This is to certify that the

thesis entitled

A Methodological Approach for Assessing the Impacts of Macropolicies on Rural Households in Ecuador

presented by

Monica Acosta

has been accepted towards fulfillment of the requirements for

M.S. degree in Agricultural Economics

Major professor

Date 28 August 1995

A METHODOLOGICAL APPROACH FOR ASSESSING THE IMPACTS OF MACROPOLICIES ON RURAL HOUSEHOLDS IN ECUADOR

BY

Monica Acosta

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE

Department of Agricultural Economics

1995

ABSTRACT

A METHODOLOGICAL APPROACH FOR ASSESSING THE IMPACTS OF MACROPOLICIES ON RURAL HOUSEHOLDS IN ECUADOR

By

Monica Acosta

Stabilization and structural adjustment policy research in developing countries has focused mainly on the effects of market distortions removal on aggregated sectors of the economy, including agriculture. One of the criticisms of this research is that it has not addressed the differentiated impacts of economic distortions on rural households and across subsectors within agriculture due in part to the lack of data and an appropriate methodology.

This thesis describes the pre-crisis economic conditions in Ecuador and the process of stabilization and structural adjustment during the period 1980-1994. The conceptual framework and methodologies previously used to assess the effects of policy reforms in selected countries were reviewed and subsequently adapted for an empirical assessment of selected policy changes on a sample of households in Salcedo, a rural community in the mountain region of Ecuador.

This study demonstrates the usefulness of a methodology which links macro, meso and micro relationships in assessing differential household and sub-sector impacts following major macro-policy changes and adjustment of selected market distortions. The main conclusion is that the partial effects of the changes in macro policy and market distortions on rural households depends upon the enterprise structure of production, the level of tradeability among inputs and outputs and the relative importance of off-farm income sources.

DEDICATION

I dedicate this work to the memory of my grandmother,
Luzmila, the woman I have admired the most.
I hope God shows me the way to be as wise as she was.

ACKNOWLEDGMENTS

First, I would like to thank the Department of Agricultural Economics of Michigan State University for having given me great solidarity and help as a foreign student and for the valuable knowledge I achieved throughout the master program.

I would like to especially thank, Dr. Harold Riley, my major professor and Dr. David Tschirley, my thesis advisor. Dr. Riley has provided constant guidance since I met him in Ecuador in 1991, when he trusted my strong willingness to learn more about agricultural economics and gave me the information and help to come to Michigan State and later he advised me in the best way to complete the program successfully. He and Dr. Tschirley have given permanent moral support as well, something I needed many times during my graduate program.

In addition, Dr. David Tschirley has provided a valuable academic support since we started to discuss about the topic of my thesis. I went through a lot of obstacles during the data management and he, with his extraordinary practical academic knowledge and professional perseverance, encouraged and guided me throughout the data analysis and writing processes.

I have also received a lot of help from Dr. Harold Riley, member of my guidance committee. He, with his unique experience in policy analysis of developing countries, guided the preparation, organization and writing of many drafts of the thesis.

I would like to thank a number of persons from Ecuador including Engineer Neptali Bonifaz, Director of the Institute of Agricultural Strategies; Dr. David Flood and Engineer Ramon Del Salto, Economic Advisor and Director of the Project of Reorientation of the Agricultural Sector; my good friends, who allowed me to get important data in carrying out the research; and Mrs. Catalina Leon, member of the USAID-Ecuador Training Program, who gave me professional support and her unconditional friendship whenever needed.

I am especially thankful to my parents, Raul and Carmen Acosta and my son, Robertito, because they inspired me to achieve this goal. To my husband and friend, Brian J. Paterson, who made this experience enjoyable with his constant love, care, patience and honesty.

Finally, I thank God for giving me the strength and faith to overcome the many problems I faced for being in a different culture and the opportunity to enjoy wonderful times, as well.

TABLE OF CONTENTS

ABSTRACT ii

DEDICATION iii

ACKNOWLEDGMENTS iv

LIST OF TABLES ix

LIST OF FIGURES xiii

CHAPTER 1. INTRODUCTION 1

Introduction and problem statement
Purposes and objectives
Scope and methods
Organization of the study

CHAPTER 2. STABILIZATION AND STRUCTURAL ADJUSTMENT IN ECUADOR 1980-1994 8

Economic policy and the performance of agriculture prior to 1980
Crisis and adjustment from 1981 to 1987
Adjustment from 1988 to 1994
Performance of agricultural sector (1975-1994)
Welfare and socioeconomic results
- Employment
- Income and wage

Summary

CHAPTER 3. CONCEPTUAL APPROACHES AND METHODS FOR ANALYZING THE EFFECTS OF POLICY REFORM ON THE RURAL SECTOR 37

Introduction
Conceptual approaches
- Stabilization and structural adjustment
- Levels of analysis

Methods and analysis
- Macro-meso analysis
- Meso-micro analysis

CHAPTER 4. FINDINGS FROM EMPIRICAL STUDIES 63

Experiences of developing countries other than Ecuador
- General overview
- Stabilization measures and economic growth
- Employment and income during adjustment

The experience of Ecuador
- General overview
- Experiments and results of adjustment measures on economic growth and political feasibility
- Policy mix when public and private investment productivities differ
- Effects of structural adjustment on poverty

Summary

CHAPTER 5. EFFECTS OF POLICY AND MARKET DISTORTIONS ON NET HOUSEHOLD INCOME - METHODS OF ANALYSIS 87

The Data set
Analytical methods
- Processing and management of data
- Methods of analysis

CHAPTER 6. RESULTS OF THE SALCEDO RESEARCH 111

Income and land use patterns
- Household income level
- Household income shares
- Return over variable costs
- Reporting different types of income
- Adding gross livestock sales
- Average size of farms and land use

Tradable and non tradable components in the cost and output structure of farm production
- Cost structure
- Agricultural output

Partial and combined effects of policies on net agricultural income
- Partial effects of policy and market distortions on variable cost
- Combined effects of policy and market distortions on agricultural variable cost
- Combined effects of policy and market distortions on value of agricultural output
- Combined effects of policy and market distortions on net agricultural income

Combined effects of policy and market distortions on off-farm income
Combined effects of policy and market distortions on net household income

CHAPTER 7. CONCLUSIONS 143

Stabilization and structural adjustment policies in developing countries including Ecuador
Notion of tradeability
Conclusions about a disaggregated methodological approach
Conclusions about the results of the Salcedo research
Limitations and weaknesses in the analysis of the research
Methodological conclusions
Recommendations

APPENDIX A. NOTATION FOR ASSESSING IMPACTS 153

APPENDIX B. BASIC INFORMATION FOR ASSESSING SOCIAL PRICES 163

APPENDIX C. EFFECTS OF IMPORT QUOTAS 171

BIBLIOGRAPHY 173

LIST OF TABLES

Table		Page
1.	Summary of macroeconomic and agricultural behavior of the economy of Ecuador, 1975-1994	11
2.	Macroeconomic and agricultural behavior of the economy of Ecuador, 1975-1980	12
3.	Macroeconomic and agricultural behavior of the economy of Ecuador, 1981-1987	17
4.	Macroeconomic and agricultural behavior of the economy of Ecuador, 1988-1994	23
5.	Protection rates in Ecuador, 1980-1983 and 1984-1987	26
6.	Share of economically active population by sectors, Ecuador 1950-1994	30
7.	Rates of total un-employment, open un-employment and under-employment, Ecuador 1980-1994	31
8.	Share of economically active population (EAP) by sectors, Ecuador 1950-1980	32
9.	Rates of growth in real income per capita by sectors, Ecuador (1975-1994)	33
10.	Information system for the social dimensions of adjustment	43
11.	Classification of cost components for imported inputs and outputs by tradable and non tradable components	93
12.	A conceptual framework for partial assessment of the impacts of selected policy interventions and market distortions	95
13.	Private and social exchange rate, 1990-1994	98
14.	Distortion of tariffs, fees, duties and transport cost of imported inputs and outputs to warehouse as percentage of C&F, 1990-1994	100
15.	Private interest rate versus social interest rate (WEIGHTED AVERAGE DEMAND AND SUPPLY SIDES)	102

Table		Page
16.	Social return and social interest rate	103
17.	Private component of rural transport as a percentage of total transport service fee	104
18.	Private and social value components of transport vehicle parts	105
19.	Private and social value of diesel fuel	106
20.	Social component of rural transport	107
21.	Opportunity cost for farm labor	109
22.	Opportunity cost for off-farm family labor	110
23.	Distribution of farm sizes, Salcedo Ecuador (1991)	112
24.	Average net household income in US dollars	113
25.	Income shares by source and farm size category	115
26.	Cropping cash sales and own consumption shares	116
27.	Nominal private return over variable costs	117
28.	Proportion of households reporting different types of income, by farm size - Percent of total cases	118
29.	Gross farm income shares	120
30.	Land use by farm size	121
31.	Land use by farm size and crop group category	121
32.	Share of tradable and non tradable components for agricultural input and output, average 1990-1994	124
33.	Share of tradable and non tradable components in input cost by crop group category	125
34.	Partial effects of policy and market distortions on farm input cost	128
35.	Net combined effects of policy and market distortions at the agricultural input level	130

Table		Page
36.	Combined effects of policy and market distortions at agricultural output level	133
37.	Combined effects of policy and market distortions on net agricultural income	137
38.	Combined effects of policy and market distortions on off-farm income level	138
39.	Combined effects of policy and market distortions on household net income	142
A.1	Notation for calculation of private and social values of tradable and non tradable components of agricultural variable costs	154
A.2	Notation for calculation of private and social values of tradable and non tradable components of agricultural output	155
A.3	Notation for calculation of private and social values of tradable and non tradable components of net agricultural income	156
A.4	Notation for calculation of private value and social values of agricultural output, agricultural variable cost and off-farm income	157
A.5	Notation for calculation of private and social values of off-farm income	158
A.6	Notation for calculation of private value and social values of net household income	158
A.7	Notation for calculation of partial effects of policy and market distortions on agricultural variable costs	159
A.8	Notation for calculation of combined effects of policy and market distortions on agricultural variable costs	159
A.9	Notation for calculation of combined effects of policy and market distortions on agricultural output	160
A.10	Notation for calculation of combined effects of policy and market distortions on net agricultural income	161

Table Page

A.11 Notation for calculation of effects of policy and market distortions on off-farm income 162

A.12 Notation for calculation of combined effects of policy and market distortions on net household income 162

B.1 Private - current tariffs for tradable inputs and tradable outputs, percentage over C&F, 1990-1994 164

B.2 Private - current import duties, other taxes and transport to import warehouses for tradable inputs and tradable outputs Percentage over C&F, 1990-1994 165

B.3 Private - current tariffs, imports fees, other taxes and transport cost to import warehouses as a percentage of C&F 1990-1994 166

B.4 Social - "competitive" custom and port expenses and transport to import warehouses for tradable inputs and tradable outputs Percentage over C&F, 1990-1994 167

B.5 Social cost to bring imports to domestic market of Ecuador as a percentage of C&F 1990-1994 168

B.6 Private interest rate versus social interest rate (FROM THE DEMAND SIDE) 169

B.7 Private interest rate versus social interest rate (FROM THE SUPPLY SIDE) 170

LIST OF FIGURES

Figure		Page
1.	Real devaluation and factor returns with tradable inputs	51
C.1	Effects of import quotas	172

CHAPTER 1

INTRODUCTION

A. Introduction and problem statement

Since the late 1970's and early 1980's, stabilization and structural adjustment policy research in Ecuador has focused mainly on the effects of market distortions removal on aggregated sectors of the economy, including agriculture. Although, these studies gave substantial benefit for policy formulation at a macro level, no assessment of differential effects on participants was carried out due to lack of detailed household data and a methodological approach for analysis.

From the early 1970's to the early 1980's, the objective of Ecuador's economic development policy was translated into a mixture of goals including, a) taxation of agriculture and use of petroleum export earnings for import substitution industrialization, b) food self-sufficiency, b) more equitable income distribution through accessibility of food to all population groups, and c) control of inflation and stability of domestic prices (De Janvry, 1992).

The Ecuadorian strategy of economic development introduced large distortions in agricultural and non-agricultural markets through relatively strong state interventions such as high public current and capital expenditure, control of macroeconomic variables and the creation of a large bureaucracy. Domestic prices were isolated from the transmission of international prices (variation of international prices leads to corresponding variation in domestic prices) through protectionism toward import substitution and taxation of agricultural exportables (Whitaker, 1990).

By the early 1980's, export earnings decreased, international debt payments were delayed, public deficits and inflation rates increased and the overall growth rate decreased sharply. Along with these facts, the level of intervention reached a point of high complexity. The goals were confused and the crisis arrived (Fargeix, 1990).

Stabilization and adjustment policies were influenced both by international funding organizations and political decision makers because past policies revealed un-sustainability. The new set of policies aimed to (Bourguignon, 1992 and Krueger, 1993):

a) open domestic markets, so prices without distortions would be the opportunity cost of non tradable inputs and outputs,

b) open international trade, so transmission of international prices would be the opportunity cost of tradable inputs and outputs and,

c) apply institutional and legal reforms which would lower transactional costs and improve competitiveness in markets.

In practice, stabilization programs in Ecuador after 1981 were partially successful in reducing the public deficit, the current account balance deficit and in combating the acceleration of inflation. Some legal reforms were enacted to give more flexibility to international trade and the financial system, so more open markets were encouraged. However, from 1981 to 1994 many developing country governments faced serious external shocks (fall of international prices of export products and natural disasters) and opposition of political groups which forced them to either delay or slow down the intensity of stabilization packages (De Janvry, 1992).

Past analysis of policy effects on the agricultural sector of Ecuador were based on the following assumptions:

a) the agricultural sector is fully tradable and,

b) the variance of crop-mix, input-mix use and rate of substitution among factors

of production across farms sizes, types of producers and regions are non significant. Therefore, aggregated means of income and cost were used to assess the effects of policies on the whole agricultural sector.

Disaggregated studies of policy effects taking into consideration different levels of tradeability among agricultural commodities and inputs were not done due to the lack of detailed and updated household data. Also, the main purpose of those studies at that time was to show the significant response of the agricultural sector as a whole to a revised set of incentives. Therefore, assessing macro-level impacts of policies was enough to influence governments and political interest groups to take decisions on a more rapid removal of distortions in domestic agricultural markets, financial and international trade policies.

However, during the last three years, the policy formulation agenda has been moving towards a more disaggregated analyses to assess:

a) the effects of policy and market distortions at the rural household level and,

b) the effects of policy changes and improvements in market performance on private incentives and the welfare of the rural/urban poor.

For better policy formulation, it is necessary to pay more attention first, to the notion and range of tradeability among agricultural commodities in Ecuador and, second to the disaggregation across different kinds of rural households, farm sizes and regions.

B. Purpose and objectives

The main purpose of the present research was to identify and further develop analytical methods for assessing the effects of different policies that impact rural households because macro approaches do not assess the variation of effects among households based on size, farm

characteristics and crop combinations.

The specific objectives of the study were as follows:

a) To review theoretical concepts and empirical studies of the effects of stabilization and structural adjustment policies on both overall economic performance and the welfare of poor groups in developing countries including Ecuador.

b) To demonstrate how to combine rural household data with macro and meso economic variables to quantify policy distortions and to give a more careful treatment to the notion of tradeability across the crops produced in the area selected for detailed analysis.

c) To calculate relative changes in macro and meso economic variables in both current and social values and to estimate the total and partial effects of policy and market distortions on net household income in the area of Salcedo, Ecuador during 1990-1994 by farm size and crop group categories.

d) To give methodological recommendations to improve data collection systems and institutional inter-relationships and arrangements between data collection and policy analysis agencies for better policy formulation at a disaggregated level.

C. Scope and methods

A literature review was done to have a general framework about the historical experiences and the assessment of impacts of structural adjustment policies in the agricultural sector of developing countries including Ecuador. The macro-meso-micro approach and the theory of social values were subsequently adopted as a methodological framework for the empirical research of the thesis.

A household survey done by the Institute of Agricultural Strategies (IAS/USAID) in the northern part of the Sierra of Ecuador (1991) was used as a data base to assess the impacts of selected policy and market distortions on rural household incomes. The sample size was 592. A representative sample was taken for farms with less than 50 hectares and a census was taken for farms over 50 hectares. The sample was designed using the records of NIRT (National Institution for Rural Land Titles) for this area through a sophisticated method of photographic area and topographic measures for all farms.

The analytical procedures for the empirical research were the following:

a) Use of farm household data to break households into farm size categories and to characterize each category by: i) income sources (off-farm income activities; and cropping and own consumption farm income by crop group category) and, ii) structure of variable input cost.

b) Use of macro and meso economic variables obtained outside the survey to quantify policy and market failure distortion coefficients based on a comparison

between actual value (private) and an assessment of opportunity cost (social) for each case of distortion.

c) Apply these distortions coefficients on tradable and non tradable components of tradable and non tradable inputs and outputs of household farm income and on agricultural wage off-farm income to calculate the effects on net household income by farm size category.

The main limitations of the household data used can be summarized as follows:

a) Since the rural household survey available for the study was designed for a small area in the northern mountain region of Ecuador, an assessment of micro-level impacts of policy changes and structural adjustment measures over the entire nation was not possible.

b) Lack of production costs of livestock to assess net livestock income. There was only available data for livestock sales.

c) Lack of secondary data to estimate social values for some off-farm income sources.

In spite of these limitations, the linkage approach used between macro, meso and household data, the notion of tradeability and therefore the level of disaggregation in the analysis of the results represents the main contribution of the present research.

D. Organization of the study

The remainder of this study is organized as follows: Chapter II describes the pre-crisis conditions of Ecuador's economy and the process of stabilization and structural adjustment during the period 1980-1994. Chapter III describes the conceptual approaches and theoretical framework for assessing the effects of policy reforms on the rural sector of developing countries. Chapter IV discusses empirical studies of structural adjustment effects (at a macro-aggregated level) on economic and social performance in developing countries, including the case of Ecuador. Chapter V describes: a) the methodology to assess social values of the variables involved in the analysis, b) the methodology to assess total overall effects and contribution of partial effects of policy and market distortions on net household income. Chapter VI presents the results of research: a) land use and income patterns of households, b) the effects of tradeability and non tradeability on agricultural input and output value and c) the combined effects of policy and market distortions on net household income. Chapter VII summarizes the main conclusions of the empirical research, the methodological conclusions and recommendations for further research.

CHAPTER 2

STABILIZATION AND STRUCTURAL ADJUSTMENT IN ECUADOR 1980-1994

A. Economic policy and the performance of agriculture prior to 1980

During the 1960's, Ecuador was essentially an agricultural country. The main export crops (banana, cocoa, coffee and sugar) were mostly produced by a few large farmers. The import-competing crops and basic food products were produced by a large number of small farmers in the mountain region (the Sierra) and medium and small farmers on the Coast. In the Sierra, though, some food products such as milk and livestock were produced by "hacienda" owners under extensive systems of cultivation (Whitaker, 1990).

The economy changed sharply with the discovery of oil at the end of the 1960's. Production and exporting of oil started on a massive scale in 1972. With high petroleum prices in international markets (four times prices during the preceding decade), Ecuador started its modern economic development under the model of "import-substitution" that prevailed throughout Latin America during this time. The real gross domestic product grew by 15 percent annually between 1970-1974 (Fargeix, 1990).

Oil revenues generated a large balance of payments surplus, which gave the country access to low interest rate loans in a time of excess liquidity in the international market. The foreign debt of US$330 million in 1974 grew to US$2.6 billion by the end of the decade and petroleum exports' averaged 54 percent of total exports between 1975 and 1980 (Table 1).

The main policies and reforms implemented during 1975-1980 (Tables 1 and 2) were:

a) Increased public capital and current expenditures, the creation of a number of public enterprises and a rapid expansion of the bureaucracy. During 1975-1980, government budget deficit as a percentage of GDP averaged -2.5 percent and if public enterprises were added it was -3.5 percent. Public investment as percentage of GDP was 6.1 percent but private investment was still much larger (17.7 percent). The public deficit was financed mainly by external sources (53.7 percent on the average). The contribution of oil revenues to the government budget (measured as percentage of GDP) increased from 3.9 percent in 1973 to 7.5 percent in 1980. The growth in public expenditures benefited non-tradables like services and construction. The services sector grew on average 7.7 percent annually between 1965-1980 (Table 1).

b) Creation of a whole structure of subsidies toward the industrial sector through an overvalued exchange rate, protective tariffs and quotas on competitive imports, subsidies for machinery and other inputs, preferential interest rates and tax exemptions. These subsidies supported the creation of a capital-intensive industrial sector concentrated in the two largest cities: Quito and Guayaquil (De Janvry, 1992). GDP grew on average 8.2 percent annually during this period and the rate of growth for industry and petroleum were 9.3 and 6.1 percent, respectively (Table 1).

c) In general, the agricultural sector was discriminated through taxes on export crops, controls on producer and consumer prices, overvaluation of the exchange rate and direct subsidies for wheat and barley imports. Agriculture growth slowed to 3.4 percent annually between 1965-1980. However, there were some direct compensating policies like preferential interest rates for agricultural short term loans, subsidies and low tariffs for imports of machinery, agro-chemicals and fertilizers and subsidies in the use of water through the building of irrigation

systems and protection from imports of some food crops (corn, rice, soybeans, oil beans, sorghum and sugar). Nevertheless, these sectoral policies did not offset the discrimination of the overvaluation of the exchange rate (Whitaker, 1990).

The degrees of discrimination differed among sub-sectors and crops within agriculture. Export crops grew by only 1.2 per cent during 1965-1981 while other crops grew at 2 percent. In contrast, forestry, and fishing grew at relative rapid rates of 9.6 per cent and 11.7 percent, respectively, while livestock grew at 4.6 percent (Whitaker, 1990).

Rapid growth in fishing is partially explained by growth in demand for shrimp and fish in the international markets. The high rates of growth in livestock production, forestry, and some import-substituting crops (hard corn, soybeans, sorghum and oilseeds) are explained by the backward linkages from protected domestic industries to these sectors which produced raw materials for expanding internal markets for milk, furniture, dairy products, processed meat, vegetable oils, soaps and poultry (Acosta, 1990).

d) The economic boom and significant structural and social changes ended by the early 1980's. Oil production and exports fell by 5 percent in 1980. Both the current account of the balance of payments and the public sector budget experienced substantial deficits in 1981 of -7.1 percent and -4.8 percent of GDP, respectively. Economic growth slowed to 3.9 percent and foreign lenders cut all new loans in August 1982 when adjustment became necessary (Fargeix, Andre, 1990).

Table 1. Summary of macroeconomic and agricultural behavior of the economy of Ecuador, 1965-1994

Concept/Item	65-80	75-80	81-87	88-91	92-94
GDP GROWTH (%)					
GDP growth	8.2%	n/a	2.3%	2.7%	3.0%
GDP growth agriculture	3.4%	n/a	6.2%	4.9%	0.0%
GDP growth petroleum	6.1%	n/a	2.1%	-1.0%	9.2%
GDP growth industry	9.3%	n/a	0.2%	-0.4%	3.3%
GDP growth services	7.7%	n/a	0.9%	4.8%	1.4%
Share GDP by sectors (%)					
Agriculture	20.1%	n/a	15.3%	17.3%	17.3%
Petroleum	4.6%	n/a	12.4%	12.5%	13.3%
Industry	17.1%	n/a	18.1%	15.8%	15.2%
Services	26.6%	n/a	26.9%	26.4%	26.3%
GLOBAL PUBLIC DEFICIT / SURPLUS					
Government budget (%/GDP)	n/a	-2.5%	-1.4%	-1.8%	-3.6%
Government budget + public enterprises	n/a	-3.5%	-2.1%	n/a	n/a
%financed internal	n/a	46.3%	80.7%	1.5%	8.8%
%financed external	n/a	53.7%	19.3%	98.5%	91.2%
INVESTMENT as %/GDP					
Public investment	n/a	6.1%	5.7%	3.2%	2.5%
Private investment	n/a	17.7%	13.5%	10.8%	11.9%
BALANCE OF PAYMENTS (millions of $US)					
Current account balance	n/a	(423)	(606)	(489)	(556)
Trade balance	n/a	77	586	732	588
Balance services (interest debt)	n/a	n/a	n/a	(1,324)	(1,274)
Direct investment	n/a	n/a	n/a	150	469
External debt received	n/a	n/a	n/a	194	300
International Monetary Reserve	n/a	n/a	n/a	228	472
SHARE OF EXPORTS BY SECTORS (%)					
Agriculture	n/a	43.9%	48.6%	52.2%	58.8%
Petroleum	n/a	53.7%	49.9%	46.4%	40.0%
Others	n/a	2.4%	1.5%	1.4%	1.2%
SHARE OF IMPORTS BY SECTORS (%)					
For agriculture	n/a	17.5%	18.4%	8.8%	16.9%
For industry, transp., construction	n/a	82.5%	81.6%	91.2%	83.1%
SHARE OF IMPORTS BY SECTORS AND PRODUCTS (%)					
Imports for agriculture					
Durable	n/a	n/a	n/a	3.5%	12.2%
Raw materials	n/a	n/a	n/a	4.4%	3.9%
Machinery	n/a	n/a	n/a	0.9%	0.7%
Imports for other sectors					
Non Durable, transport and fuel	n/a	n/a	n/a	10.1%	12.3%
Raw materials	n/a	n/a	n/a	45.9%	33.7%
Machinery, construction	n/a	n/a	n/a	35.2%	37.2%
AGRICULTURAL TRADE BALANCE					
Trade balance (millions of $US)	n/a	425	678	1,169	1,465
Agricultural trade balance as % of other sectors'imports	n/a	70.7%	74.0%	74.3%	74.4%
MONETARY POLICY					
Total domestic credit (%/GDP)	n/a	22.1%	26.1%	14.3%	11.2%
Credit to private sector (%/GDP)	n/a	19.0%	20.6%	7.5%	5.5%
Credit to public sector (%/GDP)	n/a	3.1%	5.5%	6.8%	5.7%
Money supply M1					
%/GDP	n/a	15.4%	13.3%	9.3%	8.8%
Money growth	n/a	23.9%	25.8%	47.6%	42.6%
MACROECONOMIC VARIABLES					
Inflation rate	n/a	12.2%	27.2%	57.8%	42.3%
Nominal interest rate	n/a	10.5%	17.3%	45.1%	51.4%
Real Interest rate	n/a	-1.7%	-9.9%	-12.7%	9.1%
Exchange rate (official) a	n/a	25	75	662	1,828
Exchange rate (free market) b	n/a	25	79	731	1,901
Ratio = b - a	n/a	-0.7%	-2.6%	16.0%	3.8%

Source: Central Bank - Ecuador, "Boletin Anuario" various issues; Whitaker, 1987
De Janvry A., 1991.

Table 2. Macroeconomic and agricultural behavior of the economy of Ecuador, 1975-1980

Concept	1975	1976	1977	1978	1979	1980
GDP ANALYSIS						
GDP growth	5.6%	9.2%	6.5%	6.6%	5.3%	4.9%
GDP at factor costs						
Agriculture	91.2	93.8	96.0	92.3	95.0	100.0
Manufacturing	64.2	72.7	81.3	88.0	96.5	100.0
Services	69.4	75.6	82.5	88.2	92.9	100.0
GLOBAL PUBLIC DEFICIT / SURPLUS as percentage of GDP						
Government budget	-0.9%	-2.6%	-4.5%	-3.0%	-0.1%	-3.7%
Government budget + public enterprises	-2.2%	-3.3%	-5.5%	-0.5%	-0.5%	-4.5%
%financed internal	66.7%	87.5%	50.0%	0.0%	100.0%	66.7%
%financed external	33.3%	12.5%	50.0%	100.0%	0.0%	33.3%
INVESTMENT as percentage of GDP						
Public investment	5.9%	6.6%	5.9%	6.2%	5.3%	6.4%
Private investment	17.3%	15.6%	17.7%	20.0%	18.4%	17.2%
BALANCE OF PAYMENTS (millions of $US)						
Current account balance	(220)	(7)	(342)	(701)	(625)	(642)
Trade balance	7	259	40	(175)	54	278
Balance of services (interest debt)	n/a	n/a	n/a	n/a	n/a	n/a
MONETARY POLICY						
Total domestic credit (%/GDP)	20.6%	21.8%	21.9%	22.8%	22.9%	22.7%
Credit to private sector	18.8%	20.2%	18.9%	19.4%	18.4%	18.5%
Credit to public sector	1.8%	1.6%	3.0%	3.4%	4.5%	4.2%
Money supply M1						
%/GDP	14.4%	16.1%	15.8%	15.6%	15.0%	15.3%
Money growth	n/a	38.1%	22.9%	13.5%	17.0%	28.0%
MACROECONOMIC VARIABLES						
Inflation rate	14.3%	10.2%	12.9%	13.1%	10.1%	12.8%
Nominal interest rate	12.3%	8.7%	11.2%	11.1%	8.6%	11.3%
Real Interest rate	-2.0%	-1.5%	-1.7%	-2.0%	-1.5%	-1.5%
Exchange rate (official) a	25	25	25	25	25	25
Exchange rate (free market) b	n/a	24	25	25	25	25
Ratio (b/a)-1	n/a	-2.2%	0.9%	-0.6%	-1.4%	0.0%

Source: Central Bank - Ecuador, "Boletin Anuario" various issues; Whitaker, 1987; De Janvry A., 1991
Elaboration: Author

B. Crisis and adjustment from 1981 to 1987

The crisis had its origin in the financial problems with the foreign debt and a 15 percent decline in petroleum prices. The amount of total new foreign debt was reduced from US$1,218 million in 1981 to an average of US$354 million between 1982-1984 (Fargeix, 1990).

Loss of export earnings occurred from falling oil export prices from US$35 a barrel in 1980-81 to US$27 in 1983-84. The crisis was intensified by the floods of the winter of 1982-1983, which destroyed a large part of agricultural production (it was estimated that the floods were responsible for a 30 percent decline in agricultural production) (De Janvry, 1992).

Three periods of stabilization-structural programs can be identified after the crisis in 1981 based on the intensity of macroeconomic adjustment and institutional reforms.

The periods for the analysis were the following: 1. 1981-1987 (two government regimes), 2.1988-1991 (one government regime) and 3. 1992-1994 (one government regime).

The main policies and reforms during the government regimes (Tables 1 and 3) were:

a) Devaluation was used as a main policy of adjustment with restriction on imports through quotas and tariffs and the elimination of export taxes. The exchange rate went from 25 sucres per dollar in 1981 to 63 sucres per dollar in 1984 in the controlled market compared with 61 s/US in the free market. There was an increase in the level of protection from 25 percent over the 1970's to 52 percent in 1982-1984 (Table 3).

b) Current expenditures in the fiscal budget were reduced from 9.9 to 8.3 percent of GDP in 1983 and capital expenditures from 2.7 to 2.4. The government deficit was reduced from 5.7 percent of GDP in 1981 to -0.9 percent in 1983 and turned into a surplus of 1.2 percent in 1984 (Table 3).

c) Nevertheless, money growth (M1)[1] went from 11.7 percent in 1981 to 42.2 percent in 1984 and inflation accelerated from 14.7 percent in 1981 to 30.4 percent in 1984. This sharp increase in the inflation rate can be partially explained by the winter floods in 1983 (Fargeix, Andre, 1990).

d) Favorable international prices for export commodities and the depreciation in the exchange rate brought out a surplus in the balance of trade. It went from US$ 174 millions in 1981 to $US 1,055 millions in 1984. The current account deficit dropped from $US 993 millions in 1981 to $US 263 millions in 1984 (Table 3).

With the election of President Febres Cordero in August 1984, there was an important deepening in stabilization policies. The political power of this government coalition represented the coastal agro-exporters and banking interests in contrast with the previous political power of the bureaucracy and urban interests under the Dutch disease and discrimination against agriculture.

The main policies and reforms during this government regime (1984 and 1987) (Tables 1 and 3) were:

a) Unification of exchange rate markets. In 1985, the official exchange rate was used for petroleum exports and international debt and the rest of the international transactions passed from the official exchange rate to a more "devaluated" intervention rate.

b) A series of measures were implemented to liberalize international market transactions such as reduction of import tariffs and the elimination of import prohibitions and quantitative restrictions. The trade system was further liberalized in January 1986 with a revision in the entire tariff system under the Import Tariff Law.

---

[1] Money growth M1 = growth referred to domestic monetary currency in circulation + domestic monetary deposits in Central Bank.

c) Domestic prices of fuel and electricity were increased to cut down the subsidies that prevailed since the oil discovery.

d) Nominal interest rates were increased from 17 percent in 1984 to 21% in 1986 which implied an increase in real interest rates from -13.4 percent in 1984 to -2 percent in 1986. By the end of 1984, financial liberalization started with some interest rates for specific savings instruments, which were set up by the banks themselves and not subject to Central Bank intervention (World Bank, 1993).

All of these brought some positive economic results: recuperation of economic growth (GDP grew by 4.2 percent in 1984 and 4.3 percent in 1985); a public sector budget surplus (4.2 percent of GDP in 1985); a current account deficit turned into a surplus of $US 114 millions in 1985; and reduction of the inflation rate from 48.1 percent in 1983 to 30.4 percent in 1984 and 28 percent in 1985 (Table 3).

The large devaluations, the removal of price controls, unemployment in non-competitive industries, decline in government subsidies and welfare benefits implied an increase in inflation and a fall in the real wage bill. The only short-term gainers were the economic elites supporting the regime - coastal agro-exporters and financial interests. Some politically powerful groups such as organized labor, industrialists producing for the domestic market and importers which had gained under the appreciated real exchange rates, lost during this period. Therefore the political cost and instability was high due also to the lack of targeted compensatory measures for poor groups (who lost in the process, too) (De Janvry, 1992).

In 1986 the fall of petroleum prices from $US25 to $US12 per barrel shocked the economy deeply. The losses in export revenues were equal to 8 percent of GDP. This new international shock forced the government to carry out additional measures. The programs of liberalization of trade, financial markets and agricultural prices were intensified.

The nominal devaluation averaged 50 percent during 1986, when the inflation rate was 23 percent. By August 1986, the exchange rate was fully liberalized to a free market. The elimination of agricultural subsidies and elimination of maximum prices for many consumer goods was part of the agricultural structural adjustment program negotiated with the World Bank (Fargeix, Andre, 1990).

The economic stabilization measures tended to offset the external shocks, but the program was not politically sustainable. The government began to institute a program based on "populism or regionalism" supported by a coalition between economic elites and lower class urban groups. This meant that the government had to abandon austerity in favor of a program of public work expenditures which contributed to inflation pressures again (De Janvry, 1992). The government and public enterprises surplus of 4.6 percent in 1985 turned into a deficit of -3 percent in 1987 financed 30 percent by internal sources. Money growth M1 rose from 23.6 percent in 1985 to 32.3 percent in 1987 (Table 3).

At the end of 1987, an earthquake destroyed part of the only pipeline transporting crude petroleum from the Amazon region to the coast. Exports were stopped for several months and fell by 35 percent overall in 1987. The public budget deficit soared to 13 percent of GDP, given the high proportion of petroleum revenues financing the budget. GDP fell by 5.2 percent in 1987 and the rate of inflation went to 30 percent. The situation was worsening by the falling of petroleum prices again in 1988 and the transition to a new democratic regime with excessive fiscal expenditure expectations (Whitaker, 1990).

Table 3. Macroeconomic and agricultural behavior of the economy of Ecuador, 1981-1987

Concept	1981	1982	1983	1984	1985	1986	1987
GDP analysis							
GDP growth	3.9%	1.2%	-2.8%	4.2%	4.3%	3.2%	-5.2%
GDP at factor costs							
Agriculture	106.8	109.0	93.8	103.8	114.1	125.6	134.9
Manufacturing	108.8	110.4	108.9	106.8	107.1	105.3	105.5
Services	103.2	105.4	101.0	104.3	107.2	109.7	112.4
GLOBAL PUBLIC DEFICIT or SURPLUS as % of GDP							
Government budget	-5.7%	-5.5%	-0.9%	1.2%	4.2%	-1.0%	-1.9%
Govern.budget + public enterprises	-5.8%	-7.5%	-2.2%	1.4%	4.6%	-2.4%	-3.0%
%financed internal	42.3%	53.3%	-16.0%	-62.5%	15.8%	72.1%	30.4%
INVESTMENT as %of GDP							
Public investment	7.3%	6.5%	4.8%	4.4%	4.9%	5.8%	6.1%
Private investment	14.9%	16.1%	11.8%	11.0%	11.2%	12.6%	17.0%
BALANCE OF PAYMENTS							
Current account balance	(993)	(1,201)	(134)	(263)	114	(548)	(1,175)
Trade balance	174	140	927	1,055	1,294	555	(33)
MONETARY POLICY							
Total domestic credit (%/GDP)	24.5%	25.9%	30.6%	28.2%	25.9%	24.2%	23.3%
Credit to private sector	18.7%	19.8%	26.4%	23.7%	17.3%	18.4%	19.8%
Credit to public sector	5.8%	6.1%	4.2%	4.5%	8.6%	5.8%	3.5%
Money supply M1							
%/GDP	14.4%	14.5%	14.0%	13.7%	12.4%	12.0%	12.1%
Money growth	11.7%	20.2%	30.4%	42.2%	23.6%	20.4%	32.3%
MACROECONOMIC VARIABLES							
Inflation rate	14.7%	16.4%	48.1%	30.4%	28.0%	23.0%	29.5%
Nominal interest rate	13.0%	13.0%	15.0%	17.0%	19.0%	21.0%	23.0%
Real Interest rate	-1.7%	-3.4%	-33.1%	-13.4%	-9.0%	-2.0%	-6.5%
Exchange rate (official) a	25	30	44	63	70	123	170
Exchange rate (free market) b	21	27	40	61	60	148	194
Ratio (b/a)-1	-15.5%	-11.5%	-10.3%	-1.9%	-13.1%	20.8%	13.5%

Source: Central Bank - Ecuador, "Boletin Anuario" various issues; Whitaker, 1987; De Janvry A., 1991

C. Adjustment from 1988 to 1994

During the 1988-1991 presidential term, some stabilization and adjustment took place, but at the same time there were additional policies and measures which aimed to strengthen the government intervention and the participation of the public sector. This political attitude was justified by the political ideology of a need for a deeper intervention because of the perceived structural failures in the economy related with the existence of oligopoly power in certain sectors. At the same time, the new government coalition was based on bureaucratic and financial interests, mainly related with urban interests.

The main policies and reforms implemented during 1988 to 1991 (Tables 1 and 4) were:

a) A return to differential exchange rates: The regime introduced an intervention exchange rate for all, debt-service and imports of products named as "basic" like food commodities, medicines and agricultural and industrial inputs; a free exchange rate for all other transactions in the economy (accounted for only 10 percent of the total international trade); and, an official exchange rate for accounting purposes of the Central Bank. Average sucre overvaluation was 24 percent during 1988-1991. By August 1992, international reserves were almost depleted. From $US 400 million in 1990, it dropped to $US 22 million in 1991 (Central Bank, 1993).

b) Renegotiation of external debt was not successful. External debt received went from $US 159 million in 1988 to -$US 123 million in 1992. The payment of a total of US$2,000 million of debt service was delayed during 1988-1991 (Table 4).

c) Even though overvaluation of foreign exchange rate occurred, there were some efforts to stimulate agricultural exports. A law which aimed to facilitate exports was issued in May 1992. This law eliminated legal and paper requirements to export, customs procedures, port

fees and reduction of transportation restrictions. A one-step window for many imports and exports was set-up at the Central Bank. Nevertheless, there were still some quotas, licenses, taxes and even prohibitions to some commodities like rice, wheat and soybeans tort, for example (IDB, 1993). d) There was a system of controlled interest rates based on setting ceilings for financial spread and preferential interest rates for agricultural commodities and export crops. The exporters could receive sucres in advance from their exports as a kind of short-term loan with lower interest rates than the average in the market. Because of this implicit subsidy given by the Central Bank, there were big financial operating losses, which induced money creation and inflation pressures (IDB, 1993).

The real interest rate went from -31.2 percent in 1988 to positive real interest rates of 4.5 and 7.7 percent in 1991 and 1992, respectively (Table 4). The preferential real interest rates for the agricultural sector went from -37 percent in 1988-1989 to 1 and 3 percent in 1991-1992. The difference between the general interest rate and preferential rates decreased from 14 points in 1988 to 7 points in 1992 (ASRP/MAG, 1993).

e) Fiscal policy increased current expenditure more than capital investment. Public employment was double the preceding period (1984-1987) and the number of public enterprises went from 116 to 163. The global public surplus of 0.1 percent of GDP in 1988 turned out into a deficit of -2.1 and -4.7 percent of GDP in 1987 and 1988, respectively (Table 4).

f) Monetary policy was more expansionary than during the preceding period (1981-1987). The rate of money growth M1 rose from 25.8 percent to 47.6 percent between the two periods, nevertheless the money supply as a percentage of GDP went from 13.3 to 9.3 percent. The average inflation rate during 1981-1987 was 27.2 percent and it continued rising to average 57.8 percent during 1988-1991 (Table 1).

g) The reactivation of the Andean Free Trade Agreement (Andean Pact) in the

northern countries of South America put some pressure on the government to begin a process of liberalization of trade and simplification of the tariff and custom system. Under the Common Andean Tariff, import tariff ceilings were reduced drastically from 290 percent to 40 percent and the spread in tariffs between raw materials and processed goods dropped, meaning a more equal treatment between the agricultural and industrial sectors (ARSP/MAG, 1993).

The last Tariff Reform in May 1992 has the following levels of tariffs (%/C&F): a) raw materials, vehicles and inputs not produced in the country (0%-5%), b) inputs and other semi-processed products (10%-15%) and final goods (20%).

The election of a new president in August 1992 was based on a political coalition between the most market liberalized agro-exporters and financial interests. Therefore, it was expected to turn the mild liberalization and stabilization program of the past regime into a most radical one.

The main policies and reforms implemented during 1992 to 1994 (Tables 1 and 4) were:

a) Monetary and public sector deficit: The stabilization package aimed basically to reduce inflation which averaged the highest level during 1988-1991 (57.8 percent). Money growth averaged 42.6 percent between 1992-1994 compared with 47.6 percent in preceding period. The inflation rate went from 54.6 percent in 1992 to 45 percent in 1993 and 27.3 percent in 1994. The overall public sector deficit was reduced from -4.7 percent of GDP in 1992 to -2.5 percent of GDP in 1994 (Tables 1 and 4).

b) Exchange rate: The exchange rate was left to float within a band but the rates of the devaluation rate in 1993 and 1994 (19 and 13 percent, respectively) were lower than inflation (45 and 27 percent, respectively) (Table 4). This means that had been some overvaluation of around 11 percent during this period (according to estimations of Central Bank of Ecuador).

c) International reserves: There was an important increase of international reserves from US$200 million in August 1992 to US$800 million by the end of 1992, US$1,356 million

by December 1993 and $US1,522 million by the end 1994. International reserves exceeded the monetary base by around 60 percent during these years (Central Bank Statistics, 1994).

d) Interest rate: The interest rate was fully liberalized. The reform of the financial system aimed to remove control of interest rates, preferential interest rates, ceilings on the financial spread and lower the deposits the financial system is required to maintain in the Central Bank. However, the interest rates for savings (average 35 percent during 1992-1994) have been much lower than for loans (between 46 and 55 percent during the same period), suggesting the possibility of a structural problem in the financial market of Ecuador (Central Bank Statistics, 1994).

The Central Bank is continuing to give liquidity to the banks through lines of credit at preferential rates because of the lack of success in capturing savings from the public. Among the monetary authorities of Ecuador, there are questions related with inefficiency and concentration in the financial system, which have to be addressed as part of further adjustment and stabilization in this matter.

e) International trade: Ecuador's trade-openness ratio (exports + imports divided by GDP) calculated by the Central Bank in 1993 was relatively high (50 percent). Many quantitative restrictions have been removed; tariffs have been reduced from a range of 28%-290% in 1990 to 0%-20% in 1994 (with the exception of automobiles, at 40%); tariff classifications have declined from 21 to 10 with over 90% of total imports at four tariff rates (5%, 10%, 15% and 20%) (Tariff Reform Book, 1990-1994).

f) Public services tariffs and subsidies: Prices of electricity, other tariffs and domestic oil products have risen substantially to the point that the price of diesel and fuel, for example was 26 percent higher than the international price by November 1993. There is an implicit tax for combustible consumers of this magnitude and the revenues are part of the oil

stabilization fund, which has as one of its purposes the payment of service on the foreign debt (Petro-Ecuador, 1994).

Nevertheless, there are direct subsidies to public transportation (used primarily by the poor) and poor users of electricity in the rural sector. There are in effect target food and medicine programs for the poor. The total cost of these social measures has been estimated at about 0.4 percent of GDP (Ministry of Finance, Department of National Budget, 1994).

Table 4. Macroeconomic and agricultural behavior of the economy of Ecuador, 1988-1994

Concept	1988	1989	1990	1991	1992	1993	1994
GDP analysis							
GDP growth	10.5%	0.3%	3.0%	5.0%	3.6%	2.0%	3.9%
GDP growth agriculture	7.7%	2.8%	6.1%	5.9%	3.4%	-1.7%	1.8%
GDP growth petroleum	115.8%	-9.7%	-0.9%	8.4%	5.8%	11.0%	7.4%
GDP growth industry	2.0%	-5.0%	0.7%	3.2%	3.6%	2.5%	4.1%
GDP growth services	1.7%	3.1%	6.2%	5.1%	2.7%	0.1%	2.6%
GLOBAL PUBLIC DEFICIT / SURPLUS as % of GDP							
Government budget	0.1%	-2.6%	-2.6%	-2.1%	-4.7%	-3.7%	-2.5%
%financed external	100.0%	94.1%	100.0%	100.0%	84.4%	89.2%	100.0%
INVESTMENT as % of GDP							
Public investment	3.8%	3.3%	2.9%	2.6%	2.7%	2.4%	2.4%
Private investment	10.7%	11.0%	10.3%	11.3%	11.7%	11.9%	12.1%
BALANCE OF PAYMENTS							
Current account balance	(611)	(594)	(210)	(542)	(73)	(556)	n/a
Trade balance	619	661	1,003	644	925	588	n/a
Balance of services	(1,327)	(1,352)	(1,320)	(1,296)	(1,118)	(1,274)	n/a
Direct investment	155	160	126	160	178	469	n/a
External debt received	129	509	66	72	(123)	300	n/a
Inter.Monet.Reserv.	(25)	379	400	157	22	472	n/a
SHARE EXPORTS BY SECTORS							
Agriculture	54.2%	49.8%	46.6%	58.4%	54.2%	57.8%	64.3%
Petroleum	44.5%	48.7%	51.9%	40.4%	44.4%	40.9%	34.6%
Others	1.3%	1.5%	1.6%	1.2%	1.3%	1.2%	1.0%
SHARE IMPORTS BY SECTORS							
IMPORTS AGRICULTURE	7.9%	8.0%	10.0%	9.3%	15.6%	17.1%	17.9%
Durable	3.7%	2.5%	4.2%	3.5%	9.7%	13.1%	13.8%
Raw materials	3.5%	4.8%	4.4%	4.8%	5.0%	3.3%	3.5%
Machinery	0.7%	0.7%	1.4%	1.0%	0.9%	0.7%	0.6%
IMPORTS OTHER SECTORS	92.1%	92.0%	90.0%	90.7%	84.4%	82.9%	82.1%
Non Durable, transport, fuel	9.1%	11.1%	9.9%	10.4%	11.0%	12.3%	13.6%
Raw materials	43.9%	48.0%	48.0%	43.6%	36.1%	33.5%	31.4%
Machinery, construction	39.1%	32.8%	32.2%	36.7%	37.3%	37.1%	37.2%
AGRICULTURAL TRADE BALANCE							
Trade balance (mil.US)	1,067	1,041	1,099	1,469	1,322	1,391	1,683
Trade balance as % of other sectors imports	76.6%	69.6%	74.4%	76.6%	79.4%	75.6%	68.4%
MONETARY POLICY							
Total domestic credit (%/GDP)	17.8%	14.0%	14.2%	11.1%	10.0%	9.9%	13.8%
Credit to private sector	10.8%	7.8%	6.4%	5.1%	4.9%	4.6%	7.0%
Credit to public sector	7.0%	6.2%	7.8%	6.0%	5.1%	5.3%	6.8%
Money supply							
%/GDP M1	11.2%	9.0%	8.7%	8.5%	7.7%	8.2%	10.5%
Money growth	53.8%	38.1%	52.2%	46.5%	44.5%	49.4%	34.0%
Other quasi money							
%/GDP quasi money	8.7%	7.8%	8.8%	9.9%	10.4%	11.6%	19.0%
quasi money growth	39.1%	52.0%	80.5%	69.0%	64.9%	57.5%	70.9%
money/quasi money growth	47.0%	44.2%	65.3%	57.9%	55.5%	54.0%	55.6%
MACROECONOMIC VARIABLES							
Inflation rate	58.2%	75.6%	48.5%	48.7%	54.6%	45.0%	27.3%
Nominal interest rate	27.0%	48.4%	51.8%	53.2%	62.3%	47.8%	44.0%
Real Interest rate	-31.2%	-27.2%	3.3%	4.5%	7.7%	2.8%	16.7%
Exchange rate (intervention mkt) a	302	527	768	1,050	1,553	1,848	2,084
Exchange rate (free market) b	436	568	822	1,100	1,587	1,918	2,197
Ratio (b/a)-1	44.4%	7.8%	7.0%	4.8%	2.2%	3.8%	5.4%

Source: Central Bank - Ecuador, "Boletin Anuario" various issues; Whitaker, 87; De Janvry A., 91

D. Performance of agricultural sector (1975-1994)

Despite the discrimination experienced by agriculture and especially export crops during the 1970's and the 1980's through an overvalued exchange rate and export taxes, agricultural exports exceeded agricultural imports by big margins.

The share of agricultural exports in total exports went from 43.9 percent during 1975-1980 to 52.2 and 58.8 percent during 1988-1991 and 1992-1994, respectively. Agricultural trade surplus as a percentage of other sectors' imports (durable, non-durable goods for industry, fuel and raw materials and machinery for industry, construction and transport) was around 72 percent during the last three decades, indicating the ability of agriculture to generate surplus export earnings (Table 1).

Since adjustment began in 1981, the performance of the sector had been characterized by a strong growth in traditional and non-traditional exports (shrimp, fruits and flowers). The importable crops did receive more or less the same treatment as in the 1970's, relatively high tariffs with a system of import controls through import permits and financial deposits in the Central Bank. The objective of "self-sufficiency" and domestic protection for import substitutes in agriculture guided the policy during the last three decades.

Most of the food crops produced in the mountain region can be qualified as non-tradable because of bulkiness and perishability. These products were subjected to price controls between 1975 and 1988, but these had little effect because the budget for police control was insufficient and inefficient. Therefore, a free market for these commodities prevailed and there was an active trade with the frontier countries (Colombia and Peru) that provided market opportunities for both producers and informal traders (IAS, 1991).

Publications of nominal and effective protection rates (Acosta, 1991 and ASRP, 1993)

helped to analyze the degree of protection or negative protection some agricultural commodities experienced between 1980-1992.

The nominal protection rate is the difference between the domestic price (the effective price the producer received) and the border price (which is the international price adjusted to an equilibrium exchange rate without over or under valuation + custom expenses + transport to farm). The border price is the opportunity cost of the farmer, the price he/she would have received in the absence of distortions (exchange rate and trade regime) (Monke, 1989).

$$NPR = (Pd-Pb)/Pb \qquad (2.1)$$

where:

Pd = domestic price.

Pb = border price.

Effective protection rates adds the effect of indirect policy effect on the product and direct compensating effect of tradable input polices (subsidies in import of machinery, fertilizer, agro-chemicals in the form of preferential exchange rates or exemptions in payment of tariffs, duties and other custom expenses) (Monke, 1989).

$$EPR = [(Pd*q_i-Td*q_{ij})/(Pb*q_i-Tb*q_{ij})]-1 \qquad (2.2)$$

where:

Pd = domestic price.

q_i = quantity produced of product.

Td = domestic tradable input price.

q_{ij} = quantity of tradable input j on product i.

Pb = border price.

Tb = border tradable input price.

Rice, wheat, barley, banana, coffee and cocoa during 1980-1983 were discriminated against according to nominal protection analysis. Producers of these products received less than they would had distortions related to exchange rates, tariffs and other duties been removed. For importables, the nominal protection rate was positive during 1984-1987 except for wheat, meaning that exchange rate and trade policies protected these commodities. For banana, coffee and cocoa, the nominal protection rate was negative from 1980-1987 except for cocoa during 1984-1987, meaning that exchange rate policy and taxes on exports highly discriminated against exporting crops (Table 5).

Table 5. Protection rates in Ecuador, 1980-1983 and 1984-1987

Years / Concept	Rice	Hard Corn	Soy-beans	Wheat	Barley	Banana	Coffee	Cocoa
Nominal protection								
1980-83	-11%	37%	7%	-32%	-37%	-81%	-86%	-15%
1984-87	40%	52%	23%	-28%	1%	-75%	-74%	12%
Effective protection								
1980-83	-9%	52%	68%	-35%	-38%	-84%	-95%	-22%
1984-87	46%	64%	60%	-35%	5%	-78%	-88%	20%
1988-1992 (NPR and EPR)	Rice	Hard corn	Sorghum	Soy-beans	Wheat	Sugar	Milk	
Nominal protection rate	-17%	-4%	-24%	-11%	28%	-45%	-10%	
Effective protection rate	-2%	14%	-13%	7%	47%	-45%	5%	

Source: Acosta, 1991; ARSP, 1993

Effective and nominal protection patterns were very similar during these two periods, indicating that direct and indirect policies largely cancelled each other. Each measure shows a strong shift in policy during 1984-1987. Nominal and effective protection for rice, hard corn, soybeans, barley and cocoa increased substantially. Soybeans and hard corn used relatively more tradable inputs than other commodities, for that reason it received higher effective protection rates. Banana and coffee still experienced high levels of discrimination if exchange rate overvaluation and other explicit export taxes with compensating input subsidies are taken into account (Table 5).

For the period 1988-1992, the farm producers of sugar, sorghum, rice, soybeans, milk and hard corn received less (in the order mentioned) than they would have received if free trade and competition with international markets would have occurred. Only wheat had a positive nominal protection rate of 27.3 percent. Since 1988 it was a trend of reducing the level of nominal protection for products denominated "basic food". There was a general perception in the government that keeping these prices depressed would be an efficient way to control inflation (Table 5).

Effective protection rates turned out positive for hard corn, soybeans and milk, less negative for rice, sorghum and sugar and slightly more positive for wheat, meaning that subsidies in tradable inputs cancelled discrimination against the output. All the commodities used more than 40 percent of tradable inputs, therefore compensating policies on inputs had a significant effect on the effective protection rates of these commodities (Acosta, 1991 and ASRP, 1993).

The trade reform between 1990 and 1994 did not reach the agricultural sector to the same extent. Some exports like rice, hard corn, soybean meal, african palm and cotton are still subject to quotas, restrictions, licenses, taxes and controls.

There has been no reform of the "Agricultural Development Law" since 1975 when it

was created. This law set low tariffs for imports of agricultural inputs, but legalized a margin up to 30 percent of profit and 30 percent of administrative and sales margins for importers. During 1992-1994, the law had still some restrictions on input imports in relation with qualification of importers, brand registers and other additional requirements.

The "Law for the Defense of Consumer Prices" was issued in June 1990 setting minimum prices for producers and maximum prices for consumers. Producer support prices for cotton, sugar cane, milk, rice, barley, hard corn, wheat and soybean and consumer ceiling prices for sugar, pasteurized milk, wheat flour, processed rice, pharmaceutical products and vegetables and meat.

The Agricultural Marketing Board (AMB) was in charge of controlling producer prices by purchases at harvest time. However its role was relatively marginal between 1980-1992 and focused only on rice and eventually hard corn. The average market share of the Marketing Board on rice was 17 percent between 1988-1992 compared with 12 percent between 1980-1987 and during the last three years, its market share was reduced to less than 7 percent (Statistics Ministry of Agriculture and Agricultural Marketing Board, 1994).

Neither minimum producer nor maximum consumer prices had any effect on the market because the lack of institutional ability to put the law in practice.

By 1993, the Law for the Defense of Consumer Prices was partially abolished as a condition to implement the band prices policy which is part of the negotiations within the Andean Trade Agreement. The band price policy consists in setting a domestic price for import substitutes based on international price plus an andean common tariff and other custom expenses under which no imports can enter the market. Rice, hard corn, soybeans, wheat, barley, flour, palm oil, sugar, milk and their sub-products are included in this mechanism (Manual of Band Prices, Project of Reorientation of Agricultural Sector, 1994).

Some technical reports of the Project of Reorientation of Agricultural Sector within the Ministry said that overall, the price band has compensated the overvaluation of exchange rate during the last two years which had made agricultural imports cheap.

E. Welfare and socioeconomic results

E.1. Employment

Between 1950-1980, the economically active population grew at an average rate of 3.1 percent. The very high concentration of land and the persistence of rural poverty induced high rates of rural-urban migration. Between 1974 and 1982, urban population grew at an average annual rate of 4.5 percent while the rural population growth rate was 0.9 percent. The migration pattern was accelerated because of the stagnation of agriculture during the 1970's and part of the 1980's and the concentration of public investment and service sector employment in the urban sector (Fargeix, 1990).

Share of economically active population EAP[2] in modern agriculture and modern urban sector remained almost constant between 1950 and 1980. Therefore, informal activities had to absorb the surplus supply of labor, growing at an average annual rate of 7 percent during 1954 and 1980 and took a quarter of economically active population in 1980. Share of EAP of informal sector almost doubled for the period analyzed (Table 6).

---

[2] EAP = economically active population = population who actively is looking for a job.

Table 6. Share of economically active population by sectors, Ecuador 1950-1994

Years	Agricultural sector	Formal sector	Informal sector
1950	66.3%	21.9%	11.7%
1960	62.2%	19.4%	18.4%
1970	58.8%	17.5%	23.7%
1980	51.6%	23.0%	25.4%
1991	38.0%	29.9%	26.7%
1992	37.3%	30.0%	27.1%
1993	37.9%	30.3%	26.5%
1994	37.8%	31.2%	25.7%

Source: 1950-1980: De Janvry, 1991; 1991-1994 Estimates National Institute of Census (NISC), 1994

Small farmers in agriculture was another refuge of urban unemployed. By 1980, despite the stagnation of employment in the modern subsector, agriculture still employed 52 percent of EAP (De Janvry, 1992).

Rural informal activities are more important than urban informal activities according to Labastida and Vos who calculated a 5.5 percent of under-employment[3] in agriculture by 1982, 4 percent in non-agriculture and 3 percent for the whole economy.

The employment situation worsened during the period of crisis and adjustment. Open unemployment increased from 5.7 percent in 1980 to 12 percent in 1986. Total industrial employment fell at a rate of 1.7 percent between 1982 and 1986 (Table 7).

[3] Under-employment = population employed in non formal activities.

Table 7. Rates of total unemployment, open unemployment and under employment, Ecuador 1980-1994

Years	Total unemployment	Open unemployment	Under unemployment 1/
1980	5.7%	n/a	n/a
1981	6.0%	n/a	n/a
1982	6.3%	n/a	n/a
1983	6.7%	n/a	n/a
1984	10.5%	n/a	n/a
1985	10.4%	n/a	n/a
1986	12.0%	n/a	n/a
1991	12.0%	n/a	n/a
1992	11.2%	8.9%	2.4%
1993	10.7%	8.3%	2.4%
1994	10.0%	7.6%	2.4%

Notes:

1/ Under unemployment is considered when economically active population are looking for a full time job but are working either a part time job paid the average wage according to their skills or a full time job paid less than the average wage according to their skills.

Source: 1980-1986: De Janvry, 1991; 1991-1994 Estimates National Institute of Census (NISC), 1994

The labor market remained complex and inefficient between 1987-1994. Until now, there is a wide array of bonuses, compensation payments (for cost of living, vacations, holidays, overtime and sixteen additional salaries). All of these extra payments increases the basic wages by 70 percent or more (Central Bank Statistics, 1993).

This situation has been a structural distortion in the labor market, creating strong rigidities which have prevented a labor reallocation. Likely, the marginal productivity of labor is less than its wage in the formal sector, meaning that the demand for labor is lower than the supply. It suggests that excess supply has been sheltered in the informal sector. There was an increased share of economically active population in informal sector from around 20 percent

between 1950-1980 to around 45 percent between 1991-1994 (including domestic services). Share of economically active population in urban modern sector decreased between the same periods from around 22 percent to 18 percent (Table 8).

Table 8. Share of economically active population (EAP) by sectors, Ecuador 1950-1980

Years	Agricultural activities	Modern sector 1/	Informal sector 2/	Domestic services sector
1991	6.6%	47.6%	40.5%	5.5%
1992	5.6%	47.8%	41.1%	5.6%
1993	6.3%	48.2%	40.3%	5.3%
1994	6.1%	49.7%	39.0%	5.3%

Notes:

1/ Modern sector includes modern agriculture EAP in around 30 percent

2/ Includes rural and urban EAP in informal sector

Source: Estimates National Institute of Census (NISC), 1994

Fiscal austerity during stabilization and adjustment after 1981 reduced employment opportunities for skilled labor by cutting current expenditure and unskilled labor by cutting investment expenditure. Since investment expenditure fell more rapidly than current expenditure during adjustment, open unemployment hit the unskilled labor the most. Some of this unskilled labor was rural because small farmers (peasants) who had less than 5 hectares usually complemented their income by either public / private formal or informal activities (Fargeix, Andre, 1990).

E.2. Income and wage

By 1988, the real minimum wage[4] had decreased 45 percent relative to 1980 (using the consumer index price) and 65 percent (using the food index price). However, real remuneration fell by only half the minimum wage, indicating that legal minimum wage was overstated and not effectively paid.

The overall wage bill fell, but in agriculture it fell more rapidly than in industry after 1981. The rate of growth of real income per capita in agriculture decreased by 11 percent annually between 1980-1982 compared with -2 percent in non-agriculture. During 1982-1987, the rate of growth of per capita income decreased by 7 percent in both sectors (Table 9).

Estimations of the National Institute of Census of 1994 revealed that between 1990 and 1993, the agriculture income per capita for some crops in the coast increased more rapidly than the average agriculture income per capita in the sierra. Between 1993 and 1994, the situation reversed but by a lower margin. Growth of income per capita in the informal sector of the sierra and coast had almost the same trend during 1990-1992 and bigger differences between 1992-1994. This analysis suggests that there were differences in income variations as stabilization went forward (Table 9).

---

[4] Minimum wage: legal minimum wage established to be paid in industry and public sector.

Table 9. Rates of growth in real income per capita by sectors, Ecuador (1975-1994)

Years	Agriculture	Non agriculture	Agriculture		Informal sector	
			Sierra	Coast 1/	Sierra	Coast
75-80	5%	9%	n/a	n/a	n/a	n/a
80-82	-11%	-2%	n/a	n/a	n/a	n/a
82-87	-7%	-7%	n/a	n/a	n/a	n/a
87-90	9%	n/a	n/a	n/a	n/a	n/a
90-91	9%	n/a	9%	15%	20%	20%
91-92	18%	n/a	18%	39%	34%	35%
92-93	-13%	n/a	-13%	9%	-16%	-1%
93-94	15%	n/a	3%	1%	1%	-10%
87-94	7%	8%	n/a	n/a	n/a	n/a

Notes:
1/ Average wage in banana, palm oil, sugar, hard corn, rice, soybeans and tropical fruits

Source: 1975-1987: De Janvry, 1991; 1991-1994 Estimates National Institute of Census (NISC), 1994

F. Summary

a) Between 1965 and 1994, the economy of Ecuador relied heavily on two main sectors petroleum and agriculture. Between 1965 and 1980, GDP growth was 8.2 percent, driven mainly by the petroleum and industry growth because oil exporting revenues were used to subsidize the development of the industrial sector.

b) In general, agriculture was highly discriminated between 1965 and 1980 and less discriminated during adjustment (1981-1994). The discrimination reached agricultural sub-sectors in different degrees. Agricultural exports were hit the most through an overvalued exchange rate and export taxes. Agricultural import substitutes were protected against international imports through high rates of tariffs and direct subsidies of tradable inputs and preferential credit. Nevertheless, sectoral policies did not offset the negative effects of the overvalued exchange rate.

Agricultural import substitutes and agricultural non-tradables were subject to domestic price controls during the last three decades under the ideology of self-sufficiency. Since 1984,

when inflation accelerated (especially the food consumer price index), the governments treated some of these agricultural commodities as targets to control inflation. Nevertheless, the lack of institutional ability made price control ineffective and the incentives or dis-incentives came basically through macroeconomic policy. Overvalued exchange rates made domestic production compete with cheap formal and informal imports. High interest rates (between 1984-1994) discouraged new investments in agriculture.

c) Stabilization programs after 1981 were partially adequate in reducing the public deficit, current account balance deficit and controlling the acceleration of inflation. Some legal reforms were put into practice to give more flexibility to the international trade and financial system. However, most developing country governments including Ecuador faced serious external shocks (fall of international prices of export products and natural disasters) and opposition of political groups which force them to either delay or slow down intensity of stabilization packages.

The main political groups who constantly opposed such programs were the bureaucracy (which grew dramatically during the oil boom), a non-competitive industrial sector (which became large in the economy of Ecuador during industrial development period), urban middle class (who bore part of the adjustment cost through less employment opportunities by cutting current and capital public expenditures) and urban poor (who did not receive any effective target compensation programs during adjustment).

Rural rich and poor were hit less hard by the stabilization and structural adjustment programs than were industrialists and urban poor, especially when devaluations became an important instrument to reduce current account balance and made agricultural export commodities relatively more profitable than before 1981. The acceleration of real interest rates between 1991 and 1994 made investments and operating financial costs higher than in the preceding periods. Therefore, there was a partial shift from capital intensive practices in seeding, insecticide-

herbicide application, harvest and collection toward greater use of labor, especially among medium and small farmers.

CHAPTER 3

CONCEPTUAL APPROACHES AND METHODS FOR ANALYZING THE EFFECTS OF POLICY REFORM ON THE RURAL SECTOR

A. Introduction

During the period 1960-1985, the main objective of economic policy in developing countries was to achieve rapid economic growth through industrialization and import-substitution, taking as example the case of Japan, U.S.S.R. and other developed countries, which had successfully grown through taxation of agriculture.

For policy formulation, this objective was translated into certain goals like: a) self-sufficiency, b) income distribution through accessibility of food to all groups of the population, c) stability of domestic prices, holding back the influence of international markets, and d) extraction of resources from agriculture to finance fiscal budgets of state enterprises.

The policy instruments used to achieve those goals dealt with various aspects at the same time: economic growth, efficiency, income-distribution, price stability and political coalition issues.

Johnson stated the following:

> One of the most discouraging lessons... is that failure of a policy measure is almost never followed by the abandonment of that measure. Instead an effort is made to fix the measure, often in a way that exacerbates its already bad record, or a new measure is introduced designed to offset some of the worst effects of the first measure....(1987, p.360).

In fact, in all the countries the degree of intervention reached a point of high complexity

by the beginning of the 1980's, the goals were confused, the crisis arrived by a lack of growth, export earnings and high levels of foreign debt and the political coalitions and urban-rural interests changed.

The causes of the crisis at the beginning of the 1980's in most developing countries were related to budget deficits and current account deficits. In most of the countries the problem started with the payment of interest on the foreign debt accumulated in the 1970's, which had financed a large proportion of the public investment in that period. Nevertheless, in some cases (Ghana, Zambia, Argentina, Colombia, Egypt, Philippines) a tight trade regime (control of imports through quotas, prohibitions and high import duties) was applied in an attempt to reduce the international trade imbalance. In other cases, devaluation was used instead, combined with a more mild control of imports (Korea after 1970, Malaysia, Chile and Portugal).

High inflation rates in some countries (Brazil, Argentina, Thailand, Sri Lanka, Turkey), made many governments abandon totally or partially the policy of low producer/consumer agricultural prices applied before the crisis started and use a tight monetary policy and devaluation (Krueger, Anne, 1991).

In combination with the stabilization programs, there was a need over the 1980's to implement structural adjustment programs. These more extensive measures were taken, not only to stabilize in the medium and long run the imbalances of the economy, but they were a condition to receive loans from the IDF and IBRD for longer investment projects.

B. Conceptual approaches

B.1. Stabilization and structural adjustment

The levels of stabilization and structural adjustment a country requires depends on the degree of disequilibria in the economy. The first term has the analogy of "curing the illness" and the second term of "preventing the illness". It is important to make this distinction in order to determine: a) the time frame of policy implementation, b) the level of autonomy a government can have in the process, and c) the intensity and level of macroeconomic alignments.

Stabilization mainly concerns measures which affect the demand side of the economy to decrease the external deficit. Such programs generally involves similar measures across countries devaluation, reduction or stabilization of current expenditure and public investment and contraction of the money supply. The attempt to reduce the demand to the level of supply in the short term shows, that along with the external shocks some parts of the crisis originated from insufficient domestic supply with respect to demand. Once equilibrium has been re-established by the measures mentioned above, these programs foresee avoiding new imbalances and ensuring sustainable economic growth. For that reason a complementary set of medium and long term measures have to be designed (if countries want to grow after stabilization). The IMF and World Bank work together to persuade governments that stabilization measures should be accompanied by structural reforms (Bourguignon, 1992; Alain de Janvry, 1991).

Structural adjustment programs consist of an in-depth reform of the economy to change the public and private legal and operating framework in which enterprises function. Structural adjustment measures are based mainly on the idea of increasing the economy's efficiency in the long term through the liberalization of markets (financial, goods, services and trade) and

flexibility of resource movement across activities.

The areas involved in structural adjustment reform are:

a) Domestic marketing policy reform

b) Ownership and management of public enterprises

c) Trade regime reform

d) Financial sector reform

Domestic marketing policy reform typically deals with liberalization of price controls and abolishment or size reduction (targeting) of government marketing boards. The reform can include projects for enhancing private investment in post-harvest, storage and marketing of agricultural commodities if there is a lack of sufficient private facilities.

Privatization or management reform would look for less intervention of the state in controlling prices at different levels and more efficient intervention of the state. The government agencies subject to this reform are generally those which: i) trade agricultural goods to support prices, ii) deliver subsidized credits to certain sectors or subsectors of the economy, iii) deliver special services to the community such as electricity, water, irrigation or transport.

Trade regime reform would include lowering of customs tariffs, reduction of the spread between the bottom and ceiling custom tariff, elimination of import quotas and other non-tariff barriers, clarification of sanitary, standards and norms, and reduction of explicit export subsidies or taxes.

Financial sector reform including clear rules to function efficiently, is an important component of a structural reform. For example, the ability to mobilize domestic savings in response to rising interest rates (in a competitive framework among financial institutions) helps to offset the negative effect of reduction investment in the short term, when contraction of the money supply is implemented and interest rates start to go up (Bourguignon, 1992; Fargeix,

1990). Generally, stabilization programs were a condition to receive loans from the IMF, especially when adjustment came after the crisis and when the country's financial position did not allow borrowing from commercial banks.

Similarly, the structural adjustment programs were needed to receive funds from other international funding organizations like the IDB or the IBRD. The conditionality attached to these loans generally allowed the country somewhat more "autonomy" in the sense that they took into account factors like: a) a longer term to prevent recurrent imbalances; b) some political and social dimensions specific to each country's history and current situation; and c) other factors related to the world's economy such as the instability of international prices (especially agricultural commodities) which can make complete liberalization to world markets risky for the domestic tradable sectors.

Analyzing the history of adjustment after crisis in developing countries, there was typically a mixed implementation of both stabilization and structural adjustment programs. Even though, the importance of making a conceptual distinction between these two terms, the following sections will take one or the other to refer for stabilization itself or structural adjustment if a combination of both issues are included.

B.2. Levels of analysis

The social effects of macroeconomic stabilization and structural adjustment depend in part on the level of the expansionary and recessionary forces which are involved in those programs. These forces are partially determined by private reactions to changes in incentives, which in turn are conditioned by cultural norms in the country, by the credibility of the economic reform package, and by the ability of the infrastructure and institutions to facilitate resource movement

among sectors and activities. Also a difference in productivity between public and private sector is important to determine the social effects of the stabilization package (Fargeix, 1990).

Changes in different aspects of welfare (consumption, basic needs and leisure) are experienced by households and individuals through the process of stabilization and structural adjustment. The analysis of the social cost of adjustment requires a microeconomic and household level orientation. The step from micro analysis to household level has not been done widely because there is a lack of integration between micro and macro theory. (Bourguignon, 1992).

Responding to this weakness, *meso-economic analysis* is a new notion of analysis which basically combines both frameworks. The first level of analysis tries to isolate the effects of macro policy structural adjustment changes on relevant markets and infrastructure. The second level analyzes how household income-earning activities, consumption behavior and satisfaction of basic needs respond to these meso-economic changes. The most important elements on relevant markets and infrastructure affecting households are labor markets, credit and product markets, health and education services and the state of economic infrastructure such as transportation, electricity, water and irrigation.

Table 10 summarizes the information system required to analyze the socio - economic dimensions of adjustment going from the macro level through the micro and household level (Demery, 1993).

The analysis needs to identify periods of distabilization and adjustment. During distabilization, major macro imbalances creates the need for adjustment. During adjustment, one could expect reduction of these imbalances. For example, during distabilization, inflation rates, external deficits and government budget deficits are likely to increase. Also there are other signals of distabilization such as imposition of import restrictions because of scarcity of foreign exchange, appreciation of the real exchange rate and resource transfers into the non-tradable sector.

The analysis also requires a search for the causes of the imbalances during a chosen period of distabilization and divide them between internal and external shocks (qualitative analysis) along with an analysis of policy instruments used to achieve stabilization and an assessment of changes in relative prices between tradable and non-tradable goods (Bourguignon, 1992; Fargeix, 1990 and Demery, 1993).

Table 10. Information system for the social dimensions of adjustment

Level	Focus	Analysis	Constructs	Data
Macro	Policy: - devaluation - monetary contraction - fiscal deficit reduction	Macro economic models	- National accounts - Social account matrix - Consumer price index - Balance of payments - Other macro indicators	- Economic trade and financial statistics
Meso	Effects: - markets - economic and social infra-structure	Sectoral and institutional studies	- Social account matrix - Food balance sheets - Sectoral quantity and price index	- Community survey - Price statistics - Production statistics
Micro	Impact: -Individual household welfare	Household models analysis	- Poverty profiles - Social indicators	Household surveys: - economic - social - anthropo-metric and - demogra-phic measures

Source: World Bank 1991 b, Table 6.1.

Another issue that must to be taken into account in the analysis is the existence of informal markets in agricultural products, credit, foreign exchange, and even labor. The informal sector has been a significant proportion of the economy of developing countries and has behaved as an option to access markets (credit and exchange rate, for example) or has been a shelter for

rural and urban un-employees (who started to increase during adjustment) (Bourguignon, 1992 and Krueger, 1992)

Macro-meso analysis is the study of achievements at an aggregated level of economic and social sectors during the period of adjustment. It tries to evaluate the effects of policy changes on markets and infrastructure, but it is difficult to predict accurately such effects for the following reasons (Bourguignon, 1992):

- First, some policy instruments have opposite effects and it is difficult to assess which dominates. For example, a devaluation produces a mix of income and substitution effects and the relative importance of those effects will determine the net outcome. Income effect means more national currency for a foreign currency (exportables are motivated); substitution effect implies a change in consumption away from importables and toward domestic substitutes. If import-substitutes are competitive enough, domestic production of exportables and importables are encouraged, if not only exportables benefit from devaluation.
- Second, a stabilization/adjustment program is a combination of many measures, and it is difficult to isolate the net effect of only one and determine the weighted effect of each measure. For example, a devaluation with trade liberalization could carry a substitution away from importables if the devaluation dominates the liberalization effect, or could increase imports if the liberalization effect dominates.
- Third, sometimes stabilization and adjustment occur simultaneously with external shocks, and it is difficult to isolate the net effects of each.
- Fourth, comparing the effects of any structural adjustment package versus another arrangement of policies such as no adjustment, gives important insights to assess the trade-offs of the current adjustment policies (which could be the most politically feasible; for example) (De Janvry, 1991). In other words, besides comparing conditions before and after the reform, it

would be necessary to examine the hypothetical question "what would have happened under an alternative set of policies".

Meso-micro analysis is the study of income sources, expenditure decisions, and basic needs coverage as a function of prices, household characteristics, head-family wage, total family income and relevant infrastructure available to the household. Household surveys constitute the basic data for this type of analysis, complemented by sectoral surveys on prices and infrastructure characteristics. However, it is difficult and costly to do household surveys, especially at a national level; so the analysis could be partially done for specific regions of a country (where household data is more available) (Bourguignon, 1992).

Analysis at the macro level consists of trade policy indicators which include: exchange rates, rural-urban terms of trade (tradable versus non-tradable prices), structure of protection by sectors and the external terms of trade. Generally this analysis involves a set of indicators which can tell how the exchange rate policy, custom tariffs on tradable goods, and price policy can affect the incentives in the industrial and agricultural sector, for example. Indicators of this style include the nominal protection rate, the effective protection rate, the coefficient of comparative advantage and the coefficient of producer subsidy (Scandizzo, 1989).

At this level, it is important to define and understand the notion of exportables, importables and non tradables, in order to isolate the effects of stabilization and adjustment on different kind of products depending on their degree of tradeability, see Scandizzo, 1989. Some households earn their income from the activity of tradables (importables or exportables); others depend on the activities of non-tradables; and others can derive their income from a mixture of these activities (Bourguignon, 1992).

At the meso level, there are three main prices involved: wage rates, price of food and fuel, and for farmers, agricultural output prices.

In addition to this meso analysis, it is often necessary to consider institutional characteristics of the markets in which the poor operate such as: i) institutional arrangements concerned with minimum wages and other social benefits of urban and rural workers and, ii) institutional arrangements in rural credit markets (subsidies on interest rates or constrained access to credit by smallholders as a way of rationing cheap credit).

At the micro level, economic, social, demographic and anthropometric characteristics of the household's members are the base to analyze changes in individual and household income and welfare resulting from a change in policies. There are two different kind of surveys that can be used for this purpose: the "Light Priority Survey" and the "Multi-topic Household Survey".

The Light Priority Survey (PS) involves data collection on a limited number of topics over large samples aimed at target groups, establishing key indicators of welfare and basic needs characteristics. The advantage of this kind of survey is that it allows fast tabulation, and gives a quick view and initial data base for targeting essential and short-term interventions as part of compensation under stabilization programs (around 2-4 years). It is recommended to do this survey on a repeated basis to keep track of the evolution of target group characteristics during long term structural adjustment periods.

The Multi-topic Integrated Survey (IS) collects information over restricted samples, which includes data on income and expenditures, assets, socio-economic characteristics and welfare indicators of households and their members. The main goal is to analyze in-depth household responses to changes in their living and working environment (Demery, 1993).

IS surveys take time to be analyzed (data collection usually requires a full year). They are considered as long-term planning tools in an attempt to offset the negative effects of structural adjustment measures on the more affected set of households. After this general evaluation through IS surveys or other alternative methods, the PS surveys can be designed more efficiently on a

targeted and short-term basis.

Because the IS surveys require time in being analyzed, sometimes the PS surveys could be implemented under more general analysis and criteria about which target groups should be protected during the stabilization period (Demery, 1993).

C. Methods and analysis

C.1. Macro-meso analysis

There are two approaches that can be used in the macro-meso analysis: a) analysis of time series of variables to assess economic and social trends and construction of cross-sectional and time series tables, and b) development of econometric models.

The first technique deals with analysis of historical records. In this approach, it is important to identify periods of distabilization and adjustment to explain how adjustment has affected markets and infrastructure over time. However, this analysis has certain drawbacks:

i) historical records do not imply causation because what happens over time is influenced by a wide range of factors and not only by macroeconomic policies. Movements in relative prices might reflect changes in the supply curve due to technological progress or the adverse effect of a drought, for example. This problem can be addressed to some extent dividing the historical series in sub-periods,

ii) this approach does not distinguish between first-order and higher-order effects. A policy that raises the market price of a good will cause some households to reduce demand and hence reduction in price (depending on the demand elasticity of the good). So, the initial increase in prices, affecting household income is moderated by ex-post demand and supply responses.

iii) the approach does not account for the interactions between infrastructure and markets. A rise in the price of food will stimulate an increase in the production of food which will increase the demand for labor and raise of the rural wage (depending on the level of unemployment in the rural sector).

The second technique can be complementary to the first in order to test if the indicators deviate significantly from their historical trend during a period of structural adjustment (Bourguignon, 1992). The use of this tool requires a good understanding of the country to handle the model's predictions in a realistic manner. One advantage of this approach is that when theory is ambiguous in the direction of a change (two opposite effects involved), models can simulate them and reveal which is stronger.

The main weakness of macro-meso modeling is that it does not allow disaggregation, which limits the design of actions by policy makers to aim at certain problems carried out in the adjustment process such as economic efficiency or social distributional costs among groups. (De Janvry, 1991).

In either of the two techniques, the analysis of macroeconomic policy changes must be divided into three sections:

i) the effects of adjustment in relative product prices,

ii) some assessment of the real-wage effects of policy interventions, and

iii) changes in the credit market.

C.1.1. Tradables versus non tradables

In economies where agriculture is the most important sector, the response of agricultural production to reforms in macroeconomic policies is a major determinant of the success of the

adjustment package program. Removal of policy distortions can lead to improvements in resource allocation, agricultural investment and economic growth.

However, because agriculture in developing countries is heterogeneous in terms of structure of production and response to policy reforms, there is a need to go beyond the macroeconomic policy reform. In this context, sectoral policies, investment and programs to alleviate poverty in the rural sector must be complementary to macroeconomic policies to ensure a sustainable response of agriculture to changes in incentives. For this reason, it is necessary to clarify the notion of tradeability and its influence in agriculture performance once structural adjustment is implemented.

Non tradables are goods which face physical impediments to trade at any conceivable price. The most common causes are transport and distribution costs. Dornbusch (1980) defines the non-tradables as goods where transportation costs are too high in comparison to the price differential between world and domestic production. In agriculture, there is a wide range of goods that can be classified as non-tradable because of their intrinsic characteristics such as: perishability, high fixed costs related to marketing and distribution and low value/bulk ratios.

However, there could be policy factors such as high tariffs, import or export prohibitions, subsidies and non-tariff barriers that can make some goods non tradable for long periods of time. The most important question is whether a good is in fact tradable or would become tradable as a result of a policy change. However, when analyzing the effects of macro-policies such as exchange rates on production, it is not correct to treat a crop as tradable if the marketing system and other policies prevent transmission of border prices.

Non-tradable inputs are the land, capital and labor assuming absence of mobility outside the national boundaries. If there is some kind of mobility for capital and labor, for example, the opportunity cost of these factors would be the international price in their respective relevant

market. Relevant market is defined as the market where the good is traded in greater proportions that in other equivalent markets.

Tradables are goods that effectively or potentially can be traded internationally, where the transport costs are lower than the difference between the international and domestic price. As discussed above, there could be some changes in economic policies (price, trade and exchange rate policies) that can give some goods more flexibility to be traded. Also, longer term changes in infrastructure and institutional efficiency can make some agricultural goods tradables, depending on the degree of perishability, value/bulk ratio and fixed costs for distribution and marketing.

The notion of tradeability within agriculture has to be analyzed carefully when assessing effects of macro policy changes in agriculture because those effects can vary widely among subsectors, regions or crops, especially in the short and medium terms depending on:

i) how tradable is the subsector or crop in a certain period of time chosen for the analysis because, during that frame of time a significant proportion of agricultural production might still not be completely tradable due to lack of marketing and institutional infrastructure; for example. These restrictions usually takes longer time to be solved than other trade regime obstacles which make goods non tradable,

ii) proportion of tradable inputs in the total costs of tradable output and,

ii) flexibility of input substitution (biological technology or mobility of factors among sectors). Given both conditions, a producer can either stick with his original input mix or change it for a lower cost input mix and this will result in different absolute effects of the exchange rate policy.

Only when deviations from the average are small and consequently there is homogeneity in the structure of costs among crops or groups of producers or regions, can the sectoral averages

of tradable inputs be used in the assessment of macro policies effects in short or longer terms.

Figure 1 shows the effects of a real exchange rate depreciation.

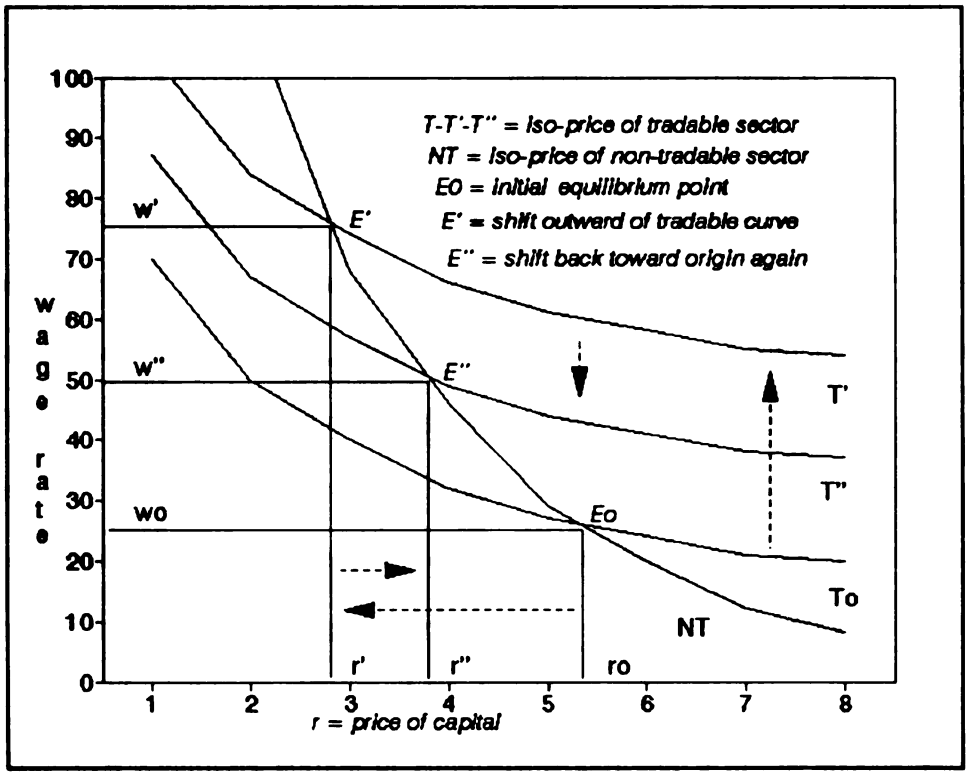

Figure 1 Real devaluation and factor returns with tradable inputs (Source: Taken from Kyle, 1992)

The increase in output price due to depreciation will shift the iso-price curve of the traded sector outward (lower r and higher w), but because the exchange rate depreciation has an effect in imported inputs, the curve shifts back toward the origin. Depending on the structure of the imported input cost and the degree of substitutability between factor[5], this shift could offset partially or totally the initial impact on r and w.

---

[5] High substitution values in a more pronounced curvature while complementary relationships result in relatively flat curves.

Substitution effects between factors can modify the output effect of price changes. The effect of input price changes can be cancelled or reinforced, if the imported input is a good or poor substitute for the factor in which the tradable sector is not intensive. The larger the effects, the greater the participation of imported inputs in the structure of costs. Consequently, there is a situation where it is inappropriate to treat existing technical coefficients as fixed to predict the response of capital and labor allocations from policy changes.

The presence of these substitution effects indicate that it is not possible to predict accurately the effects of a removal of overvaluation of exchange rate policy or subsidies on agriculture incentives; for example, without taking into account the conditions of production and their differences among commodities, groups of producers and regions. However, at a first level of analysis, one can point out the set of conditions that could prevent a strong output effect in agriculture coming from the elimination of policy distortions such as overvaluation of the exchange rate, subsidies, taxes, high import tariffs and quantitative restrictions for trade.

The set of conditions can be the following:

i) A significant portion of non-tradable agricultural output coming either from physical characteristics of the goods or from infrastructure and institutional impediments for trade,

ii) Removal of large subsidies on tradable inputs which may represent a large fraction of short-run variable costs and,

iii) Low substitutability between imported inputs and non-tradable inputs (Kyle, Steven, 1992)

C.1.2. Measurement of market intervention effects

It is important to try to calculate the terms of trade between agricultural and non-agricultural products. The income terms of trade is the ratio of the index of the value of agricultural output (sales) to the index of non-agricultural prices.

$$It = (P_a * Q_a)/P_{na} \qquad (3.1)$$

where:

It = income terms of trade.

P_a = index of agricultural prices.

Q_a = agricultural output.

P_{na} = index of non-agricultural prices.

The household terms of trade describe the ratio of a weighted index of all prices associated with household income (farm and wage) and a weighted index of the prices of all expenditures. Therefore, the household terms of trade gives a complete idea about the net impact of price changes on household net income.

$$Ht = \sum_{j=1}^{k} (P_{fi} * W_{fi} + P_{wi} * W_{wi} 2) / \sum_{j=1}^{k} (P_{fe} * W_{fe} + P_{we} * W_{we}) \qquad (3.2)$$

where:

Ht = household terms of trade.

j,k = number of households.

P_{fi} = index of farm output prices.

W_{fi} = share of farm income in total household income.

P_{wi} = index of wages.

W_{wi} = share of wages in total household income.

P_{fe} = index of farm input prices.

W_{fi} = share of farm input expenditure in total household expenditure.

P_{we} = index of out-farm household expenditures.

W_{we} = share of out-farm expenditure in total household expenditure.

Producer prices would include agricultural exportables, tradable food and non-tradable agricultural products; consumer prices would include tradable food, non-tradable food products and non-agricultural products. Estimates of real-income change are obtained by combining changes in relative producer and consumer prices with income and expenditure shares, respectively. The different producer and consumer prices can be a weighted average of the main products representing the pattern of the target groups selected. The analysis gives only the first order effects of relative-price changes on smallholders as producers and consumers (Sahn and Sarris, 1991).

The use of a consumer price index (CPI), for example will not reflect the expenditure pattern behavior of the group. The use of CPI can overstate real income losses from producer price decreases and consumer price increases because it does not allow production and consumption responses to relative price-changes.

The inclusion of international price changes in household income could be included using nominal and effective rates of protection for specific crops.

Nominal protection rate is the ratio of domestic prices to border prices minus one (2.1). The NPR can be calculated using official exchange and equilibrium exchange rates to include the level of implicit taxation resulting from exchange rate distortions. NPR > 0 means that domestic production is encouraged through specific policies (exchange rate policy and international trade policy), if NPR < 0 the opposite is true (Scandizzo, 1989).

The effective protection rate takes into account the value added of commodity output. It is the difference between the value added measured in domestic prices and in border prices minus one (2.2). EPR > 0 means that valued added of domestic production is encouraged through specific policies which affect the output and tradable inputs (exchange rate policy and international trade policy), if EPR < 0 the opposite is true (Scandizzo, 1989).

C.2. Meso-micro analysis

C.2.1. Socio-economic classification (SEG) and target groups in structural adjustment

The Priority Analysis (PA) is one method that can be used for the analysis of social effects of structural adjustment at the meso-micro level. The basic idea of PA is to identify socio-economic groups (SEG). This classification is specific for each country and therefore must reflect specific socio-economic attributes of the groups and conditions of policy changes during adjustment. From this classification, it is easier to narrow down target groups and establish key indicators through which the impact of adjustment on these selected groups can be monitored (Demery, 1993). PA relies primarily on tabular presentation but it can include multiple variable regression analysis.

The indicators for PA can be proxy variables because direct welfare measures are difficult to get in the sense that they require a large data base of total household expenditures, income and assets. The selection of proxies must be in such a way that they can reflect in the short term, undesirable effects from adjustment. The indicators must be sensible enough to change when households have to make decisions, facing constraints of income and employment. For example, literacy is an important indicator that is associated with personal welfare, but it will not change much in the short term. Instead, student dropout rates and mis-match between age and grade attended, will quickly respond to changes in the opportunity cost of schooling that occurs during adjustment.

The following SEG classification in developing countries can be taken as an illustration:

- Rural-export-oriented farmers (medium and large holdings)
- Rural-export-oriented smallholders
- Rural-food/subsistence farmers
- Rural-pastoralist
- Rural-landless agricultural workers
- Rural-non agricultural workers
- Urban-skilled public sector employees
- Urban-unskilled public sector employees
- Urban-formal private sector workers
- Urban-informal private sector workers
- Urban-inactive or unemployed

Target groups must be homogeneous internally with respect to major economic parameters. They are defined using economic and non-economic criteria, and can overlap so that one individual of a household can belong to several target groups. For example, the poor, female-headed households, malnourished children, smallholders, coffee farmers, and so on can be target groups.

In this sense, three relations between target groups and socioeconomic groups are possible:

- A target group equals a SEG (farm-subsistence holders)

- A target group is part of a SEG (laid-off unskilled public employees)
- A target group overlaps various SEGs (female-headed households).

A construction of distribution of households across SEGs will help to indicate the extent to which the target group is concentrated across SEGs. Therefore, interventions needed to be targeted will focus on those SEGs with high participation of that specific target group, in order to minimize the leakages to people outside the target group (Demery, 1993).

C.2.2. Level of employment and wages during structural adjustment

Structural adjustment affects households directly through employment opportunities being cut, so especially poor households may have to reallocate their time to different types of employment and different sectors of the economy. There are differences in the way households diversify their sources of income, depending on the endowments (physical or human capital) they have, to respond to a new incentive structure derived from structural adjustment. Households that have diversified their income beyond agriculture would have more adaptation to past shocks (Bourguignon, 1992).

There are arguments that structural adjustment affects men and women differently and depending on the region, activity and SEG, these differences could be more pronounced. Structural adjustment affects employment in general, but there could be differences in the unemployment rate by age, sex, level of education, region, activity, SEG and labor mobility.

There is a discussion also that structural adjustment not only increases job mobility, but induces people to hold more secondary jobs. An analysis in which SEG or secondary activity jobs occurred more often would help to understand better the diversification of income sources during structural adjustment (Demery, 1993).

Structural adjustment affects employment and earnings through product markets, labor markets and capital markets, as well (Demery, 1993).

Product markets affect employment and wages through:

- Restrictionary fiscal and monetary policies: These policies reduce aggregate demand. Prices of non-tradables fall relative to prices of tradables, so this will increase production of tradables and reduce production of non-tradables. The speed and extent of these changes will depend on supply responsiveness.
- Devaluation and import liberalization: Devaluation increases prices of tradables relative to non-tradables. Agricultural export prices increase more than production in the short term, because of the relative low elasticity of supply of agricultural exports. Not all tradables expand, because cuts in tariffs and quotas reduce the prices of importables relative to exportables. Sectors producing importables contract relative to exportables (Fargeix, 1990).
- Sectoral price adjustments: The elimination of price controls and the reform of marketing institutions alter the structure of prices.
- Changes in the provision and rehabilitation of infrastructure: Reduction in public investment affects the profitability of the private sector in general, but if the reduction of public investment is concentrated in certain sectors, it will affect the profitability differently (De Janvry, 1991).

These product market adjustments change the demand for labor. If a sector is labor intensive, then employment and earnings in the long term will increase (under the supposition that no labor market rigidities exist). The short term outcome will depend on the mobility of labor. The changes in demand for labor will affect the stability of jobs in the short term, as well. Also, price increases may raise labor participation of members of households (children and women, for

example), and induce multiple job holdings (Demery, 1993).

Institutional changes affect labor markets through:

- Change in private wage determination: Government minimum wages induce a dual structure in employment, in the sense that wages cannot adjust downward (because of the minimum wage) and the unemployment shelter in the informal sector. Minimum wages could be more flexible during the adjustment process to let the wages go down in response to contraction in demand, so this may have implications in the wage determination of formal and informal sectors (Bourguignon, 1992).
- Change in public wage determination: In some countries, during structural adjustment, public sector wages are still above market levels, but in others, wages for skilled public employees fall below those in the private sector (Fargeix, 1990).
- Retrenchment in public sector employment: In most countries, public employment is overextended before adjustment, so retrenchments of public labor (specially unskilled labor used in public investment as in the case of Ecuador) release resources to pay more to scarce professionals. Public employment is more often concentrated in urban areas, so during adjustment one may expect large changes in local labor markets (Fargeix, 1990; Alain de Janvry, 1991).
- There could be some causes for segmentation in labor markets such as unionization and monopsony, barriers to mobility, discrimination and distortions in capital markets. In this context, segmentation influences output fluctuations on employment and earnings. For example, if there is a fall in demand of non-tradables with inflexible formal sector wages, formal labor markets in the non-tradables bear the employment contraction, since they can not maintain employment by taking lower wages. Informal sector demand of labor decreases as a result of general aggregate demand contraction. This informal sector shelters more newly unemployed coming from the formal non-tradable sector and informal sector's wages fall more than they otherwise would

(Bourguignon, 1992; De Janvry, 1991).

Changes in capital markets affect labor markets through:

- Change in the price of capital to producers: Devaluation and import liberalization change the price of machinery and equipment. The net change will depend on which of those effects dominates the other. The devaluation makes the importables more expensive, but the trade liberalization could offset this effect through reduction of tariffs, elimination of quotas and hence more competition among importers.
- Reduction or elimination of financial repression: Structural adjustment usually tries to eliminate general subsidies in markets, especially those related with capital markets. This changes the relative factor-price ratios households and enterprises face inducing them to changes in the factor combination used (Demery, 1993). In some countries, the price of capital may rise relative to labor, favoring employment and wage growth. But, this will depend on the flexibility of substitution between labor and capital in the different activities. In general, agricultural export activities can substitute capital for labor more easily than industrial sectors, for example (Bourguignon, 1992).

C.2.3. Income and assets

Income is another variable directly affected by policy changes. It is known to be a difficult variable to obtain from household surveys in the sense that respondents under-report their income for fear of taxation or they may not estimate accurately the income for a referred period. Also, income is determined by seasonality, so in one-visit surveys, it is difficult to obtain seasonal variations of income.

The analysis should start with sources of income: wage income of head and spouse,

revenue from agricultural enterprises and revenue from non-agricultural enterprises. Asset holdings analysis could be complementary.

Wage earnings: Tables that summarize the sources of income by SEG and family member of household can be constructed for the analysis of wage-earnings. This analysis helps to:

i) determine to what extent the head's income is determinant for household income

ii) determine which SEGs have been more affected by adjustment policies; and

iii) which households have been losing or gaining or offsetting the negative impacts by combining sources of income among the members of the household.

Also a table on wage earnings can give some insights about the wage differentials between public and private sector. In the very short-term, one expects a rise in the wage of tradable-oriented activities relative to non-tradable activities and the public sector.

Wage differences by SEG can be explained by changes in the structure of incentives from structural adjustment, but also they can be explained by level of education. The estimation of a simple wage-earnings model (based on human capital theory) will help to analyze the changes of returns to education and work experience during the adjustment period. The regression will help to test the presence of segmentation, in the sense that in developing countries workers may not be able to move easily among different sections of the market (informal and formal sectors, or urban and rural, or male and female workers) (Demery, 1993).

Agricultural activities: Some crops are favored by structural adjustment through the mechanism of prices and other crops experience declines in prices. The change in prices will affect the area planted and therefore the production. Also the availability of agricultural inputs as labor, capital, fertilizer and seeds can change due to adjustment policies.

Non farm enterprises: Market opportunities for tradables are supposed to increase and decrease for non-tradables. Infrastructure and institutional changes may improve access to

product, factor and credit markets and have a direct impact in the profitability of non-farm activities.

The first step is to classify non-farm activities as exportables, importables and non-tradables, then identify which groups have business in each of the sectors and finally determine which activities are increasing and which are declining.

Assets: Asset is an important indicator of household's welfare. When households loss assets means that they have to sell assets to meet consumption needs, which will erode future earning abilities.

CHAPTER 4

FINDINGS FROM EMPIRICAL STUDIES

This chapter is organized in two parts. The first part describes the findings of empirical studies about the effects of stabilization and structural adjustment policies in the economy and agricultural sector of developing countries. It is based on three country comparative studies: Krueger (1991); Krueger, Schiff and Valdez (1991) and Bourguignon and Morrison (1992).

The second part describes the social impact of stabilization policies in Ecuador between 1980 and 1987 with the inclusion of a political feasibility analysis to carry out stabilization. It is based on two studies, one by De Janvry and Fargeix (1991) and the other by De Janvry and Graham, 1994).

A. Experiences of developing countries other than Ecuador

A.1. General overview

During the period 1960-1985, the main objective of economic policy in developing countries was to achieve rapid economic growth through industrialization and import-substitution, taking as examples the cases of Japan, the U.S.S.R. and other developed countries, which had successfully grown through taxation of agriculture.

For policy formulation, this objective was translated into certain goals like: a) self-sufficiency, b) income distribution through accessibility of food to all groups of the population, c) stability of domestic prices, including insulation from the influence of international markets,

and d) extraction of resources from agriculture to finance fiscal budgets of state enterprises.

The policy instruments used to achieve those goals dealt with various aspects at the same time: economic growth, efficiency, income-distribution, price stability and political coalition issues. The causes of the crisis at the beginning of the 1980's in most of these countries were related to budget deficits and current account deficits. The problem started with the payment of interest on the foreign debt accumulated in the 1970's, which had financed a large proportion of the public investment in that period. Nevertheless, in some cases (Ghana, Zambia, Argentina, Colombia, Egypt, Philippines) a tight trade regime (control of imports through quotas, prohibitions and high import duties) was applied in an attempt to reduce the international trade imbalance. In other cases, devaluation was used instead, combined with a more mild control of imports (Korea after 1970, Malaysia, Chile and Portugal).

High inflation rates in some countries (Brazil, Argentina, Thailand, Sri Lanka, Turkey), made many governments abandon totally or partially the policy of low producer/consumer agricultural prices applied before the crisis started and use a tight monetary policy and devaluation (Krueger, Anne, 1991).

The study by Krueger, Schiff and Valdez (1991) which analyzes agricultural pricing policies in four groups of countries[6], concludes that the greatest discrimination against agriculture was associated with slower overall economic growth, because of the high participation of agricultural GDP in overall GDP. The combination of low international prices and overvaluation

---

[6] Countries grouped by their degree of intervention.
Group 1: Cote d'Ivoire, Ghana, Zambia) - extreme discriminators against agriculture (1960-1984, -52% of direct and indirect discrimination)
Group 2: Argentina, Colombia, Dominican Republic, Egypt, Morocco, Pakistan, Philippines, Thailand, Turkey) - big discriminators against agriculture (1960-1986, -36%)
Group 3: Brazil, Chile, Malaysia - mild discriminators against agriculture (1960-1983, -16%)
Group 4: Korea, Portugal - mild discrimination in favor of agriculture (1960-1984, 10%) (Schiff and Valdez).

of the exchange rate under the prevalence of the ideology of import substitution caused export earnings to fall, especially agricultural export earnings.

This study describes two types of policies affecting agriculture:

a) Direct discrimination policies: These are sectoral distortions in the trade and payments regime, such as exports and imports taxes and subsidies, quotas and direct interventions that affect individual agricultural outputs and inputs through credit and level of public investment in agriculture.

b) Indirect discrimination policies: These are macroeconomic distortions, which the author calculated as a weighted average of the overvaluation of the exchange rate and the tax due to industrial protection (change of agricultural prices versus non-agricultural prices due to removal of industrial trade policy interventions).

In Argentina, it was estimated that the direct discrimination against agriculture caused a loss of export earnings of 40% during the period of 1960-1985. In Ghana, where indirect discrimination was relatively high and there was a mild indirect protection, it is estimated that the losses in export earnings were around 80% of actual exports over the period 1963-1985. The average losses for all groups were calculated at 30 percent.

For the second group of countries, the direct transfers out of agriculture were 8 percent of agricultural GNP over the period 1960-1983, but total transfers were 36 percent of GNP, meaning that the main distortion against agriculture came from macroeconomic policy.

As a result, the total impact of interventions on relative prices was in some countries very large. In Ghana, even before 1976, farmers received only 40 percent of what they would have received under free trade. In Argentina, Cote d'Ivoire, Dominican Republic, Egypt, Pakistan, Sri Lanka, Thailand and Zambia, farm incomes in real terms could have been increased by more than 50 percent removing indirect and especially direct discrimination.

In relation to the impact of pricing policies on overall food consumption levels, there was a big variation among countries. Brazil, Ghana, Korea, Portugal and Turkey, where food production was protected through import prohibitions but taxed through low producer and consumer prices, total food consumption fell as a result of a insufficient domestic agricultural supply. Another problem was that discrimination against agricultural commodities most affected the rural poor, since they were the main producers of these commodities (Brazil, Egypt, Ghana, Thailand and Turkey).

In Egypt, Philippines, Sri Lanka, Thailand and Zambia, there was a net subsidy to food consumption through the existence of marketing boards, which bore the financial costs of the subsidy (relatively high producer prices and low consumer prices). In these cases, total consumption was higher than otherwise, but this was achieved at substantial cost:

a) discouragement of private investment in storage facilities;

b) unequal income distribution (the subsidies in most cases went to high and medium income groups; for example it was estimated that upper income groups in Thailand gained more than 10 percent in income because of direct and total agricultural pricing policies);

c) corruption within government intervention enterprises accompanied by un-sustainable expenditures that lead the re-organization and in some cases elimination of these enterprises.

In addition in all the cases, there was a shift of resources from highly productive exportables (which experienced both direct and indirect discrimination) to less productive exportables and import-competing commodities. The latter often received less direct discrimination and in some cases mild direct protection that offset much of the indirect macroeconomic discrimination.

A.2. Stabilization measures and economic growth

The effects of stabilization on economic growth can not be predicted a priori. To address this question empirically, Bourguignon and Morrison (1992) conducted a study covering 7 countries: Chile, Cote d'Ivoire, Ecuador, Ghana, Indonesia, Malaysia and Morocco. Their findings include the following:

a) There was success in cutting the current account deficit comparing the two years before and the two years after a stabilization program. In Ecuador and Malaysia the deficit went from 10% of GDP to equilibrium during this period.

b) Four out of the seven countries showed that the rate of GDP growth was higher in the years following the stabilization than the preceding ones. Per capita GDP declined in only two of the seven countries (Cote d'Ivoire and Indonesia).

However, the study points out the need to qualify the assessment incorporating unusual circumstances of some countries prior to stabilization, which could overestimate the low economic growth before stabilization (case of Chile with economic policy errors and unfavorable exogenous shocks, the crisis in Ghana between 1971-1974 and 1982 was characterized by insufficient supply and not, as in the other cases, by excess demand).

c) In countries facing a large budget deficit, the stabilization program reduced it, but it was less evident than the reduction of the external deficit and in some countries like Morocco there was still a significant budget deficit after two years of stabilization.

d) The rate of inflation fell, except in Chile and Ecuador, where the growth of the money supply was not controlled. In Ecuador, inflation went from 16 percent in 1982-1983 to 42 percent in 1984.

e) Service international debt / exports ratio increased much less than international

debt / GDP ratio, or even decreased, as a result of stabilization programs and re-scheduling of foreign debt under agreement with the International Monetary Fund (IMF).

During the period of discrimination against agriculture, the studies stated that this was accompanied by a slow rate of growth of agricultural GDP and overall GDP because net transfers from agriculture to other sectors implied low rates of investment in agriculture. Adjustment in some countries clearly showed a recuperation of GDP growth and in other countries there were other exogenous factors such as low world prices and natural disasters which slowed GDP growth. Increases in the flow of foreign loans and export earnings were a pattern across most countries when stabilization was instituted.

A.3. Employment and income during adjustment

The negative impact of adjustment on employment can be hidden through the expansion of the informal sector and migration. The term unemployment in developed countries is linked in part to a system of unemployment benefits, which do not exist in most developing countries.

Bourguignon and Morrison (1991) stated that in a very poor country most economically active people work in the agricultural sector more or less depending on the season, and when labor demand is low, labor mobilization toward informal activities in the rural or urban sector offsets the effect of not working "full-time" in one specific job. In towns and cities more people are active in informal activities (which are often not-full time) than in the formal sector. In fact, when there are workers losing jobs in the formal sector, unemployment does not increase as in the developed countries, where there is a system of compensation.

A decline in wages has to be understood in an overall context too. In a poor country people employed in the formal sector could be in the top four income deciles, while people in

the rural sector are usually in the lowest four. If an adjustment program causes a decline in wages but increases export prices of agricultural commodities, then the effect in the rural sector would be an increase in agricultural incomes and reduction in income inequality and rural poverty.

Despite these conceptual approximations, it is difficult to explain changes easily because the impact of an adjustment program is combined with other effects such as long-term demographic trends, migratory flows and the financial crisis preceding the adjustment. Therefore, in order to isolate the impact of adjustment on employment and wages, it would be necessary to use a model.

Nevertheless, there is a phenomena which has occurred in developing countries. Informal activities increase because of the excess labor supply (which grows rapidly in cities, 5 to 6 percent a year) and stagnant or decreasing labor demand in the formal sector. The impact of adjustment on employment is not expressed in terms of increased unemployment but rather in a consistent growth of informal employment, which absorbs the surplus of labor from formal activities (public and private). Adjustment typically made prices and incomes fall in the informal sector, but at least this sector has served as a refuge of people who, otherwise, would be unemployed. In Cote d'Ivoire, there was a 7.7 percent annual growth in labor supply from 1980-1985 and a 20 percent fall in labor demand by the modern sector (public and private). If not for informal activities, the number of unemployed would have tripled and the unemployment rate would have been 42 percent rather than 29 percent (Bourguignon, 1992). The same pattern happened in other countries. In Ecuador industrial employment grew at a 1.7 percent annual rate during 1981-1986 compared with 9.1 percent between 1975 and 1980. A 1987 survey in Quito, the capital city, and two other cities reported that the number of underemployed in the informal sector was greater than the number of unemployed in Quito and twice the number of unemployed in the other cities (De Janvry, 1992).

There is a difference between the trend of real wages in the formal public and private sectors. In general, the stabilization measures target the reduction of recruitment and payrolls in the public sector and the government can influence the trend in the private sector by setting minimum wages. In Ecuador, the legal real minimum wage fell by 15 percent between 1982 and 1985, so the real wage bill in the formal sector would have had to decline at least in the same proportion.

The experience of other countries in this respect is opposite that in the Latin American cases. The private sector's real wage decreased less and in some cases increased or remained stable in Morocco, Malaysia and Cote d 'Ivoire.

The impact of unemployment in the rural sector coming from stabilization is not the same as in the urban sector for two main reasons: a) the impact of adjustment on agriculture is favorable, in general, or at least neutral, so it does not reduce this sector's demand for labor; and b) labor supply grows more slowly in rural areas than in cities and the conditions of employment are different.

The impacts of adjustment on agricultural sector incomes are less negative than in other sectors for several reasons. First, wage reductions in the public sector to control budget deficits do not affect agriculture. Second, devaluation has the most positive impact in terms of increasing the relative prices of tradable versus non-tradable goods and agriculture frequently has a large proportion of tradable goods. Finally, in some cases, there is a liberalization of price controls for other commodities, which have made them adjust upwards given the negative protection these commodities faced before adjustment.

Surveys from 1979-1985 in Cote d'Ivoire show that farmer incomes did not decrease during adjustment. In Morocco, small farmers' income in cereals and legumes increased by an average of 40 percent between 1984-1985, without any fall in real prices of these products. In

Indonesia, the slow increase in rice output in 1984-1985 was followed by a rapid increase in other commodities' output (Bourguignon, 1992).

The only case where this trend did not occur was in Ecuador, mainly because of the problem that many farmers' holdings are so small (especially in the mountain region - Sierra) that they have to complement their agricultural income with informal activities or public sector employment in great proportions. Thus, they suffered directly from the fall in formal wages and urban informal income activities. There was a 46 percent fall in the construction sector's wage during 1982-1985 and a 20 percent fall between 1982-1987 in small farmers' total farm and non farm income.

In the coastal region of Ecuador, the effect was different. Small farmers participate in significant proportions in export crops (banana, coffee, cocoa) and agricultural wages for some commodities (oilseeds, shrimp, fruits) have been higher than in the mountain region's rural sector (especially after adjustment and during seasonal peaks).

B. The experience of Ecuador

B.1. General overview

The study of structural adjustment effects on the economy and on the income of social groups in Ecuador is based on a macroeconomic model with a high level of aggregation. Therefore, there is no linkage framework between macro, micro and household level in assessing impacts. Nevertheless, the macro - aggregated effects in this study gave important insights and patterns for the general framework involved in the particular analysis of the thesis.

Using a general equilibrium model, De Janvry and Fargeix (1991) assessed the economic

and social effects of four stabilization instruments in Ecuador during 1980-1987: devaluation, cutting of current and capital public expenditures, cutting the rate of growth of the money supply and wage repression.

a) Exchange rate adjustment was the main instrument used in the short-term adjustments.

b) Monetary policy was the main instrument to control inflation by reduction of money supply relative to GDP.

c) In fiscal policy, both current and capital expenditures were reduced, but in the short term, capital investment expenditures were cut more. While exchange rate and monetary policy have had a certain degree of acceptance by political groups and the broader population, fiscal austerity did not enjoy such acceptance.

d) Wage repression on unskilled labor was accomplished by drastic reductions in minimum wage rates.

The authors used a dynamic model for the Ecuadorian economy to examine each policy. The endogenous variables for 1980 (the year for which the model was built) were not the current variables, but smoothed historical trends during the decade before 1980. Policy experiments were made in deviation from this base run. Parameters for the real side of the model were incorporated with a high level of aggregation.

The high level of aggregation implies less dispersion in parameters. Parameters for the financial side of the model were not estimated due to lack of time series available on household holdings of financial assets disaggregated by households groups, so elasticity parameters were taken as constant across households and across firms using econometric estimates and information from other sources. The model was calibrated to reproduce a state economy with no foreign sector shocks, with trends as close as possible to the historical trends in the pre-crisis period.

B.2. Experiments and results of adjustment measures on economic growth and political feasibility

The authors analyzed the following alternatives using sensitivity analysis in the general equilibrium model:

a) the impact of exchange rate, fiscal and monetary adjustment approach when the relative productivities of private and public investment differ,

b) the role of alternative fiscal instruments - budget cuts concentrated on current expenditures or equal across capital and current expenditures,

c) the effects of delaying implementation of fiscal adjustment, or monetary adjustment or both as opposed to exchange rate adjustment or immediate implementation of fiscal and monetary policies,

d) the possibilities of compensation through income transfers to ensure political feasibility and neutrality of poverty,

f) differential effects of alternative policies on rural and urban poverty and the type of political coalitions most effective to endorse interests of either urban or rural poor.

Because the authors gave a series of scenarios to analyze the impact of adjustment policies and their relative importance in the past and future trends, the cases and events closer to the reality of the Ecuadorian economy during 1980-1987 will be highlighted here.

B.2.1. Policy mix when public and private investment productivities differ

The model distinguished between public and private investment with respect to demand composition, import content and intensity of labor use. Also, each sector was assumed to have

a different total factor productivity (important in the long run growth). Protecting one type of investment or another under different stabilization policies would have affected differently economic growth, political feasibility and welfare.

a) Productivities of public and private investment were represented by elasticities of total factor productivity growth with respect to investment, when these were set at medium values (chosen by the authors in 0.01 according to historical trend). The mass of private investment is four times larger than that of public investment.

For a high discount rate (short-term preference), fiscal policy is preferred by monetary policy after the initial preference for exchange rate adjustment in year 2. For medium and low discount rates (medium and long-term preferences), fiscal adjustment is the best alternative for economic growth. The reduced pressure of government loans in the financial market lowers interest rates and stimulates private investment, which in turn has a greater absolute productivity effect with better economic growth than public investment. The higher GDP in the long-term catches up with that achieved with monetary adjustment three years after the shock.

In year 2, before the crisis has induced a full recession, the exchange rate adjustment is better in terms of economic, political feasibility and welfare criteria. At medium and high discount rates, monetary policy is better for political feasibility and overall welfare index. This is because the future gains of economic growth from fiscal austerity are discounted too much by politicians. The politicians prefer monetary instruments because are less harmful in cutting employment of the politically supportive skilled workers in public sector.

b) When private productivity is lower than public productivity, in countries with a small entrepreneur investment and poor market institutions, monetary instruments might be the best option to achieve stabilization and economic growth.

c) When public investment is more inefficient, restrictive fiscal policy remains costly

in the short run for political economic feasibility and welfare. Such fiscal policy, though, is highly preferred even when evaluated at high discount rates. Since economic growth is the best option to alleviate poverty, the fiscal adjustment approach is the best instrument to do it. Nevertheless, political feasibility, even in the case of low productivity of public investment, makes it difficult to use fiscal austerity measures.

In conclusion, there is a strong political preference to use monetary and exchange rate instruments over fiscal adjustment at all levels of productivity of investment and different discount rates, despite the superiority of fiscal policy instruments for economic growth. That has been the case of Ecuador during 1980-1987.

B.2.2. Alternative fiscal instruments

If more austere fiscal policies are necessary to protect private investment and future economic growth, the reduction of public expenditures should concentrate on current expenditures. The study describes two alternatives: a) proportional cuts in both expenditures, and b) all cuts done on current expenditure.

There is little difference between the two options in terms of economic efficiency in the short-term. In the medium and long-run, protecting government investment results in greater efficiency. At all discount rates, cutting current expenditure is economically superior. In a political sense, the situation changes. Capital expenditures have given jobs mainly to unskilled urban and rural labor and current expenditures have been targeted to skilled medium and high income urban groups, who have had political and bureaucratic power to support coalitions and influence the stability of governments.

Since stabilization was the only option, politicians preferred to cut proportionally capital

and current expenditure rather than cutting current expenditures only. The exchange rate adjustments still dominated politically.

B.2.3. Politics of delay

Both fiscal and monetary policy adjustments make economic growth stronger in the long-run than exchange rate adjustment. The former act on different distortions and in opposite directions on interest rates, an important indicator of investment and growth. They also both have short-term recessionary and political costs. The question is if fiscal and monetary policies applied together in the short term would add up to a stronger recession than applying one after the other, and what would be the cost in long-run economic growth of delaying one or the other or both.

Implementing both policies simultaneously does lead to a deeper recession, therefore a joint application would entail higher political and welfare cost in the short-term, but greater future recovery of the economy.

If both adjustments are delayed, GDP decreases at a rapid pace before the economy starts to recover. This alternative is not better under economic, political or poverty alleviation criteria. If only one is delayed, total GDP never falls as low as in the case of a simultaneous delay of both of them. However, because the recession occurs two years later in the simulation, with population growing, per capita GDP falls to a lower level. Poverty reaches a higher level than with an immediate implementation of both policies. The role of population growth is important to determine the costs of delaying fiscal or monetary policies.

The ordinal ranking of policies shows that delaying the implementation of monetary policies is never superior to their immediate implementation. In reference to fiscal policies, there is a trade-off involved. For growth, immediate implementation is better than delay. For political

feasibility and short-run welfare, delay is better than shock.

Ecuadorian governments used persistently exchange rate adjustments during 1980-1992 without any significant delay. Monetary policies were used more consistently and with more intensity than fiscal policies, but were still not sufficient (at least until 1992), as indicated by the persistence of high levels of inflation (around 45%). Nevertheless in the last two years the inflation rate dropped drastically to levels of 20%, suggesting that monetary adjustment was intensified.

Fiscal austerity was delayed with mild periodic applications throughout 1980-1994. One signal that this adjustment has not been intensified is the persistent high real interest rates for loans since 1991 and specially since 1993 and 1994, when it has reached the highest levels since the 1980's.

The scenario analyzed closer to reality suggests that during 1980-1987, the short-term costs of the type of adjustment actually pursued in Ecuador were less than in a case of simultaneous implementation of monetary and fiscal policies, but that recovery of economic growth and alleviation of poverty might not have reached the optimum levels according to the structural adjustment benefits for the long-run.

B.2.4. Compensation measures

In order to design compensation programs to alleviate poverty and achieve political feasibility in the case of immediate, persistent and simultaneous fiscal and monetary adjustment, the gainers would have to be taxed to transfer income to the losers. The only obvious gainers in the case of Ecuador from 1980-1987 were the large agro-export farmers, but their income gains were too small to compensate the losers. Therefore, compensation schemes in a crisis period must

rely on transfers from the rest of the world. The question would be to what population groups would income transfers be justified and what is the minimum cost of this program?.

The results of the model with respect to this issue are the following:

a) To achieve political feasibility, the urban medium and high income groups would need to receive direct transfers equal to 1.8 and 1.2 percent of their pre-crisis income levels, respectively in order to maintain their income levels un-changed after fiscal and monetary policy adjustment. All other groups would receive some benefits from these transfers, but absolute poverty would not decline. The cost of the compensation program to ensure political feasibility (after a campaign of persuasion to the public which points out the importance of a whole package of adjustment relative to exchange rate adjustment only) was equal to 9 per cent of the pre-crisis foreign capital flow.

b) Maintaining a poverty index equal to the post-crisis but pre-adjustment level - in the case of cutting current expenditures and wage repression-, would require a direct transfer of 1.8 percent of their pre-crisis income levels for small farmers, 0.2 percent for the medium farmers and 1 percent for the urban poor. The resource transfer would have a small multiplier effect and income gains, mainly toward the large farmers. This would help to increase political feasibility slightly (compared to implementation of fiscal policy without compensation) because of the small income gains captured by the large farmers and by the urban medium and upper income groups. Political feasibility ratio is still negative, though, so additional transfers would be needed to buy political support from the urban medium and upper income groups in the short-run.

The cost of both compensation programs (political feasibility - 9 percent and alleviation of poverty - 8.3 percent of the pre-crisis foreign borrowing) were almost the same.

In Ecuador, compensation programs were neglected during adjustment. "Ex-post

accommodation costs" occurred for opposite political groups which meant reversal of certain adjustment policies instead of creating short-term compensation programs with a commitment of political support for further stabilization. Efficient targeted compensation mechanisms for the poor never existed. Both types of compensation figures are important to ensure sustainable political feasibility and reduction of social costs from structural adjustment (De Janvry and Graham, 1994).

B.3. Effects of structural adjustment on poverty

The poor in Ecuador are very heterogeneous. The largest number of poor are small farmers and landless followed by low education urban groups and in lower proportion medium size farmers. The composition of income sources varies widely across the different groups. According to the study of De Janvry and Fargeix (1991), structural adjustment affected shares of wages and profits in different ways across groups. The author gave an important general insight about the evolution over time of rural and urban poverty.

Before the crisis, poverty was still largely rural, not only in individual income classes but in participation of the rural population in total poverty. Under the scenario of "no-shock", a continuation of migration out of rural areas would have continued during 1980-1987. Rural poverty would have fallen dramatically and urban poverty would have increased its participation in aggregate poverty.

A full exchange rate adjustment scenario (with no overvaluation) favors the tradable sectors over the non-tradable and since agriculture is mainly tradable, the rural poor would have been benefited relative to the urban poor. However, the rural poor in the coast could have gained more relative to the rural poor in the mountain region, because of greater tradeability of crops

on the coast.

Since monetary policies control capital out-flight and the foreign deficit, implying a reduction in the need for exchange rate adjustment, these policies would affect negatively more the rural poor relative to the urban poor. By contrast, a fiscal adjustment scenario which cuts proportionally current and capital expenditures would have a very direct effect on the urban population (high salary civil servants and low income workers) and additional losses from public goods benefits. The rural poor would be affected only in a marginal way, through the reduction of construction investment, in the sense that this sector represents some proportion of their income sources. Reduction in health and educational public services would not affect the rural poor as the urban poor, since the rural poor benefited from public goods in a marginal way (primary and some secondary roads in the rural sector, some electricity and water services and no social or family benefits) (De Janvry and Fargeix, 1992).

Monetary and fiscal policies implemented simultaneously (which was not the case in Ecuador) are just sufficient to stabilize rural poverty in the last year of the general equilibrium model (1987). It is only with the cut of current expenditures (in the sensitivity analysis) that growth is sufficient to reduce rural poverty.

The real scenario in Ecuador during 1980-1987 suggests that the rural poor benefited from persistent exchange rate devaluation, but this positive effect could have been offset by the delay of fiscal adjustment in current expenditures and the reduction of capital expenditures.

The conclusion of this study, though, is that rural poverty alleviation is related with an aggregate recovery pattern (likely because of the more diversified structure of income in rural areas), therefore fiscal policies always fit better for them.

The interests of the urban poor are related with the upper income urban groups in the sense that both suffer from fiscal austerity, and they support a monetary adjustment over

exchange rate adjustment, along with a delay in fiscal policy adjustment.

Poverty alleviation in Ecuador does depend on the rate of discount chosen by political coalitions under the condition of a need to intensify structural adjustment for economic growth in future years. There is clearly a distinction in poverty treatment between rural and urban poor and opposite interests are involved. The rural poor are benefited more by the promotion of economic growth in a small public sector and the urban poor are allied with politically dominant coalitions who prefer delay of fiscal policy adjustment.

Targeting for political feasibility and poverty alleviation are not the same thing. Targeting for political feasibility is not explicit, so it could be done indirectly by targeting for poverty. Therefore, this overall alleviation of poverty would spill over to the politically relevant poor groups supporting political leaders in the government. There are different ways to do so, either finding resources abroad or re-targeting existing subsidies - food in particular, or a combination of the two.

The authors list some approaches for poverty alleviation such as direct investment in the poor. It would work if it is consistent with the nature of adjustment policies. For example, investments that would help the poor to shift to the production of tradables (exportables and importables) or maintain their market share of tradables if they are already involved in their production.

In this case, it would be necessary to enhance the productivity of the poor and to take into account the elasticity of demand for what they produce. The sectors with the greatest share in total income are agricultural exports (47.3 per cent), trade (45.6 per cent), services (43.9 per cent) and food agriculture (43.3 per cent). Since export agriculture is the most tradable, it suggests that the efforts of targeting for poverty alleviation should go there. In addition, the trade-offs between tradeability and labor intensity in the design of compensation programs must be

analyzed carefully.

C. Summary

The following studies about experiences of structural adjustment in developing countries other than Ecuador were reviewed:

1.- The political economy of agricultural pricing policy: A synthesis of the political economy in developing countries (Krueger, 1991); The political economy of agricultural pricing policy: A synthesis of the economics in developing countries (Krueger, Schiff and Valdez, 1991); and Political economy of policy reform in developing countries (Krueger, 1993).

The studies consisted of a comparative analysis of eighteen developing countries gathered in 4 groups by their degree of discrimination against agriculture. The main purpose was to estimate the degree of price discrimination against agriculture and explain how it changed over time under structural adjustment policies. The analysis focused on the main variables affected by such programs like foreign exchange earnings, agricultural output and income distribution. The authors also considered political factors and how they affected the motivations of policy makers to determine agricultural intervention and success or failure of reforms.

The main conclusions can be summarized as follows:

a) Direct and indirect policy discrimination occurred in all countries and macroeconomic policies had the largest effect, especially toward exportables. Direct or sectoral policies added to the negative effect on exportables, but in the case of agricultural importables, direct policies tried to offset the discrimination of macroeconomic policies through high tariffs, quantitative restrictions, cheap credit and cheap access to inputs. However, in most of the countries the effect of those policies was smaller than the macro effect.

b) High taxation of agriculture was associated with low growth in agriculture and the broader economy. The net transfers from agriculture to other sectors from direct and indirect policies were large in all the countries, leading to depression in agricultural investment and growth, losses in income by rural actors and regressive income distribution. "Cheap food policies" benefited mainly urban households, employees in the government and the formal sector at the expense of the rural sector. The cost was bigger for the rural poor as well as for the urban poor in the informal sector. For the urban poor, the loss resulting from the negative impact on growth was higher than the static gains from price intervention. For the rural poor, both negative impacts added up over time.

c) Through the process of crisis and adjustment, a complex arrangement of political actors appeared and influenced outcomes either in carrying out adjustment successfully or in reversing periods of policy reforms. In general, the main opponents of reducing discrimination against agriculture were urban industrial businessmen, bureaucrats and urban workers, while those in favor were exporters and to some extent the rural poor.

d) Along with these political factors, the economic crisis under large public and current account deficits and conditions of foreign lenders pushed the initiation of reforms in all the countries. Nevertheless, the delays in further liberalization and removal of distortions were influenced by the complexity of political coalitions of interest groups, mistakes of technocrats (as in the case of Brazil, Chile, Mexico, Taiwan) and unpredicted natural disasters or depressed prices for developing countries' exports.

2.- Adjustment and equity in developing countries (Bourguignon and Morrison, 1992). The sample consisted of seven countries. Some carried out adjustment measures in cooperation with IMF (Chile, Cote d'Ivoire, Ecuador and Morocco) and Indonesia and Malaysia adjusted before the crisis without having to go to the IMF. Ghana rejected adjustment and

remained in crisis for ten years and had to reduce its imports to the level of its exports since it did not use foreign loans. The main purpose of the study was to reveal the advantages of an early adjustment, to state the importance of political factors in the process of removing distortions and to describe the particular conditions of unemployment, incomes, government transfers and poverty during the adjustment period.

The main conclusions were the following:

a) Adjustment in external and public deficits had different social and political costs in all countries, therefore it is not possible not to have losers in the process. Increased poverty occurred among certain groups and compensatory measures were urgent either to alleviate poverty or to reach political agreement to continue reforms.

b) The only way to avoid the costs of adjustment is to adjust before a crisis because a smaller reduction in demand is necessary and the country can avoid overshooting of unemployment, swelling of the informal sector and large budget cuts. Also, this approach has the advantage of a permanent flow of foreign capital before and during the adjustment that helped to implement compensatory programs for the losers, leading to less opposition to further adjustment.

c) Through the simulations used in the study, the authors state that devaluation is, in general, a more efficient short term measure than cutting public expenditure or money supply. A devaluation slows economic activity less, it is more advantageous for the rural sector and it has better distribution effects. However, for further stabilization and growth, it is necessary to carry out other adjustment measures. Political constraints were important in all the countries, therefore a package has to be politically and economically feasible at any time of the process.

d) Liberalization of foreign trade lowers prices of manufactured goods relative to agricultural prices, so it benefits small farmers and decreases poverty when this predominates in

rural areas. Removal of distortions gives the right signals in the markets and a mobilization of resources occurs toward exportables (if factors are not rigid). Thus, income gains appeared for small and medium farmers and in the non-agricultural sectors and labor-intensive industries were favored, potentially reducing unemployment and underemployment. Cutting public expenditure and reorganizing public enterprises has had the largest social cost though a number of lay-offs that can be larger than the creation of new employment opportunities around exportables. In the short and medium terms, compensation packages are necessary to ensure political and social stability and therefore further stabilization and growth.

3.- Adjustment and equity in Ecuador (De Janvry and Fargeix, 1991)

The purpose of the study was to determine the social impact of stabilization policies in Ecuador between 1980-1987. The authors constructed a dynamic computable general equilibrium model. Using that model, they compared the economic and social effects of four stabilization instruments: devaluation, cutting of current and capital public expenditures, cutting the rate of growth of the money supply and wage repression. The simulations show that the choice of a stabilization technique affects social groups differently. A devaluation benefits farmers in the short term, but affects urban upper and medium income classes by reducing real wages. A cut in current expenditures reduces employment of skilled public employees. A cut in public capital expenditures reduces employment of un-skilled public employees (composed of urban poor and the rural poor who complement their rural income by working in public construction). A cut in public social expenditures affects the urban poor more than the rural poor since the first have benefited more from health and education services.

Using these results, the authors made simulations of the political feasibility of alternative stabilization packages based on the interests of socio-economic groups and their influence in policy makers' decisions. Therefore, they stated that structural adjustment packages have four

dimensions: effectiveness in terms of political feasibility, least costly social terms, short term economic stability and long term economic growth. The combination of all these elements would help to conciliate stabilization with economic growth, reduction of poverty and democratic political stability.

4.- The political feasibility of adjustment in Ecuador and Venezuela (De Janvry and Graham, 1994). The study explains why delays in stabilization measures and reversals have occurred in Ecuador since 1980. The strong opposition of the wide variety of industrial organizations and organized labor as opposed to coastal agro-exporters have determined the weak political support for stabilization in Ecuador.

Also imperfect and private information has been the cause of failures in economic packages because the parties in coalitions never knew the whole set of policy options and the expected responses of other players. In consequence ex-ante policy dialogue has occurred without consensus and commitment and based mainly on a seeking of "ex post policy accommodation" that has determined later reversions of policies.

The empirical studies analyzed in this chapter have a common characteristic which is the high level of aggregation used to assess impacts of structural adjustment policies in the agricultural and non agricultural sectors. The analysis of the interaction of effects of macro and micro changes on household income sources and households' decisions on expenditure patterns was not done. This might be due to a lack of methodological approach that can link macro, micro and household dimensions and a lack of available household survey data.

CHAPTER 5

EFFECTS OF POLICY AND MARKET DISTORTIONS ON NET HOUSEHOLD INCOME - METHODS OF ANALYSIS

This chapter describes the data set, the processing and the management of data from the survey done in the area of Salcedo-Ecuador; the concept and methodology of social prices of all the variables involved in the determination of household income; and the methods of analysis to assess the impact of selected policy and market distortions on net household income.

A. The Data set

In Ecuador, there are no complete records of data on land tenure that can define current ownership of agricultural units. The last census was made in 1974.

The area of Salcedo was selected for the present research. It is located in the northern part of the Sierra, mountain region of Ecuador. Salcedo is known as one of the communities where land has gone through an intense process of sub-division, through the Agrarian Reform and through informal and formal market activity. Small and medium farms have produced crops for domestic consumption and for a small scale trade with the frontier of Colombia. It has been assumed that this regional trade has motivated farming activities among small and medium farmers. A significant proportion of these farms have no property rights, therefore the risk of investing in agriculture is relatively high. Most of the largest farms are owned by communities and because the law does not allow community land to be sold, there is either an active underground rent land market or a large percentage of the land is not used for agricultural

purposes (Camacho, 1992).

In this area a survey was done in 1991 by the Institute of Agropecuarian Strategies (IAS), National Institute of Statistics and Census (NISC) and Project of Titles and Rural Adjudication of Land (PTRAL).

The sample size was 592. A representative sample was taken among properties of less than 50 hectares and a census was made of properties of more than 50 hectares. The sample was designed using the records of PTRAL in 1990. The Institute used a sophisticated method of photographic area and topographic measures of all farms (Camacho, 1992).

B. Analytical methods

B.1. Processing and management of data

The block of data was processed with the computer software SPSS/PC+. There were four files for the block of data:

a) Socio-economic indicators about off-farm income per member of the household.

b) Use of land by type of property and by quality of land.

c) Cash production costs and cash and non-cash income per crop. The data in the survey was disaggregated by 25 crops, which were combined into 10 crop groups. One group had internationally tradable outputs, two groups had regionally tradable outputs and the rest of the groups had non-tradable outputs[7].

---

[7] Internationally tradable outputs are defined as products which can be traded overseas, the ones in the present research are import substitutes commodities. Regionally tradable outputs are defined as products which have been historically traded with the frontier countries and not overseas because of bulkiness and perishability. Non-tradable outputs are defined as products which can be traded only in the domestic market because of high ratios of bulkiness and perishability in relation to value.

d) Livestock inventories and livestock sales. Because the survey data did not include livestock production costs, the net farm income was calculated without taking into account livestock sales in order to avoid an over-weight of this item into estimating total household income. Nevertheless, gross farm income was calculated to estimate the relative proportion of livestock in gross household income.

The household data were aggregated by five farm size categories and ten crop categories. The farm size categories were divided based on a low variance of farm sizes and homogeneity of cropping patterns.

The crop group categories were based on homogeneity of product characteristics:

1 = for animal consumption like hay, alfalfa and straw
2 = soft corn
3 = beans and lentils
4 = oats
5 = potatoes
6 = indigenous roots and grains
7 = non citrus fruits
8 = onions
9 = others
10= wheat, barley and hard corn

The data were combined in each case to produce the following summary files containing average data on the following variables:

a) household net income by farm size crop group categories,

b) land use and quality of land by farm size,

c) gross livestock income by farm size,

d) tradable and non-tradable components in production costs by farm size and crop,

e) partial and combined effects of policy and market distortions on tradable and non-tradable agricultural inputs and outputs, off-farm income and net household income by farm size and crop group categories and,

f) private and social return over variable costs by farm size and crop group

categories.

B.2. Methods of analysis

B.2.1. Social prices - concepts

The methodology of the Policy Analysis Matrix (Monke and Pearson, 1989) was used to calculated social prices. Comparison between social and domestic prices was done to estimate partial and combined effects of policy and market distortions on agricultural output and variable cost, off-farm income and net household income.

Agricultural variable costs were classified as: a) fertilizers, b) agro-chemicals, c) machinery, d) labor and e) seed. Fertilizers, agro-chemicals, machinery and in some cases seed from tradable outputs were considered tradable inputs, while labor was considered non-tradable.

Tradable inputs are those which have their opportunity cost in the international market. Therefore, the social prices of these inputs were calculated making a matrix of social import costs without distortions. The main distortions identified between 1990 and 1994 were: a) overvaluation of exchange rate; b) import tariffs and duties and import taxes paid currently by importers; c) non-competitive marketing and profit margins taken by importers. The Law for Agricultural Development valid between 1990-1992, guaranteed marketing margins for sales and administration up to 30 percent over Cost and Freight (C&F) for each import and a profit margin of an additional 30 percent.

Non-tradable inputs are those whose prices are determined domestically. The opportunity cost would be the next best alternative available without distortions. The main distortion identified in the rural labor market of the Sierra (mountain region) was the lack of free mobility of labor

among areas and sectors (Coast, Sierra and Rural Informal Sector)[8]. This distortion has driven differences in rural wages among sectors, crops and regions.

Tradable and non-tradable output: From the crops of the research, barley, wheat and hard corn were considered tradable internationally. The opportunity cost of these crops was their border price (international prices adjusted by exchange rate, no tariffs or duties and transport to farms in the Sierra).

Potatoes and soft corn were considered regionally tradable. The opportunity cost of these crops was their border price in Colombia adjusted for exchange rate and transport costs. Data on differences in prices between Ecuador and Colombia for potatoes and soft corn were taken from annual publications of the National Association of Potatoes and Soft Corn growers in Colombia.

All other crops were considered non-tradable for being excessively perishable and bulky.

B.2.2. Calculating the effects of policy and market distortions on agricultural variable costs, agricultural income, off-farm income and net household income

Summary 1: Steps of calculation

First step: Divide each tradable input into proportions of tradable and non tradable components. For tradable inputs, available records of imports in the Ministry of Agriculture (1990-1994) were taken to determine share of tradable and non tradable components.

The Ministry of Agriculture in Ecuador has had the legal right to ask importers detailed information about C&F, tariffs / fees / duties paid in customs, administrative / sales and profit

---

[8] Information taken from: NISC publication of Employment and Wages (Formal and Informal Sector), 1991-1994 and the survey done by the Agricultural Sector Reorientation Project ASRP/USAID in 1993 in some selected areas in the Coast.

margins for every item before granting an import permit. When importers bring merchandise to the country, they have the duty to give the Ministry of Agriculture another sheet with data adjusted to real import values (generally C&F price and administrative/sales and profit margins).

"Effective" sheets of records of imports were used in the present research and the most common items imported in each case during 1990-1994 were urea (representing around 80 percent of total fertilizer imports); Monitor 600 EC (around 35% of total insecticides imports); Paraquat 24 EC (around 30% of total herbicides imports); Cuprosan 311 SD (around 45% of total fungicides imports); tractors 110 HP as a record model for machinery (Statistics of Ministry of Agriculture, 1994).

The reported prices from these records were compared with actual market prices from the Price Information System available in the Ministry of Agriculture. Variations were not large (between 3%-10%), therefore the source of data to calculate shares of tradables and non tradables components was likely reliable (Table 11).

Second step: Make a matrix of input cost and output income by tradable and non tradable component for each crop, multiplying the respective shares by the actual values reported in the survey.

Third step: Calculate distortion coefficients for each level of the matrix. Secondary data (macroeconomic and microeconomic variables) were used.

Fourth step: Make a matrix of social values multiplying the elements of the matrix in private values by the respective distortion coefficients.

Fifth step: Calculate the partial and combined effects of policy and market distortions on: a) agricultural variable cost, b) agricultural output, c) return on variable cost, d) off-farm income and e) net household income. A distortion rate was calculated for each policy and market distortion, which is the ratio between social and private values. Tables A.1 - A.12 in appendix A summarize the methodology used.

n

Table 11. Tradeability classification of cost components for imported inputs and outputs a/

Item	COMPONENTS	
	Tradables	Non-tradables
1. C&F	X	
2. Tariffs, duties, fees and taxes		X
3. Transport from port to importer warehouse		
a. Diesel	X	
b. Vehicle	X	X
c. Parts	X	X
d. Labor (driver)		X
e. Return of owner of vehicle		X
4. Administrative/sales margins of importer		X
5. Financial costs of importer		
a. Interest rate to open credit card in foreign bank to carry out import		X
b. Domestic interest rate to hold inventory (opportunity cost of capital) Taken 30% 1/		X
6. Profit margin (opportunity cost of importer's capital) Taken 70% 1/		X

Notes:

a/ Tradable inputs: fertilizer, herbicides, insecticides, fungicides and machinery; tradable outputs: wheat, hard corn and barley

1/ It was assumed that 30 percent of inventory was financed by loans and the rest by own capital

Source: Records of imports, Ministry of Agriculture, 1990-1994

Summary 2 - Matrix of policies, variables and distortions

Table 12 summarizes the policies and variables involved in estimating private and social values of tradable and non tradable inputs and outputs and the distortions identified in each market.

B.2.3. Adjustment of policy and market distortions

Exchange rate policy

Since the exchange rate affects the social prices of all tradables, it is important that exchange rate distortions be properly identified and corrected for purposes of the present analysis. Estimating an accurate real equilibrium exchange rate can present major problems. If no reliable estimates of the real equilibrium exchange rate are available from secondary sources, a formal method can be used. The purchasing power parity (PPP) method is the simplest. The version used in this analysis involves selecting a base year, or preferably, a base month, in which the exchange rate in the domestic market is judged to have been valued at its equilibrium rate in relation with the currency from the dominant trading partner (often the US dollar) and deflating the exchange rate in subsequent years (or months) by the difference in domestic inflation rates (Table 13).

Table 12. A conceptual framework for partial assessments of the impacts of selected policy interventions and market distortions, Ecuador 1990-1994

Item	Variable	Private value	Social value	Historical Distortion	Component of tradable inputs affected by the policy		Component of tradable outputs affected by the policy		Non-tradable labor
					Tradable	Non tradable	Tradable	Non tradable	
A. POLICIES									
Exchange rate policy	Exchange rate	Current exchange rate in open market	Social - equilibrium exchange rate calculated by PPP method	Overvaluation	X		X		
Trade policy	Tariffs, duties, fees and other import taxes	Current tariffs, duties, fees and other taxes	Tariffs, duties, fees and taxes = 0; and "efficient" custom and port expenses	Non-zero tariffs, fees, duties and taxes		X		X	
Interest rate policy	Interest rate	Current domestic interest rate in open financial market	Social interest rate = weighted interest rate between: DEMAND SIDE - assuming domestic demanders of loans free access to international market; SUPPLY SIDE - assuming domestic suppliers of loans charge lower operating and profit margins, taking as reference financial margins in USA. Assuming more efficiency and competitiveness in domestic financial system.	Private value > social value due to: a) high inflation rate, b) high margins of domestic financial system		X		X	

Table 12 (Continued). A conceptual framework for partial assessments of the impacts of selected policy interventions and market distortions, Ecuador 1990-1994

Item	Variable	Private value	Social value	Historical Distortion	Component of tradable inputs affected by the policy		Component of tradable outputs affected by the policy		Non-tradable labor
					Tradable	Non tradable	Tradable	Non tradable	
Monetary policy	Rate of return	Current domestic rate of return of the following activities: a) importers of tradable inputs and outputs, b) rural transporters (owners of vehicles for rural transportation)	Nominal social interest rate + 10% risk free (Taking estimation of Pearson and Monke average real return for low income economies of 10%)	Private return > social return due to market power		X		X	
Petroleum policy	Price of diesel fuel	Current domestic price of diesel fuel	Border price of diesel adjusted by social exchange rate	Under pricing of domestic diesel 1990-1992 (subsidy) and over pricing 1993-1994 (consumer tax)	X		X		

Table 12 (Continued). A conceptual framework for partial assessments of the impacts of selected policy interventions and market distortions, Ecuador 1990-1994

Item	Variable	Private value	Social value	Historical Distortion	Component of tradable inputs affected by the policy		Component of tradable outputs affected by the policy		Non-tradable labor
					Tradable	Nontradable	Tradable	Nontradable	
B. MARKET DISTORTIONS									
Market distortion in selected rural labor market	Rural wage	Current domestic rural wage in Salcedo	Social rural wage for these areas, assuming free mobility of labor among areas and sectors (Coast / Sierra / Informal sector)	Private value < social value due to: a) lack of information job opportunities in profitable coastal export crops, b) lack of information of job opportunities in retailing informal sector and c) cultural and environmental barriers					X
Market failures and distortions in tradable domestic output markets	Price of tradable output	Current domestic market price of tradable output	Border price of tradable output, taking international price as opportunity cost and adjusted for exchange rate and trade distortions	Alternating under and over pricing domestic product			X	X	

Table 13. Private and social exchange rate, 1990-1994

Year	PRIVATE Exchange rate NER(c) a	Price Index of Ecuador b	Price Index of USA c	Price index ratio c/b	Real exch. rate RER = a*(c/b)	Soc. exch. rate SER (1) d)	Over-val. rate (d/a) -1
1990	822	56.9	95.0	1.67	1,372	773	-5.8%
1991	1,101	84.6	98.8	1.17	1,287	1,107	0.3%
1992	1,594	130.8	101.8	0.78	1,241	1,661	4.2%
1993	1,919	189.6	104.8	0.55	1,061	2,340	21.7%
1994	2,198	241.4	107.5	0.45	979	2,902	32.0%

Notes:

(1) Social exchange rate calculated by PPP method Base year = December 1991. Exchange rate was valued as its true equilibrium rate in relation to the currency used by the dominant trading partner (USA = 68% of Ecuador's trade). Reforms in cutting trade barriers and tariff protection started 1991.

SER = social exchange rate = [NER(e)/RER] * NER(c) = d
RER = real exchange rate = [a * (c/b)]
NER(e) = nominal exchange rate in base year - dec 91/ = 1,293 s/US
NER(c) = current nominal exchange rate = a

Source : PPP methodology, CIMMYT economics paper, Determining comparative advantage through DRC Analysis, 1990

Trade policy

Through the 1980's, Ecuador's tariffs for tradable agricultural inputs and outputs (import substitutes such as wheat and barley) were relatively low in comparison with other South American economies. Tariffs for tradable outputs which competed with domestic production such as hard corn, soybeans and rice were, on the contrary, relatively high.

Since 1992, when the Andean Trade Treaty started to be reinforced, the agreement for an "andean common tariff" pushed tariffs for inputs and import substitute outputs higher and tariffs for competitive imports lower than the past decade.

Besides tariffs during 1990-1994, there were other import restrictions such as special fees, duties and taxes to be paid to the Customs Institution, Police, Central Bank, Ministry of Finance

and Ministry of Social Welfare. The C&F value plus all of these expenses equal the import cost at the importer warehouse.

In the case of tradable inputs, the estimation of private import cost described in table 12 is close to the observed domestic market prices because suppliers of inputs are only importers. In the case of importable outputs, the estimation of private import cost described in table 22 differs from the prevailed domestic market price because suppliers of importable outputs are domestic producers and importers.

By definition, the social value of tariffs, fees and duties are zero and only those custom and port expenses considered "legitimate" in the sense that they would be paid anyhow in a free trade situation, are left as social value. The social value of transport as a percentage of C&F is included here for purposes of data management but is described in detail in next section.

Distortion coefficients as ratios between social values and private values were calculated for tradable inputs and outputs. The coefficient is a measure that explains the extent to which social value differs from private value (Table 14).

During 1990 and 1994, the social value of tariffs, fees, duties, port expenses and transport cost to importer warehouses was between 29 percent and 64 percent of private value for tradable inputs and between 26 percent and 38 percent for tradable outputs. The reason for these low ratios is the prevalence of protectionism for importables through trade policy during this period in the economy of Ecuador.

Table 14. Distortion of tariffs, fees, duties and transport cost of imported inputs and outputs to warehouse as percentage of C&F, 1990-1994 1/

Concept	1990	1991	1992	1993	1994
1. Tradable input					
1.1. Fertilizer	0.50	0.34	0.53	0.64	0.64
1.2. Agrochemicals	0.29	0.29	0.37	0.46	0.51
1.3. Tradable seed	0.32	0.31	0.40	0.46	0.48
1.4. Machinery	0.34	0.33	0.43	0.48	0.51
2. Tradable output					
2.1. Hard corn	0.33	0.31	0.26	0.28	0.27
2.2. Wheat	0.32	0.31	0.33	0.38	0.26
2.3. Barley	0.32	0.31	0.34	0.38	0.27
3. Parts for vehicles for rural transport	0.16	0.15	0.19	0.28	0.30

Notes:

1/ Distortion coefficient = social value / private value

Source: Import records, Ministry of Agriculture 1990-1994; Trade Policy of Ecuador 1990-1994, Ministry of Finance
Table derived from tables B.1 - B.5 in appendix B

Monetary policy

Calculation of a social interest rate

Through the 1970s, part of the 1980s (1980-1986) and part of the 1990s (1988-1992), either the interest rate or the "financial spread"[9] were fixed with the purpose of controlling inflation. Money growth was greater than the interest rate. The consequence was a permanent high inflation rate that became difficult to control (high expectations of inflation rate spread through the economy during the 1980s and 1990s). Informal loan markets were part of the

9 Financial spread = (interest rate for loans - interest rate for savings).

economy and were characterized by higher interest rates than in the formal financial system during 1984-1991 (IDEA, 1992).

With the new government starting in 1992, interest rates were not controlled anymore, the legal deposit of banks in the Central Bank was lowered to half and the legal barriers to entry in the Financial System were removed (World Bank, 1993). The Reform aimed to give more flexibility to domestic banks in order to:

a) slow down the increase in the financial spread (interest rate for loans - interest rate for savings),

b) decrease the participation of the Central Bank in the loanable funds of the financial system; and,

c) reduce the differential between inflation and interest rate and therefore the real return of financial system to give incentive for investment in the whole economy.

Inflation slowed from 50 percent in 1992 to 27 percent in 1994, but interest rates and the financial spread were still very high; the financial spread increased from 12.9 percent in 1992 to 17.1 and 44.5 percent in 1993 and 1994, respectively. Monetary authorities of the country realized that the domestic capital market faced both macroeconomic distortions and market failures during this period. Once macroeconomic distortions and legal barriers were partially removed, interest rates did not go down.

The social interest rate was calculated following Lee and Flood (1994). The method started by calculating a "social interest rate for loans" assuming demanders have free access to international financial markets, which had lower interest rates than domestic markets. A "social return for the financial system" was calculated, assuming domestic suppliers of loans lower the financial spread and profit margins to levels of foreign banks in the USA (50% higher than USA taking into account smaller economies of scale in domestic banks).

Finally a weighted "social interest rate" was calculated giving a weight of 60% to the social interest rate from the demand side and 40% to the social interest rate from the supply side, assuming supply distortions are more inflexible than mobility of demanders in the international capital markets.

Table 15 shows the distortion coefficient on the interest rate. During 1990-1994 with the exception of 1993, the social interest rate was between 75 and 83 percent of the private interest rate due to the distortions previously analyzed.

Table 15. Private interest rate versus social interest rate (WEIGHTED AVERAGE DEMAND AND SUPPLY SIDES)

Year	nominal social interest rate 1/	nominal social return in Ecuador 2/	adjusted nominal social return in USA 3/	weighted social interest rate 4/	private interest rate 5/	Distortion 4/5
1990	27.8%	57.5%	53.1%	39.2%	52.4%	0.75
1991	31.7%	57.7%	52.1%	41.5%	53.1%	0.78
1992	45.2%	63.6%	57.7%	52.0%	62.5%	0.83
1993	47.1%	54.0%	48.3%	49.3%	47.0%	1.05
1994	44.9%	37.5%	32.7%	41.4%	53.3%	0.78

Notes:

1/ Nominal social interest rate where domestic demanders for loans can access international loan market
2/ Nominal social return domestic market where domestic suppliers of loans (financial system) have on average (90-94) 58.6% lower margin than international suppliers of loans
3/ Estimated nominal social return international market
4/ Weighted social interest rate with the following weights:
For 1/ 60%
For 2/ 30%
For 3/ 10% - assuming domestic financial market face some sort of competition with international financial markets
5/ Current private interest rate

Source: Monthly statistical information of Central Bank of Ecuador
Table derived from tables B.6 - B.7 in appendix B

Monetary policy

Calculation of average social rate of return

The adjustment for rate of return of importers and transporters was done adding a risk premium of 10% to the social interest rate and comparing it with the estimation of Pearson and Monke of real social rate of return for low income economies (Tables 12 and 16). The private rate of return of importers of tradable inputs and outputs was taken from the records of imports (Ministry of Agriculture, 1990-1994). The private return of transporters was estimated by adding a 15 percent risk premium to the inflation rate.

Table 16. Social return and social interest rate

Item	1990	1991	1992	1993	1994
private return inflation + 15% risk free	63.5%	63.7%	69.6%	61.4%	42.5%
social interest rate a	39.2%	41.5%	52.0%	49.3%	41.4%
social return b = a + 10% risk free	49.2%	51.5%	62.0%	59.3%	51.4%

Source: Monthly statistical information of Central Bank of Ecuador, table 15

Market distortions: transport

Transport represents between 10 and 12 percent of total cost of tradable inputs and outputs, therefore it was decided to correct distortions in its components. Transport cost was divided into five components, and the contribution of each to the cost of total transport service fee was calculated using approximations from the National Association of Transporters, Quito-Ecuador, 1994 (Table 17).

Table 17. Private component of rural transport as a percentage of total transport service fee

Item	2 year old vehicle	1990	1991	1992	1993	1994
a. vehicle	20	9	7	8	9	10
b. parts	5	16	18	17	16	15
c. labor	5	5	5	5	5	5
d. diesel	8	8	8	8	8	8
e. return	62	62	62	62	62	62
TOTAL	100	100	100	100	100	100
annually average age of vehicles		5.5	6.0	5.0	5.5	4.0

Source: National Transport Association of Ecuador (Quito-Ecuador); Department of Police - licenses and plates (1990-1994)

The assessment of social value for each component was done in the following way:

Vehicle: Because the age of vehicles for merchandise transportation was close to 6 years old between 1990-1994, the units were almost fully depreciated. For that reason, the proportion of the vehicle component in total transport service cost was relatively low. The social value or opportunity cost would be the replacement cost of purchasing new vehicles adjusted for the exchange rate, tariffs and other distortions in the market for imported vehicles. It was decided not to do this adjustment because of insufficient data.

Parts: Social value was calculated following the same procedure as the other tradable inputs (Table 18).

Labor: The labor in transportation have been the best paid in non-skilled labor markets, therefore the social value = private value. Considering lower international mobility of labor (even among neighbor countries), their opportunity cost would be the same as for their current occupation.

Diesel: The social value of diesel would be the international price of diesel (taking USA as reference) adjusted by exchange rate and transportation - border price (Table 19). From the

Table 18. Private and social value components of transport vehicle parts

Item	Description	1990	1991	1992	1993	1994
PRIVATE VALUE						
a. C&F	base=100	100.00	100.00	100.00	100.00	100.00
b. Tariff, duties and fees	%/C&F	28.60	31.69	25.01	17.74	19.64
c. Marketing margin	%/C&F	10.00	10.00	10.00	10.00	10.00
d. Profit of importer 1/	%/C&F	24.40	30.20	21.17	21.23	23.20
e. Total private component	a+b+c+d	163.00	171.89	156.17	148.97	152.84
SOCIAL VALUE						
a. C&F	2/	94.60	100.30	104.20	121.81	132.01
b. Tariff, duties and fees	%/C&F	4.94	5.28	5.50	6.84	8.72
c. Marketing margin 2/	%/C&F	4.73	5.01	5.21	6.09	6.60
d. Profit of importer 3/	%/C&F	15.51	17.22	21.53	24.08	22.62
e. Total social component	a+b+c+d	119.79	127.81	136.44	158.82	169.95
DISTORTION COEFFICIENT	5/	0.73	0.74	0.87	1.07	1.11

Notes:

1/ Profit of importer = average private profit of economy
2/ social C&F = private C&F * overvaluation rate
3/ Social market margin = 15% annual / 3 frequencies imports per year
4/ Social profit importer = avg social profit / 3 frequencies imports per year
5/ Distortion coefficient = social value - private value

Source: Records of transport vehicle parts, Ministry of Finance, 1990-1994 and table 16.

Table 19. Private and social value of diesel fuel

Concept	1990	1991	1992	1993	1994
Market exchange rate	821	1,099	1,586	1,917	2,198
Overvaluation rate	-5.4%	0.3%	4.2%	21.8%	32.0%
Social exchange rate 1/	777	1,103	1,653	2,335	2,901
Quito wholesale price of diesel (s/gal)	286	386	798	1314	1576
Quito wholesale price of diesel (US/gal) 2/	0.37	0.35	0.48	0.56	0.54
International FOB price of diesel Gulf of Mexico (US/gal)	0.66	0.58	0.55	0.50	0.46
Freight (0.6%/FOB)					
Insurance (0.4%/FOB)					
Other costs (10%/FOB)					
Border price diesel Gulf of Ecuador (US/gal) 3/	0.59	0.52	0.49	0.45	0.41
Distortion coefficient 4/	1.59	1.48	1.02	0.79	0.76

Notes:

1/ Social exchange rate = market exchange rate * (1+ overvaluation rate)
2/ Price in dollars using social exchange rate
3/ FOB price Gulf of Mexico adjusted by freight, insurance and other costs
4/ Distortion coefficient = social value / private value

Source: Monthly statistics of Petro-Ecuador (1990-1994); table 13.

1970's to 1992, the domestic price of petroleum sub-products was below the international price as a result of subsidies. During the last 2 years, however, domestic prices have exceeded international prices and have included a tax. This tax has been for a National Reserve Fund whose purpose has been helping to pay the international debt (Petro-Ecuador, 1994).

Return to transport vehicle owner: The social value of return to transporters was calculated in the same way as for importers, adding a risk premium of 10% to the social interest rate (See section on monetary policy - calculation of average social rate of return).

The total transport distortion coefficient may now be calculated as the sum of private

values of its components multiply by the distortion coefficients in each case (Table 20).

Table 20. Social component of rural transport a/

Concept	1990	1991	1992	1993	1994
a. vehicle	9	7	8	9	10
b. parts	12	13	15	17	17
c. labor	5	5	5	5	5
d. diesel	13	12	8	6	6
e. return	42	35	61	58	46
TOTAL	80	73	96	95	84
distortion coefficient 1/	0.80	0.72	0.97	0.95	0.84

Notes:

1/ Distortion coefficient = social value / private value

Source: a/ Derived from tables 17-19

Market distortion

Calculation of social rural wage

The social value or opportunity cost of labor is the best alternative in a specific labor market. There were wage differences between the Sierra and Coast and among the rural informal and formal sectors for the same rural un-skilled labor during 1990-1994 (Tables 21 and 22). These differences evidence the existence of rigidities in labor mobility across sectors and regions. In general, in the Sierra and specifically in the area selected for the survey, the agricultural rural wage was low relative to the coast (Ministry of Agriculture, 1990-1994). Rural informal sector wages in the Coast and Sierra were higher than rural agriculture wages in the same regions (National Institute of Statistics and Census, 1994).

Therefore, for the present research, there are three relevant labor markets for determining the opportunity cost of paid rural labor in farm variable costs. These are: a) the rural informal

labor market of the Sierra, b) the rural informal labor market in the Coast and c) agricultural rural

wages for selected crops of the Coast in a region closer to the area of the survey. These crops were export crops and other more profitable crops than in the Sierra. The specific region of the Coast (outside the primary banana area) was chosen for the analysis because rural labor of the Sierra have more likely access to labor market due to geographical closeness and less cultural differences than other regions in the coast (Table 21).

In the survey, off-farm income was composed of four income sources: a) non-agricultural informal, b) non-agricultural formal, c) agricultural wage and d) others. For the first one, the relevant markets to determine the opportunity cost were the urban informal market in the Sierra and the respective market in the Coast. For the second and the last one, it was assumed that the social value equals the private value because of insufficient data. For the third one, the relevant markets chosen were the agricultural labor markets in four crops of the coast: banana, palm oil, sugar, and other crops such as rice, hard corn, soybeans and tropical fruits (Table 22).

There are two ways to determine the social value or opportunity cost of paid labor wage in variable cost and off-farm wage: a) take the highest net wage (gross wage - mobilization cost) in the respective relevant markets and, b) take a weighted wage taking into account risk and probabilities of finding a job in the relevant markets, compare it with actual wage in each case and choose the highest. For the present research, the first approach was used.

Table 21. Opportunity cost for farm labor

Item	1990	1991	1992	1993	1994
	Dollars per day				
A. Gross wage per day in relevant market					
A.1. SIERRA SELECTED AREA					
a. Agricultural	3.57	3.86	4.40	4.12	3.72
b. Rural informal sector	3.96	4.75	6.40	5.37	4.92
A.2. COAST					
a. Banana	4.63	5.45	6.36	6.10	5.64
b. Sugar/Palm oil	3.70	4.47	5.54	5.92	4.52
c. Other crops 1/	2.96	3.58	4.76	5.80	4.06
d. Rural informal sector	3.53	4.23	5.70	5.65	4.61
Mobilization cost per person per day from the Sierra to informal sector in the Coast 2/	0.67	0.73	0.76	0.93	1.19
Mobilization cost per person per day from sierra to banana farms in OUTSIDE BANANA AREAS (closer to the Sierra) 2/	0.64	0.70	0.72	0.89	1.14
B. Net wage per day in relevant market discounting mobilization cost					
B.1. SIERRA SELECTED AREA					
a. Agriculture	3.57	3.86	4.40	4.12	3.72
b. Informal	3.96	4.75	6.40	5.37	4.92
B.2. COAST					
a. Banana	3.99	4.75	5.64	5.21	4.50
b. Sugar/Palm oil	3.06	3.77	4.82	5.04	3.38
c. Other crops 1/	2.32	2.88	4.04	4.92	2.92
d. Informal sector	2.86	3.50	4.94	4.72	3.42
C. Opportunity cost of labor agriculture in the Sierra 3/	3.99	4.75	6.40	5.37	4.92
D. Distortion coefficient 4/	1.12	1.23	1.45	1.30	1.32

Notes:

1/ Other crops = (rice, hard corn, soybeans and tropical fruits)
2/ Includes room, food and transport
3/ Opportunity cost of labor = highest net wage in relevant market
4/ Distortion coefficient = Opportunity cost in relevant market / private wage in the Sierra

Source: Records of production cost by areas (1990-1994), Ministry of Agriculture, National Institute of Statistics and Census (1991-1994); mobilization costs: estimates for food, room and transport for 1994 and adjusted 1990-1993 by inflation rates of food and beverages, housing and miscellaneous.

Table 22. Opportunity cost for off-farm family labor

Item	1990	1991	1992	1993	1994
	Dollars per day				
A. NON-AGRICULTURAL INFORMAL					
A.1. Gross wage per day in relevant market					
a. Urban informal in the Sierra	3.88	4.64	6.24	5.24	4.80
b. Urban informal in the Coast	3.44	4.12	5.56	5.52	4.28
c. Mobilization cost from the Sierra to the Coast	0.68	0.74	0.78	0.95	1.21
A.2. Net wage per day in relevant market discounting mobilization cost					
a. Urban informal in the Sierra	3.88	4.64	6.24	5.24	4.80
b. Urban informal in the Coast	2.76	3.38	4.78	4.57	3.07
A.3. Opportunity cost of labor 1/	3.88	4.64	6.24	5.24	4.80
A.4. Distortion coefficient 2/	1.00	1.00	1.00	1.00	1.00
B. AGRICULTURAL WAGE - FORMAL					
B.1. Gross wage per day in relevant market					
a. Agricultural wage in the Sierra	3.57	3.86	4.40	4.12	3.72
b. Agricultural wage banana	4.63	5.45	6.36	6.10	5.64
c. Agricultural wage sugar/palm oil	3.70	4.47	5.54	5.92	4.52
d. Agricultural wage other crops (Coast)	2.96	3.58	4.76	5.80	4.06
e. Mobilization cost from the Sierra to the Coast	0.64	0.70	0.72	0.89	1.14
B.2. Net wage per day in relevant market discounting mobilization cost					
a. Agricultural wage in the Sierra	3.57	3.86	4.40	4.12	3.72
b. Agricultural wage banana	3.99	4.75	5.64	5.21	4.50
c. Agricultural wage sugar/palm oil	3.06	3.77	4.82	5.04	3.38
d. Agricultural wage other crops (Coast)	2.32	2.88	4.04	4.92	2.92
B.3. Opportunity cost of labor 1/	3.99	4.75	5.64	5.21	4.50
B.4. Distortion coefficient 2/	1.12	1.23	1.28	1.27	1.21

Notes:

1/ Opportunity cost = highest net wage in relevant market
2/ Distortion coefficient = opportunity cost relevant market / private wage

Source: National Institute of Statistics and Census (1991-1994); mobilization costs: estimates for food, room and transport for 1994 and adjusted 1990-1993 by inflation rates of food and beverages, housing and miscellaneous; table 21.

CHAPTER 6

RESULTS OF THE SALCEDO RESEARCH

This chapter presents the results of the Salcedo research about the following issues: a) land use and income patterns of households, b) tradeability and non tradeability of agricultural input and output value, b) total and partial impacts of selected policy and market distortions on agricultural output and variable costs, off-farm income and net household income.

A. Income and land use patterns by farm size category

For analysis purposes, farm households in the area of Salcedo were divided into five farm size categories. The farm size categories were divided based on a low variance of farm sizes and homogeneity of cropping patterns. Eighty six percent of the cases in the survey reported farm sizes between 0 and 5 hectares and 14 percent of the cases reported farm sizes more than 5 hectares, therefore the distribution of the data was heavily skewed towards the smallest farm sizes.

Because the purpose of the present research was to analyze differential effects of policy and market distortions among the smallest sized properties, this group was divided in two categories: 0-1 and 1-5 hectares. Even though only 14 percent of the cases reporter larger farm sizes, this group was divided in three group categories due to wide differences in farm sizes within this 14 percent (Table 23).

Table 23. Distribution of farm sizes, Salcedo Ecuador (1991)

Farm size category (has)	Number of cases	% households in sample of 592 cases
0-1 has	302	51%
1-5 has	207	35%
5-20 has	53	9%
20-50 has	12	2%
> 50 has	18	3%
Total	592	100%

Source: Survey, IDEA/Ecuador, 1991

A.1. Household income level

The level of household income varied directly with farm size rising from an average of US$571 per year for farms of 0-1 hectares to US$12,084 per year for farms of more than 50 hectares. Net cropping income per hectare showed no systematic relationship to farm size because of different cropping combinations as well as different profit rates among crops. The lowest average net cropping income per hectare belonged to farms of 5-20 and > 50 hectares while the highest average net cropping income per hectare corresponded to farms of 20-50 (Table 24).

Table 24. Average net household income in US dollars

Farm size category (has)	0-1	1-5	5-20	20-50	>50
Household income	571	897	1,535	5,471	12,084
1. Off-farm income	424	354	542	927	1,211
2. Cropping income	148	544	993	4,544	10,873
a. Own consumption	23	36	60	125	312
b. Cash sales	125	507	933	4,420	10,561
Average cropping size (has)	0.17	0.74	2.31	2.56	16.98
Average cropping income per ha	870	735	430	1,775	640

Source: Survey, IDEA/Ecuador, 1991

A.2. Household income shares

The off-farm income share in net household income showed a share negative relationship to farm size, ranging from 74 percent in farms of 0-1 hectares to 10 percent in farms of more than 50 hectares (Table 25). For the first three farm size categories, the highest share in off-farm income corresponded to formal non-agricultural and agricultural wage. The importance of agricultural wages in off-farm income could be related with the relative mobility of labor within the rural sector, coming from small farms toward larger farms, especially in peak agricultural seasons that occur with seed planting and harvest. In all cases, cash cropping sales are significant and relatively higher than own-consumption income (Table 26).

In cropping income, potatoes were one of the main crops for all groups of farms, ranging from 34 percent of cropping income in farms of 20-50 hectares to 79 percent on farms of 5-20 hectares. Wheat, hard corn and barley were relatively an important component of cropping income for all farm size categories, ranging from 12 percent on farms of 20-50 hectares to 20

percent in farms of 1-5 hectares. Non-citrus fruits were relatively more important for farms of 20-50 hectares and more than 50 hectares than for the rest of farm size categories. Onions were produced only on farms of 0-1 hectares (7.3 percent of cropping income) and in farms of 20-50 hectares (32 percent of cropping income). Crops for animal consumption (hay, alfalfa and straw), soft corn, beans and lentils, oat and indigenous roots and grains had a very insignificant share in cropping income for all farm categories (Table 25).

Table 25. Income shares by source and farm size category

Item	Farm size categories (has)				
	0-1	1-5	5-20	20-50	>50
	Percentage				
A. Off-farm income (% total household income	74%	39%	35%	17%	10%
Sources: (% of total off-farm income)					
1. Non-agricultural informal	4%	2%	0%	0%	8%
2. Non-agricultural formal	73%	81%	54%	31%	0%
3. Agricultural wage formal	22%	14%	41%	10%	1%
4. Other off-farm income	1%	3%	5%	59%	92%
B. Cropping income (% of total household income)	26%	61%	65%	83%	90%
Sources: (% of total cropping income)					
1. For animal consumption	1.8%	1.5%	0.7%	0.0%	0.0%
2. Soft corn	0.0%	0.0%	0.1%	0.0%	0.0%
3. Beans/lentils	0.7%	1.6%	2.0%	1.0%	3.2%
4. Oats	0.2%	0.0%	0.0%	0.0%	0.0%
5. Potatoes	74.3%	74.3%	78.6%	33.9%	38.6%
6. Indig.roots and grains 1/	0.0%	0.1%	0.1%	0.0%	0.1%
7. Non citrus fruits	2.1%	2.5%	0.0%	21.3%	40.5%
8. Onions	7.3%	0.0%	0.0%	32.0%	0.0%
9. Others	0.0%	0.0%	0.0%	0.0%	0.0%
10.Wheat, Barley, Hard corn	13.6%	20.0%	18.5%	11.8%	17.6%

Notes:

1/ Indigenous roots and grains

Source: Survey, IDEA/Ecuador, 1991

Table 26. Cropping cash sales and own consumption shares

Farm size categories (has)	0-1		1-5		5-20		20-50		>50	
Cash / own consumption shares	SA 1/	CO 2/	SA 1/	CO 2/	SA 1/	CO 2/	SA 1/	CO 2/	SA 1/	CO 2/
1. Animal consump. a/	70%	30%	54%	46%	3%	97%	0%	0%	0%	0%
2. Soft corn	0%	0%	0%	0%	97%	3%	0%	0%	0%	0%
3. Beans, lentils	64%	36%	79%	21%	92%	8%	100%	0%	98%	2%
4. Oat	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
5. Potatoes	88%	12%	93%	7%	97%	3%	99%	1%	96%	4%
6. Roots and grains	0%	0%	92%	8%	95%	5%	0%	0%	100%	0%
7. Non citrus fruits	0%	100%	100%	0%	0%	0%	100%	0%	100%	0%
8. Onion	100%	0%	0%	0%	0%	0%	100%	0%	0%	0%
9. Others	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
10.Wheat/Barl./H.corn	63%	37%	79%	21%	90%	10%	99%	1%	97%	3%
AVERAGE	77%	23%	86%	14%	95%	5%	98%	2%	97%	3%

Notes:

a/ Crops for animal consumption includes hay, alfalfa and straw
1/ SA = Cropping cash sales
2/ CO = Cropping own consumption

Source: Survey, IDEA/Ecuador, 1991

A.3. Return over variable costs

The nominal return over variable costs is a ratio between net income and variable costs (Gittinger, 1972). The meaning of this ratio can be expressed as the percent an entrepreneur has left after paying all variable costs.

The return over variable costs was the highest for onions and non-citrus fruits with an average of 35.4 and 25.5 percent, respectively. Potatoes, beans and lentils and animal consumption had average returns ranging between 6.8 and 5.7 percent. The lowest return ranged from 1.9 percent to -2.2 percent and corresponded to oats, indigenous roots and grains and the group of tradables (wheat, barley, hard corn and soft corn) (Table 27).

The larger the farm size the larger the return on variable costs going from 6 percent on average for farms of 0-1 hectares to 23 and 13 percent on average for farms of 20-50 and more

than 50 hectares, respectively. The highest returns for these farm sizes were due to cropping of non-citrus fruits and onions (Table 27).

Table 27. Nominal private return over variable costs a/

	Farm size categories (has)					
	0-1	1-5	5-20	20-50	>50	Ave rage
Crop group category						
1. Animal consumption	55%	53%	61%	n/a	n/a	55%
2. Soft corn	n/a	n/a	47%	n/a	n/a	47%
3. Beans/lentils	58%	54%	57%	55%	55%	55%
4. Oat	51%	n/a	n/a	n/a	n/a	51%
5. Potatoes	55%	55%	59%	63%	54%	56%
6. Indig.roots and grains	n/a	49%	55%	n/a	61%	51%
7. Non citrus fruits	70%	76%	n/a	85%	72%	75%
8. Onions	83%	n/a	n/a	87%	n/a	84%
9. Others	n/a	n/a	n/a	n/a	n/a	n/a
10.Wheat/Barley/Hard corn	46%	45%	52%	54%	65%	48%
AVERAGE	55%	53%	57%	72%	62%	-

Notes:

a/ Nominal return on variable costs = (((Gross income / variable costs))-1)

Source: Survey, IDEA/Ecuador, 1991

A.4. Reporting different types of income

Table 28 shows that the proportion of households reporting some off-farm income decreases with larger farm sizes, while the proportion reporting some cropping income is high and relatively constant across farm sizes. The role of own consumption falls with larger farm sizes, while cash sales show the opposite trend.

Potatoes, wheat, barley and hard corn were the four most important crops for all farm size categories with more than 50 percent of the cases reporting the cropping of these products. Cropping of beans and lentils were reported in all farm groups going from 5 percent of the cases

for farms of 0-1 hectares to 31 percent of the cases for farms of more than 50 hectares (Table 38). Production of soft corn was reported only in farms of 5-20 hectares (34 percent of the cases). Oats were reported only in farms of 0-1 hectares with 16 percent of the cases. Indigenous roots and grains were reported in all farm groups except farms of 0-1 hectares and 20-50 hectares. Non citrus fruits were relatively more important for farms of 20-50 and more than 50 hectares than in the rest of farm sizes. Onions were relatively more important for farms of 20-50 hectares than the rest groups (Table 28).

Table 28. Proportion of households reporting different types of income, by farm size - Percent of total cases

Farm size categories (has)	0-1	1-5	5-20	20-50	>50
A. Off-farm income	95%	75%	60%	77%	46%
A.1. Non-agric. informal	2%	2%	0%	0%	17%
A.2. Non-agric. formal	55%	52%	33%	30%	0%
A.3. Agric.wage formal	26%	27%	37%	20%	17%
A.4. Other	18%	19%	30%	50%	67%
B. Cropping income	92%	98%	96%	89%	100%
B.1. Animal consumption	8%	5%	7%	0%	0%
B.2. Soft corn	0%	0%	34%	0%	0%
B.3. Beans/lentils	5%	17%	25%	25%	31%
B.4. Oat	16%	0%	0%	0%	0%
B.5. Potatoes	49%	54%	73%	63%	69%
B.6. Indig.roots/grains 1/	0%	5%	23%	0%	8%
B.7. Non citrus fruits	2%	1%	0%	12%	38%
B.8. Onion	1%	0%	0%	12%	0%
B.9. Others	1%	0%	0%	0%	0%
B.10.Wheat/Barl./H. corn	50%	49%	48%	49%	62%
B.a. Own consumption	96%	98%	98%	56%	54%
B.b. Cash sales	73%	87%	96%	100%	100%

Notes:

1/ Indigenous roots and grains

Source: Survey, IDEA/Ecuador, 1991

A.5. Adding gross livestock sales

Gross livestock sales were added to gross household income to analyze the relative importance of livestock in gross household income. The participation of livestock sales averaged 7 percent in farms of 0-1, 1-5 and >50 hectares. In farms of 5-20 and 20-50 hectares, the participation of gross livestock sales was relatively higher (12 and 11 percent, respectively) (Table 29).

Table 29. Gross farm income shares

Farm size categories (has)	Total farm income	Total off-farm income	Gross live-stock sales
0-1	18%	75%	7%
1-5	55%	41%	5%
5-20	73%	15%	12%
20-50	64%	26%	11%
> 50	89%	4%	7%

Source: Survey, IDEA/Ecuador, 1991

A.6. Average size of farms and land use

The larger the farm size the lower the percentage of cultivated land. It dropped from 21 percent in farms of 0-1 hectares to 5 and 1 percent in farms of 20-50 and >50 hectares, respectively. In all farm size categories, more than 75% of total area was cultivated for wheat, barley, hard corn, beans, lentils and potatoes. In farms of 0-1, 1-5 and 20-50 hectares, the share of these crops in cultivated area was more than 90% and the rest 10% was cultivated by animal feeding crops in the first two lower farm size categories and non citrus fruits and onions in farms of 20-50 hectares. In farms of 5-20 and more than 50 hectares, the share of indigenous roots and grains in cultivated area was 13.8 and 23.5%, respectively (Tables 30 and 31).

Table 30. Land use by farm size

	Farm size categories (has)				
	0-1	1-5	5-20	20-50	>50
Cultivated land (has)	0.2	0.7	2.3	2.6	17.0
% of total area	21%	16%	13%	5%	1%
Non cultivated land (has)	0.7	3.9	15.8	45.2	1244.9
% of total area	89%	84%	87%	95%	99%
Average farm size (has)	0.8	4.6	18.1	47.7	1261.8

Source: Survey, IDEA/Ecuador, 1991

Table 31. Land use by farm size and crop group category

	Farm size categories (has)				
	0-1	1-5	5-20	20-50	>50
Crop group category					
1. Animal consumption	6.97%	2.89%	2.54%	0.00%	0.00%
2. Soft corn	0.00%	0.00%	4.25%	0.00%	0.00%
3. Beans/lentils	5.48%	12.44%	20.52%	11.11%	19.66%
4. Oat	0.08%	0.00%	0.00%	0.00%	0.00%
5. Potatoes	18.41%	18.24%	29.07%	18.83%	8.86%
6. Indig.roots and grains	0.01%	2.76%	13.76%	0.00%	23.49%
7. Non citrus fruits	0.05%	0.10%	0.00%	5.35%	0.56%
8. Onion	0.55%	0.00%	0.00%	4.17%	0.00%
9. Others	0.00%	0.00%	0.00%	0.00%	0.00%
10.Wheat/Barley/Hard corn	68.46%	63.57%	29.86%	60.54%	47.44%

Source: Survey, IDEA/Ecuador, 1991

B. Tradable and non tradable components in the cost and output structure of farm production

B.1. Cost structure

There was a slight difference among farm sizes in the proportion of tradable and non-tradable components in the cost structure of the crops produced. The tradable component of imported inputs was defined as the C&F value of fertilizer, agrochemicals and machinery. The non-tradable components of imported inputs corresponded to tariffs, duties, fees, port and custom expenses, marketing and profit margin of importers. Transport was defined as a combination of tradable and non tradable components of cost. The non tradable inputs in cost structure were basically the labor and non tradable seed.

The tradable component between 1990-1994 was between 51 and 57 percent of total variable cost. The highest proportion corresponded to farms of 0-1 and 5-20 hectares, followed by farms of 1-5 and >50 hectares. The lowest share of tradable component was 51 percent for farms of 20-50 hectares. These differences were mainly due to cropping patterns where some crops have more tradable inputs in their cost structure than others (Table 32).

Another 13 percent on average accounted by non-tradable component of input imports (tariffs, duties and other fees and marketing and profit margins of input importers). Seven percent of total cost on average corresponded to transport costs (Table 32).

Non tradable components such as labor and non tradable seed shared total cost between 22 percent for farms of 0-1 hectares to 30 percent for farms of 20-50 hectares. The relatively high proportion of non tradable inputs in the larger farm sizes was due to relatively lower levels of use of tradable inputs such as fertilizers, agrochemicals and machinery than the other farm size

categories (Table 32).

The proportion of the tradable component in the cost structure varied greatly across crops. Those which have more tradable components between 1990-1994 were in descending order: potatoes, indigenous roots and grains, onions, fruits and non-citrus, soft corn, oat, cereals (wheat, barley and hard corn), forage crops (straw, hay and pasture) and beans and lentils. The range of share of the tradable component in total cost was from 17 to 64 percent of total cost. The crops with less tradable inputs were crops for animal consumption and beans and lentils. The crops with the highest tradable inputs were potatoes and indigenous roots and grains (Table 33).

B.2. Agricultural output (Table 32)

Agricultural output was classified into three categories: a) internationally tradable output, b) regionally tradable output and c) non tradable output.

The share of the first category in total agricultural output value went from around 14 percent for farms of 0-1 and 20-50 hectares to 22 percent for farms of 1-5 hectares. The share of regional tradable output was significantly higher for the farms of 0-1, 1-5 and 5-20 hectares (more than 70 percent). For the last two farm size categories, the respective percentage was between 37 and 42 percent.

The share of non tradable output was significantly lower for the first three small farm size categories than for the larger farms, where the average share was 49 and 41 percent, respectively. This was due to the relatively high importance of non tradable crops such as onions and non-citrus fruits in the larger farms.

Table 32. Share of tradable and non tradable components for agricultural input and output, average 1990-1994

Farm size category (has)	0-1	1-5	5-20	20-50	>50
1. TRADABLE INPUTS 1/ (% of total input cost)					
1.1. Tradable component					
a. C&F	57%	54%	57%	51%	55%
1.2. Non tradable component					
a. Tariffs, duties and fees	5%	5%	5%	5%	5%
b. Financial cost	2%	2%	2%	2%	2%
c. Marketing and profit margins	6%	6%	6%	6%	7%
2. TRADABLE / NON TRADABLE INPUT (% total input cost)					
2.1. Transport 2/	7%	7%	7%	7%	6%
3. NON TRADABLE INPUT (% of total input cost)					
3.1. Labor	22%	25%	22%	29%	23%
3.2. Seed	1%	1%	1%	1%	1%
4. INTERNATIONALLY TRADABLE OUTPUT (% total output)	15%	22%	20%	14%	17%
5. REGIONALLY TRADABLE OUTPUT (% total output)	74%	73%	77%	37%	42%
6. NON TRADABLE OUTPUT (% total output)	10%	5%	3%	49%	41%

Notes:
1/ Tradable input = fertilizer, herbicides, insecticides, fungicides, machinery, tradable seed and machinery
2/ Transport cost = transport of tradable inputs to importer warehouses + transport of output to wholesale market

Source: Survey, IDEA/Ecuador, 1991

Table 33. Share of tradable and non tradable components in input cost by crop group category

	Crop group category 1/								
	1	2	3	4	5	6	7	8	10
1. TRADABLE INPUTS 2/									
1.1. Tradable component									
a. C&F	20%	43%	17%	38%	64%	50%	42%	46%	30%
1.2. Non tradable component									
a. Tariffs, duties and fees	2%	4%	2%	4%	6%	5%	4%	5%	3%
b. Financial cost	1%	2%	1%	1%	2%	2%	2%	2%	1%
c. Marketing and profit margins	4%	5%	2%	5%	8%	7%	5%	7%	4%
2. TRADABLE / NON TRADABLE INPUT									
2.1. Transport	7%	6%	6%	6%	7%	6%	6%	6%	6%
3. NON TRADABLE INPUT									
3.1. Labor	43%	35%	66%	40%	12%	28%	39%	33%	56%
3.2. Seed	23%	5%	6%	6%	1%	2%	2%	3%	0%

Notes:

1/ Crop group categories: 1 = for animal consumption, 2 = soft corn, 3 = beans and lentils, 4 = oats, 5 = potatoes, 6 = indigenous roots and grains, 7 = non citrus fruits, 8 = onions and 10 = wheat, barley and hard corn

2/ tradable inputs = fertilizer, herbicides, insecticides, fungicides and machinery

Source: Survey IDEA/Ecuador, 1991

C. Partial and combined effects of policies on net agricultural income

C.1. Partial effects of policy and market distortions on total variable cost

This section uses distortion rates which were defined as the ratio between social and private value minus 1. The distortion rates took into account separated values of policy and market distortions. The results can be summarized as follows (Table 34):

a) Exchange rate: The separated effect of the exchange rate indicates there was undervaluation during 1990 and an increasing overvaluation of the exchange rate from 1991 to 1994. The social exchange rate was 5.4 percent lower than the private exchange rate in 1990 and 32 percent higher than the respective private value in 1994.

This overvaluation implies that the tradable input cost was cheaper than what it would have been if there were no distortions in the exchange rate market. On the other hand, if the output is tradable, the overvaluation effect is the opposite and in general more than offsets the protective effect from the input side, especially if the share of tradable inputs in total cost is relatively low.

In the data set, only wheat, barley, hard corn, potatoes and soft corn are considered tradable. The first three were internationally tradable and the last two were regionally tradable. The rest of the crops were non-tradables because either they are bulky or perishable products. Therefore, one expects an overall protective effect of overvaluation if non-tradable outputs represent a large proportion of total output and if the share of tradable inputs is relatively higher than non tradable inputs within the cost structure of these crops.

On the other hand, overvaluation might reduce net agricultural income if tradable outputs are more important than non tradable and if there was a low share of tradable inputs in total cost.

b) Tariffs: Other duties and import fees had a negative impact in making private prices of imported inputs higher than they would have been if free trade had existed. The effect of this component decreased from 1990-1991. Social value of tariffs, duties and fees was 56.7 percent lower than the current value in 1990 and 39.3 percent lower in 1994. The social value or reference point represents a situation of free trade.

c) Interest rate: The interest rate is part of the non-tradable component of imported inputs, since importers charged financial cost to their inventory. In 1990, the social value was 25 percent lower than the actual cost paid by importers and 13 percent lower in 1994. The social value represents a more free domestic and international capital movement in the market.

d) Transport: The social value of transport cost represents a situation of no distortions of exchange rate, tariffs, duties, fees, marketing and profit margins that affects transport components exist. In 1990, the respective social value was 20 percent lower than the private value and went to 13 percent lower in 1994.

e) Marketing margins and profit of input importers: The social value or scenario of comparison represents a situation of more competitiveness in the distribution of imported inputs. The distortion coefficient can be positive when enough competitiveness exists in the market or negative when there is some market power in the domestic distribution of tradable inputs. The social value was 29.1 percent lower than the private or current value in 1990 and 13.1 percent higher in 1994. The elimination of legal barriers to imported agricultural inputs in 1993 encouraged new entrance to the market.

f) Labor: The labor distortions in the market of the rural sector in Ecuador during 1990 and 1994 were related to a lack of mobility of the labor force between the mountain region (the Sierra) and the Coast due to cultural, social and geographic differences and lack of information of agricultural job opportunities. The discrepancy increased sharply so that by 1994, the opportunity cost or social value of labor was 32 percent higher than its private cost.

Table 34. Partial effects of policy and market distortions on farm input cost a/

Farm size category (has)	1990	1991	1992	1993	1994
EFFECT BY:					
1. Exchange rate	-5.4%	0.3%	4.2%	21.8%	32.0%
2. Tariffs, duties and fees	-56.7%	-56.6%	-56.5%	-44.4%	-39.3%
3. Interest rate	-25.0%	-22.0%	-16.8%	4.0%	-13.0%
4. Transport	-20.0%	-28.0%	-3.0%	-5.0%	-16.0%
5. Marketing and profit margins	-29.1%	-26.2%	-5.4%	-3.3%	13.1%
6. Labor market	12.0%	23.0%	45.0%	30.0%	32.0%

a/ Distortion rate = (social value / private value)-1; derived following methodology of table A.6 in appendix A

Source: Survey IDEA/Ecuador, 1991

C.2. Combined effects of policy and market distortions on agricultural variable cost

The total effect was defined as the ratio between social and private value minus one and was divided into the partial contribution of six policy and market distortions: exchange rate, trade and interest rate policy, transport, marketing and importer profit margins and labor market distortions.

A negative rate means that farmers were not protected by current distortions affecting variable cost since they paid a private value higher than what they would have paid without distortions. A positive means the opposite. Differences across farm size categories were small but substantial across years (Table 35). In 1990, all policy and market distortions had a negative impact in total effect of variable cost but labor. In 1991, only exchange rate and labor had a positive effect but they were more than offset by the rest of partial effects. From 1992 to 1994,

the positive partial effects of exchange rate and labor on variable costs were stronger and continuously increasing, and either were added or offset by the relatively small effects of trade and interest rate policy and marketing and profit margin distortions of input importers.

C.3. Combined effects of policy and market distortions on value of agricultural output

The total effect was defined as the ratio between social and private output values minus one. The total effect was divided into the partial contribution of six policy and market distortions: exchange rate, trade and interest rate policy, transport and marketing and importer profit margins and the "residual effects" in domestic output market prices.

A negative distortion rate means that the farmers were protected by current distortions affecting agricultural output since they received for their output a higher private value than what they would have received without distortions. A positive distortion rate means the opposite.

The "residual effects" are the ones which make the border price or opportunity cost of tradable output different from its current private value, but which are not accounted for by adjustment of the five distortions described in table 36.

A large part of these "residual effects" came from incomplete transmission of international price changes to domestic prices. This incomplete transmission could be due to a combination of two factors: a) existence of some quantitative trade restrictions during the period of analysis and b) market rigidities and imperfections so that domestic markets were unable to fully adjust to external price changes.

During 1990-1994, explicit quantitative trade restrictions were removed, but there were other implicit trade restrictions such as the import permissions regime that remained in place and gave the government the power to control imports through a system of distributing

Table 35. Net combined effects of policy and market distortions at the agricultural input level a/

	Farm size categories (has)				
	0-1	1-5	5-20	20-50	>50
1. Total effect - 1990	**-7.4%**	**-6.5%**	**-7.2%**	**-5.9%**	**-7.4%**
a. Exchange rate	-3.1%	-2.9%	-3.0%	-2.7%	-2.9%
b. Tariffs, duties and fees	-3.2%	-3.1%	-3.2%	-2.8%	-3.0%
c. Interest rate	-0.4%	-0.4%	-0.4%	-0.4%	-0.4%
d. Transport	-1.3%	-1.3%	-1.3%	-1.3%	-1.3%
e. Marketing and profit margins	-2.0%	-1.8%	-2.0%	-2.1%	-2.5%
f. Labor market	2.6%	3.0%	2.7%	3.5%	2.8%
2. Total effect - 1991	**-2.1%**	**-1.0%**	**-1.8%**	**-0.1%**	**-2.0%**
a. Exchange rate	0.2%	0.2%	0.2%	0.2%	0.2%
b. Tariffs, duties and fees	-3.2%	-3.1%	-3.2%	-2.8%	-3.1%
c. Interest rate	-0.4%	-0.3%	-0.4%	-0.3%	-0.4%
d. Transport	-1.8%	-1.8%	-1.8%	-1.8%	-1.8%
e. Marketing and profit margins	-1.8%	-1.7%	-1.7%	-1.9%	-2.2%
f. Labor market	4.9%	5.8%	5.1%	6.6%	5.4%
3. Total effect - 1992	**8.3%**	**10.0%**	**8.8%**	**11.4%**	**8.7%**
a. Exchange rate	2.4%	2.3%	2.4%	2.2%	2.3%
b. Tariffs, duties and fees	-3.1%	-3.0%	-3.1%	-2.7%	-2.9%
c. Interest rate	-0.3%	-0.3%	-0.3%	-0.3%	-0.3%
d. Transport	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%
e. Marketing and profit margins	-0.1%	-0.1%	-0.1%	-0.5%	-0.7%
f. Labor market	9.6%	11.3%	10.1%	13.0%	10.5%
4. Total effect - 1993	**16.3%**	**17.0%**	**16.6%**	**17.2%**	**16.2%**
a. Exchange rate	12.5%	11.9%	12.4%	11.1%	12.0%
b. Tariffs, duties and fees	-2.2%	-2.1%	-2.1%	-1.9%	-2.1%
c. Interest rate	0.1%	0.1%	0.1%	0.1%	0.1%
d. Transport	-0.3%	-0.3%	-0.3%	-0.3%	-0.3%
e. Marketing and profit margins	-0.1%	-0.1%	-0.1%	-0.3%	-0.5%
f. Labor market	6.4%	7.5%	6.7%	8.7%	7.0%
5. Total effect - 1994	**22.9%**	**23.3%**	**23.1%**	**23.3%**	**22.7%**
a. Exchange rate	18.9%	17.9%	18.7%	16.8%	18.2%
b. Tariffs, duties and fees	-2.2%	-2.1%	-2.2%	-2.0%	-2.1%
c. Interest rate	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%
d. Transport	-1.1%	-1.1%	-1.1%	-1.0%	-1.1%
e. Marketing and profit margins	0.7%	0.7%	0.7%	0.5%	0.5%
f. Labor market	6.8%	8.0%	7.2%	9.2%	7.5%

Notes:
a/ Distortion rate = (social value / private value)-1; derived from table A.7 in appendix A

Source: Survey IDEA/Ecuador, 1991

permissions to importers based on an arbitrary assessment of domestic demand and supply. The effects of this trade regime are similar to those under an import quota system (See figure C.1 in appendix C). Structural rigidities of agricultural markets are not easily or immediately influenced by removal of either explicit or implicit policy distortions. Therefore, a more careful analysis of this incomplete of transmission of international prices into domestic markets is needed.

There were slight differences in combined effects across farm size categories. The total effects were slightly lower for the larger farms given the relatively higher participation of non tradable output (onion and non-citrus fruits) as compared to the smaller farm sizes (Table 36).

The total effect was negative in 1990, turning slightly positive in 1991 and moving up steadily through 1994. This implies that agricultural output in this farm household sample received negative protection during most of the period of analysis. Although the total effect went up every year, there were differences in the trend of the partial effects. The total effect for all farm sizes was mainly driven by the strong negative protection effects of the exchange rate distortion for all years.

The partial effect of international trade policy distortions (tariffs, duties and fees) stayed roughly stable between protection ratios of 0.9 and 2 percent. Interest rate and transport component distortions had a minimum protection effect on gross agricultural output value for all years and farm sizes. It went from 0.1 to 0.6 percent for interest rate and from 0.1 to 0.2 percent for transport cost. The effect of distortions of marketing and profit margins of importers had the same trend and direction as total effect and exchange rate although its impact was minimal (Table 36).

The "residual effects" related with the varying transmission of international prices and the market distortions for domestic output exhibit considerable fluctuations across years.

In 1991, 1992 and 1994 the weighted variation of international and regional output prices

was increasingly positive going from 12.45 to 53.20 percent. Therefore, one could expect a higher social value or opportunity cost of tradable output, and if there was complete transmission of international prices, a higher domestic value.

During 1991 and 1992, social agricultural output value would have been higher than private value if the distortion due to incomplete transmission of international prices were removed. Also, it is probable that the slow transmission of international prices to domestic markets along with the effect of "other inefficiencies" in domestic distribution made current agricultural output lower than it would have been otherwise (Table 36).

In 1994, social agricultural output value would have been lower than private value if the distortion due to variation of international prices were removed. It is also likely that the strong effect from the transmission of international prices to the domestic markets and the effect of "other inefficiencies" in domestic distribution made current agricultural output higher than it would have been otherwise. The effect of "other inefficiencies" was opposite from the effects observed in 1991 and 1992 (Table 36).

In 1990 and 1993 the weighted variation of international and regional output prices was negative (-5.9 and -22.4 percent, respectively). Therefore, one could expect a lower social value or opportunity cost of tradable output, and if total transmission of international prices, a lower domestic value.

During 1990 and 1993, social agricultural output would have been lower than private value taking out the distortion due to variation of international prices. It means that both, a likely mild transmission of international prices to the domestic market and the effect of "other inefficiencies" in domestic distribution, made current agricultural output higher than it would have been otherwise (Table 36).

Table 36. Combined effects of policy and market distortions at agricultural output level a/

Farm size (has)	0-1	1-5	5-20	20-50	>50
1. Total effect - 1990	**-16.2%**	**-15.8%**	**-17.3%**	**-8.9%**	**-10.7%**
a. Exchange rate	-4.2%	-4.6%	-4.6%	-2.4%	-2.8%
b. Tariffs, duties and fees	-1.0%	-1.6%	-1.3%	-0.9%	-1.1%
c. Interest rate	-0.4%	-0.6%	-0.4%	-0.3%	-0.3%
d. Transport	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%
e. Marketing and profit margins	-0.3%	-0.5%	-0.4%	-0.3%	-0.4%
f. Residual effects 1/	-10.2%	-8.3%	-10.4%	-4.9%	-6.1%
1.1. Total effect intern.trad.output	-8.7%	-5.6%	-9.4%	-11.2%	-13.4%
1.2. Total effect region.trad.output	-20.0%	-20.0%	-20.0%	-20.0%	-20.0%
1.3. Total effect non trad.output	0.0%	0.0%	0.0%	0.0%	0.0%
2. Total effect - 1991	**2.1%**	**1.9%**	**2.5%**	**1.0%**	**1.0%**
a. Exchange rate	0.3%	0.3%	0.3%	0.1%	0.2%
b. Tariffs, duties and fees	-1.2%	-1.8%	-1.6%	-1.1%	-1.3%
c. Interest rate	-0.4%	-0.6%	-0.5%	-0.3%	-0.4%
d. Transport	-0.1%	-0.2%	-0.2%	-0.1%	-0.2%
e. Marketing and profit margins	-0.3%	-0.5%	-0.4%	-0.3%	-0.3%
f. Residual effects 1/	3.9%	4.7%	4.9%	2.7%	3.0%
2.1. Total effect intern.trad.output	3.9%	2.0%	4.7%	2.0%	1.0%
2.2. Total effect region.trad.output	2.0%	2.0%	2.0%	2.0%	2.0%
2.3. Total effect non trad.output	0.0%	0.0%	0.0%	0.0%	0.0%
3. Total effect - 1992	**3.1%**	**2.0%**	**3.2%**	**1.4%**	**1.8%**
a. Exchange rate	3.7%	3.9%	4.0%	2.1%	2.4%
b. Tariffs, duties and fees	-1.1%	-1.5%	-1.4%	-1.0%	-1.2%
c. Interest rate	-0.3%	-0.4%	-0.3%	-0.2%	-0.3%
d. Transport	0.0%	-0.1%	-0.1%	0.0%	0.0%
e. Marketing and profit margins	-0.2%	-0.2%	-0.2%	-0.1%	-0.2%
f. Residual effects 1/	0.9%	0.4%	1.2%	0.7%	1.0%
3.1. Total effect intern.trad.output	-4.2%	-7.4%	-3.2%	-3.2%	-2.0%
3.2. Total effect region.trad.output	5.0%	5.0%	5.0%	5.0%	5.0%
3.3. Total effect non trad.output	0.0%	0.0%	0.0%	0.0%	0.0%
4. Total effect - 1993	**2.9%**	**3.3%**	**3.2%**	**1.8%**	**2.2%**
a. Exchange rate	16.6%	17.5%	17.9%	9.4%	11.0%
b. Tariffs, duties and fees	-0.9%	-1.5%	-1.2%	-0.9%	-1.0%
c. Interest rate	-0.2%	-0.3%	-0.2%	-0.2%	-0.2%
d. Transport	-0.1%	-0.1%	-0.1%	0.0%	0.0%
e. Marketing and profit margins	0.1%	0.1%	0.1%	0.0%	0.0%
f. Residual effects 1/	-12.5%	-12.4%	-13.3%	-6.5%	-7.6%
4.1. Total effect intern.trad.output	4.5%	5.2%	4.3%	5.1%	5.4%
4.2. Total effect region.trad.output	3.0%	3.0%	3.0%	3.0%	3.0%
4.3. Total effect non trad.output	0.0%	0.0%	0.0%	0.0%	0.0%
5. Total effect - 1994	**12.2%**	**13.3%**	**14.1%**	**8.1%**	**9.8%**
a. Exchange rate	24.7%	26.2%	27.0%	14.2%	16.7%
b. Tariffs, duties and fees	-1.4%	-2.0%	-1.8%	-1.2%	-1.5%
c. Interest rate	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%
d. Transport	-0.1%	-0.2%	-0.2%	-0.1%	-0.1%
e. Marketing and profit margins	0.5%	0.8%	0.6%	0.4%	0.5%
f. Residual effects 1/	-11.4%	-11.2%	-11.3%	-5.1%	-5.7%
5.1. Total effect intern.trad.output	31.2%	27.3%	32.4%	31.5%	32.4%
5.2. Total effect region.trad.output	10.0%	10.0%	10.0%	10.0%	10.0%
5.3. Total effect non trad.output	0.0%	0.0%	0.0%	0.0%	0.0%

Notes:

a/ Distortion rate = (social value / private value)-1; derived from table A.8 in appendix A

1/ Residual effects that make border price of tradable output being different from domestic price

Source: Survey IDEA/Ecuador, 1991

C.4. Summarized effects in net agricultural income

The total effect was defined in the same way as in the analysis of agricultural variable cost and agricultural output. It was divided into the partial contributions of seven policy and market distortions: exchange rate, trade and interest rate policy, transport, marketing and importer profit margins, labor distortions and the "residual effects" in domestic output and input markets. A negative distortion rate means that the farmers were protected by current distortions affecting net agricultural income since they received for their net output a higher private value than what they would have received without distortions. A positive distortion rate means the opposite.

The "residual effects" are the ones which make the border price or opportunity cost of tradable output and input different from its current private value, but which are not fully accounted for by the six distortions as shown in table 37.

A large part of these "residual effects" came from an incomplete transmission of international price changes for outputs and inputs to domestic prices. This incomplete transmission could be due to the same factors as explained in section C.3. but applied to agricultural tradable outputs as well as agricultural tradable inputs.

There were slight differences in the combined effects across farm size categories. The structure of costs did not show great differences across farm size categories mainly because in this area, there has been a considerable strong smuggling of chemicals and fertilizers coming from Colombia which allowed the small as well as the large farmers easy accessibility to these inputs. In fact, some studies of the International Potatoes Center and the National Institute of Agricultural Research of Ecuador (1992) showed that in some communities in the northern part of Ecuador, there was over-use of chemicals and fertilizers by the small and medium farmers.

In other parts of the country, there is evidence of differences in the use of variable tradable inputs across farm sizes (Ministry of Agriculture, 1994).

As seen in section C.2 and C.3., there were more differences in the output crop combination across farm sizes than in the structure of variable costs (Table 36). Large farms had a relatively higher participation of non tradable output (onion and non-citrus fruits) as compared to the smaller farm sizes (Table 36).

The total net effect in agricultural income was steadily negative between 1990 and 1994 with the exception of 1991. This implies that the combination of effects of agricultural input and output in this sample received a positive protection during most of the period of analysis. The current value of the exchange rate meant a negative protection to net agricultural income. The level of overvaluation through most of the years analyzed affected tradable outputs more than importable inputs. However, this partial effect was more than offset by the combination of the partial effects of labor and the "residual distortions" (Table 37).

Agricultural labor was paid lower than its social value through all the period of analysis and given its significant share in total variable cost for all farm sizes, the effect of the labor distortions in net farm income implied current net cost-savings. The partial distortion rate was between -4.7 and -17.7 percent (Table 37).

The existence of "residual distortions" in the domestic markets for outputs and inputs (incomplete transmission of international prices and market rigidities in domestic distribution) protected the net farm income for all farms sizes in three of the five years of the analysis but the contrary was observed in two of the five years. The "residual distortions" in the domestic output markets were added to the "residual distortions" in the domestic input markets (Table 37).

The partial effect of international trade policy distortions (tariffs, duties and fees), transport and marketing and profit margins of importers stayed roughly stable between a negative

protection ratios of 0.1 and 2.9 percent. Interest rate distortions had a minimum protection effect on net farm income for all years and farm sizes. The partial distortion rate went from -0.3 to -0.7 percent (Table 37).

D. Combined effects of policy and market distortions on off-farm income

The total effect of distortions on off-farm income was defined in the same way as for agricultural output and variable cost. A negative ratio means that farmers were protected by current distortions affecting the labor market since they were paid for off-farm labor a private value higher than the social value. If the ratio is positive it means the opposite.

The only adjustment was done for off-farm agricultural wage income. Therefore the total effect of off-farm income sources was lower than the observed effect on agricultural wage. The differences of effects across farm sizes are due to the different levels in the agricultural wage share in total off-farm income. The farms of 5-20 hectares had the highest effect due to higher agricultural wage as an off-farm income source than the rest of farm sizes. Farms of more than 50 hectares had the lowest effect. From 1990 to 1994, there was an increasing negative protection effect on off-farm income sources across regions and sectors due to lack of labor mobility (Table 38).

Table 37. Combined effects of policy and market distortions on net agricultural income a/

Farm size category (has)	0-1	1-5	5-20	20-50	>50
1. Total effect - 1990	**-32.3%**	**-33.2%**	**-35.1%**	**-13.2%**	**-16.1%**
a. Exchange rate	-6.4%	-7.7%	-7.3%	-2.0%	-2.6%
b. Tariffs, duties and fees	2.9%	1.2%	1.9%	1.8%	2.1%
c. Interest rate	-0.3%	-1.0%	-0.5%	-0.2%	-0.2%
d. Transport	2.2%	2.1%	2.0%	1.6%	1.9%
e. Marketing and profit margins	2.6%	1.9%	2.2%	2.2%	3.1%
f. Labor market	-4.7%	-5.7%	-4.7%	-4.9%	-4.5%
g. Residual effects 1/	-28.7%	-24.0%	-28.7%	-11.7%	-15.8%
2. Total effect - 1991	**9.7%**	**7.3%**	**10.1%**	**2.5%**	**5.8%**
a. Exchange rate	0.4%	0.5%	0.5%	0.1%	0.2%
b. Tariffs, duties and fees	2.4%	0.7%	1.3%	1.3%	1.5%
c. Interest rate	-0.4%	-1.1%	-0.7%	-0.3%	-0.4%
d. Transport	2.9%	2.8%	2.7%	2.2%	2.5%
e. Marketing and profit margins	2.3%	1.7%	1.9%	2.0%	2.7%
f. Labor market	-9.0%	-10.9%	-9.0%	-9.3%	-8.6%
g. Residual effects 1/	11.0%	13.6%	13.4%	6.5%	7.9%
3. Total effect - 1992	**-6.5%**	**-13.2%**	**-6.5%**	**-12.7%**	**-9.4%**
a. Exchange rate	6.0%	6.7%	6.8%	2.0%	2.6%
b. Tariffs, duties and fees	2.7%	1.1%	1.7%	1.5%	1.7%
c. Interest rate	-0.3%	-0.8%	-0.5%	-0.2%	-0.2%
d. Transport	0.2%	0.1%	0.2%	0.2%	0.2%
e. Marketing and profit margins	-0.2%	-0.4%	-0.3%	0.4%	0.7%
f. Labor market	-17.5%	-21.3%	-17.7%	-18.2%	-16.9%
g. Residual effects 1/	2.6%	1.3%	3.3%	1.7%	2.6%
4. Total effect - 1993	**-21.5%**	**-22.4%**	**-20.3%**	**-19.8%**	**-20.4%**
a. Exchange rate	24.0%	28.2%	27.7%	7.0%	9.3%
b. Tariffs, duties and fees	1.3%	-0.3%	0.5%	0.7%	0.7%
c. Interest rate	-0.7%	-1.1%	-0.8%	-0.5%	-0.6%
d. Transport	0.4%	0.3%	0.4%	0.3%	0.4%
e. Marketing and profit margins	0.4%	0.5%	0.4%	0.6%	0.9%
f. Labor market	-11.7%	-14.2%	-11.8%	-12.1%	-11.3%
g. Residual effects 1/	-35.3%	-35.8%	-36.7%	-15.7%	-19.8%
5. Total effect - 1994	**-7.3%**	**-5.4%**	**-1.5%**	**-13.2%**	**-11.0%**
a. Exchange rate	35.3%	41.7%	41.5%	10.7%	14.4%
b. Tariffs, duties and fees	0.1%	-1.8%	-1.1%	-0.2%	-0.5%
c. Interest rate	0.2%	0.0%	0.1%	0.1%	0.2%
d. Transport	1.6%	1.4%	1.4%	1.2%	1.3%
e. Marketing and profit margins	0.0%	0.9%	0.3%	0.3%	0.4%
f. Labor market	-12.5%	-15.1%	-12.6%	-12.9%	-12.0%
g. Residual effects 1/	-32.1%	-32.4%	-31.2%	-12.3%	-14.9%

Notes:

a/ Distortion rate = (social value / private value)-1; derived from table A.10 in appendix A

1/ Residual effects that make border price of tradable output being different from domestic price

Source: Survey IDEA/Ecuador, 1991

Table 38. Combined effects of policy and market distortions on off-farm income level a/

Farm size categories (has)	0-1	1-5	5-20	20-50	>50
1990					
Effect non-agric.informal	0.0%	0.0%	n/a	n/a	0.0%
Effect non-agric.formal	0.0%	0.0%	0.0%	0.0%	n/a
Effect agricultural wage	0.0%	0.0%	0.0%	0.0%	0.0%
Effect other sources of income	12.0%	12.0%	12.0%	12.0%	12.0%
Total effect off-farm inc.	2.6%	1.6%	4.9%	1.2%	0.1%
1991					
Effect non-agric.informal	0.0%	0.0%	n/a	n/a	0.0%
Effect non-agric.formal	0.0%	0.0%	0.0%	0.0%	n/a
Effect agricultural wage	0.0%	0.0%	0.0%	0.0%	0.0%
Effect other sources of income	23.0%	23.0%	23.0%	23.0%	23.0%
Total effect off-farm inc.	5.0%	3.2%	9.4%	2.3%	0.2%
1992					
Effect non-agric.informal	0.0%	0.0%	n/a	n/a	0.0%
Effect non-agric.formal	0.0%	0.0%	0.0%	0.0%	n/a
Effect agricultural wage	0.0%	0.0%	0.0%	0.0%	0.0%
Effect other sources of income	28.0%	28.0%	28.0%	28.0%	28.0%
Total effect off-farm inc.	6.1%	3.8%	11.5%	2.8%	0.3%
1993					
Effect non-agric.informal	0.0%	0.0%	n/a	n/a	0.0%
Effect non-agric.formal	0.0%	0.0%	0.0%	0.0%	n/a
Effect agricultural wage	0.0%	0.0%	0.0%	0.0%	0.0%
Effect other sources of income	27.0%	27.0%	27.0%	27.0%	27.0%
Total effect off-farm inc.	5.8%	3.7%	11.1%	2.7%	0.3%
1994					
Effect non-agric.informal	0.0%	0.0%	n/a	n/a	0.0%
Effect non-agric.formal	0.0%	0.0%	0.0%	0.0%	n/a
Effect agricultural wage	0.0%	0.0%	0.0%	0.0%	0.0%
Effect other sources of income	21.0%	21.0%	21.0%	21.0%	21.0%
Total effect off-farm inc.	4.5%	2.9%	8.6%	2.1%	0.2%

Notes:

a/ Distortion rate = (social value / private value)-1; derived from table A.9 in appendix A

Source: Survey IDEA/Ecuador, 1991

E. Combined effects of policy and market distortions on net household income

A negative ratio means that farmers were protected by current distortions affecting all net income sources since they actually received a net household income higher than the value they would have received measured on social terms (without distortions). A positive ratio means the opposite (Table 39). The total effect of all distortions on net household income fluctuated across years and farm sizes. These fluctuations were mainly driven by exchange rate, "residual effects" and labor distortions.

The effect of distortion of the exchange rate on net household income under strong overvaluation (1993-1994) was generally offset by the "residual effects" and labor distortions. The effect of "residual distortions" on net household income is explained the same way as in the case of agricultural output but including the instability of transmission of international input prices mainly due to market rigidities and inefficiencies in input domestic markets.

The effect of these other residual distortions in agricultural input and output markets was stronger than the labor effect. Exchange rate distortion penalized private net household income while both distortions, labor and "residual" made current private value higher that its social value and offset the former impact in 1993 for all farm sizes and in 1994 for all but 0-1 and 5-20 hectares. These farm sizes revealed the highest proportion of tradable output than the rest (Table 39).

In 1994, international and regional output prices increased on average 53.2 percent and international input prices increased on average 21 percent. Removal of this effect would have made net farm income lower than it really was (respective distortion rate < 0). Therefore, a likely stronger transmission of international output prices than international input prices into domestic market was added to "other inefficiencies" in domestic distribution, making current net

farm income higher than its opportunity cost or social value (Table 39).

In 1993, international and regional output prices decreased on average 22.4 percent and international input prices increased slightly in 0.75 percent. Removal of this distortion would have made net farm income lower than it really was compared with 1994. Therefore, a likely mild transmission of international prices was added to "other inefficiencies" in domestic distribution, making current net farm income higher than its opportunity cost (Table 39).

Lack of mobility of labor made private labor input cost lower than otherwise, and this saving cost was higher than labor wage losses from off-farm income when compared with a situation of more labor mobility for all farm sizes. This relationship becomes stronger the larger the ratio between share of labor paid in total cost and share of labor wage in total off-farm income (1-5, 20-50 and > 50 hectares).

The effect of mild overvaluation of the exchange rate on net household income during 1992 was reinforced by the effect of "residual distortions" but largely offset by the effect of labor distortions for all farm sizes but 0-1 and 5-20 hectares, showing that for these farm sizes, lack of labor mobility implied larger losses from labor wage off-farm income than labor-paid savings cost compared with the rest of farms.

In 1992, international and regional output prices increased on average 26.4 percent while international input prices increased only 0.95 percent. Removal of this effect would have made net farm income slightly higher than it really was. Therefore, a likely slow transmission of international prices was added to "other inefficiencies" in domestic distribution, making current net farm income lower than its opportunity cost. These inefficiencies in domestic distribution, contrary as in 1993 and 1994, likely pushed a more rapid decrease in domestic output prices due to seasonal variation of prices or bad weather/climate conditions, for example.

The effect of a minimum overvaluation of the exchange rate on net household income

during 1991 was reinforced by the effect of "residual distortions" and more than offset the effect of labor distortions for all farm sizes. Lack of labor mobility implied in this year smaller net labor-paid savings than in 1992, 1993 and 1994 relative to a situation of more labor mobility (Table 38).

In 1991, international and regional output prices increased on average 12.45 percent while international input prices increased in 2.13 percent. Removal of this effect would have made net farm income largely higher than it really was compared with 1992. Therefore, a likely slow transmission of international prices was added to "other inefficiencies" in domestic distribution, making current net farm income lower than its opportunity cost compared with 1992. Therefore "other inefficiencies" likely pushed domestic output market prices to decrease more rapidly than in 1992.

The effect of a mild undervaluation of the exchange rate on net household income during 1990 was reinforced by all the rest of the policy and market distortions and mainly by the effect of "residual distortions". In 1990, international and regional output prices decreased on average 5.9 percent while international input prices increased on average 21 percent. Removal of this effect would have made net farm income lower than it really was. Therefore, a likely slow transmission of international prices (specially international input prices) was added to "other inefficiencies" in domestic distribution, making current net farm income lower than its opportunity cost. "Other inefficiencies" pushed domestic output market prices to increase more rapidly than otherwise as in 1993 and 1994 (Table 39).

The effect of the distortions of the rest of policies on net household income was relatively insignificant for all years and farm sizes. Effects of removing distortions in trade policy, interest rates, transport cost, marketing and profit margins of importers were opposite for inputs and outputs almost on the same level; therefore, the total effect of these policies on net farm income was minimal.

Table 39. Combined effects of policy and market distortions on net household income a/

Farm size category (has)	0-1	1-5	5-20	20-50	>50
1. Total effect - 1990	**-10.0%**	**-17.3%**	**-19.8%**	**-5.7%**	**-9.8%**
a. Exchange rate	-2.3%	-4.2%	-4.5%	-1.0%	-1.6%
b. Tariffs, duties and fees	1.1%	0.7%	1.2%	0.8%	1.3%
c. Interest rate	-0.1%	-0.5%	-0.3%	-0.1%	-0.1%
d. Transport	0.8%	1.1%	1.2%	0.8%	1.1%
e. Marketing and profit margins	0.9%	1.0%	1.4%	1.1%	1.9%
f. Labor market	0.0%	-2.3%	-1.0%	-1.7%	-2.7%
g. Residual effects 1/	-10.3%	-13.1%	-17.7%	-5.6%	-9.6%
2. Total effect - 1991	**6.7%**	**5.4%**	**9.8%**	**2.4%**	**3.6%**
a. Exchange rate	0.2%	0.3%	0.3%	0.1%	0.1%
b. Tariffs, duties and fees	0.9%	0.4%	0.8%	0.6%	0.9%
c. Interest rate	-0.2%	-0.6%	-0.4%	-0.2%	-0.2%
d. Transport	1.1%	1.5%	1.7%	1.1%	1.5%
e. Marketing and profit margins	0.8%	0.9%	1.2%	1.0%	1.7%
f. Labor market	0.0%	-4.5%	-1.9%	-3.3%	-5.2%
g. Residual effects 1/	3.9%	7.4%	8.3%	3.1%	4.8%
3. Total effect - 1992	**1.5%**	**-5.4%**	**0.4%**	**-4.7%**	**-5.6%**
a. Exchange rate	2.2%	3.7%	4.2%	0.9%	1.6%
b. Tariffs, duties and fees	1.0%	0.6%	1.0%	0.7%	1.0%
c. Interest rate	-0.1%	-0.4%	-0.3%	-0.1%	-0.1%
d. Transport	0.1%	0.1%	0.1%	0.1%	0.1%
e. Marketing and profit margins	-0.1%	-0.2%	-0.2%	0.2%	0.4%
f. Labor market	-2.4%	-9.8%	-6.5%	-7.3%	-10.2%
g. Residual effects 1/	0.9%	0.7%	2.0%	0.8%	1.6%
4. Total effect - 1993	**-4.0%**	**-10.5%**	**-8.3%**	**-8.1%**	**-12.3%**
a. Exchange rate	8.6%	15.3%	17.1%	3.4%	5.7%
b. Tariffs, duties and fees	0.5%	-0.2%	0.3%	0.3%	0.4%
c. Interest rate	-0.2%	-0.6%	-0.5%	-0.2%	-0.4%
d. Transport	0.2%	0.2%	0.2%	0.2%	0.2%
e. Marketing and profit margins	0.1%	0.3%	0.2%	0.3%	0.5%
f. Labor market	-0.5%	-6.0%	-3.0%	-4.4%	-6.8%
g. Residual effects 1/	-12.7%	-19.5%	-22.6%	-7.6%	-12.1%
5. Total effect - 1994	**0.3%**	**-1.6%**	**2.4%**	**-5.3%**	**-6.6%**
a. Exchange rate	12.7%	22.7%	25.6%	5.2%	8.8%
b. Tariffs, duties and fees	0.1%	-1.0%	-0.6%	-0.1%	-0.3%
c. Interest rate	0.1%	0.0%	0.1%	0.1%	0.1%
d. Transport	0.6%	0.7%	0.9%	0.6%	0.8%
e. Marketing and profit margins	0.0%	0.5%	0.2%	0.1%	0.2%
f. Labor market	-1.6%	-6.9%	-4.4%	-5.1%	-7.2%
g. Residual effects 1/	-11.5%	-17.6%	-19.3%	-5.9%	-9.1%

Notes:
a/ Distortion rate = (social value / private value)-1; derived from table A.10 in appendix A
1/ Residual effects that make border price of tradable output being different from domestic price
Source: Survey IDEA/Ecuador, 1991

CHAPTER 7

CONCLUSIONS

A. Stabilization and structural adjustment policies in developing countries including Ecuador

Current economic theory assumes that stabilization and structural adjustment policies in developing countries are urgent to encourage the overall economy to stabilize first and second to give the different sectors undistorted signals for sustainable growth. Two kinds of distortions can be distinguished, one related with policy intervention and another related with structural inefficiencies of markets. Stabilization packages are supposed to remove policy distortion interventions while structural adjustment programs are supposed to correct market failures over time.

In general, the empirical evidence indicates that removal of policy distortions in developing countries helps to reduce the public deficit, to control inflation, to increase export earnings of tradeable sectors and thereby to attain higher economic growth rates. Nevertheless, these achievements can differ among countries depending on various factors including variations in international prices, the level of market failures and government intervention and the political feasibility to carry out policy changes and legal reforms.

In Ecuador the influence of political groups forced the governments to either delay or reduce the intensity of stabilization packages. The main political groups who constantly opposed such programs were the public sector bureaucracy (which grew dramatically during the oil boom), a non-competitive industrial sector (which became large in the economy of Ecuador

during the industrial development period), the urban middle class (which bore part of the adjustment cost through fewer employment opportunities as a result of cuts in current and capital public expenditures) and the urban poor (who did not receive any effective targeted compensation programs during adjustment; De Janvry, 1992).

The only interest groups favoring stabilization programs were the high income rural enterprises and the rural poor. This support was based on the income gains that devaluations brought to agricultural export crops and the relatively high prices of capital in agriculture, which pushed a substitution effect toward labor in certain agricultural activities. However, there were regional disparities because the Coast has specialized in export commodities while the Sierra has produced mainly domestic consumption crops.

B. Notion of tradeability

The main conclusion arrived at from aggregated studies of policy effects in developing countries has been that the effect of changing exchange rate policy dominates the impacts from changing simultaneously other policies and market structures, especially for tradeable sectors like agriculture and for the short term.

In macro-meso level studies, it has been generally assumed that the agricultural sector is fully tradeable. This assumption can be inaccurate for a substantial percentage of agricultural production mainly because of the following conditions:

a) Non-existence of physical and other institutional infrastructure or high fixed costs related with marketing and distribution can make agricultural production non-tradable for long periods of time. Some products are naturally non-tradable due to low value/bulk ratios or high perishability.

b) Stabilization and structural adjustment policy changes that are not applied simultaneously and during the same time frame. Prioritation of policy changes occurs based on the arrangement of political and economical forces within specific countries and the level of influence from international funding organisms. Therefore, depending on the specific case, sometimes it is more realistic to assess how a policy change will affect incentives under the assumption of a systematic decreasing of other interventions, instead of assuming a removal of the whole set of distortions. In this line of thinking, it is sometimes mistaken to treat a product or group of products as non-tradeable if sectoral policy interventions or institutional inefficiencies that preclude transmission of border prices are not a priority in the policy agenda.

c) The structure of input use and proportion of tradeable versus non-tradeable inputs in total variable cost make effects of policy distortions or policy changes different across products, farmers and regions. Also, the proportion of fixed cost versus variable cost in total cost and level of tradeability of fixed costs have to be taken into account to assess overall effects of changes.

d) When changes in relative prices of inputs affect input mix use and the extent to which inputs with higher relative prices after a policy change can be substituted will depend on the production function of each particular product. The probability of substitution among inputs due to price changes of inputs and outputs might mitigate or reinforce the "normal" effect of incentives under a scenario of fixed coefficients of factor substitution. This fact deals with the flexibility a producer could have to vary input mix after a change in input prices.

C. Conclusions about a disaggregated methodological approach

It is not possible even in theory to predict accurately the effects of removing policy and market distortions on aggregated agricultural sector without going to a more disaggregated level and to analyze the implications of it.

Also, if the purpose is to assess the impact of structural adjustment changes on target groups of society such as rural poor, for example, the need for disaggregation is even more evident. At this level, it is important to use a methodology which can connect macro policy changes with specific relevant markets (micro analysis) with combined effects of both macro and micro analyses on household net income.

The results of the present research contrast with more aggregated studies of macroeconomic effects on agricultural activity because those studies analyzed mainly the tradable proportion of agricultural production. In Ecuador, there is a significant proportion of non tradable agricultural production located in the Sierra (mountain region). In this sense, the analysis of the thesis deals with data collected in a selected area of the Sierra. Even though the results can not fully support broad based policy implications, the methodology can be helpful in re-thinking future household data collection systems and methods of analysis.

D. Conclusions about the results of the Salcedo research

The results of the Salcedo research can be summarized as follows:

a) Crop combinations across farm sizes did not differ greatly. All farm sizes produced potatoes, wheat, barley and hard corn (regionally and internationally tradable outputs).

The share of cropping income from these products was more than 85 percent for the smallest farm sizes but for the largest farms, the respective share was almost 50 percent. The rest of cropping income for farms of 20-50 and more than 50 hectares was provided by non-citrus fruits and onions, considered as non-tradable and which had the highest private real return on variable costs.

b) Tradable inputs accounted for between 51 and 57 percent of total variable costs for all farm sizes and the share of labor in non-tradable input costs was relatively larger than the rest of non-tradable input components (between 22 and 29 percent of total variable cost).

c) The total effect of removing policy distortions and market failures on net household income was disaggregated into seven partial effects: i) exchange rate, ii) tariffs, fees and duties, iii) interest rate, iv) transport cost, v) marketing and profit margins of importers, vi) labor and vii) "residual effects". The "residual effects" are the ones which make the border price or opportunity cost of tradable output different from its current private value, but which are not accounted for by adjustment of the six distortions.

A large part of these "residual effects" may have come from incomplete transmission of international price changes to domestic markets. A more careful analysis of this issue is needed for future research where the interaction of policy instruments, institutional dimensions and structural rigidities of domestic markets could likely be one of the main issues to be discussed.

d) The total effect of all distortions on net household income fluctuated across years and farm sizes. These fluctuations were mainly driven by exchange rate, "residual effects" and labor distortions.

e) For all farm sizes and all years, lack of mobility of labor made savings in labor paid higher than losses in off-farm income when compared with a situation of more labor mobility. This statement is stronger the larger the ratio between share of labor paid in total cost

and share of labor wage in total off-farm income (1-5, 20-50 and > 50 hectares). The protection effect of labor was continuously increasing annually.

f) The effect of distortion of exchange rate on net household income under a strong overvaluation (1993-1994) was generally offset by the effect of "residual" and labor distortions. The effect of "residual distortions" in domestic input and output markets was stronger than labor effect, though. Exchange rate distortion penalized private net household income while both distortions, labor and "others" protected it and offset the former impact in 1993 for all farm sizes and in 1994 for all but 0-1 and 5-20 hectares. These farm sizes revealed the highest proportion of tradable output than the rest.

g) With undervaluation, negative protection of the exchange rate distortion coming from the variable cost side offset somewhat the protection effect from the output side. The higher the overvaluation the stronger the protection effect from variable cost offset the negative protection effect from output side.

h) From the analysis of the "residual effects", one can assume that, in general, there was a slow transmission of international output and input price changes into the domestic market. Variation of domestic market prices was higher than variation of international prices, presumably due to "other inefficiencies" in domestic distribution.

i) The effect of the distortions of the rest of policies on net household income was non significant for all years and farm sizes. Effects of distortions on trade policy, interest rate, transport cost, marketing and profit margins of importers for inputs and outputs almost cancel each other for all years and farm sizes. Therefore, the total effect of these policies on net farm income was minimal.

j) The distortions of tariffs, duties and fees of tradable inputs brought up relatively stronger effects than distortions of international trade policy of international tradable outputs for

all years and farm sizes but 1994 when the opposite occurred. Therefore, net effect would have made net farm income higher than it really was with the exception of 1994.

k) The effect of distortions of transport affecting input (negative protection effect) was stronger than protection effect from output side for all years and farm sizes. Therefore, net effect would have made net farm income higher than it really was.

l) The effect of distortions of interest rate affecting financial cost of importable output (protection) was stronger than the negative protection effect from tradable input for all years and farm sizes but 1994. Therefore, net effect would have made net farm income lower than it really was.

m) The effect of distortions of marketing and profit margins of input importers (negative protection) was stronger than protection effect from importers of output side, for all years and farm sizes but 1994. Therefore, net effect would have made net farm income higher than it really was.

E. Limitations and weaknesses in the analysis

The main limitations of the data used were:

a) The household survey was done for a small area, so a broad base of policy implications was not possible.

b) Lack of data on costs for livestock and household expenditures did not allow more accurate assessment of effects.

c) Lack of secondary data to estimate social prices for some off-farm income sources did not allow more accurate assessment of effects.

The main weaknesses of the assumptions used were:

a) No substitution effects between labor-capital was considered from policy changes, therefore technical input coefficients were assumed to be constant over the period of analysis.

b) No variation of crop combination from policy changes was considered, so household decisions on crop-mix were assumed to be constant over the period of analysis.

c) Because of non-availability of social indicators, effects of policy changes on education, health, accessibility to basic services and labor participation of household members was not estimated.

d) Because there were slightly differences in combined effects of policy and market distortions on net farm income across farm size categories, a general conclusion about the relevant importance of disaggregation in this specific sample can not be stated.

However, some studies of the International Potatoes Center and the National Institute for Agriculture Research show that in the northern part of the country, where the sample was taken, there has been low differentiation in the use of chemicals and fertilizers per hectare across farm sizes. In other parts of the country, there is evidence of large variations in the use of variable tradable inputs as well as in the output crop combination across farm sizes (Ministry of Agriculture, 1994). Therefore, the need of a disaggregated methodological approach to assess policy and market effects on rural households at a national or regional level is justified.

In spite of these limitations, the linkage approach used, the notion of tradeability and the level of disaggregation achieved represent the main methodological contribution of the present research.

E. Methodological conclusions

The approach used in the present research offers improvements in policy analysis and strategy formulation for a more accurate assessment of policy changes on specific rural households, agricultural crops, farmers and regions. A more disaggregated analysis, like that presented here, is needed to link macro, meso and micro changes with differential household impact variations.

The main conclusion using this approach was that partial effects played different roles on net household effect depending on the farm structure of production, the level of tradeability among inputs and outputs and the relative importance of off-farm income sources.

With the model developed in Chapter V, it is possible to have a more complete matrix of elements that explains the interactions among policy and market distortions under different conditions of output crop-mix, input-mix use and rates of substitution among factors of production.

The model allows to do sensitivity analysis on different scenarios of policy arrangements and household data components in order to give more dynamics to the analysis.

F. Recommendations

As seen in this research, there is a lack of adequate household survey data in Ecuador to allow disaggregated analysis of policy impacts. Therefore, some recommendations can be pointed out to improve the design of household surveys (national or regional) as follows:

a) Incorporate a careful treatment of tradeability on net farm income: output and variable costs.

b) Incorporate a present value model for net livestock income due to nature of this business (stock of animals of different ages and mix of variable and fixed costs).

c) Clarify classification of off-farm income sources

d) Incorporate social attributes for households: number of members contributing to total household income (family labor and wage earnings); accessibility to basic services (water, electricity and transport), education and health per member of household.

e) Incorporate household expenditures

f) Design a proper and timely schedule of household visits to update data and capture variation of income and expenditure household decisions from policy changes

However, until more complete future household data is available, the use of sensitivity analysis in the methodological approach used in this thesis could improve accuracy and dynamics to the results.

There is a need for better coordination between data collection and policy analysis units, so that data collection responds in a timely manner to policy analysis demands in order to achieve a more practical analytical routine in policy formulation.

In addition, it would be interesting to research the interactions between policy instrument changes, institutional dimensions from these changes and the role of market rigidities in order to analyze more carefully the dynamics of stabilization and structural policy changes in agricultural markets. Subsector studies of key commodity groups would be helpful in identifying means to remedy structural inefficiencies in domestic markets that continue to be isolated from regional and international markets. It is evident that changes in policy formulation are not enough to overcome structural distortions.

APPENDIX A
NOTATION FOR ASSESSING IMPACTS

Table A.1 Notation for calculation of private and social values of tradable and non tradable components of agricultural variable costs

Item	Private 1/		Social 2/	
	Tradable	Non tradable	Tradable	Non tradable
1. Tradable inputs				
Total import cost	A	B	A'	B'
a. C&F	a1		a1'	
b. Tariffs, duties and fees		b1		b1'
c. Transport to importer warehouses	a2	b2	a2'	b2'
d. Importer financial cost		b3		b3'
e. Importer mkt./profit margin		b4		b4'
2. Tradable/non tradable input				
a. Transport of output to wholesale market	C	D	C'	D'
3. Total transport 3/	E	F	E'	F'
4. Non tradable input				
a. Labor		G		G'
4. Total variable cost	H	I	H'	I'
	J = H + I		J' = H' + I'	

Notes:

1/ Private import cost of tradable input = domestic market price of tradable input; Suppliers of tradable input = importers
2/ Social import cost of tradable input = border price of tradable input
3/ Total transport = transport of tradable input to importer warehouses + transport of output to wholesale market

Table A.2 Notation for calculation of private and social values of tradable and non tradable components of agricultural output

Item	Domestic price	Private 1/		Social 2/	
		Tradable	Non tradable	Tradable	Non tradable
1. International tradable output (importables)					
A. Domestic price of national production	K				
B. Import cost	-	L	M	L'	M'
	-	Y=L+M		Y'=L'+M'	
b.1. C&F		11		11'	
b.2. Tariffs, duties and fees			m1		m1'
b.3. Transp.to importer warehouse		12	m2	12'	m2'
b.4. Importer financial cost			m3		m3'
b.5. Importer mkt./profit margin			m4		m4'
2. Regional tradable output (importable or exportable?)	N		O 3/		O' 4/
3. Non tradable output Non importable or exportable	P				
4. Total agricultural output	Q	R	S	R'	S'
	Z=Q+R+S			Z'=Q+R'+S'	

Notes:

1/ Private import cost of tradable output is not equal to domestic market price of output
Private import cost of tradable output = opportunity cost (with distortions) for domestic production
Suppliers of tradable output = domestic producers + importers

2/ Social import cost of tradable output = border price of tradable output
Social import cost of tradable output = opportunity cost (without distortions) for domestic production

3/ Border price of regional tradable output with exchange rate distortion
Price in Colombia = opportunity cost for domestic production (with exchange rate distortion)

4/ Border price of regional tradable output without exchange rate distortion
Price in Colombia = opportunity cost for domestic production (without exchange rate distortion)

Table A.3 Notation for calculation of private value and social values of net agricultural income

Concept	SOCIAL VALUE' 1/	Item	SOCIAL VALUE SVa	PRIVATE VALUE PVa
NET AGRICULTURAL INCOME			[Y'+O'Q] -J'	[Y+O+Q] -J
Net agricultural income without distortions but:				
a. Exchange rate	(ERo+ERo1+Q)-(ERi)	= ERa		
b. Tariffs, duties and fees	(TAo+O'+Q)-(TAi)	= TAa		
c. Transport market	(TRo+O'+Q)-(TRi)	= TRa		
d. Interest rate	(INo+O'+Q)-(INi)	= INa		
e. Marketing/profit margins	(MGo+O'+Q)-(MGi)	= MGa		
f. Labor	(Y'+O'+Q)-(LAi)	= MGa		
Notes: 1/ Social value taking out some distortions				

Table A.4 Notation for calculation of private value and social values of agricultural output, agricultural variable cost and off-farm income

Concept	SOCIAL VALUE' 1/	Item	SOCIAL VALUE	PRIVATE VALUE
AGRICULTURAL OUTPUT				
1. International tradable agricultural output			Y'	K
International tradable output without all distortions but:				
a. Exchange rate	(Y'-l1'+l1)	= ERo		
b. Tariffs, duties and fees	(Y'-m1'+m1)	= TAo		
c. Transport market	(Y'-l2'-m2') +(l2+m2)	= TRo		
d. Interest rate	(Y'-m3'+m3)	= INo		
e. Marketing/profit margins	(Y'-m4'+m4)	= MGo		
2. Regional tradable agricultural output			O'	N
Regional tradable agricultural output without all distortions but:				
a. Exchange rate	O	= ERo1	O'	N
3. Non tradable agricultural output			Q	Q
AGRICULTURAL VARIABLE COST				
Total variable cost			J'	J
Variable cost without all distortions but:				
a. Exchange rate	(J'-a1'+a1)	= ERi		
b. Tariffs, duties and fees	(J'-b1'+b1)	= TAi		
c. Transport market	(J'-E1'-F') +(E+F)	= TRi		
d. Interest rate	(J'-b3'+b3)	= INi		
e. Marketing/profit margins	(J'-b4'+b4)	= MGi		
f. Labor	(J'-G'+G)	= LAi		
OFF-FARM INCOME				
Off-farm income			X'	X
Off-farm income without all distortions but:				
Labor market	(X'-T'-U' -V'-W')+ (T+U+V+W)	= LAo		

Notes:

1/ Social value taking out some distortions

Table A.5 Notation for calculation of private and social values of off-farm income

Item	Private	Social
1. Non agricultural informal	T	T'
2. Non agricultural formal	U	U'
3. Agricultural wage	V	V'
4. Others	W	W'
5. Total off-farm income	X	X'

Table A.6 Notation for calculation of private value and social values of net household income

Concept	SOCIAL VALUE' 1/	Item	SOCIAL VALUE SVh	PRIVATE VALUE PVh
NET HOUSEHOLD INCOME			[Y'+O'Q] -J'+X']	[Y+O+Q-J+ X]
Net household income without distortions but:				
a. Exchange rate	(ERo+ERo1+Q)- (ERi)+(X')	= ERh		
b. Tariffs, duties and fees	(TAo+O'+Q)- (TAi)+(X')	= TAh		
c. Transport market	(TRo+O'+Q)- (TRi)+(X')	= TRh		
d. Interest rate	(INo+O'+Q)- (INi)+(X')	= INh		
e. Marketing/profit margins	(MGo+O'+Q)- (MGi)+(X')	= MGh		
f. Labor	(Y'+O'+Q)- (LAi)+(LAo)	= MGh		

Notes:

1/ Social value taking out some distortions

Table A.11 Notation for calculation of effects of policy and market distortions on off-farm income

Concept	Distortion rate 1/
EFFECTS ON:	
1. Non agricultural informal	(T'/T)-1
2. Non agricultural formal	(U'/U)-1
3. Agricultural wage	(V'/V)-1
4. Others	(W'/W)-1
TOTAL EFFECT ON OFF-FARM INCOME	(X'/X)-1
Notes: 1/ Distortion rates (social value / private value)	

Table A.12 Notation for calculation of combined effects of policy and market distortions on net household income

Concept	Distortion rate 1/	Item	Combined effect
EFFECTS BY:			
1. Exchange rate	(ERh/PVh)-1	= 1	(nhe-1)
2. Tariffs, duties and fees	(TAh/PVh)-1	= 2	(nhe-2)
3. Transport market	(TRh/PVh)-1	= 3	(nhe-3)
4. Interest rate	(INh/PVh)-1	= 4	(nhe-4)
5. Marketing/profit margins	(MGh/PVh)-1	= 5	(nhe-5)
6. Labor	(LAh/PVh)-1	= 6	(nhe-6)
7. Other effects 2/			(nhe)-(1+2+3+4+5+6)
TOTAL EFFECT ON NET HOUSEHOLD INCOME			(SVh/PVh)-1 = nhe
Notes: 1/ Distortion rates (social value / private value) 2/ Other effects that make border price different from domestic price They could be distortions related with distortions in domestic market of output			

APPENDIX B
BASIC INFORMATION FOR ASSESSING SOCIAL PRICES

Table B.1 Private - current tariffs for tradable inputs and tradable outputs, percentage over C&F, 1990-1994

Concept	1990	1991	1992	1993	1994
1. Tradable input					
1.1. Fertilizer	0%	5%	0%	0%	0%
1.2. Agrochemicals 1/	5%	5%	2%	2%	2%
1.3. Tradable seed	5%	5%	2%	2%	2%
1.4. Machinery	5%	5%	2%	2%	2%
2. Tradable output					
2.1. Hard corn	5%	5%	12%	12%	15%
2.2. Wheat	5%	5%	5%	5%	15%
2.3. Barley	5%	5%	5%	5%	15%
3. Parts for vehicles for rural transportation	19%	22%	16%	9%	10%

Notes:

1/ Agrochemicals = insecticides, herbicides, fungicides

Source: Manual of import tariffs (1990-1994), Ministry of Finance of Ecuador

Table B.2 Private - current import duties, other taxes and transport to import warehouses for tradable inputs and tradable outputs Percentage over C&F, 1990-1994

Concept	1990	1991	1992	1993	1994
1. Import duties in %/C&F for tradable inputs and outputs					
1.1. FONIM	2.00%	2.00%	2.00%	2.00%	2.00%
1.2. INFA	1.00%	1.00%	1.00%	1.00%	1.00%
1.3. Service fee Central Bank	1.00%	1.00%	1.00%	0.00%	0.00%
1.4. Foreign Bank commisions 1/	2.00%	2.00%	2.00%	2.00%	2.00%
1.5. Customs expenses	2.00%	2.10%	2.10%	2.20%	2.20%
1.6. Municipal/police taxes	0.03%	0.03%	0.03%	0.03%	0.03%
1.7. Verification fee at port 2/	0.00%	0.00%	0.00%	0.00%	1.00%
2. Transport from port to import warehouse in US/TM but translate to %/C&F for:					
2.1. Tradable input					
a. Fertilizer	2.83%	2.56%	2.43%	2.57%	3.08%
b. Agrochemicals	0.09%	0.08%	0.06%	0.09%	0.10%
c. Tradable seed	2.95%	2.85%	2.52%	2.73%	2.94%
d. Machinery	1.89%	1.77%	1.48%	1.56%	1.58%
2.2. Tradable output					
a. Hard corn	3.64%	3.44%	3.29%	3.42%	3.55%
b. Wheat	3.04%	3.03%	2.39%	2.62%	2.91%
c. Barley	3.15%	3.03%	2.72%	3.05%	3.33%
2.3. Parts for vehicles for rural transportation	1.00%	1.00%	0.80%	0.90%	0.90%
3. Port fees Paid in US/TM but translate to %/C&F for:					
3.1. Tradable input					
a. Fertilizer	1.44%	1.31%	1.44%	0.40%	0.59%
b. Agrochemicals	1.08%	0.99%	1.11%	0.08%	0.07%
c. Tradable seed	3.44%	3.48%	3.42%	2.59%	2.41%
d. Machinery	1.08%	1.00%	0.99%	0.91%	0.89%
3.2. Tradable output					
a. Hard corn	4.13%	4.13%	4.28%	3.25%	2.92%
b. Wheat	3.63%	3.74%	3.38%	2.45%	2.36%
c. Barley	3.72%	3.74%	3.75%	2.92%	2.74%
3.3. Parts for vehicles for rural transportation	0.57%	0.56%	0.54%	0.53%	0.51%

Notes:

1/ Foreign bank commisions to open credit card as a requirement to make an import
2/ Verification of merchandise at port

Source: Manual of fees, duties and other import taxes (1990-1994), Ministry of Finance and Central Bank of Ecuador; import records (1990-1994), Ministry of Agriculture of Ecuador

Table B.3 Private - current tariffs, imports fees, other taxes and transport cost to import warehouses as a percentage of C&F 1990-1994

Concept	1990	1991	1992	1993	1994
1. Tradable input					
1.1. Fertilizer	12.3%	17.0%	12.0%	10.2%	11.9%
1.2. Agrochemicals	14.2%	14.2%	11.3%	9.4%	10.4%
1.3. Tradable seed	19.4%	19.5%	16.1%	14.5%	15.6%
1.4. Machinery	16.0%	15.9%	12.6%	11.7%	12.7%
2. Tradable output					
2.1. Hard corn	20.8%	20.7%	27.7%	25.9%	29.7%
2.2. Wheat	19.7%	19.9%	18.9%	17.3%	28.5%
2.3. Barley	19.9%	19.9%	19.6%	18.2%	29.3%
3. Parts for vehicles for rural transportation	21.6%	31.7%	25.0%	17.7%	19.6%

Source: Tables B.1 and B.2

Table B.4 Social - "competitive" custom and port expenses and transport to import warehouses for tradable inputs and tradable outputs Percentage over C&F, 1990-1994

Concept	1990	1991	1992	1993	1994
1. Import duties in %/C&F for tradable inputs and outputs					
1.1. FONIM	0.00%	0.00%	0.00%	0.00%	0.00%
1.2. INFA	0.00%	0.00%	0.00%	0.00%	0.00%
1.3. Service fee Central Bank	0.00%	0.00%	0.00%	0.00%	0.00%
1.4. Foreign Bank commisions	2.00%	2.00%	2.00%	2.00%	2.00%
1.5. Customs expenses	2.00%	2.10%	2.10%	2.20%	2.20%
1.6. Municipal taxes	0.00%	0.00%	0.00%	0.00%	0.00%
1.7. Verification fee at port	0.00%	0.00%	0.00%	0.00%	1.00%
2. Transport from port to import warehouse in US/TM but translate to %/C&F1/					
2.1. Tradable input					
a. Fertilizer	2.15%	1.71%	2.23%	2.29%	2.38%
b. Agrochemic.	0.07%	0.05%	0.05%	0.08%	0.08%
c. Trad.seed	2.24%	1.90%	2.31%	2.43%	2.27%
d. Machinery	1.43%	1.18%	1.36%	1.39%	1.22%
2.2. Tradable output					
a. Hard corn	2.76%	2.30%	3.01%	3.05%	2.74%
b. Wheat	2.31%	2.03%	2.18%	2.34%	2.24%
c. Barley	2.39%	2.02%	2.49%	2.72%	2.57%
2.3. Parts for vehicles for rural transport	0.68%	0.60%	0.62%	0.77%	0.73%

Notes:

1/ Social value of transport

Source: Table B.2 and table 20 for transport cost

Table B.5 Social cost to bring imports to domestic market of Ecuador as a percentage of C&F 1990-1994

Concept	1990	1991	1992	1993	1994
1. Tradable input					
1.1. Fertilizer	6.1%	5.8%	6.3%	6.5%	7.6%
1.2. Agrochem.	4.1%	4.2%	4.2%	4.3%	5.3%
1.3. Trad.seed	6.2%	6.0%	6.4%	6.6%	7.5%
1.4. Machinery	5.4%	5.3%	5.5%	5.6%	6.4%
2. Tradable output					
2.1. Hard corn	6.8%	6.4%	7.1%	7.2%	7.9%
2.2. Wheat	6.3%	6.1%	6.3%	6.5%	7.4%
2.3. Barley	6.4%	6.1%	6.6%	6.9%	7.8%
3. Parts for vehicles for rural transport	4.7%	4.7%	4.7%	5.0%	5.9%

Source: Table B.4

Table B.6 Private interest rate vs social interest rate 1/ (FROM THE DEMAND SIDE)

Year	prime interest rate 2/ a	overvaluation rate b	devaluation rate c	nominal social interest rate 3/ d	nominal private interest rate 4/ e
1990	10.0%	-5.4%	43.2%	27.8%	52.4%
1991	6.5%	0.3%	37.9%	31.7%	53.1%
1992	6.0%	4.2%	47.0%	45.2%	62.5%
1993	6.0%	21.8%	31.3%	47.1%	47.0%
1994	6.9%	32.0%	19.8%	44.9%	53.3%

Notes:

1/ Social interest rate = concept taken from Study of "Matrix of Policy Analysis" in the Project of Reorientation of Agricultural Sector (PRSA/USAID) (Lee and Flood).
Social interest rate = rate it would be in an environment of free movement of capital (domestic and international). Demanders of loans have the possibility to access to international market.

2/ prime interest rate = opportunity cost of domestic loan demanders

3/ $a + d = b + c \quad d = (b+c)-a$

4/ nominal private interest rate = current interest rate in domestic market

Source: Monthly statistical information of Central Bank and table 13

Table B.7 Private interest rate vs social interest rate 1/ (FROM THE SUPPLY SIDE)

Year	Financial system in Ecuador 2/					
	real return to attract savings	financial operating expenses	real return of financial activity	inflation rate Ecuador	nominal social return domestic capital	real social return 4/
	a	b	c	d	a+b+c+d	
1990	2.0%	3.0%	4.0%	48.5%	57.5%	9.0%
1991	2.0%	3.0%	4.0%	48.7%	57.7%	9.0%
1992	2.0%	3.0%	4.0%	54.6%	63.6%	9.0%
1993	2.0%	3.0%	4.0%	45.0%	54.0%	9.0%
1994	2.0%	3.0%	4.0%	28.5%	37.5%	9.0%

1/ Social return domestic capital = concept taken from Study of "Matrix of Policy Analysis" in the Project of Reorientation of Agricultural Sector (PRSA/USAID), (lee and Flood).
Interest rate = rate it would be in an environment of free movement of capital (domestic and international).

2/ Hypothetical situation where financial system in Ecuador would be more efficient, but still not the same efficiency as "international USA system". Therefore percentages of expenses and return are 50% more than the average in USA.

3/ real social return domestic capital = nominal - inflation rate.

Source: Monthly statistical information, Central Bank of Ecuador

APPENDIX C
EFFECTS OF IMPORT QUOTAS

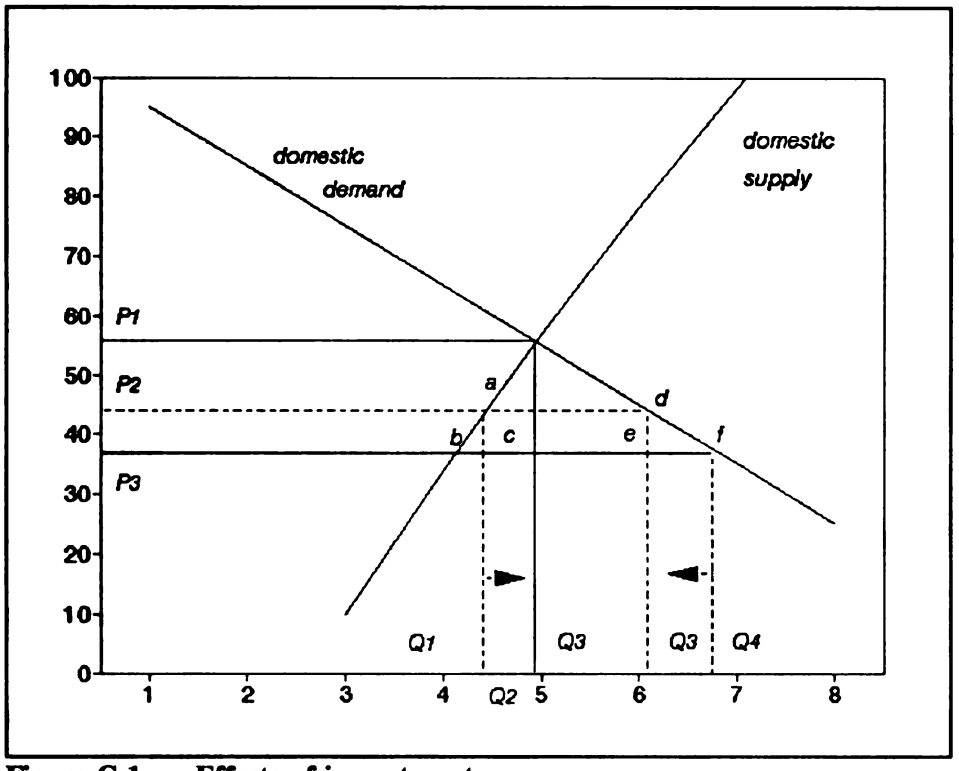

Figure C.1 Effects of import quotas

Definition of terms:

P1 = price with no international trade
P2 = price with import quotas and international trade
P3 = price without import quotas and international trade
Q1 = domestic supply with international trade and no import quotas
Q2 = domestic supply with international trade and import quotas
Q3 = domestic supply and demand with no international trade
Q4 = domestic demand with international trade and import quotas
Q5 = domestic demand with international trade and no import quotas
Q1-Q5 = import level with international trade and no import quotas
Q2-Q4 = import quota

Analysis:

If import quota is imposed then the following effects occur:
a) Transfer of consumer surplus to producer surplus from area P2-P3-d-f to area P2-P3-a-b
b) Transfer of consumer surplus to importer rents from area P2-P3-d-f to area a-c-d-e
c) Net weigth losses equal to areas a-b-c and d-e-f

BIBLIOGRAPHY

Acosta, Monica, "Structure of Protection for the Agropecuarian Sector of Ecuador (1970-1987)" (unpublished Bachelor dissertation, Catholic University of Quito, 1990).

Agricultural Sector Reorientation Project (ASRP/USAID), Ministry of Agriculture - Ecuador, Statistics Compilation of the Agricultural Sector: Ecuador, 1965-1994, Quito-Ecuador, Nov., 1994.

Agricultural Sector Reorientation Project (ASRP/USAID), Ministry of Agriculture - Ecuador, Indicators for Agricultural Protection: Ecuador (1986-1992), Quito-Ecuador, 1993.

Agricultural Sector Reorientation Project (ASRP/USAID), Ministry of Agriculture - Ecuador, " Policy Analysis Matrix: Selected Crops of Ecuador (1990-1994)" (unpublished technical paper, under the direction of David Lee and David Flood, December, 1994).

Bourguignon, F and Morrison, Ch., Adjustment and Equity in Developing Countries, Publications Service, OECD, Paris, 1992.

Camacho, Carlos and Monica Navas, Evolution of the Agrarian Reform and Land Tenure in Ecuador (1964-1991), Institute of Agricultural Strategies (IAS), Quito-Ecuador, 1992.

Central Bank of Ecuador, Series of Macroeconomic Statistics, 1980-1992, Editorial Banco Central del Ecuador, Quito-Ecuador, Dec., 1993.

Claassen, Emil-Maria, The Impact of Stabilization and Structural Adjustment Policies on the Rural Sector, Case Studies: Senegal, Liberia, Zambia and Morocco, FAO, Rome, 1991.

De Janvry, A.; E. Saudoulet; and A. Fargeix, Adjustment and Equity in Ecuador, Publications Service, OECD, Paris, 1991.

Demery, L.; M. Ferroni; and Ch. Grootaert, Understanding the Social Effects of Policy Reform, The World Bank, Washington, D.C., 1993.

Diakosavvas, D., The Effects of Trade and Exchange Policies on Production Incentives in Agriculture, FAO, Rome, 1990.

Fargeix, A., Growth and Poverty in Stabilization Programs: A General Equilibrium Model with Financial Markets in Ecuador, PHD Dissertation, University of California, Berkley, 1990.

Gittinger, J.Price, Economic Analysis of Agricultural Projects, The Johns Hopkins University Press, London, 1972.

Interamerican Development Bank - IDB, "Country programming paper, Case: Ecuador," Washington D.C., 1993. (Mimeographed.)

Interamerican Development Bank - IDB, "Agropecuarian Sectorial Program: Ecuador, Sectorial Loan Project,", Washington D.C., 1993. (Mimeographed.)

Institute of Agricultural Strategies (IAS), "Impacts of Commercial Agriculture in Open Trade Within the Andean Region" (paper presented at the technical meeting of the Junta del Acuerdo de Cartagena, Quito-Ecuador, March, 1991).

Klein Emilio, OECD Technical Paper, Informal Sector and Regulations in Ecuador and Jamaica, Paris, France, 1993.

Krueger, Anne, The Political Economy of Agricultural Pricing Policy, Latin America Case, Vol. I. (London: Hopkins University Press, 1991).

Krueger, Anne, Political Economy of Policy Reform in Developing Countries, John Hopkins University Press, London, 1993.

Krueger, Anne; Maurice Schiff; and Alberto Valdez, The Political Economy of Agricultural Pricing Policy. A synthesis of the political economy in developing countries, Vol. V (London: John Hopkins University Press, 1991).

Kyle, Steven, Pitfalls in the Measurement of Real Exchange Rate Effects on Agriculture, Cornell University, Ithaca, New York, 1992.

Kyle, Steven and Johan Swinnen, The Theory of Contested Markets and the Degree of Tradeability of Agricultural Commodities: an Empirical Test in Zaire, Cornell University and Katholieke Universitiet Leuven, New York, 1992.

Division of International Trade, Ministry of Finance of Ecuador, Tariff and International Trade Reform, Quito-Ecuador, 1988-1992.

Monke, Eric and Scott Pearson, The Policy Analysis Matrix for Agricultural Development, Cornell University Press, Ithaca, N.Y., 1989.

Morris, Michael, Determining Comparative Advantage through DRC Analysis, CYMMIT's Economics Paper, Mexico D.F., 1990.

National Institute of Statistics and Census (NISC), "Estimates of Employment Statistics,", Quito-Ecuador, 1994. (Mimeographed.)

Raghav, Gaiha, Structural Adjustment and Household Welfare in Rural Areas, FAO, 1991.

Ramirez, Jorge, "El Sector Agropecuario dentro de la Apertura Economica." Revista Nacional Agropecuaria, Sociedad de Agricultores de Colombia (SAC), Editorial Presencia, Bogota, Marzo, 1991.

Reca, L., Ajuste Macroeconomico y Sector Agropecuario en America Latina, IICA, Buenos Aires, 1991.

Sarris, Alexander, Ghana Under Structural Adjustment, International Fund for Agricultural Development IFAD, 1991.

Scandizzo, L., Measures of Protection: Methodology, Economic Interpretation and Policy Relevance, FAO, Rome, 1989.

Stewart, Rigoberto and Monica Acosta, The Agricultural Protection in Ecuador: Case of Basic Grains, Institute of Agricultural Strategies (IAS), Central America Institute of Cooperation (IICA) and Ministry of Agriculture of Ecuador, Quito-Ecuador, May, 1992.

Valdez, Alberto and Maurice Schiff, A Synthesis of the Economics in Developing Countries,, John Hopkins University Press, London, 1992.

Whitaker, M., The Role of Agriculture in Ecuador's Development, Westview Press, 1990.

World Bank, "Macroeconomic Assessment Paper, Case: Ecuador," Washington D.C., 1993. (Mimeographed.)