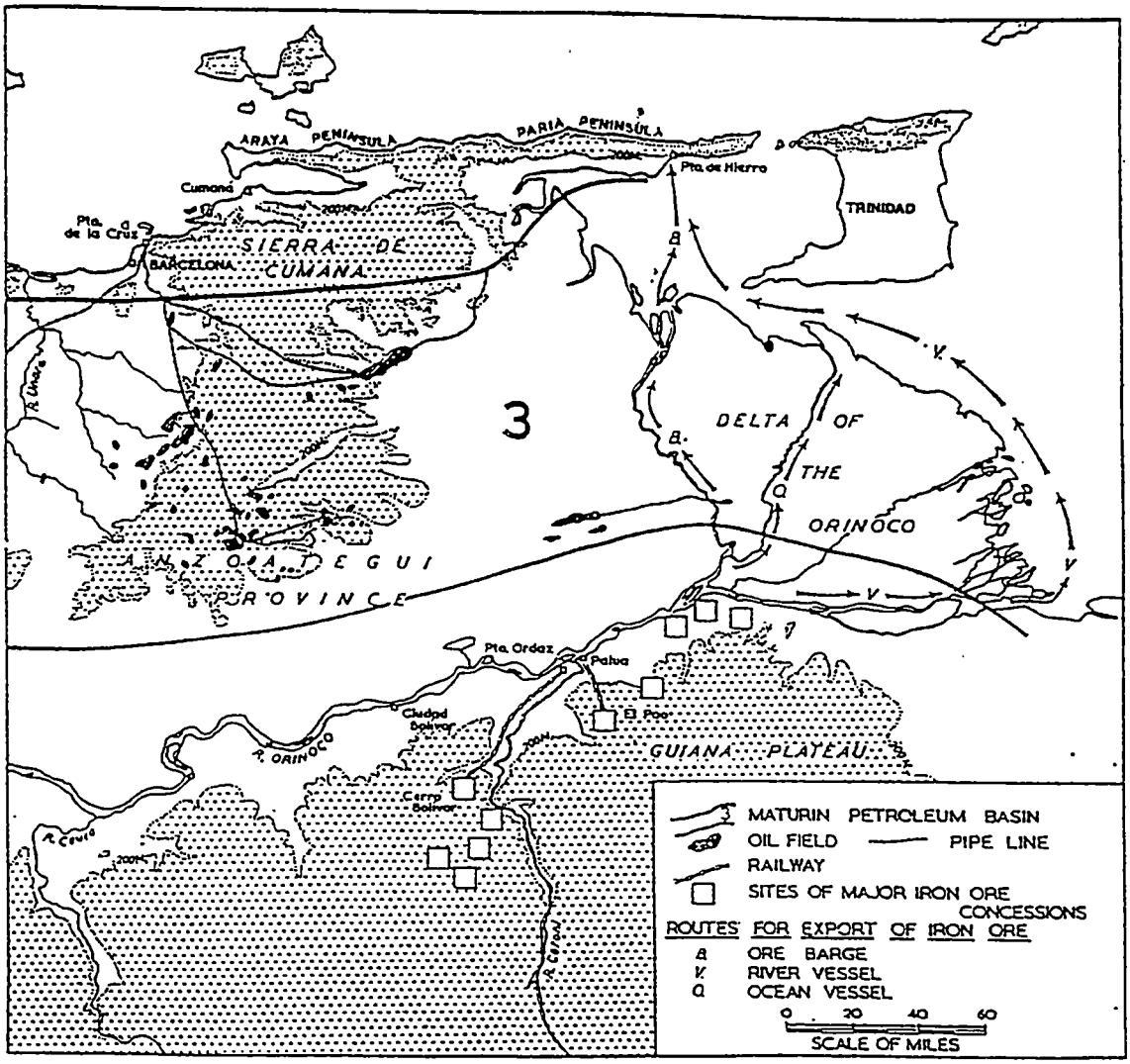


Fig. 31. Eastern Venezuela

A-9: Eastern Venezuela
Source: Butland, 1960

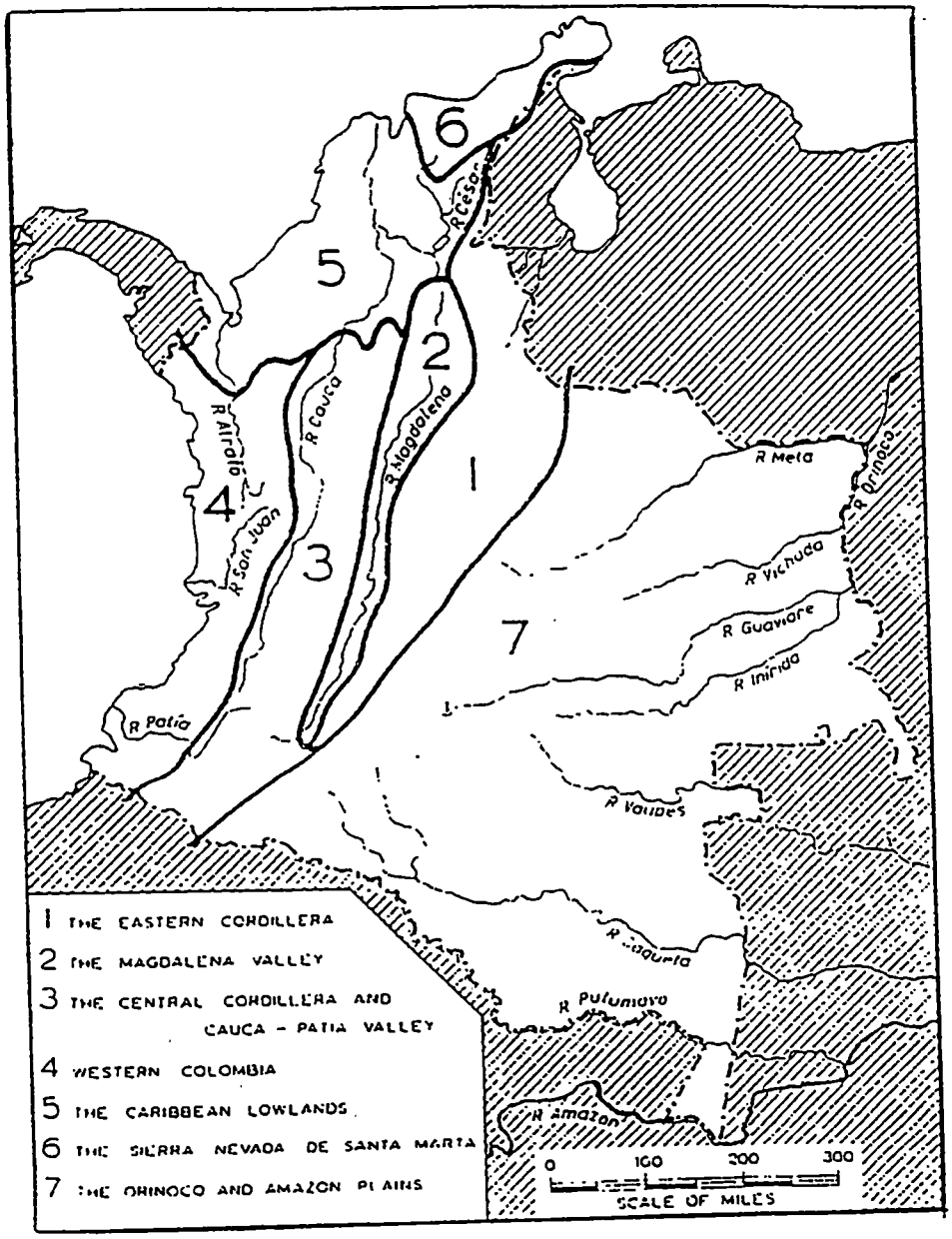


Fig. 33. The regions of Colombia

A-10: The Regions of Colombia
Source: Butland, 1960

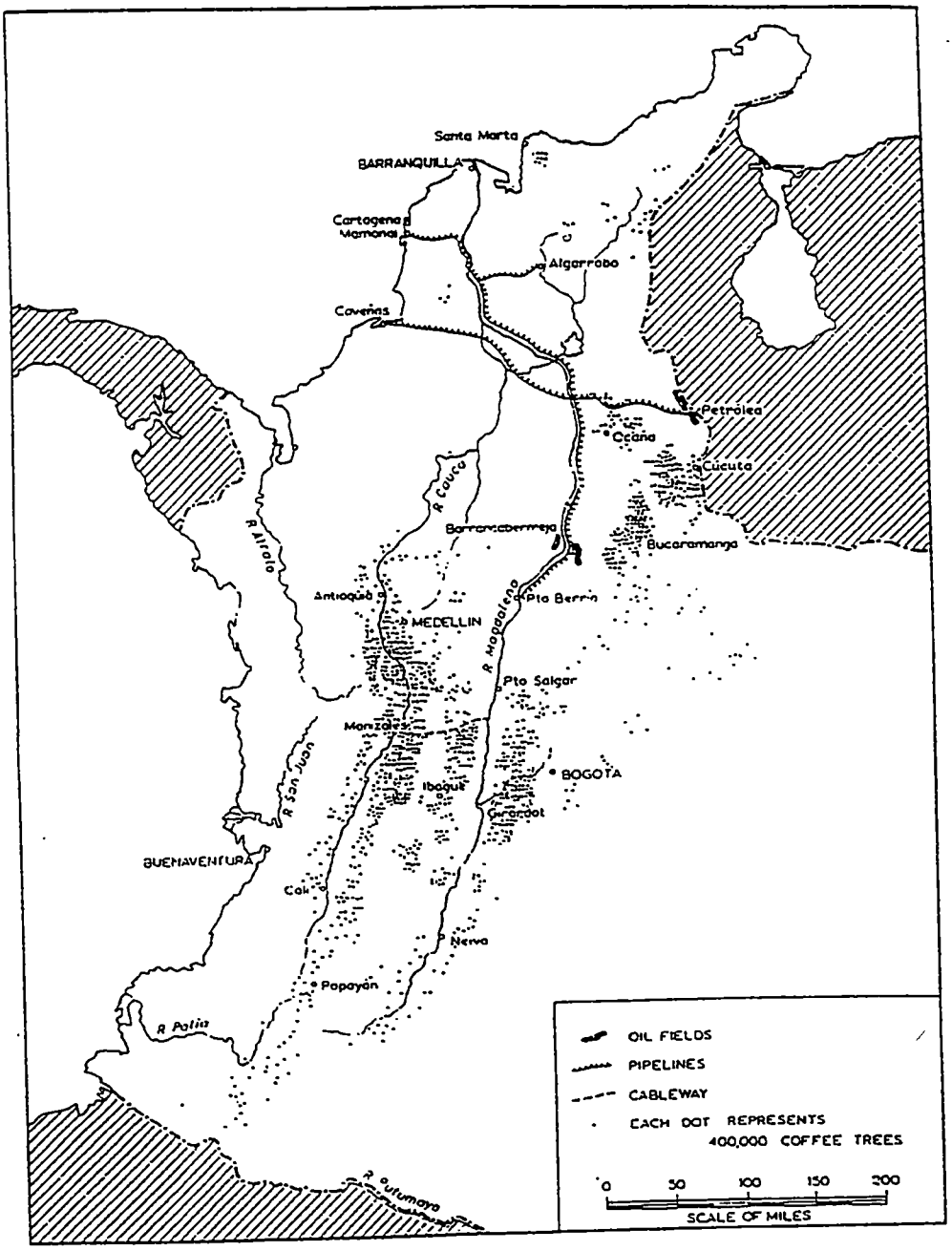


Fig. 35. The distribution of coffee cultivation in Colombia

A-11: The Distribution of Coffee Cultivation in Colombia
Source: Butland, 1960

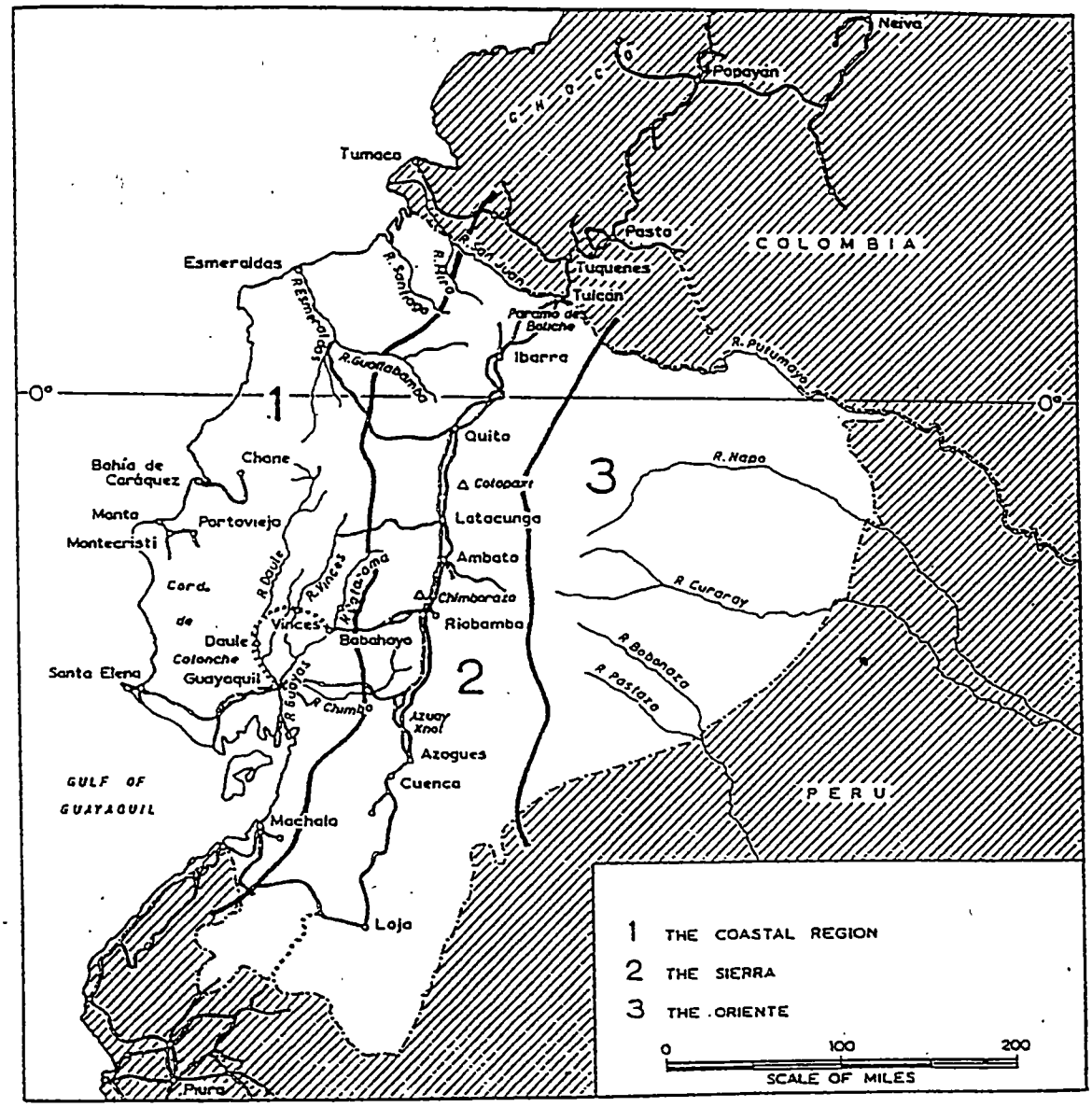


Fig. 36. The regions of Ecuador

A-12: The Regions of Ecuador
Source: Butland, 1960

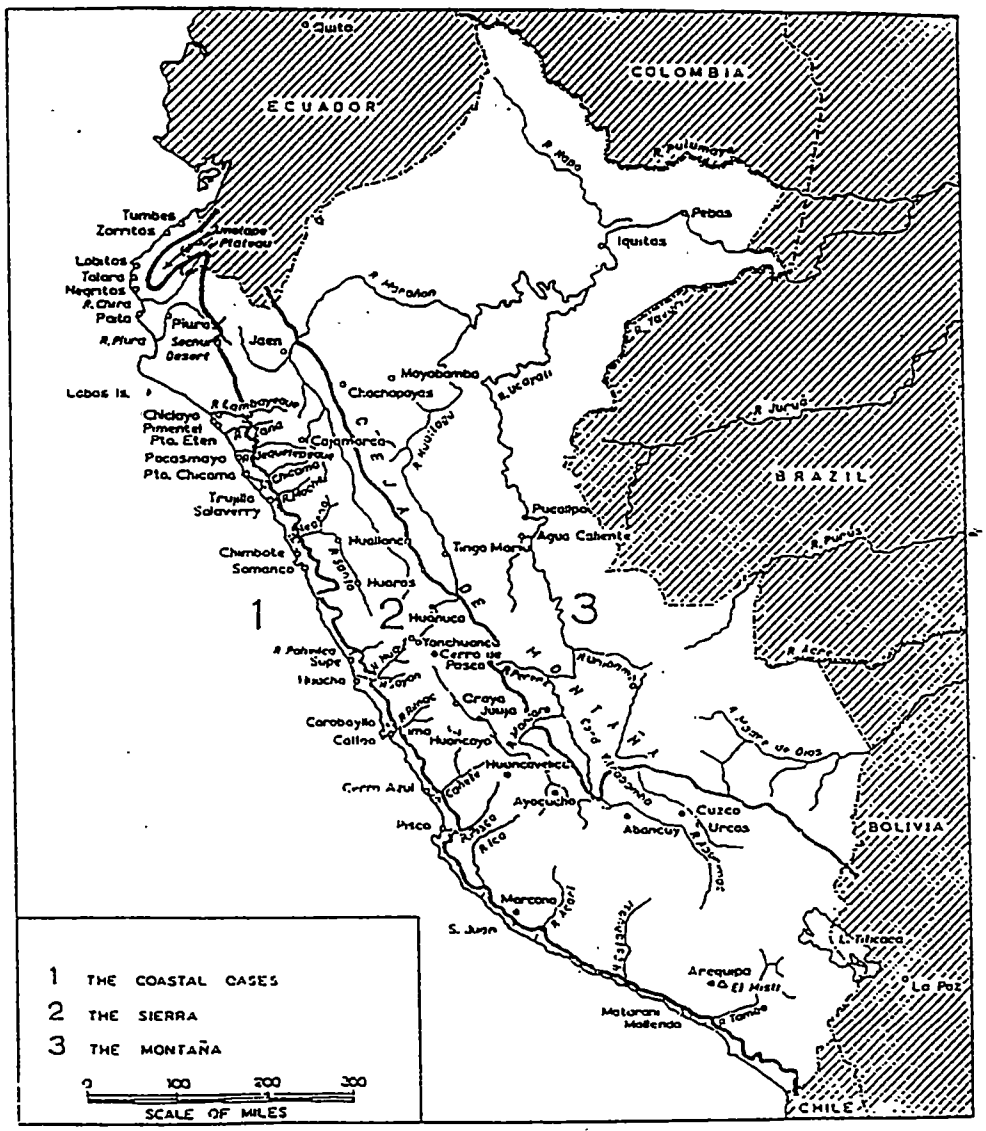


Fig. 37. The regions of Peru

A-13: The Regions of Peru
Source: Butland, 1960

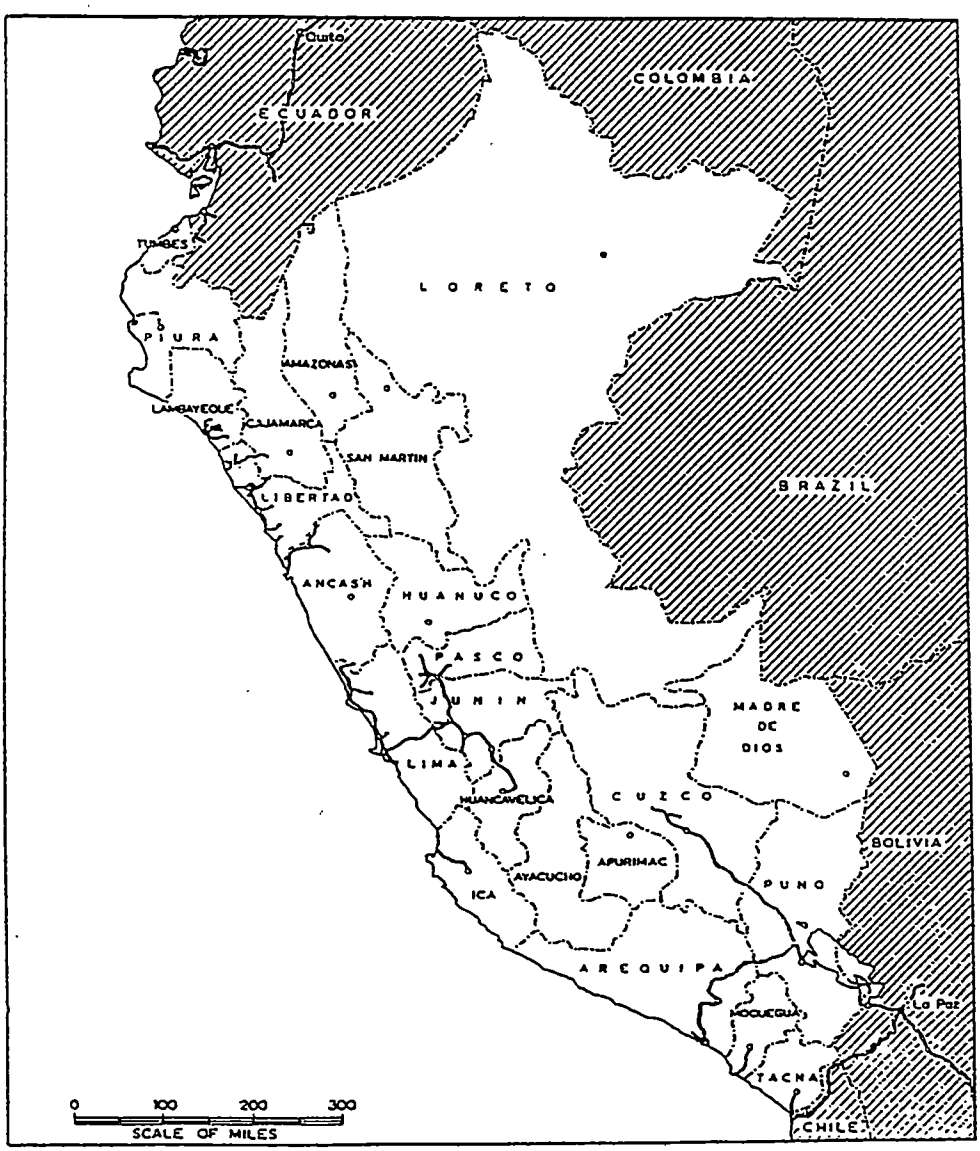


Fig. 38. The departments of Peru

The limited railway pattern has been developed primarily for export of mineral and agricultural produce

A-14: The Department of Peru

Source: Butland, 1960

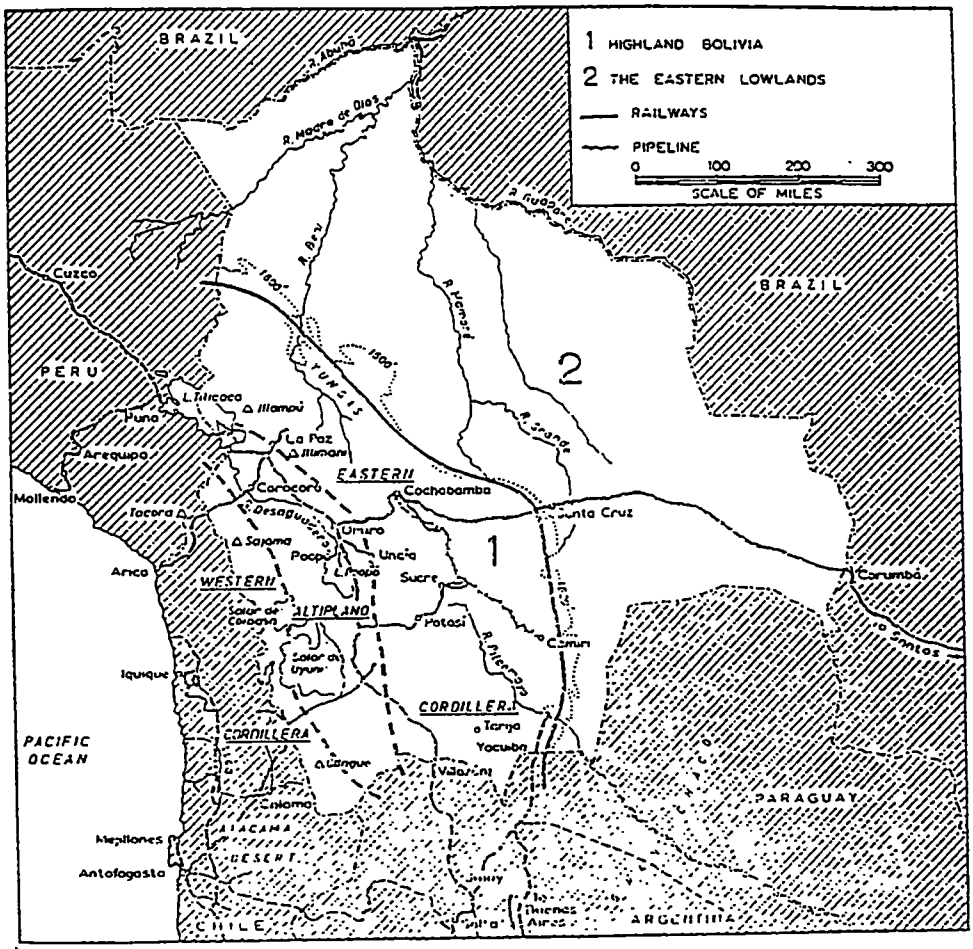
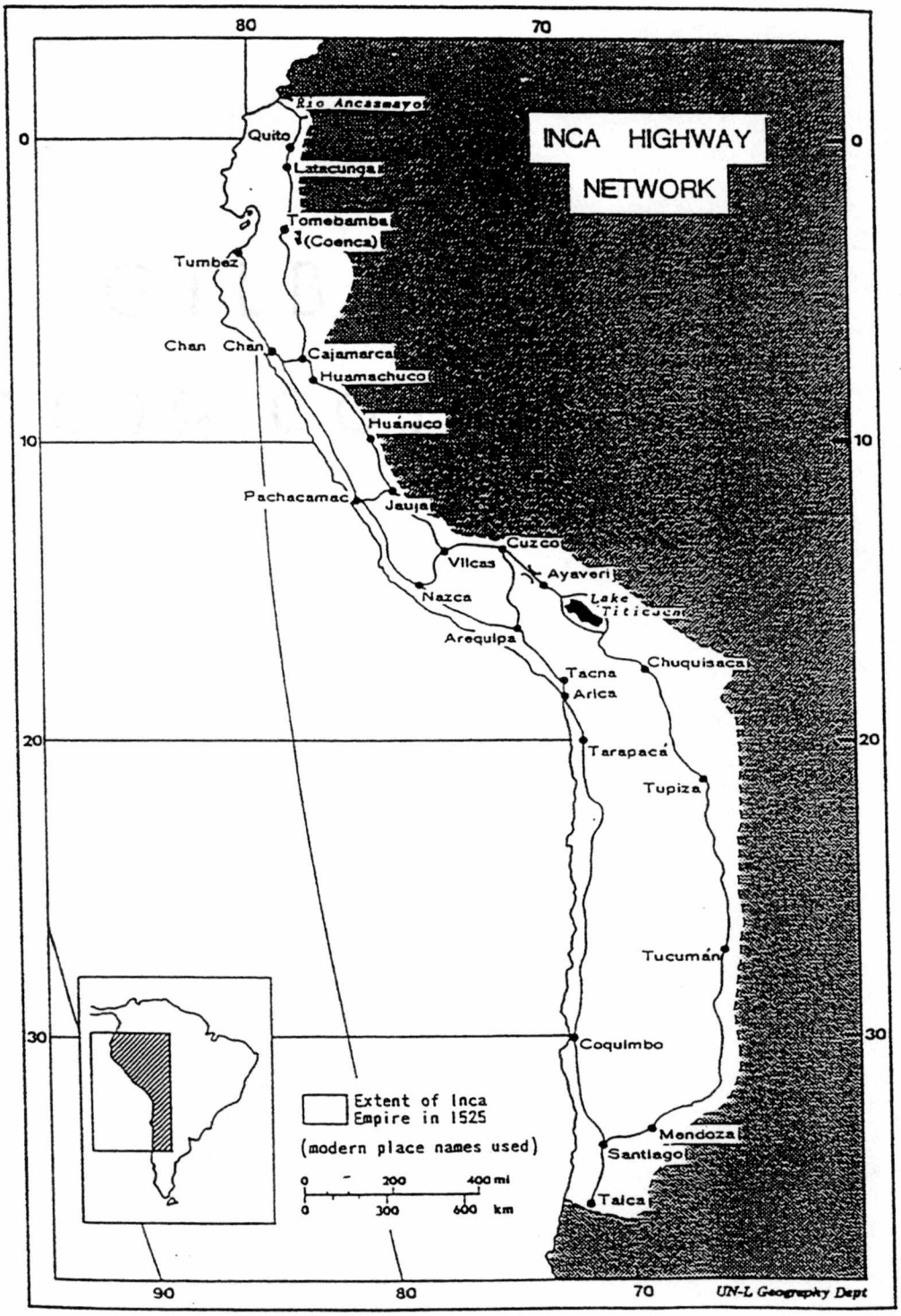


Fig. 41. The regions of Bolivia

A-15: The Regions of Bolivia
Source: Butland, 1960



Inca highway network.

A-16: INCA Highway Network
Source: Butland, 1960



Fig. 8. The international road links of Latin America

Although the Pan-American Highway has many important gaps, the road connections linking the twenty republics have developed considerably in this century

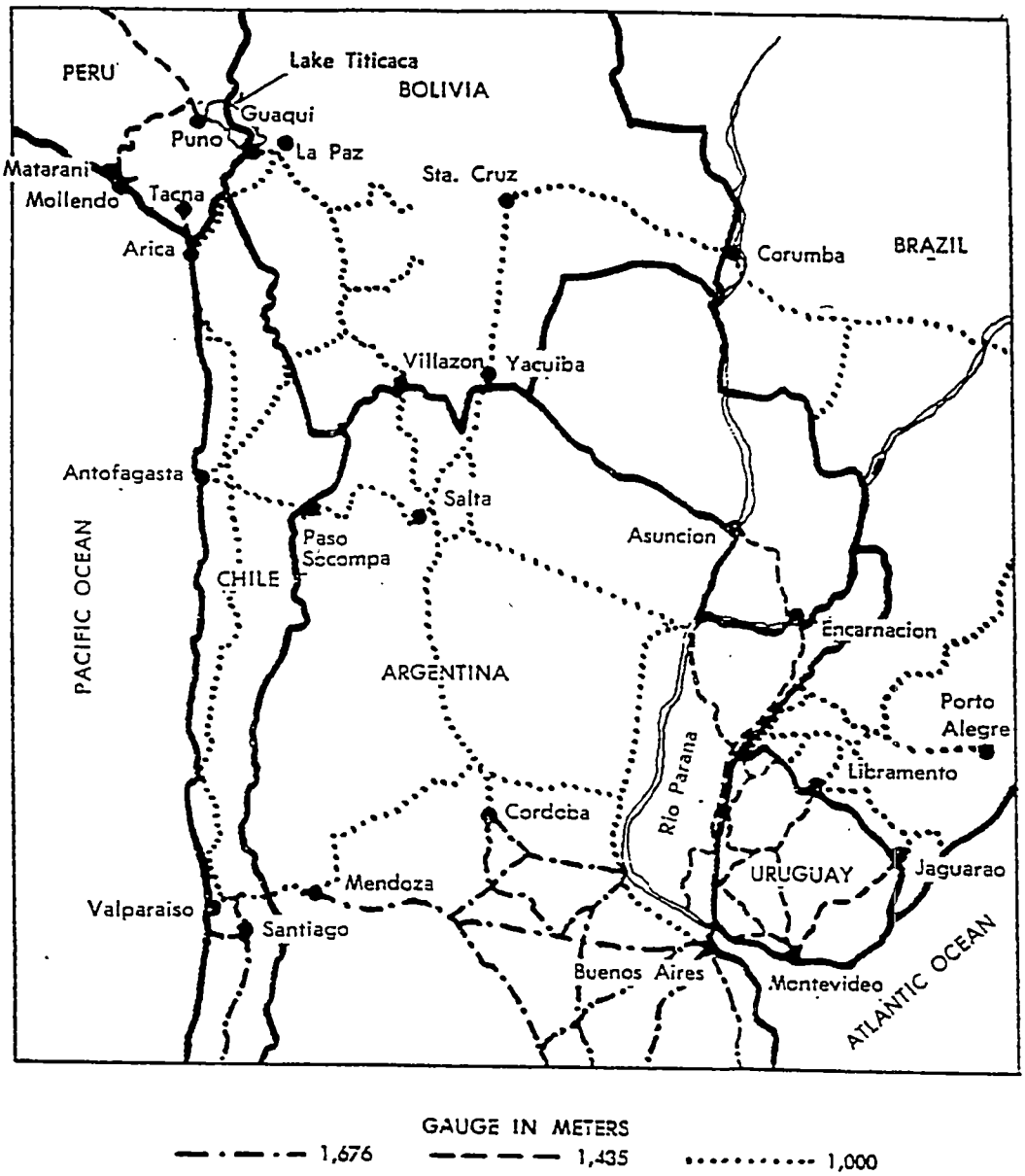
A-17: The International Road Links of Latin America
Source: Butland, 1960

FIGURE 2. *Major Railways in South America*



A-18: Major Railways in South America
Source: Brown, 1966

FIGURE 3. *International Railways in South America*



A-19: International Railways in South America
Source: Brown, 1966

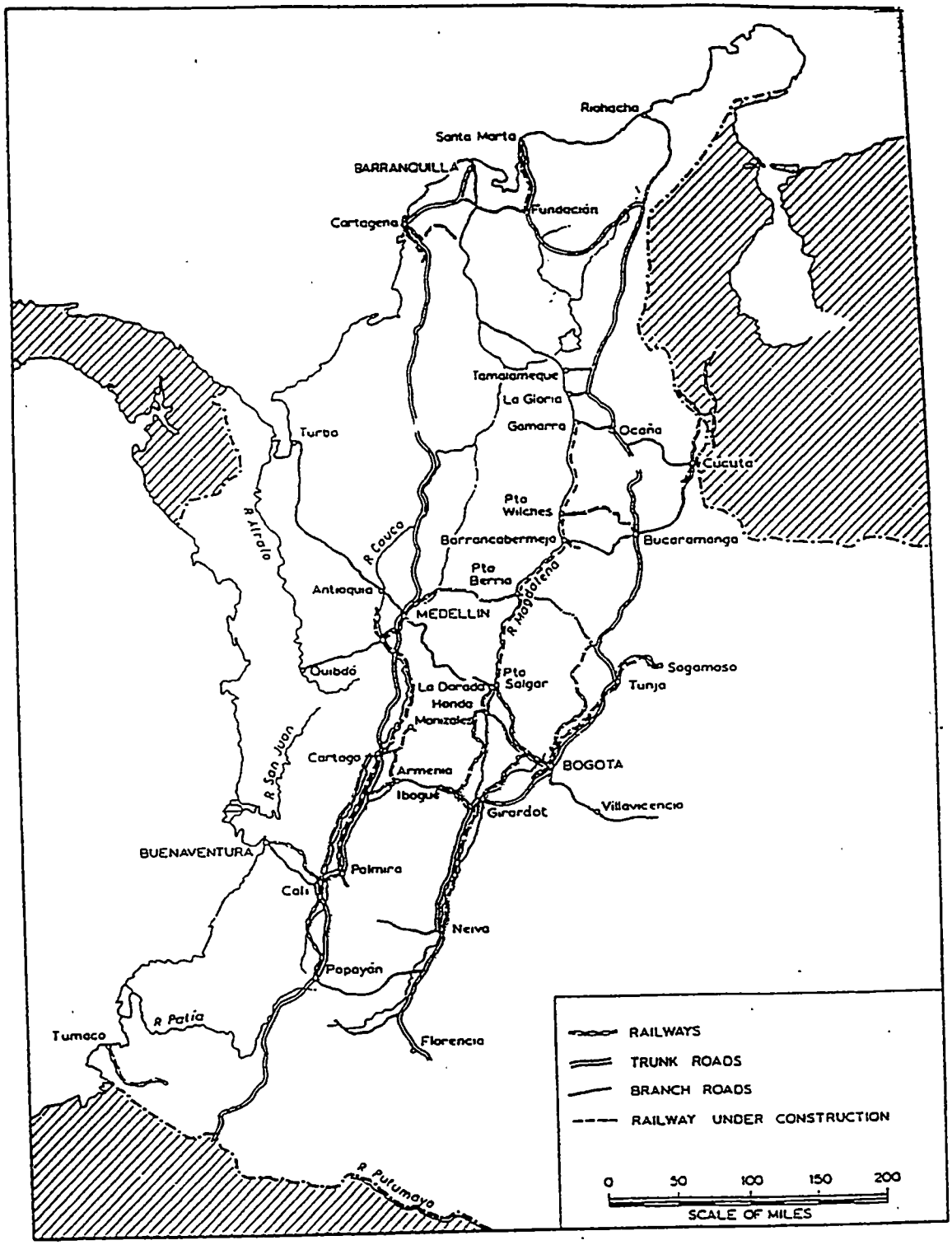


Fig. 34. Roads and railways in Colombia

A-20: Roads and Railways in Colombia
Source: Butland, 1960

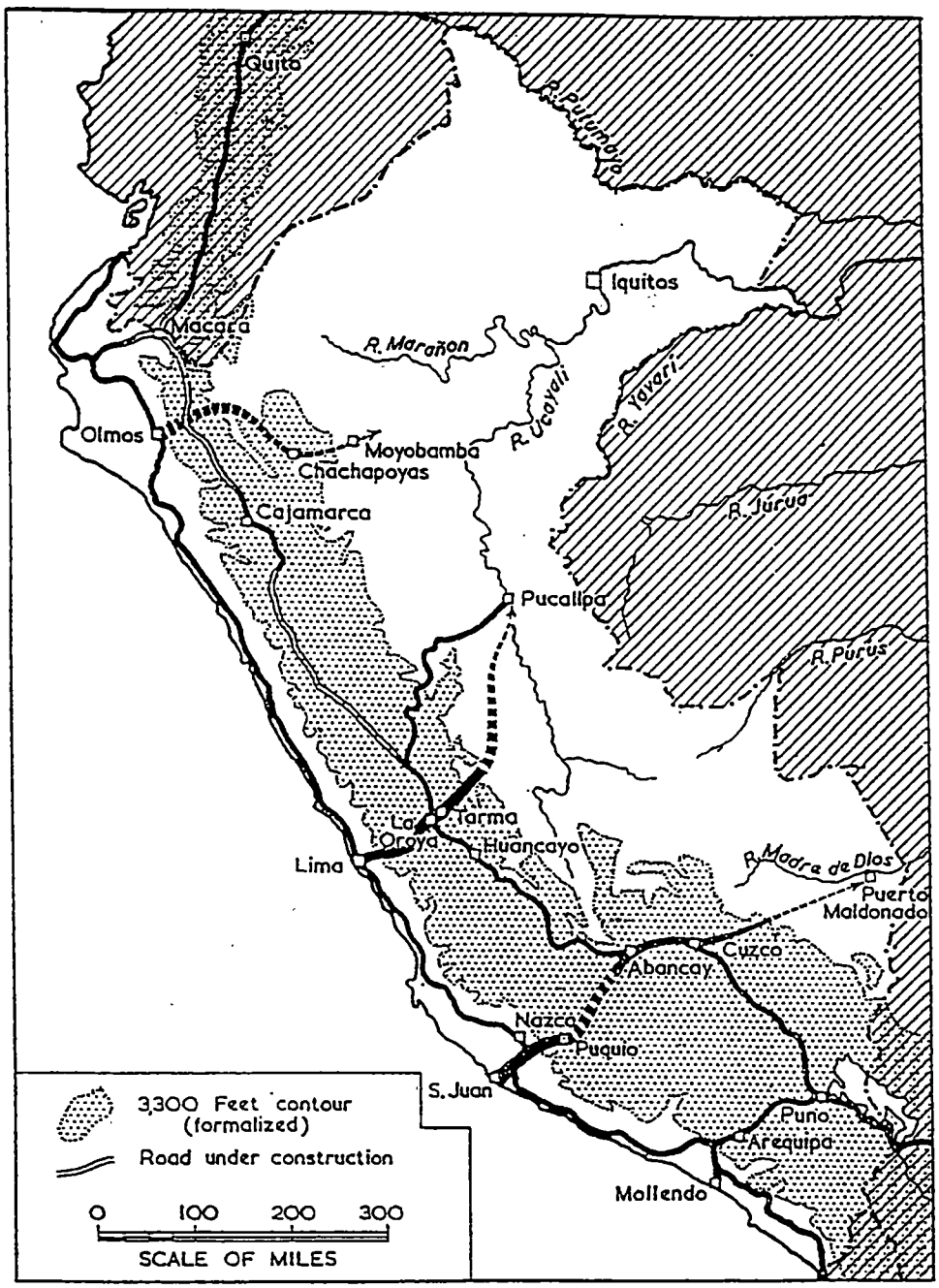
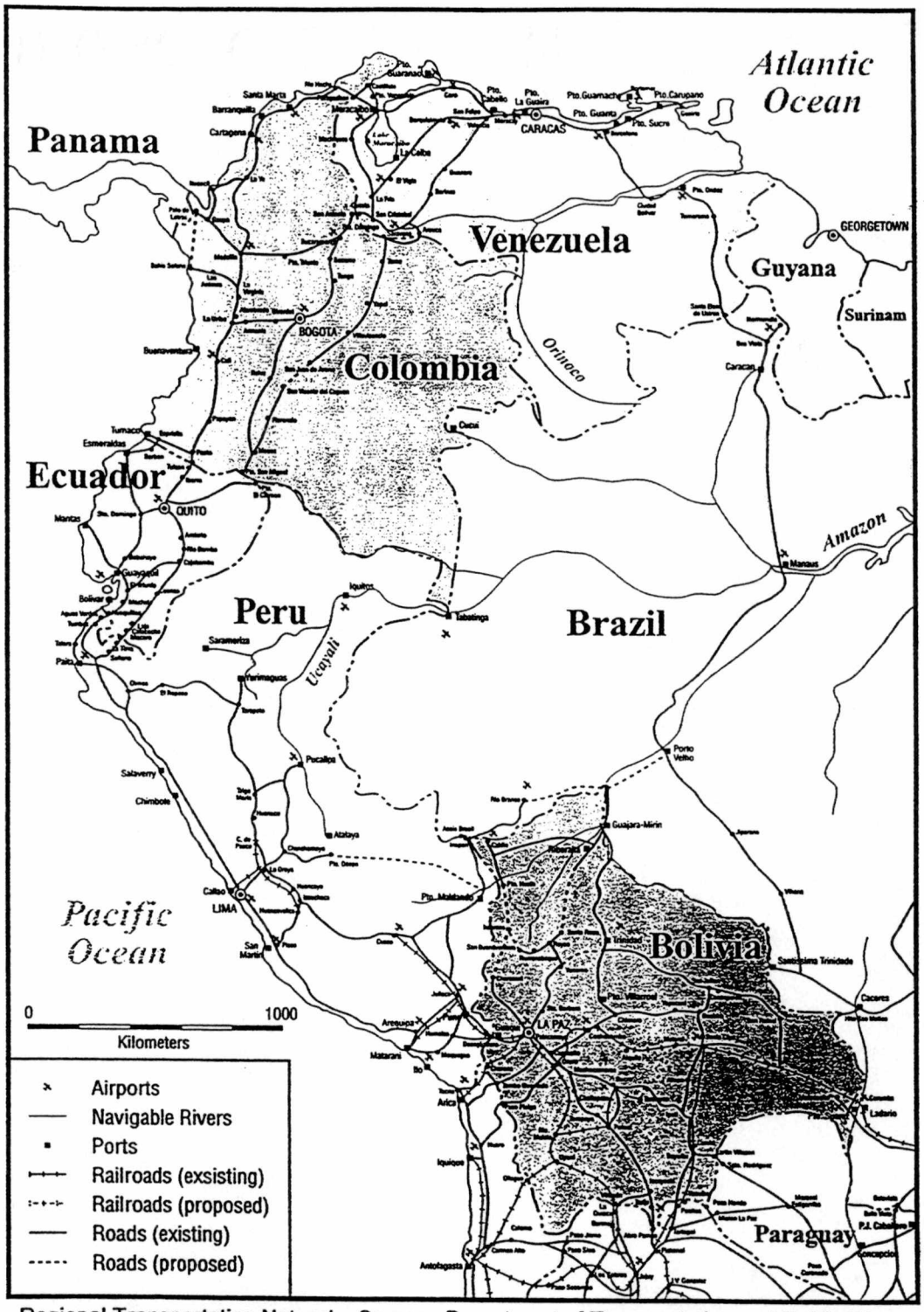


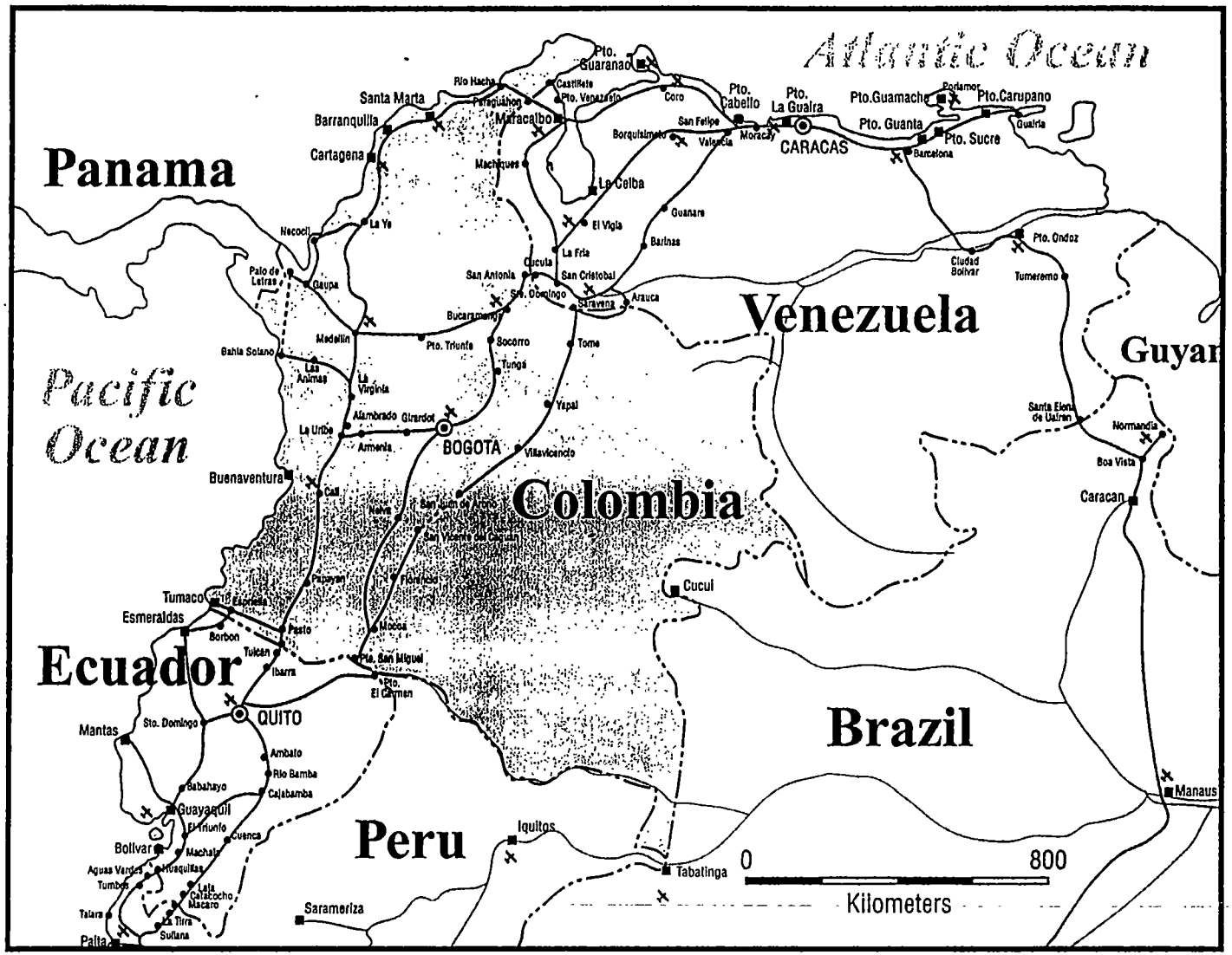
Fig. 39. Transverse and longitudinal road systems of Peru

A-21: Transverse and Longitudinal Road System of Peru
Source: Butland, 1960

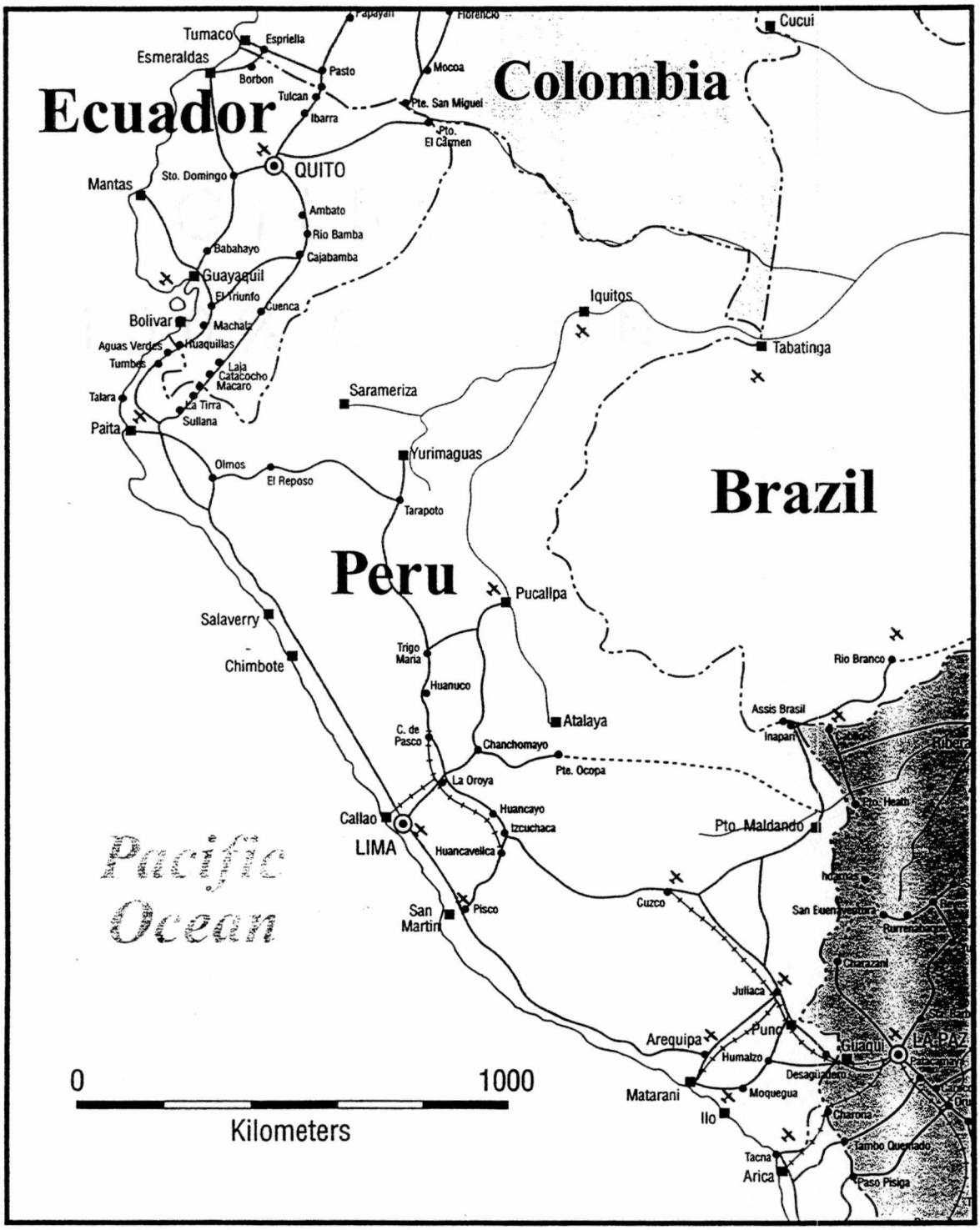


Regional Transportation Network. Source: Department of Transportation and Public Works, Santiago, Chile, 1992.

A-22: Regional Transportation Network of The Andean Nations

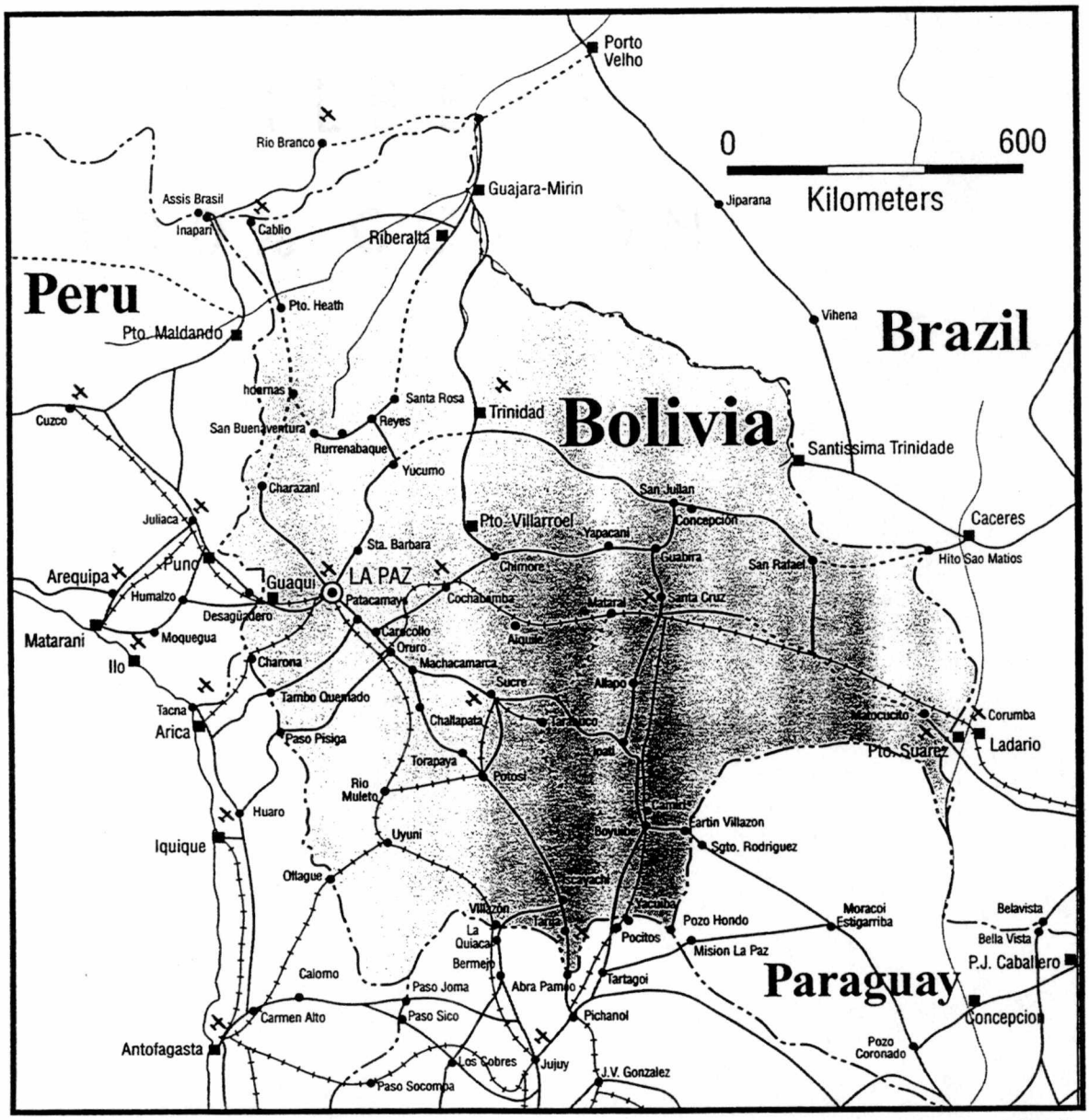


Regional Transportation Network - Ecuador, Colombia, and Venezuela. Source: Department of Transportation and Public Works, Santiago, Chile, 1992.



Regional Transportation Network - Peru and Ecuador. Source: Department of Transportation and Public Works, Santiago, Chile, 1992.

A-24: Regional Transportation Network: Peru and Ecuador



Regional Transportation Network - Bolivia. Source: Department of Transportation and Public Works, Santiago, Chile, 1992.

A-25: Regional Transportation Network: Bolivia

APPENDIX B
Tables and Other Figures

B-1 List of Agreements with Mercosur and Mexico 242
B-2 Investment Priorities in Transportation Infrastrucutre..... 243
B-3 Registry Format 244
B-4 Andean Intraregional Exports: 1970-95..... 245

ANDEAN COMMUNITY MEMBERS
FREE TRADE AGREEMENTS
1991-1996

COUNTRIES	AGREEMENT STATUS
BOLIVIA-URUGUAY	Completed in 1991
COLOMBIA-ARGENTINA	Completed in 1991
VENEZUELA-ARGENTINA	Completed in 1992
ECUADOR- ARGENTINA	Completed in 1992
BOLIVIA-CHILE	Completed in 1993/1994
VENEZUELA-CHILE	Completed in 1993
COLOMBIA-CHILE	Completed in 1993
PERU-BRAZIL	Completed in 1993
BOLIVIA-BRAZIL	Completed in 1994
BOLIVIA-MEXICO	Completed in 1994
ECUADOR-CHILE	Completed in 1994
COLOMBIA-VENEZUELA-MEXICO (G-3)	Completed in 1994
VENEZUELA-CARICOM	Completed in 1994
COLOMBIA-CARICOM	Completed in 1994
VENEZUELA-BRAZIL	Completed in 1994
BOLIVIA- PARAGUAY	Completed in 1994
BOLIVIA-MERCOSUR	Completed in 1996

Source: DFATA, 1997

B-1: List of Agreements with Mercosur and Mexico

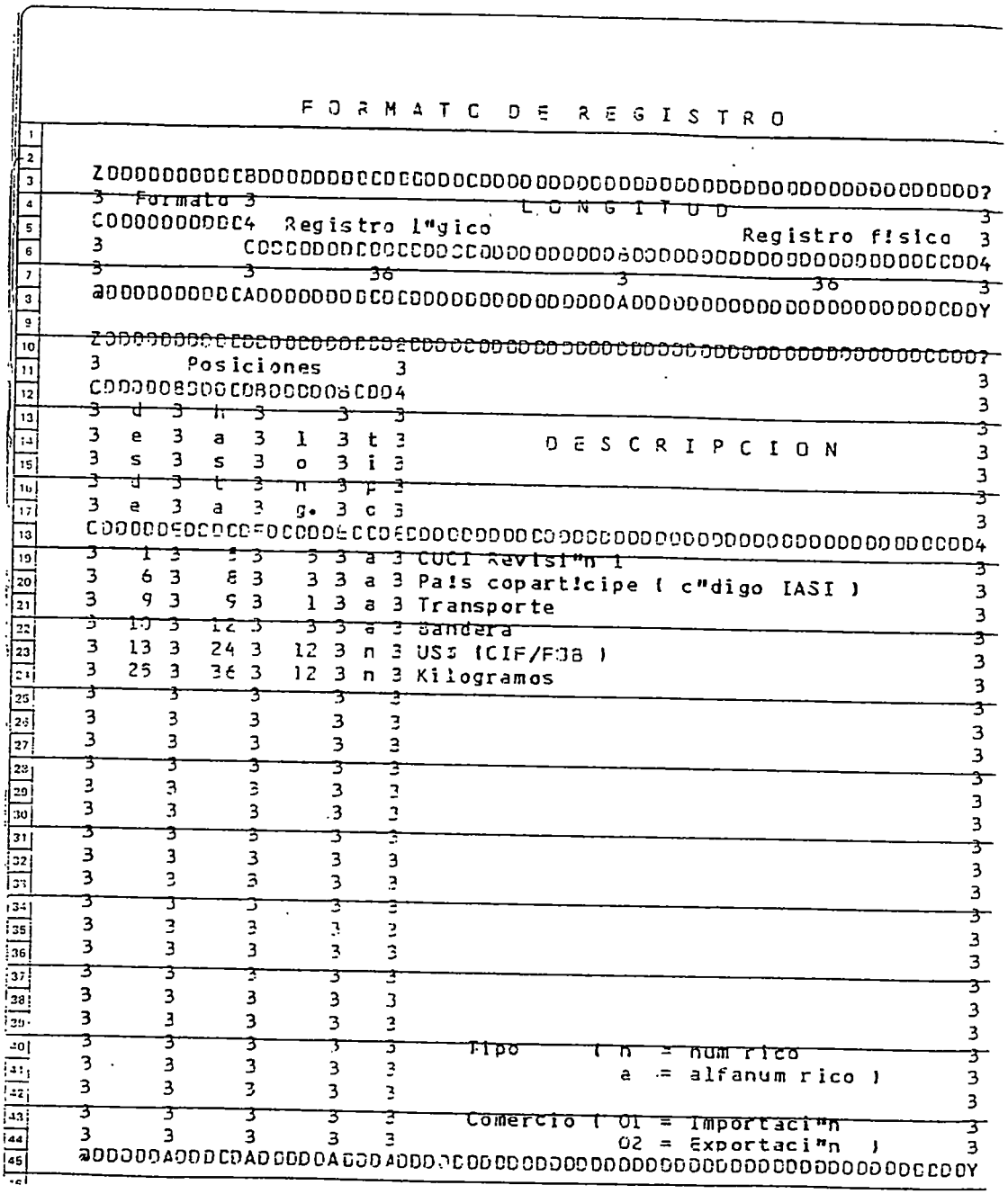
TABLE 1. *Indicated Transport Investment Priorities in South America*

Regions: Both Origins and Destinations	I	II	III	IV	V	VI	VII	VIII	IX
I. Industrial Heartland in Brazil, Argentina and Uruguay	Highway/ Railway River Ocean	River Railway Highway	Highway Ocean Railway	Ocean	Highway & River/ Railway	Ocean	Ocean	River & Ocean	Highway Ocean Railway
II. Supporting Hinterland		Railway/ Highway/ River	Highway Railway	Ocean	Highway & River/ Railway	Ocean	Ocean	River & Ocean	Ocean/ Highway
III. Chile			Highway Railway	Ocean Railway	?	Ocean	Ocean	Ocean	Ocean
IV. Highlands of Bolivia and Peru				Highway Railway	Highway	Ocean	Ocean	Highway & River Ocean	Ocean
V. Eastern slope of the Andes					Highway/ River	?	?	River	?
VI. Colombia and Venezuela						Highway/ Railway Ocean	Highway Ocean	River & Ocean	Ocean
VII. Ecuador							Highway Railway	River & Ocean	Ocean
VIII. Amazon Basin								River	River & Ocean
IX. Northeast Brazil									Highway Railway

Explanation: Ordering indicates priority for investment and development. A slash between two media indicates equal priority. An "&" between two media indicates that they are used together. Ocean refers both to ports and to the organization of shipping services. "?" indicates that priorities cannot be determined at present. The main diagonal is internal transport within each region. Other squares correspond to interregional transport. Only half the table is shown because the same transport media are used for transport in both directions.

B-2: Investment Priorities in Transportation Infrastructure

Brown, 1966



B-3: Registry Format
Source: ECLAC

Andean Group Intraregional Exports: 1970-1995
Volume in Tons

VOLUME Sum

			Bolivia	Colombia	Chile	Ecuador	Peru	Venezuela	Andean
Bolivia	YEAR	1970	.	6	18,187	10	2,899	1	20,888
		1975	.	173	31,123	133,229	35,057	42	199,623
		1980	.	20,401	.	446	27,193	1,911	49,951
		1985	.	482	.	37	36,184	0	36,704
		1990	.	4,178	.	108	138,194	3,238	145,717
		1991	.	116,965		2,090	149,902	3,061	272,017
		1992	.	95,958		10,225	161,521	1,497	269,201
		1993		139,898		20,085	159,964	751	320,699
		1994		227,999	.	35,939	243,694	3,201	510,832
		1995	.	279,529	.	26,505	273,013	19,851	600,898
Chile	YEAR	1970	4,786	39,669	.	20,791	47,421	10,830	123,696
		1975	46,878	52,900	.	85 562	77,328	72,763	335,429
Colombia	YEAR	1970	544	.	799,246	756,006	666,895	64 360	2,287,051
		1975	13,377		49,631	128,436	33,721	226,092	451,257
		1980	1,405		.	91,210	20,873	666,431	779,919
		1985	1,016	.		87,306	18,850	228,336	315,307
		1990	2,300	.	.	102,880	174,874	689 209	969 263
		1991	2,778		.	181,536	979,165	533,087	1,676,566
		1992	5,344	.		181,312	1,180,798	982,469	2,349,923
		1993	7,397		.	395,123	836,988	1,002,338	2,241,846
		1994	8,817	.		290,410	608,377	793,319	1,700,724
		1995	9,925		.	453,192	2,947,159	715,589	4,125,845
Ecuador	YEAR	1970	18	8,639	82,297	.	11,880	3,330	102,870
		1975	220	19,864	763,293	.	1,101,012	3,330	1,887,719
		1980	183	81,883		.	7,567	37,688	127,301
		1985	5	180,440	.		3,076	3,105	186,626
		1990	272	52,880		.	15,072	8,989	77,213
		1991	542	52,611	.	.	22,746	12,891	88 790
		1992	583	105,453		.	28,962	23,106	158,104
		1993	625	182,209	.		49,786	10,117	242,736
		1994	1,374	290,207	.	.	1,230,893	5,868	1,528,343
		1995	1,037	256,183			208,114	17,231	482,566
Peru	YEAR	1970	3,755	39,968	17,229	19,304	.	24,636	104,892
		1975	4,754	26,814	98,867	30,819	.	37,542	198,795
		1980	53,982	106,753	.	624,541		89,014	874,289
		1985	31,301	128,183	.	89,540	.	69,024	318,048
		1990	35,842	194,819		79,234	.	76,114	386,008
		1991	32,514	243,564		148,888		65,217	490,181
		1992	29,785	85,120	.	63,265	.	91,993	270,163
		1993	57,305	131,075		85,156	.	69 840	343,377
		1994	84,849	166,224	.	99,228	.	116,934	467,235
		1995	78,927	147,441	.	68,781	.	131,270	426,419
Venezuela	YEAR	1970	41	80,425	590,475	435,175	518,812	.	1,624,927
		1975	74	42,447	1,341	2,943	12,292		59,097
		1980	16	91,374	.	15,246	12,566		119,201
		1985	40	117,729		8,639	15,470	.	141,878
		1990	282	554,995	.	81,641	53,102	.	690,019
		1991	148	548,599	.	111,113	153,966	.	813,827
		1992	4,157	799,000	.	109,931	182,194	.	1,095,283
		1993	208	1,377,993	.	50,425	199,455	.	1,628,081
		1994	2,971	1,446,137	.	149,030	259,086	.	1,857,223
		1995	7,289	1,811,258		206,119	433,990	.	2,458,657
Andean	YEAR	1970		.	.		.		4,264,322
		1975		.	.	.	.	.	3,129,920
		1980	.	.		.	.	.	1,950,659
		1985	.	.		.			998,563
		1990	.	.		.	.	.	2,268,221
		1991			.	.	.	.	3,341,382
		1992	.	.	.	.			4,142,674
		1993	.			.	.		4,776,739
		1994	.	.	.	.		.	6,064,357
		1995	.	.	.	.	.	.	8,094 383

B-4: Andean Intraregional Exports: 1970-95

VITA

María Fernanda Meléndez was born in Santiago, Chile on April 25, 1959. She attended elementary and secondary schools in Santiago, Chile. In April 1982 she graduated with a Bachelor of Science in Business Administration degree with a major in accounting and auditing from the University of Santiago of Chile.

After working as an auditor for two years with Price Waterhouse, Chile, she accepted a full-time faculty position in the College of Business Administration of the University of Santiago of Chile in May 1982. She won a scholarship to pursue graduate studies in Europe. She attended the Escuela Superior de Administración y Dirección de Empresas (ESADE) in Barcelona, Spain. She received a Master in Business Administration with a major in Finance from ESADE in July 1984. After working back in the University of Santiago for six years, she was a visiting scholar for 15 months at the College of Business Administration of the University of Tennessee in Knoxville. In January 1992, she entered the Graduate School of the University of Tennessee, Knoxville. She received the Doctor of Philosophy degree with a major in Business Administration in May 2001. She is presently working as a full-time faculty in the Business School at University of Santiago, Chile.