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International Bank for Reconstruction and Development

The Current Economic Position and Prospects of Ecuador

October 1973

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CURRENT ECONOMIC POSITION

AND PROSPECTS

OF

ECUADOR

This report is based on the findings of an economic mission which visited Ecuador during March and April 1972 and subsequent staff visits and discussions with the government authorities. The mission was composed of Messrs. R. Echeverria (Chief of Mission), J. Balcazar (investment program adviser), G. Novak (general economist), S. Malik (general economist), P. Dax (general economist), A. Parra (petroleum specialist-consultant), S. Lerner (industrial economist-consultant), R. Kahil (fiscal economist-consultant), N. Nowak (tax administration specialist-consultant), W. Kupper (power specialist), and Miss B. Protas (secretary). This report also draws from the findings of an IBRD Agricultural Sector Review Mission which visited Ecuador in the fall of 1970. The petroleum prospects reflect the situation as of February 1973.

International Bank for
Reconstruction and Development
1818 H Street, N. W.
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CURRENT ECONOMIC POSITION AND
LONG-TERM PROSPECTS OF ECUADOR

TABLE OF CONTENTS

COUNTRY DATA - ECUADOR

AREA
271,000 km² [2]

POPULATION [a]
6.5 million (mid-1972)
Rate of Growth: 3.4% (from 1960 to 1971)

DENSITY
24 per km² [2]
200 per km² of arable land

POPULATION CHARACTERISTICS (1970) [a]

Crude Birth Rate (per 1,000)	48
Crude Death Rate (per 1,000)	14
Infant Mortality (per 1,000 live births)	87

INCOME DISTRIBUTION (1970) [a]

% of national income, lowest quintile	2.7
highest quintile	73.2

ACCESS TO PIPED WATER (1969) [b]

% of population - urban	92
- rural	9

NUTRITION [e]

Calorie intake as % of requirements (1964-66)	74
Per capita protein intake, grams (1962)	48

HEALTH (1968) [b]

Population per physician	2,770
Population per hospital bed	450

DISTRIBUTION OF LAND OWNERSHIP (1968) [c]

% owned by top 10% of owners	76
% owned by smallest 30% of owners	1

ACCESS TO ELECTRICITY (1962) [d]

% of dwellings	32

EDUCATION

Adult literacy rate % (1962) [f]	68
Primary school enrollment % (1967) [g]	76

GNP PER CAPITA in 1970 [1]: US $290

GROSS NATIONAL PRODUCT IN 1971

	US $ Mln.	%	1960-65	1965-70	1971
			ANNUAL RATE OF GROWTH (%, constant prices)		
GNP at Market Prices	1,606	100.0	4.6	5.5	7.0
Gross Domestic Investment	371	23.1	2.5	12.6	19.6
Gross National Saving	141	8.0	0.5	4.7	-28.0
Current Account Balance	-230	-14.3	.	.	.
Exports of Goods, NFS	257	16.0	2.9	3.2	7.2
Imports of Goods, NFS	466	29.0	5.1	9.8	36.8

OUTPUT, LABOR FORCE AND PRODUCTIVITY IN 1971

	Value Added		Labor Force [2]		V. A. Per Worker	
	US $ Mln.	%	Mln.	%	US $	%
Agriculture [3]	432	28.5	1.1	55.0	393	14.2
Industry [4]	405	26.7	0.4	20.0	1,012	36.7
Services [5]	678	44.8	0.5	25.0	1,356	49.1
Unallocated	.	.	-	-	.	.
Total/Average	1,515	100.0	2.0	100.0	2,761	100.0

GOVERNMENT FINANCE

	Public Sector [6]			Central Government		
	($ Mln.)	% of GDP		($ Mln.)	% of GDP	
	1971 e	1971 e	1965-71	1971	1971	1965-71
Current Receipts	7,091	17.2	14.4	4,864	11.8	9.3
Current Expenditure	5,988	14.5	12.3	4,369	10.6	8.5
Current Surplus	1,103	2.7	2.1	495	1.2	0.8
Capital Expenditures	2,594	6.3	5.1	1,410	3.4	2.5
External Assistance (net)	563	1.4	1.4	..	..	..

e Staff Estimate
.. not available
. not applicable

COUNTRY DATA - ECUADOR

MONEY, CREDIT and PRICES	1965	1969	1970	1971
	(Million S/ outstanding end period)			
Money and Quasi Money	5,446	9,660	11,539	12,619
Bank Credit to Public Sector	541	1,365	1,810	2,583
Bank Credit to Private Sector	4,106	6,388	7,527	8,321
	(Percentages or Index Numbers)			
Money and Quasi Money as % of GDP	26.2	31.7	32.8	30.6
General Price Index (1963 = 100) 7/	107.2	127.2	135.7	148.8
Annual percentage changes in:				
General Price Index	3.9	4.7	6.7	9.8
Bank credit to Public Sector	362.4	66.4	32.6	42.7
Bank credit to Private Sector	1.7	9.7	17.8	10.5

BALANCE OF PAYMENTS

	1969	1970	1971
	(Millions US $)		
Exports of Goods, NFS	220	256	257
Imports of Goods, NFS	330	361	466
Resource Gap (deficit = -)	-110	-105	-209
Interest Payments (net)	- 8	- 10	- 11
Workers' Remittances	..	..	..
Other Factor Payments (net)	- 20	- 24	- 24
Net Transfers	12	14	13
Balance on Current Account	-126	-125	-230
Direct Foreign Investment	75	90	157
Net MLT Borrowing	16	31	23
Disbursements	30	47	46
Amortization	14	16	24
Subtotal	91	121	1,180
Capital Grants 8/	-	4	4
Other Capital (net)	-	-	-
Other items n.e.i	40	- 1	18
Increase in Reserves (+)	5	2	- 30
Gross Reserves (end year)	65	83	63
Net Reserves (end year)	58	56	27

MERCHANDISE EXPORTS (AVERAGE 1965-71)

	US $ Mln	%
Banana	107.5	52.3
Coffee	36.8	17.9
Cacao	24.6	12.0
Sugar	9.0	4.4
All other commodities	27.6	13.4
Total	205.6	100.0

EXTERNAL DEBT, DECEMBER 31, 1971

	US $ Mln
Public Debt, incl. guaranteed	390.1
Non-Guaranteed Private Debt	..
Total outstanding & Disbursed	..

DEBT SERVICE RATIO for 1971 9/

	%
Public Debt, incl. guaranteed	12.0
Non-Guaranteed Private Debt	..
Total outstanding & Disbursed	..

RATE OF EXCHANGE

Through - 1970 (August 16)
US $ 1.00 = S/ 18.18
1.00 = US $ 0.055

Since - 1970 (August 17)
US $ 1.00 = S/ 25.25
1.00 = US $ 0.04

IBRD/IDA LENDING, (March 31, 1973)(Million US $):

	IBRD	IDA
Outstanding & Disbursed	35.7	14.8
Undisbursed	8.2	18.7
Outstanding incl. Undisbursed	43.9	33.5

1/ Ratio of Debt Service to Exports of Goods and Non-Factor Services.
2/ Annual Growth ratio relates to period 1966-71.
3/ Contains agriculture, livestock, forestry, fishing and hunting.
4/ Includes manufacturing, mining, public utilities and construction.
5/ Includes trade, transportation and public and private services.
6/ Excludes Social Security Institute
7/ GDP deflator.
8/ SDR's allocation.
9/ Ratio of debt service to exports of goods and non-factor services.
Sources: a/ National Planning and Coordination Board, Ecuador; b/ PAHO-Health Conditions in the Americas 1966-68, September 1970; c/ Ecuador: Encuesta Agropecuaria Nacional, 1968; d/ UN Statistical Yearbook, 1971; e/ UN, Demographic Yearbook, 1970 and FAO, Production Yearbook, 1970; f/ UNESCO, Statistical Yearbook, 1970; g/ UN, Statistical Bulletin for Latin America, 1970

Latin America and the Caribbean
May 1, 1973

CURRENCY EQUIVALENTS

Currency Unit	=	Sucre (S/)
S/1.00	=	US$0.04
US$1.00	=	S/25.00
S/1 million	=	US$40,000

GLOSSARY OF ABBREVIATIONS

BEV	-	Ecuadorian Housing Bank
BNF	-	National Development Bank
CENDES	-	Industrial Development Center
CEPE	-	Ecuadorian State Petroleum Corporation
CFN	-	National Finance Corporation
CIDA	-	Inter-American Center for Agricultural Development
COFIEC	-	Development Finance Company
EEQ	-	Electrical Company of Quito
ENPROVIT	-	State enterprise regulating trade in key commodities
ENTEL	-	National Telephone Company
EMELEC	-	Electricity Company of Ecuador
IEOS	-	Ecuadorian Institute of Sanitary Works
IERAC	-	Ecuadorian Institute of Agrarian Reform and Colonization
IESS	-	Social Security Institute
INECEL	-	Ecuadorian Institute for Electrification
INERHI	-	Ecuadorian Institute for Water Resources
INIAP	-	National Instiure for Agricultural Research
IPPF	-	International Planned Parenthood Federation

GOVERNMENT OF ECUADOR
FISCAL YEAR

January 1 to December 31

SUMMARY AND CONCLUSIONS

The development potential of Ecuador's considerable natural resources has not materialized significantly in the past. Economic growth in the last twenty years has been modest--about 5 percent per annum--and has stemmed almost exclusively from the expansion of agricultural export crops: first cacao, then coffee and more recently bananas. Although Ecuador was at one time the largest world exporter of cacao and bananas, the benefits of this growth have been largely concentrated, and the low purchasing power of large segments of the population inhibited the development of a domestic market which would stimulate the growth of manufacturing and the creation of new jobs. Unemployment and underemployment seem to have been increasing, and the average standard of living of the large majority of the population remains low.

The major obstacles to the mobilization of Ecuador's development potential have been the low and fluctuating capacity to import, the limited savings capacity of the economy, strong regionalism combined with a rigid social structure, and protracted political instability.

Ecuador is currently confronted with a great opportunity and challenge to achieve a faster and more balanced economic growth. Higher levels of foreign exchange earnings from petroleum exports should enable the economy to finance higher import levels of intermediate and capital goods and thus achieve much faster rates of growth of output and per capita income than in the past. Substantial tax revenues from petroleum should strengthen public finances, thereby enabling the government to support a high level of current expenditures and an increased public investment program without resorting to excessive borrowing.

Although in terms of its contribution to aggregate growth petroleum should play a leading role during the next several years, its direct effect on the standard of living of the population will be small. The spreading of the petroleum-generated wealth and opportunities over significant segments of the population will be one of the major problems facing the Ecuadorian authorities in the 1970s. Another major problem will be the growth and the diversification of the country's productive base so that when the expansion of the petroleum sector eventually levels off, other sources of growth will permit the country to continue self-sustained development. An appropriate development strategy for the 1970s will necessarily have to focus on the expansion potential of the petroleum sector and its possible contribution to output, foreign exchange earnings and public revenues, and on the use of these additional resources to expand output in industry and agriculture and to broaden the social and economic opportunities open to the mass of the population.

With 55 percent of the active population employed in agriculture, Ecuador still has a predominantly agrarian economy. In spite of its rich natural endowment, suited for a great variety of agricultural production, livestock and forestry, agriculture has expanded at a slower rate than the overall economy. The relatively slow growth of export crops in the recent

past and their limited prospects for further expansion can be attributed to a large extent to rigidities in external demand beyond the control of Ecuador. The most sluggish components of agricultural output have been, however, production for the domestic market. As a result, agriculture has been unable to keep up with rising urban demand for food and raw materials, and has not increased the income levels of subsistence farmers sufficiently to bring a significant number of them into the market economy. Apart from welfare considerations, so long as the bulk of rural population remains in small-scale subsistence farming, the agricultural sector cannot generate a significant demand for industrial products. While market signals have in the past led to efficient allocation of resources in export agriculture, neither market forces nor government efforts to stimulate agricultural production for the domestic market met with much success because of inherent rigidities in the productive structure. Among these rigidities are the unequal distribution of land, primitive systems of land tenure, inefficient marketing mechanisms, lack of credit and the paucity of technical improvements. The removal of these obstacles to agricultural development for the domestic market will require the government's active involvement in the formulation and implementation of comprehensive agricultural policies and appropriate public investment in these areas.

The contribution of manufacturing to output, export diversification, employment and income distribution has thus far been limited and its development potential has remained largely untapped. The main constraints to a more vigorous expansion of manufacturing have been the small size of the domestic market; high production costs and limited entrepreneurial interest in penetrating external markets; insufficient human, physical and financial infrastructure; and the absence of a sound national industrialization policy combined with coordinated government action to stimulate and regulate manufacturing expansion. While manufacturing output has increased rapidly in recent years, its contribution to total output and employment is still quite small.

While profitable opportunities arising from an expansion of domestic incomes and demand as well as from regional integration may be expected to provide an impetus to industrial growth, over the longer term it is unlikely that domestic and regional markets alone will generate sufficient momentum to substitute for petroleum induced growth, and increasing emphasis will have to be given to the promotion of industries oriented to broader markets. To open up these markets to Ecuadorian manufacturers will require an integrated and government-supported industrial production and export program, based on research, development and promotion; the program will also have to provide adequate guidance and incentives to attract both domestic and foreign financial, technical and managerial resources.

In view of the anticipated higher levels of economic activity induced by the production of petroleum (Chapter III, Section D), the substantial development potential in other productive sectors (Chapter III, Sections B, C and E), the improved financial position of the private and public sectors

(Chapter IV) and the favorable prospects for the external sector (Chapter V), GDP growth targets of the order of 10 percent for the whole economy and 8 percent for the nonpetroleum segment appear to be feasible in the period 1973-77, provided that sound economic policies are followed. These levels of growth would result in an average per capita income 30 percent higher in 1977 than at present and, hopefully, in a better distribution of income. To meet these growth targets, gross domestic fixed investment would have to increase by almost 10 percent annually during 1973-77, yielding a cumulative volume of investment 75 percent larger than in the previous five-year period. While the bulk of investment in this period will be in the petroleum sector, both public and private nonpetroleum investments will have to be considerably larger than in the past. It will be of utmost importance for the realization of projected petroleum investments--and of the overall growth targets of the economy--that reasonable incentives and stability of rules are maintained. This is especially important because of the early stage of development of the petroleum sector in Ecuador. An analysis of the public investment requirements in the various sectors and the technical and managerial capabilities at present available in Ecuador indicates that public fixed-investment growth rates of about 9 percent in 1972, 19 percent in 1973 and almost 22 percent in 1974 will be required if the projects currently in the pipeline are to proceed as scheduled. Somewhat lower rates of growth in public investment in subsequent years should suffice and be consistent with the overall growth targets of the economy. There remains the danger, however, that political pressures will lead to excessive increases in current expenditures, and that the absorptive capacity of the public sector will not increase as we expect, which would reduce the level of public investment. Indeed, if the capacity of the public sector to prepare and execute high priority investment projects does not increase as suggested in this report, it might well be advisable to develop petroleum resources at a slower pace than could be technically feasible to avoid wasting them in superfluous expenditures.

The effects of petroleum activity will be of such magnitude that the economy should not suffer from a savings constraint, provided that both the private and public sectors do not permit their consumption to exceed reasonable and adequate limits. In these circumstances, gross domestic savings could be expected to grow from the present 10 percent of GDP to over 20 percent in 1977. Over the period 1972-77, national savings could cover about 74 percent of domestic investment, compared with 56 percent in 1966-71. A pressing issue would be the removal of the institutional and technical bottlenecks that might obstruct the achievement of the private and public investment requirements and a more equitable distribution of the benefits of the development process. In order to utilize fully its own resources, as well as possible loans and credits from abroad, the government will have to expand substantially the capacity of the public sector for identifying, preparing and executing development projects. However, this expansion will tax the present very limited human resources of the public sector heavily and will require a massive training and organizational effort necessitating the government's full and immediate support. This, and the need to keep current nondevelopment expenditures under tight control, are the preconditions for obtaining lasting benefits from the petroleum boom.

In the recent past, the management of the Ecuadorian economy has been hampered by recurrent fiscal crises leading to inflationary financing from the Central Bank and to balance-of-payments difficulties. The underlying cause of these deficiencies in fiscal management has been the weakness of economic policy tools available to the fiscal authorities. Almost 50 percent of the public sector revenues have been earmarked and accrued automatically to various autonomous institutions and agencies in the rest of the public sector. The central government has lacked the mechanisms and the power to influence and coordinate the growth and allocation of those agencies' current and capital expenditures to conform with the priorities and availability of financial resources of the public sector. The present government is taking steps to increase control over budgetary allocations, to improve the level of knowledge and control of the finances of the rest of the public sector, to make periodic evaluations of the expenditures of the various components of the public sector, to centralize and increase control of external public borrowing and to relate budgetary appropriations to the objectives and priorities in the forthcoming National Development Plan. All these changes would contribute to creating an administrative system better suited for adequate financial and developmental policies. Without these measures, the likelihood of the government's carrying out a balanced investment program that would permit a sound allocation of the public revenues and foreign exchange generated by the petroleum sector is dim, since without a minimum control of revenues and expenditures no satisfactory allocation of current and capital expenditures can be expected.

Total public investment, fixed and financial, for 1973-77 is estimated at S/25.5 billion in 1971 prices. In addition, the public sector will require S/3.4 billion to cover amortization payments on existing external debt. Thus, total resources needed are estimated at S/29.3 billion. During this period, aggregate public savings are expected to amount to S/21.6 billion, provided the authorities restrain current expenditures to an annual real growth rate not in excess of 10 percent, which should be ample to achieve the several objectives postulated in this report, including activities aimed at increasing employment. Besides, some S/2.1 billion of gross official capital are expected from the existing pipeline of undisbursed loans, and a S/8.6 billion equivalent would be disbursed from new loans for prospective projects in which external multilateral and bilateral financial agencies are likely to exhibit an active interest. Thus, a gross inflow of external capital of a S/10.7 billion equivalent (US$428 million, or an average of US$86 million per year) would be forthcoming. Since amortization payments on the new debt are estimated at S/1.9 billion during the period, a total net inflow of external capital of S/5.4 billion would take place. This would be consistent with a much needed increase in foreign exchange reserves --the equivalent of three to four months import requirements by the end of the period. Moreover, the continuing participation of external development financing agencies might well be essential to achieve the required levels of public investments in terms of identification, preparation and execution of high priority projects which would help to meet the government's objectives

in the field of growth and improved income distribution. It should be noted that to help implement these objectives, official lending agencies are likely to find themselves associated with sectors and projects where the foreign exchange component is very small, and may find it necessary to finance a portion of local currency expenditures to achieve a meaningful level of involvement.

In the past few years, rapidly increasing import requirements, coupled with stagnating trends in major exports, have resulted in serious balance of payments difficulties, expanded external borrowings and depletion of foreign exchange reserves. Ecuador's capacity to import and thus to sustain economic growth and consumption will be substantially enlarged during this decade as a result of petroleum exports. Petroleum will be the single most important export item in 1973, and by 1976 it will earn more foreign exchange than all other commodities combined. The emergence of petroleum as Ecuador's major export, however, entails some risk of future distortions. By strengthening the balance of payments, petroleum exports may hide unfavorable developments in price-cost relationships and in the competitive position of the country's traditional and nontraditional exports, which from an employment point of view will remain far more important than petroleum. Thus, Ecuador's future exchange rate policy will have to be geared explicitly to taking into account not only the overall balance-of-payments situation, but also the international competitiveness of the main employment-generating activities.

Relatively high levels of imports will be required to sustain the rates of growth of the economy envisaged for the 1970s. Consumer goods imports are expected to grow at a faster rate than in the past, partly as a result of higher government consumption and more socially oriented investment expenditures, and partly because of increased overall levels of economic activity. High growth of nonpetroleum intermediate and capital goods imports will reflect the accelerated levels of economic activity in general and of manufacturing and construction in particular, as well as the import requirements emerging from the increased public investment program. Direct investments by foreign petroleum companies in exploration, drilling and pipeline construction --with an import component estimated at about 70 percent--are expected to continue, peaking in 1976 and declining thereafter.

Balance-of-payments equilibrium will require gross capital inflows totaling US$911 million in the period 1973-77, compared with a total of US$675 million in 1967-71. Direct foreign investment is expected to be the main source of external capital and is estimated to cover almost two-thirds (US$595 million) of the gross requirements. Most of these foreign investments (US$426 million) would be destined for the petroleum sector. Gross public capital inflows are estimated to provide the balance and would yield US$467

million, or an average of around US$93 million annually. */ Within this total suppliers credits are estimated to furnish some US$24 million annually (slightly higher than the levels disbursed in the past several years), and the remainder would come from external development financing agencies. Because of the large amortization and interest payments falling due in the period, the net transfer of external resources over the period would be much smaller, of the order of US$110 million. These levels of external financing would permit the accumulation of international reserves which will peak at the equivalent of almost four months' imports by 1977. This pattern of financing would also lead to an improvement in the structure of the public external debt. The average terms of gross public capital inflow are assumed at twenty-two years maturity, 5.5 percent rate of interest and 3.5 years grace, better than in the past; these averages result from the expected terms of different sources of external finance which may be available. With these terms and on the basis of the foreseen large expansion in exports, the debt service ratio is expected to fall from 15 percent of exports of goods and services in 1972 to a little over 10 percent in 1977. At the same time, the capacity to import will be expanding at a high rate.

In spite of petroleum prospects, Ecuador will continue being for some time a less developed country in Latin America. Although the government has decided to tackle some of the problems and obstacles that have traditionally inhibited the development of the country, such as the low saving capacity of the public sector and its limited power to orient economic activity, the sluggish growth of the agricultural sector, and the insufficient development of nontraditional exports, to overcome these problems will require significant changes in the economic and administrative structure of the country which can only be brought about gradually. During this transition period Ecuador should continue receiving a part of its external financing on concessionary terms. With respect to the longer run, the terms of borrowing should depend on the prospects for further development of the petroleum sector, on the changes that take place in the productive structure, and on the degree of success achieved by the five-year development plan approved by the government in 1972.

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*/ Balance-of-payments financial flows are expressed in current US dollars, while the dollar equivalents mentioned above are expressed in constant 1971 prices. This explains the small discrepancy in the figures.

I. INTRODUCTION

Ecuador is one of the smallest and, despite its considerable natural resources, one of the less developed countries in Latin America. Among the ten major South American countries it ranks ninth in territory (above Uruguay), eighth in GNP and GNP per capita (above Paraguay and Bolivia) and seventh in population (above Paraguay, Uruguay and Bolivia).

Its rich natural resources include a wide variety of climates, soils and topography, which provide the productive base for numerous agricultural crops, livestock and forestry. The Coastal Region (Costa) with its rainy tropical climate and fertile soils is suited for most tropical and semi-tropical products, as well as for beef cattle. The Sierra Region with its diverse altitudes is suited for raising most temperate crops and livestock. The Oriente Region, largely unexplored and undeveloped, is believed to have an important agricultural potential, and has recently attained economic pre-eminence through the discovery of considerable petroleum deposits. Moreover, lying at the confluence of the warm Equatorial Current and the cold Humboldt Current, the Ecuadorian seacoast is rich in marine resources.

The development potential of Ecuador's natural resources, however, has not significantly been utilized. Economic growth in the last twenty years has been modest--about 5 percent per annum--and has stemmed almost exclusively from the expansion of agricultural export crops: first cacao, then coffee and more recently bananas. Although Ecuador became in its time the largest world exporter of cacao and bananas, the benefits of this growth have been highly concentrated, and large segments of the population have remained at the subsistence level. Their low purchasing power inhibited the development of a domestic market which would stimulate the growth of manufacturing. As a result, the creation of new jobs appears to have lagged behind new entries into the labor force. Transport and power infrastructure are still insufficient, and health, education and housing facilities are very limited.

The major obstacles to the realization of Ecuador's development potential have been the low and fluctuating capacity to import, the limited savings capacity of the economy, strong regionalism combined with a rigid social structure and protracted political instability.

Foreign exchange earnings have been dependent on a few tropical agricultural products, highly vulnerable to fluctuations in demand and prices in export markets. Their stagnating trend, combined with increased import demand generated by rising incomes and a rapidly growing population resulted in mounting pressures on the balance of payments. Before the oil discoveries, these pressures had emerged as an insurmountable obstacle to higher rates of growth.

Secondly, the relatively low savings ratio, coupled with the high population growth rate, has kept Ecuador in the vicious circle of low saving and low investment. With an incremental capital output ratio of 2.8 and a

population growth rate of 3.4 percent, almost 10 percent of GDP has had to be invested just to avoid a reduction in the existing levels of per capita income; i.e., about two-thirds of the total savings effort expected in 1972 will have to be dissipated in maintaining the standard of living of the population. This pressure has been particularly strong at the government level, which had to provide the infrastructure and social services for the increased population. However, the tax system, eroded by evasion and multiple exemptions, has not been generating sufficient resources to meet these needs, and has led to the postponement of infrastructural works necessary to achieve higher levels of output and income. Thus, the limited saving capacity of the economy and the insufficient mobilization of financial resources by the public sector have acted as another limitation on Ecuador's development.

Thirdly, sharp geographic contrasts, limited communications and different ethnic origins of the population in the Sierra and the Costa, have resulted in the development of different economic structures with conflicting social, political and economic interests. Economic activity in both regions is predominantly agrarian, but in the Costa it is oriented toward plantation agriculture for export markets, and to import and export trade; in the Sierra it rests on haciendas producing for local markets and on small subsistence farms. Coastal mercantile interests have supported liberalization of foreign trade--currently the major source of tax revenues--and increases in money wages of the low-paid tenant laborers of the Sierra, with the objective of generating a market for imported consumer goods. This has been in direct conflict with the Sierra hacienda agriculture and manufacturing interests, based on production for the domestic market with the use of cheap labor; these groups have generally opposed social legislation and the lowering of protective tariffs. This cleavage--spearheaded by the city of Quito in the Sierra, the seat of government and the political center of the country, and the coastal city of Guayaquil, the economic and financial center--has taken place within the framework of a rigidly stratified society where wealth, prestige, religion, language and ethnic origin have differentiated a small economic and political elite in both regions from the large Indian and mestizo populations. 1/ It is worth noting, however, that in the last few years a growing process of internal integration has taken place, stimulated by the development of transport and communications and the accelerated migration from the Sierra region to the Costa.

The struggle for economic and political predominance has been largely confined to the upper classes of the two regions, focusing only marginally on the pressing social and economic problems of the great mass of the population. As a result of this excessive preoccupation with regional as against national objectives, Ecuador's history has been characterized by a high degree of political instability, where the strife for personal

1/ Although there are no official statistics of the ethnic composition of the population, estimates of the white population range between 10 and 15 percent; those for Indians vary between one-third and one-half of total population; and the rest is taken up by mestizos and a very small segment of Negroes and mulattoes. Spanish is the official language, but most of the Indians continue speaking Quechua, in some cases to the total exclusion of Spanish.

power has generated frequent changes in government, and the slow pace of social progress has led to recurrent civil unrest. Political changes have been responsible for lack of administrative stability reaching down to relatively low levels of government, and have limited the horizons of policy makers to the resolution of pressing current problems, precluding the adoption of policies aiming at achieving a faster and more balanced economic growth over the longer term.

Ecuador is currently confronted with a great opportunity and challenge to achieve a faster and more balanced economic development. The previous major constraints--especially balance-of-payments difficulties and limited public sector savings--could be overcome as a consequence of discovery of petroleum if appropriate policies are pursued to control consumption growth in both the public and the private sectors. The new government which came to office in early 1972 has recognized the substantially improved prospects for economic and social development and has prepared a Development Plan for 1973-77 which takes up the challenge posed by petroleum opportunities. This plan aims not only to accelerate economic growth, but also to cope with problems of social welfare which have been neglected by the pattern of previous growth.

II. GROWTH AND STRUCTURAL CHANGE

A. Recent Growth Performance

Sectorial Origin of Growth

Ecuador's economic growth appears to have accelerated from an average annual rate of 5 percent in the 1950s and most of the 1960s to 6 percent in 1969, 8 percent in 1970 and 7 percent in 1971. 2/ The major forces behind this acceleration have been the substantial investments by foreign companies in the petroleum sector, coupled with a continued expansion of the manufacturing sector and construction activities, and the recovery of banana production.

Over the last two decades, the structure of the economy has witnessed a slow shift of activity from the agricultural to the nonagricultural sectors. Agriculture's contribution to GDP is now around 29 percent, down from the 38 percent average of the 1950s. Within the growing nonagricultural activities, the services-producing sectors (including trade and government) have been the major contributors to long-term GDP growth.

Although overall agricultural growth trends have been less than satisfactory, there have been important changes in the composition of output. The most remarkable one has been the rise in importance of bananas as an export crop from less than 30 percent of total commodity exports in the early 1950s to over 50 percent in the late 1960s. Having earmarked a part of bananas export taxes for subsidizing a systematic spraying of banana plantations, and being virtually immune from storms, Ecuador has become the most reliable supplier of bananas. Further expansion of production, however, has been hampered by Ecuador's locational disadvantage vis-a-vis other producing areas. The contribution of the agricultural sector to export earnings has remained relatively constant (about 85 to 90 percent of the total) since the increase in banana exports has been offset by a relative decline in earnings from cocoa and coffee.

Next to agriculture, the manufacturing sector provides the highest contribution to GDP, with some 16 to 17 percent over the last two decades. Factory manufacturing, stimulated by government incentive and financial support, has grown at 10 percent or more in recent years. However, the apparent relative stagnation of small scale and handicraft industries has pulled down the average growth rate for the manufacturing sector to around 5 percent in the late 1960s. The overall real growth rate is probably underestimated because of excessive deflation (see Annex A for further details). Within the

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2/ See page 8 on problems for measuring economic growth in Ecuador.

manufacturing sector, food, textiles and chemicals have made a major contribution to growth. Ecuador started most of its metal processing, engineering and other advanced manufacturing industries in the last five to ten years. Being still in their infancy, they are small in size and their contribution to total manufacturing growth is relatively minor.

Construction has also made an important contribution to the total GDP growth. Starting with a 3 percent share in 1950, construction grew at a rate of 9 percent in the 1950s. Growth slowed in the early 1960s but further rapid growth in recent years expanded its share to 6 percent of GDP in 1971. Growing at an estimated 25 percent in 1970 and 17 percent in 1971, its contribution to growth rivaled that of manufacturing. Construction of roads and completion of the petroleum pipeline played an important role in the recent acceleration of its growth. Housing construction (estimated from building permits) apparently also increased but at a slower pace.

In response to a strong demand for electricity, the public utilities sector (electric power, water supply, and sanitation) experienced the highest growth rate among the major productive sectors (15 percent per year in the 1950s). Although this growth slowed in the 1960s, the share in GDP expanded from 1.0 percent in 1960 to 1.8 percent in 1971. Being still relatively small, the public utilities sector has contributed less than 3 percent to total GDP growth.

Value added by the mining sector has fluctuated around 2 percent of GDP over the last twenty years. With the discovery of petroleum in the Costa provinces in the 1950s, prospects for rapid growth in this sector appeared bright, but subsequent experience proved disappointing. After the initial moderate expansion of petroleum extraction, production actually declined in the 1960s. Output of nonfuel minerals also stagnated. The present petroleum activities in the Oriente region are being reflected mainly in the construction, transport and services sectors. With the recent initiation of petroleum production, this sector will, however, grow greatly in importance in the future.

Within the services sector, trade has been the largest group in the past, although recently it has been exceeded by private services. Together these activities accounted for one-fifth of total GDP in the 1950s, but they have grown faster than the rest of the economy, expanding their combined share to almost one-fourth of GDP in recent years. The national account estimates for private services and trade are quite weak. Together with public administration and defense, private services are derived as a residual from the total GDP. Therefore, growth estimates of these sectors as well as the apparent acceleration of GDP growth in recent years could well be spurious.

Table 1: INDUSTRIAL ORIGIN OF GDP GROWTH: TRENDS CONTRIBUTION AND STRUCTURE, SELECTED PERIOD AND CALENDAR YEARS 1950-71

(Percent)

Sectors and Industries	1950	1951-1959	1960-1964	1965-1969	1967	1968	1969	1970	1971
		Average Annual Rates of Growth in Percent (GDP at Constant Factor Cost) /1							
GDP at factor cost	..	4.7	4.5	4.9	4.8	5.0	6.3	8.8	7.6
Agricultural sector	..	3.4	4.4	2.2	0.9	- 0.9	5.2	6.2	1.7
Nonagricultural sector	..	5.5	4.6	6.3	6.8	7.6	6.8	9.9	10.2
Commodity producing	..	5.4	6.0	5.9	8.8	5.0	8.9	10.2	9.3
Mining and quarrying	..	4.3	5.7	5.3	6.4	6.4	3.1	0.9	4.4
Manufacturing	..	4.3	6.3	4.7	7.0	4.4	8.1	7.1	7.5
Construction	..	9.3	4.1	9.5	18.8	5.9	12.4	25.3	16.4
Electricity /2	..	15.0	8.8	9.1	4.8	11.7	15.0	10.7	9.5
Services producing	..	5.6	3.8	6.5	5.7	9.2	5.6	9.8	10.8
Transportation /3	..	3.9	1.7	2.9	0.5	5.3	5.4	8.3	6.5
Trade /4	..	6.9	3.3	4.8	6.9	6.3	7.4	5.8	10.7
Banking /5	..	14.0	6.2	4.7	5.9	3.7	14.4	13.5	12.5
Ownership of dwellings	..	4.0	3.1	3.7	3.5	3.1	5.8	5.0	5.8
Services	..	4.8	3.2	12.2	14.2	13.5	5.6	10.3	9.9
Public adm. and defense	..	5.4	6.6	6.0	- 4.3	16.7	- 0.3	18.4	17.6
		Contribution to Growth, by Industrial Origin (Percent of GDP Increment) /6							
Agricultural sector	..	27.9	35.8	15.2	6.5	- 9.1	25.9	21.8	6.6
Nonagricultural sector	..	72.1	64.2	84.8	93.5	109.1	74.1	78.2	93.4
Commodity producing	..	24.7	30.5	29.8	44.7	26.9	35.4	30.3	32.1
Mining and quarrying	..	2.0	2.8	2.4	2.9	2.8	1.1	0.2	1.1
Manufacturing	..	14.2	21.8	16.6	24.6	14.7	21.6	13.9	16.7
Construction	..	5.9	3.5	8.1	15.8	5.7	9.0	14.1	12.1
Electricity /2	..	2.6	2.4	2.7	1.5	3.7	3.7	2.1	2.2
Services producing	..	47.4	33.7	55.0	48.8	82.2	38.7	47.9	61.3
Transportation /3	..	4.1	1.7	2.3	0.4	4.1	3.1	3.4	3.1
Trade /4	..	16.1	8.3	10.7	14.9	14.3	12.5	7.2	14.8
Banking /5	..	4.9	3.7	2.8	3.5	2.3	6.4	4.6	5.2
Ownership of dwellings	..	6.4	4.8	5.0	4.6	4.2	5.7	3.5	4.5
Services	..	9.3	6.4	25.7	31.8	33.7	11.3	14.7	16.5
Public adm. and defense	..	6.6	8.8	8.5	- 6.4	23.6	- 0.3	14.5	17.2
		Relative Shares of the Industrial Structure (Percent of GDP) /7							
Agricultural sector	38.8	37.9	36.9	32.7	33.1	31.2	30.9	30.2	28.5
Nonagricultural sector	61.2	62.1	63.1	67.3	66.9	68.8	69.1	69.8	71.5
Commodity producing	21.5	21.7	23.4	25.1	25.3	25.4	25.9	26.3	26.7
Mining and quarrying	2.3	2.1	2.3	2.2	2.2	2.2	2.2	2.0	1.9
Manufacturing	16.0	15.4	15.9	17.0	17.0	16.9	17.1	16.9	16.9
Construction	2.7	3.2	3.9	4.4	4.6	4.7	4.9	5.7	6.1
Electricity /2	0.5	1.0	1.3	1.5	1.5	1.6	1.7	1.7	1.8
Services producing	39.7	40.4	39.7	42.2	41.6	43.4	43.2	43.5	44.8
Transportation /3	4.8	4.9	4.1	3.7	3.6	3.6	3.6	3.6	3.6
Trade /4	10.3	11.4	11.1	10.7	10.6	10.8	10.9	10.6	+10.8
Banking /5	1.4	1.9	2.8	2.8	2.8	2.8	3.0	3.1	3.3
Ownership of dwellings	8.1	7.5	6.8	6.3	6.3	6.2	6.2	6.0	5.9
Services	9.3	8.9	8.7	11.7	11.7	12.7	12.6	12.7	+13.0
Public adm. and defense	5.8	5.8	6.2	7.0	6.6	7.3	6.9	7.5	+ 8.2

/1 Average annual rates of growth for periods are based on the least squares of logarithms. Base year precedes the years indicated for growth rates.
/2 Includes electric power, gas, water supply, and sanitary services.
/3 Includes transportation, storage, and communications.
/4 Includes wholesale and retail trade.
/5 Includes banking, insurance, and real estate.
/6 Contribution to growth for periods is computed from the trend values derived by the least squares of logarithms.
/7 Shares for periods are computed from unweighted annual percentages to give equal weight to all years.

Sources: Tables 2.3 and 2.4 of the Statistical Appendix.

Major Uses of Resources

Consumption constitutes the major use of resources. Growing faster than the GDP, consumption expanded its share in GDP from 83 percent in 1950 to 90 percent in 1971. On the average, consumption increases absorbed four-fifths of the GDP growth in the 1950s. With import deficits mounting in the 1960s, consumption increments began to exceed the increments in GDP; the relationship rose from 1.02 in the early 1960s to 1.47 in 1971. Comparing the relative claims of both private and public consumption on growth, it appears that while the government contained its purchases of goods and services within the same or even a declining share of GDP, private consumption expanded considerably faster and used up over the years relatively more of the available resources in absolute as well as in relative terms.

Prior to 1970, the long-term share of the gross domestic investment (GDI) of GDP remained at about 15 percent, although annual investment expenditure fluctuated widely. Since 1968, and after a period of slow growth in the early 1960s, GDI started growing rapidly--about 20 percent per year--mainly as a result of stepped up investment in exploration and pipeline construction by foreign petroleum companies. This acceleration of investment in the last four years claimed one-half, and in 1971 three-fifths, of the increments in GDP. The combined increase in consumption and investment expenditures was one and half times the increase in GDP in 1968-69 and more than twice the GDP increase in 1971. The additional resources have been provided by rapidly mounting increases in net imports.

The public sector has maintained its level of investment at some 5 percent of GDP over the last twenty years. However, in a traditionally free enterprise economy such as Ecuador's, public fixed investment figures underestimate the government's efforts in investment activity since in several important sectors the policy has been to stimulate private investment indirectly through credit lines financed with public funds. These financial investments have been increasing over time and have been particularly significant in manufacturing, agriculture and housing.

After a period of relatively slow growth in the 1950s, private investment expanded relatively faster in 1960s and accelerated considerably in the late 1960s. With the exception of the petroleum sector, there are no data on sectorial composition of private investment. Indirect evidence points out, however, that the most important areas of private investment activity have been the conversion from Gros Michel to Cavendish bananas, the stepped-up expansion of factory manufacturing, residential and nonresidential construction and petroleum development.

Foreign trade has provided the resources which permitted Ecuador to expand simultaneously its consumption and its gross domestic investment beyond the limits set by its GDP. With exports accounting for about one-fifth of GDP and imports somewhat lower, Ecuador enjoyed a favorable balance

of trade with an export surplus amounting to an average of about 2 percent of GDP in the 1950s. However, unfavorable long-term trends eliminated the export surplus in the early 1960s. Continued and rapidly accelerating growth of imports finally led in the mid-1960s to large import deficits which reached almost 13 percent of GDP in 1971. The rate of growth for net factor payments abroad has also increased in recent years pari-passu with the acceleration of GDP growth, as the expanding import deficits required larger external capital inflows. Thus, net factor payments still represent the equivalent of 2 percent of GDP.

The Problem of Measuring Growth

There is no doubt that the Ecuadorian economy has been growing and diversifying. It has become, however, increasingly difficult to measure this growth and structural change. The coverage and particularly the quality of national accounts and the related basic statistics has deteriorated notably (see Annexes A and B). While national accounts for the 1950s and early 1960s were based on independent annual statistical information, in recent years they have been projected from the earlier estimates. In turn, the projected data have been fed as actuals in regression equations to estimate additional years, generating cumulative biases which distort the real pattern of structural change. National accounts are estimated in current prices. To measure growth in real terms, the Central Bank and the Planning Board have been using a general deflator constructed from the consumer and wholesale price indexes. In 1970, however, the calculation of the wholesale price index was discontinued, leaving the consumer price index as the only indicator of price changes in Ecuador. While the consumer price index may be relevant for deflating private consumption expenditure, it is inadequate for deflating each and every one of the components of national accounts. Where specific price increases exceed the consumer price index changes, the difference would be interpreted as real growth, and vice versa, introducing significant distortions in the measurement of structural change. Although some partial measures of economic activity are being continuously recorded by numerous agencies, much of the data produced is incomplete, not comparable over time, outdated and, in general, insufficient for the estimation of national accounts (see Annexes A and B for further details).

The formulation of short-term economic policies and the long-term planning of a changing economy require opportune and reliable statistics. During the next few years, while Ecuador absorbs the important impact that the rapid development of petroleum resources will have on its economy, the availability of high quality economic statistics will be essential for making appropriate policy decisions conducive to a rational allocation of scarce resources and an equitable distribution of the benefits of economic growth. Considering the long lead time for the development of an efficient statistical system and for the building of time series necessary for dynamic analyses of the economy, the correction of the present deficiencies should receive immediate government attention.

Table 2: GROWTH OF EXPENDITURE ON GDP: TRENDS, CONTRIBUTION AND STRUCTURE, SELECTED PERIODS AND CALENDAR YEARS, 1950-71

(Percent)

Expenditure	1950	1951-1959	1960-1964	1965-1969	1967	1968	1969	1970	1971
	Average Annual Rates of Growth in Percent (Expenditure at Constant Market Prices) /1								
GDP at market prices	..	4.8	4.5	5.0	6.2	4.9	5.8	8.3	7.0
Consumption	..	4.6	5.4	5.4	7.1	5.6	6.1	5.4	11.7
Private /2	..	(4.9)	(5.2)	(5.4)	(6.8)	(4.2)	(6.4)	(4.7)	(13.0)
General govt. /2	..	(2.7)	(6.2)	(5.9)	(9.5)	(15.3)	(4.3)	(9.9)	(3.8)
Investment /3	..	8.7	2.6	10.1	12.8	20.3	19.0	24.6	19.6
Fixed investment	..	9.6	1.9	10.8	13.9	22.0	20.1	24.5	19.3
Private /2	..	(7.8)	(4.2)	(12.9)	(17.3)	(29.9)	(29.2)	(28.8)	(25.4)
Public /2	..	(12.9)	(-1.1)	(7.4)	(9.6)	(11.0)	(5.1)	(16.0)	(5.8)
Exports /4	..	5.5	2.4	2.0	3.3	1.5	- 0.8	16.7	7.2
Imports /4	..	7.7	5.2	8.4	13.3	17.5	12.3	15.5	36.8
Net exports /4	..	/5	/5	/5	/5	-184.0	-60.8	-12.7	-107.3
Net factor income	..	6.9	- 5.9	5.0	- 4.3	12.0	- 1.0	15.0	8.5
Net indirect taxes	..	5.5	3.6	6.4	22.3	7.5	0.9	3.5	0.8
GFCCA	..	2.8	5.9	- 0.5	- 0.3	1.0	- 3.4	22.5	19.7
	Distribution of Growth (Percent of GDP Increment at Constant Market Prices) /6								
Consumption	..	80.6	101.7	95.3	100.0	101.1	92.4	57.7	143.4
Private /2	..	(73.0)	(83.7)	(81.6)	(95.5)	(61.1)	(73.9)	(39.9)	(136.8)
General govt. /2	..	(7.6)	(18.0)	(13.7)	(4.5)	(40.0)	(18.5)	(17.8)	(6.6)
Investment /3	..	23.9	8.7	27.6	26.5	56.1	50.7	51.9	56.1
Fixed investment	..	(22.2)	(5.7)	(25.5)	(24.7)	(53.0)	47.3	46.1	49.2
Private /2	..	11.8	7.2	(18.3)	(17.3)	(41.9)	(42.7)	(36.1)	(44.6)
Public /2	..	10.4	(-1.5)	(7.2)	(7.4)	(11.1)	(-4.6)	(10.0)	(4.6)
Net exports /4	..	- 4.5	- 10.4	- 22.9	- 26.5	- 57.2	- 43.1	- 9.6	-99.5
Net factor income	..	- 3.8	3.2	- 2.0	1.5	- 4.7	0.4	- 3.5	- 2.5
Net indirect taxes	..	10.8	6.9	11.4	28.9	14.1	1.5	3.8	1.0
GFCCA	..	3.0	6.5	- 0.4	- 0.2	0.9	- 2.4	10.9	12.7
	Relative Shares (Percent of GDP at Current Market Prices) /7								
Consumption	83.0	84.0	85.7	87.9	87.9	88.5	88.8	86.4	89.9
Private /2	(69.2)	(71.7)	(72.6)	(73.8)	(74.4)	(73.7)	(73.8)	(71.2)	(78.0)
General govt. /2	(13.8)	(12.3)	(13.1)	(14.1)	(13.5)	(14.8)	(15.0)	(15.2)	(11.9)
Investment /3	10.8	14.3	14.4	14.6	13.6	15.6	17.5	20.1	22.5
Fixed investment	8.5	12.2	12.8	12.7	11.8	13.7	15.6	17.9	19.9
Private /2	(5.8)	(7.7)	(7.3)	(7.7)	(6.9)	(8.5)	(10.4)	(12.3)	(14.4)
Public /2	(2.7)	(4.5)	(5.5)	(5.0)	(4.9)	(5.2)	(5.2)	(5.6)	(5.5)
Exports /4	19.2	18.8	18.3	15.9	15.9	15.4	14.4	15.6	15.5
Imports /4	13.0	17.4	18.4	18.3	17.4	19.5	20.7	22.1	28.2
Net exports /4	6.2	1.7	- 0.1	- 2.5	- 1.5	- 4.1	- 6.3	- 6.5	- 12.6
Net factor income	- 2.4	- 2.9	- 2.5	- 2.1	- 2.0	- 2.1	- 1.9	- 2.1	- 2.1
Net indirect taxes	8.8	9.7	8.6	8.7	9.2	9.5	9.0	8.6	8.1
GFCCA	5.5	4.8	5.0	4.6	4.6	4.4	4.0	4.6	5.1

/1 Average annual rates of growth for periods are based on the least squares of logarithms. Base year precedes the years indicated for growth rates.
/2 Data after 1964 relate to public and private sectors as defined by the NEPCB and are not comparable with preceding years.
/3 Gross domestic investment, including increase in stocks.
/4 Includes merchandise and nonfactor services.
/5 Import deficit appears in one or more years.
/6 Contribution to growth for periods is computed from the trend values derived by the least squares fitted to logarithms.
/7 Shares for periods are computed from unweighted annual percentages to give equal weight to all years.

Sources: Table 2.1 and 2.2 of the Statistical Appendix.

B. Population, Employment and Income Distribution

Ecuador's 6.5 million inhabitants are unevenly distributed throughout the country. The Costa and Sierra regions hold some 49 percent of the population each, and the largely unexplored Oriente region holds the remaining 2 percent. Total population growth seems to have accelerated from about 2.8 percent per year in the early 1950s to 3.4 percent in the 1960s. Because of lack of employment opportunities in rural areas, the major cities, especially Quito in the Sierra and Guayaquil in the Costa, have been major centers of attraction of domestic migration. Thus, while the rural population growth rate is estimated at 2.2 percent per year, urban growth rate, at 5.3 percent, is two and one-half times higher. This demographic increase, among the fastest in the world, imposes a tremendous stress on the existing social and economic infrastructure.

The age structure of the population is characteristic of a developing country with a very high population growth rate. Dependent population is over 50 percent of total population (48 percent under 15 years of age and about 3 percent 65 years and older), and thus the dependency coefficient is higher than 100 percent, compared with about 85 percent for all Latin America, and less than 60 percent for developed countries. As health measures continue reducing infant mortality (which at present is still very high) faster than total mortality, the population pyramid will become even "younger."

Despite the high rates of urban growth, Ecuador still remains a predominantly agrarian economy. Almost 60 percent of the population live in rural areas, and a large part of those classified as urban are in effect engaged in activities directly or indireclty related to agriculture.

Active population is about 32 percent of total population, and is estimated to be growing more or less at the same rate as total population. Employment in agriculture and manufacturing, the major productive activities, has been growing slower than the overall rate of growth of active population. More serious yet, the less than 3 percent growth of manufacturing labor force is far below the rate of growth of urban population, and substantially below the rate of increase of industrial output. Tertiary activities (trade and services) have had to absorb most of the increases in labor force, in most cases contributing to disguised unemployment in superfluous intermediary occupations. Recent data seem to indicate a continued increase in the overall rate of unemployment. The 1962 census registered about 60,000 unemployed or 4 percent of the labor force. The 1968 household survey showed a 5.5 percent rate of unemployment and a 19 percent rate among young men between the ages of 15 and 19. Since 1969, additions to factory payrolls fell to 4 percent per annum, from rates between 6 and 8 percent in the 1964-69 period.

With almost half of the total population under 15 years of age, the rate of growth of the active population should increase substantially in the future. Together with the strong rural-urban migration and a possibly higher participation of women in the labor force, greater demands for new employment will emerge in the coming years. Unless substantial modifications in existing productive practices are adopted--such as changes in land-labor relations or the use of more labor-intensive manufacturing processes--the present productive structure will be unable to cope with these demands.

Small and scattered public and private efforts in family planning are currently being made. The Social Security Institute's Medical Department runs a family planning program which it launched with its own resources. The Ministry of Public Health, with financial assistance from USAID, provides limited family planning assistance mainly through rural health stations. In addition, the Association for the Welfare of Ecuadorian Families has a family planning program in operation at two centers, one in Guayaquil and the other in Quito, with financial support from the International Planned Parenthood Federation (IPPF).

Ecuador has an extremely unequal distribution of income. The lowest two deciles of the economically active population earn about 2.5 percent of income, and the lowest half less than 10 percent. On the other hand, the top two percent of active population benefits from 30 percent of total incomes (see Table 1.5, Statistical Appendix). Agricultural incomes, taken separately, are similarly unequally distributed (see Table 7.4, Statistical Appendix). Low and unequally distributed incomes are associated with very low standards of living. Life expectancy--57 years for the whole country--is below the average for Latin America, and 15 years shorter than in the United States. The average daily caloric intake of the population is 25 percent below the average for Latin America, and the protein intake is one-third smaller than the Latin American average. Of every 100 live births, an average of 9 babies die before one year of age.

Any effort to improve income distribution must involve providing better employment opportunities for the more than 50 percent of the present labor force that is currently at the margin of the development process. Thus, in addition to absorbing the new additions to the labor force, the economy should be able to provide improved living conditions to the existing labor force. More than two-thirds of this marginal population are under-employed rural workers. Their underemployment is mainly due to the unequal distribution of land and the patterns of land tenure that, even in the presence of abundant land in some parts of the country, prevent the productive absorption of labor (see pages 21-23). Thus, improvements in the overall employment and income distribution situation will be closely linked to progress in the modification of the present agrarian structure.

III. DEVELOPMENT PROSPECTS AND POLICIES

A. Introduction

Ecuador has a considerable development potential. Besides its rich agricultural endowment and the largely unexploited fishing resources, the recent discovery of important petroleum deposits in the Oriente region puts the country in a privileged position among developing countries in terms of opportunities for economic development and social progress. Although in terms of a contribution to aggregate growth petroleum will play a leading role during the next several years, its direct effect on the standard of living of the population will be small. Ecuador will continue to remain for some time a fundamentally agrarian economy, with a major part of its population dependent on agriculture for food and income. The spreading of the petroleum-generated wealth and opportunities over a large segment of the population will be one of the major problems facing the Ecuadorian authorities in the 1970s. The other major problem will be to expand and diversify the productive base of the country so that when the expansion of the oil sector eventually levels off, other sources of growth will permit the country to continue on a self-sustained development path. An appropriate development strategy for the 1970s will necessarily have to focus on the expansion potential of the petroleum sector and its possible contribution to output, foreign exchange earnings and public revenues, and on the removal of the most serious constraints for expansion and distribution of income in the major nonpetroleum productive sectors. This chapter reviews the major trends and policies in the various sectors with the view to identifying their development potential as well as the major issues on which economic and social policy will probably have to focus.

B. Agriculture

Land Use

Ecuador can be divided into three agricultural regions distinguished by different geography, climates, patterns of production, land tenure, and settlement. Present land use and potential in the three regions are as follows:

Table 3: ACTUAL AND POTENTIAL LAND USE BY REGION, 1968
(thousand hectares)

Region	Crop Land	(%)	Cultivated Pasture	(%)	Natural Pasture	(%)	Total	(%)
West Coast (Costa)								
Potential /a	1894		788		410		3092	
Present use /b	1295	(61)	777	(66)	229	(27)	2301	(55)
Unused	599		11		181		791	
Highlands (Sierra)								
Potential	922		691		1310		2923	
Present use	820	(38)	286	(24)	624	(73)	1730	(42)
Unused	102		405		686		1193	
Eastern Lowlands (Oriente)								
Potential	435		2025		-		2460	
Present use	27	(1)	112	(10)	-	(-)	139	(3)
Unused	408		1913		-		2321	
Total Country								
Potential	3251		3504		1720		8475	
Present use	2142	(100)	1175	(100)	853	(100)	4170	(100)
Unused	1109		2329		867		4305	

/a Indicative notions prepared by the National Planning Board.
/b Estimates from the 1968 Agricultural Survey.

The Oriente region is a largely uninhabited hinterland of unknown agricultural potential, except for favorable conditions for European-type cattle down to an altitude of about 800 meters. Development is taking place by spontaneous colonization, but up to now less than one percent of the country's cattle population is located in this area.

Export-oriented plantations are the characteristic farm type in the tropical lowlands of the Costa. All the major export crops--bananas, coffee, cacao, and sugar--are produced in this region. Most pasture lands are being used very extensively and the area has a much larger potential for livestock production than the land use figures indicate.

The Sierra region provides most of the country's domestic food consumption. A wide variety of climates and soils allows a great diversity of production. Population pressure is highest in this region and crop land is increasingly scarce.

Agricultural production in Ecuador traditionally grew by the extension of cultivated area rather than the adoption of improved techniques. In the Sierra, area under crops grew by 2.7 percent while production increased by 3.5 percent during the 1954-68 period. With the spread of new plantations on the Costa, land under cultivation increased even faster than production, the rates being 4.5 percent and 3 percent, respectively, during the same period. This pattern of output growth cannot continue for long, especially in the Sierra. Raising the productivity of labor and land will have to replace extension of area under cultivation.

Organization of Production

Production for the domestic market takes place in a fundamentally different environment from production for the export market. The export economy of the Costa is of a more recent commercial origin than the hacienda economy of the Sierra--the breadbasket of the country--whose institutions date back to colonial times. Export production grew by credit, the development of an outward-oriented marketing system and access to technological improvement, all in contrast to autarkic hacienda production in the Sierra. While export-oriented plantations use predominantly full-time wage-labor and migrant workers at harvest time, resident tenants on the hacienda provide their own subsistence goods as well as a cheap source of labor to the landlord. Both on the output and input sides, therefore, a lower level of commercialization and integration with the market characterizes production for domestic consumption. This in large part accounts for the greater adaptability and quicker response to changing market requirements in the agricultural export sector, and for the failure of production for the domestic market to keep up with increasing demand.

Overall Output Growth

With 55 percent of the active population employed in agriculture, Ecuador still has a predominantly agrarian economy. Mainly because of the high proportion of nonmonetized subsistence agriculture, agricultural production and its growth are difficult to measure. Thus, estimates of agricultural growth in the sixties vary from 2.7 percent to 4.3 percent per year, with actual performance probably closer to the lower limit. The results in 1971 do not appear to have been different, since the increases in livestock production were to a large extent offset by declines in banana and coffee production and a poor wheat crop. What seems clear is that per capita production of foods has not risen significantly, if at all, during the past decade. Because of the slower growth rate of agriculture, its share in GDP declined from about 37 percent in 1960 to about 29 percent in 1971. Despite its considerable development potential, agriculture has acted as a drag on the economy, resulting in inflationary pressures and contributing to increasing food imports. Imports of agricultural products have been rising at the rate of 8 percent per annum in the last decade and, at over $50 million in 1971, they represent a significant drain on the balance of payments. On the other

hand, in the past agriculture has earned almost all of Ecuador's foreign exchange. Banana exports alone accounted for slightly over half of total foreign exchange earnings (an average of 53 percent between 1965 and 1971), and the four largest agricultural export products (bananas, coffee, cacao, sugar) for approximately 88 percent.

Trends in selected Products

In terms of value of production, bananas are by far the most important agricultural product, accounting for over one-fourth of total crop value. They are followed by rice, potatoes, coffee and sugar cane, each accounting for 8 to 10 percent of total crop value, and corn and cacao with about 5 percent each. In terms of area of production, however, corn dominates with about 300,000 hectares harvested, followed by the major exportable products--cacao, coffee, bananas and sugar cane--with areas fluctuating between 125,000 hectares (sugar cane) and 250,000 hectares (cacao). While banana is the major export product, corn is still the basic staple for most of the small subsistence farmers in the Sierra.

i. Crops Mainly for Export

Bananas grow in most of the coastal lowlands of Ecuador. In fact, they are so abundant that a portion of production is not harvested. Banana production is estimated at 2.5 million metric tons in 1971, but in the past it has fluctuated widely as it depended more on the level of production of other world suppliers than on domestic production conditions. Bananas are found on small and large farms, and productivity is largely independent of farm size. However, they are mainly a food crop for small farmers, with most of the marketable output coming out of larger plantations. Until 1964, Gros Michel was the only banana variety grown for export. With the appearance of Panama disease and changes in export markets and consumer preferences, a conversion in export production from the Gros Michel to the more resistant Cavendish variety had to be made. The Cavendish variety has higher yields but also higher water and nutritional requirements than Gros Michel; it needs to be grown under irrigation. The coastal belt of El Oro province, however, has excellent soil, water and climatic conditions for growing Cavendish bananas. There are no strong winds and the disease problems are not severe. In addition, all the plantations are near the coast and the export outlet, Puerto Bolivar. The remarkably fast and successful conversion to the Cavendish variety, together with the absence of natural hazards that plague Central American production, increases the prospects of Ecuador keeping its world market share instead of remaining as the residual supplier that it has been.

Coffee is the second most important export crop with production, largely of Arabica variety, ranging from 39,000 to 70,000 tons per year depending on weather. Coffee is typically a small holder crop, with over four-fifths of the coffee growers operating farms each of less than five

hectares. The coffee areas in Ecuador, although relatively free from pest and diseases are not fully suitable for Arabica coffee because of low altitude and erratic rainfall distribution. However, at present coffee prices, there is no alternative use of this land that would be more profitable to the farmers, particularly in the low income Manabi province. Future coffee prospects are limited by quota allocations and world supply and demand conditions. Ecuadorian production has generally exceeded the quotas of the International Coffee Organization (ICO). In 1972 Ecuador was expected to produce a coffee crop at least equal to, if not higher than the 1971 crop. The government had expected to take some 26,000 hectares of allegedly marginal coffee out of production, with financial assistance from the ICO. However, price increases generated by recent Brazilian production shortfalls are likely to inhibit further diversification of coffee areas.

Ecuador was once a major supplier of the world cacao market, but production has been stagnant since the 1920s. Yields have been falling as a result of fungus diseases, and plantations have been neglected because of the greater profitability of coffee and bananas. The volume of production has been maintained mainly through additional plantings, particularly in the provinces of Los Rios, Guayas and Manabi, which together account for about 90 percent of output. The National Institute for Agricultural Research (INIAP) has developed disease-resistant varieties, but farmers were not familiar with the advanced agricultural techniques required, and first commercial experiences have been less than satisfactory. The new varieties will make expansion of production possible, especially to replace bananas, but this will require intensive governmental assistance in the form of extension services and credit facilities. Most of Ecuador's cacao is exported as beans. Production and exports in 1972 are expected to be approximately the same as in 1971. The Ministry of Production, in cooperation with USAID, is helping farmers to prepare cacao beans and improve plantation management. The production and export of processed cacao has benefitted from the introduction of a tax credit subsidy in the amount of 7 percent of the export value.

Sugar production has more than tripled since 1960 when a quota in the U.S. market was obtained. All cane is grown under irrigation. In addition to the five large sugar mills, there are many small producers of brown sugar (panela), particularly in the highlands. This type of sugar is still popular among the Indian population, but output and consumption are declining in relation to centrifugal sugar. With relatively high cane yields and extraction rates, the sugar industry appears to be efficient and forward looking and further progress can be expected. Although domestic consumption has been growing steadily, the record 1971 production of 275,000 metric tons has generated large year-end stocks and will contribute to making more than 125,000 short tons of sugar available for export in 1972. Until recently sugar exports were wholly dependent on the U.S. quota. However, with increased production and higher world market prices, it might be possible for Ecuador to find new outlets for its sugar.

ii. Products mainly for Domestic Consumption

Wheat is grown in selected areas in the highlands, at altitudes ranging from 2,200 meters to 3,400 meters, and covers around 70,000 hectares. It is a cash crop for some 30,000 farmers; of these, 80 percent are small holders who plant an average of 1.3 hectares of wheat. In spite of price supports and the development of high-yielding wheat varieties for each of the main zones by INIAP, production has fluctuated around 65,000 metric tons throughout the 1960s. Due to increasing demand, imports increased from 40,000 metric tons in 1960 to 110,000 metric tons in 1971.

Barley is an important food crop in the highlands, and production averages around 100,000 metric tons per year. It usually occupies land which is too high or too poor for wheat. However, malt barley, developed by the breweries, is planted on the better soils and competes with wheat. Out of the 136,000 hectares of barley, about 45,000 hectares are under malt barley. The breweries operate farms and also contract with farmers.

Corn output averaged slightly under 240,000 tons annually in the 1969-71 period. The present rate of growth in output of corn is higher than that of the other cereals. Corn is grown in all parts of the country. The area planted to corn was estimated in 1970 at 292,000 hectares (237,000 hectares in the highlands, and 55,000 hectares on the coast). Yields average 900 kilograms per hectare and are slightly lower in the highlands than on the coast. The highlands produce a starch-type corn which is used for food. The lowlands produce a flint-type corn which is used only for feed. Flint-type corn from the lowlands is shipped to the highlands. However, corn is predominantly a subsistence crop, and it is estimated that only about 40 percent of total output is sold off the farm.

Potatoes are second only to corn as a food crop in the highlands. They are planted mostly in the high rainfall areas at elevations from 2,500 to 3,400 meters. Production increased from 187,000 tons in 1960 to 400,000 tons in 1971, but it fluctuates greatly from one year to another.

Rice is grown in the coastal lowlands. Planted area is estimated at about 100,000 hectares. Average paddy yields are around 2,600 kilograms per hectare. About two-thirds of the total production of 240,000 metric tons upland rice and one-third from the irrigated crop. Production fluctuates sharply (for example, 145,000 tons in 1968 and 288,000 metric tons in 1969). These fluctuations are mainly because of weather, but planted area also varies from year to year. Most of the rice growers are small tenant farmers, and a larger proportion of output is consumed on the farm. Rice exports averaged around 30,000 metric tons per year in the early 1960s. However, none has been exported since 1966, and resumption of exports is unlikely in the near future.

Animal products are the only dynamic element in agricultural production for the domestic market. Growth has accelerated from an average annual rate of 4 percent in the 1954-68 period to rates between 6 and 8

percent since 1969, in response to a rapid expansion of demand. The levels of per capita consumption are, however, still low: 7.5 kilograms for cattle products, 1.3 kilograms for mutton and 2.4 kilograms for pork in 1968 and, because of their high income elasticity, an acceleration of domestic demand is likely in the near future.

Ecuador has about 2.5 million cattle, two-thirds of which are beef type and one-third dairy. Most of the cattle is found in the western lowlands (1.4 million head) and in the highlands (1.0 million head) where, through the use of more productive breeds, somewhat improved pastures and better range management, the herd has experienced sizable increases in the last decade. Although in the western slopes of the Andes there are abundant grazing areas, the density of cattle is very low and there is substantial scope for further livestock development. Dairy cattle number about 800,000 head, and are concentrated in the temperate highlands. Ecuador has a large potential for expanding both beef and dairy products and has been receiving external financial assistance from various sources for this purpose. Three Bank Group loans and credits have been made for livestock development: a loan of US$4 million in 1967, a credit for US$1.5 million in 1970, and a credit for US$10 million in 1971. The first project assisted the development of coastal beef ranches and associated technical services, and the second project continued this program on an interim basis. The third project will continue to support coastal beef ranching but also will finance dairy development in the highlands as well as research, training and seed multiplication and certification.

Milk production is estimated at 700,000 liters per day. About 400,000 liters are pasteurized and sold for consumption as fluid milk. The Government establishes the price received by farmers for milk. The present price f.o.b. plant is S/1.60 to S/1.80 per liter (equivalent to U.S.6.1 ¢ to U.S.6.8 ¢ per quart), according to the area. Milk processing plants have suffered from a squeeze between rising production costs and a price that has been fixed for more than a decade. Unlike in livestock, processing plants are mostly owned by big manufacturers and the processing industry rather than milk producers absorb the squeeze.

Pork and mutton production has been growing at an estimated rate of about 12 percent annually. Favorable prices and a rapid turnover on capital have been important stimulating factors in this rapid growth, which is taking place largely without credit. On the other hand, prices have been relatively low, discouraging large-scale, market-oriented production. In the case of hogs, most of production takes place in small enterprises, with poor practices and low yields; about half of sheep's wool is processed and consumed on the farm. INIAP has been testing low-cost hog feeds made out of bananas, maize and cassava, with some success. With appropriate price-cost relationships and technical assistance, the prospects for expanding port production are good. The National Association of Sheep Breeders, a private organization with government support, has been upgrading the sheep

industry by importing purebred wool sheep and providing technical assistance. Further expansion of mutton and wool production can take place by making better use of the natural pastures in the highlands (paramos).

Poultry production is estimated at 9,000 metric tons and may be growing at 15 percent a year. Feed producers estimate that about 30 percent of the nation's poultry-meat and 50 percent of the eggs are produced by commercial operations. Feed prices are high. But the rapid capital turnover and product prices, considerably higher than for beef and pork, are providing sufficient incentives for the expansion of larger scale commercial poultry enterprises.

Despite the large forest area, forestry development is limited to the 1.7 million hectares of forest in the coastal lowlands. The 3 million hectares of Andean forests fulfill a protective function and should not be cut, and inaccessibility is likely to prevent for some time commercial exploitation of the approximately 10 million hectares of eastern forest. Most of the western forestry potential lies north of the Esmeraldas River, and an inventory and preliminary development plan has been prepared by United Nations Development Program. However, the heterogeneous nature of the forest and the uncertain market acceptability of many of the species has prevented commercial development to date. There is potential for developing fast-growing Pinus species to replace large imports of kraft paper used for banana packaging, and expanded reforestation of the Eucalyptus species in the highlands also appears promising. However, careful analysis of the economic and financial feasibility of the various proposals is needed. Integrally related to forestry development in the highlands is the problem of erosion, which causes severe losses in production potential. It is estimated that more than 200,000 hectares currently cultivated in the highlands are suitable only for forestry, and that this area is increasing to meet population growth.

Agricultural Potential

Ecuadorian agriculture has a large potential for increased output through improved use of land and of labor resources. There are great possibilities for increasing the productivity of land through irrigation. Dry coastal areas as well as the Guayas river basin could be converted to more intensive cultivation by irrigation both from river systems and ground water. About 180,000 hectares are now under irrigation and at least another 250,000 hectares could be profitably irrigated. In the Sierra region, about 90,000 hectares are under irrigation, often with small and inefficient systems, but this area could be doubled.

Productivity of labor in agriculture has not increased appreciably in the sixties--it is estimated to have grown by only 0.3 percent per annum. This indicates very limited progress in the use of improved techniques of production, such as selective mechanization and the use of modern inputs.

While mechanization of agriculture can only be brought about successfully through an integrated program which includes consolidation of small holdings, the application of the results of agricultural research can raise productivity within the existing structure of land tenure. A great deal of very valuable knowledge exists in this area. Founded in 1963, the National Agricultural Research Institute (INIAP), with a competent staff of over 100 professionals and considerable technical and financial assistance from abroad, has been turning out useful research results. INIAP has stressed field crop improvement and has developed improved seeds for most of the annual crops. Unfortunately, little or no payoff has been extracted from the investment in INIAP and its output of improved planting material, because the necessary complementary arrangements have not been made. Seed multiplication and distribution has not been organized, and the extension service is inadequate. As a result, the product of INIAP's research has had a limited impact on agriculture. There is an increasing recognition on the part of the government that the application of research is as important as research itself, and UNDP and FAO are assisting with a $3 million project aimed at improving the Extension Service with the view of spreading more effectively the results of research and thus increasing agricultural productivity.

Development Issues and Policies

Production for the domestic market has been the most sluggish component of agricultural output. As a result, agriculture has been unable to keep up with rising demand for food and raw materials from urban areas, and has not increased the income levels of the rural population sufficiently to bring a significant number of them into the market economy. Apart from the welfare considerations, as long as the bulk of rural population remains in small-scale subsistence farming 3/, the agricultural sector will not generate a significant demand for industrial products.

In the past, Ecuador's growth has depended largely on the import capacity generated by its traditional export crops, and substantial private and public resources have been channeled into export agriculture. The emergence of petroleum as a new source of foreign exchange, coupled with the limited prospects of growth in external demand for traditional export crops would permit shifting the emphasis and increase the relative importance that production for the domestic market can have in the future social and economic development strategy of the Ecuadorian government. Because of the large proportion of the active population depending for its living on domestic-oriented agriculture, improving productivity, employment and income opportunities there would have a significant impact on the overall living conditions in Ecuador. It would also reduce the rural-urban in-migration to the Guayaqyil and Quito areas, which is at present creating excessive demand on urban facilities and rising unemployment.

3/ The Planning Board has estimated that over one-third of Ecuador's population live in rural areas at subsistence levels, that is, at the margin of the market economy and with no saving capacity that would permit an improvement in their standard of living over time.

While market signals could lead to efficient allocation of resources in export agriculture--as it happened with the rapid conversion of Gros Michel bananas into the Cavendish variety--the removal of obstacles to development in agriculture for the domestic market will require the government's active involvement in the formulation and implementation of comprehensive policies related to marketing, land tenure and distribution and agricultural technology.

In the past, the government attempted to exert influence mainly by interferences with the price mechanism through price controls or price support schemes. However, price controls have not been enforced and have on the whole been unsuccessful to prevent rising prices and speculation. Similarly, the experience with price support programs suggests their inadequacy to stimulate production. Price support programs have been in effect for two major crops, rice and wheat. Prices paid to farmers in 1971 were equivalent to $102 per metric ton of wheat compared to the $72 Manitoba price. Millers must buy the domestic crop at this price in order to qualify for a supply of imported wheat. The National Wheat Commission finances the program partly with the proceeds of import taxes on wheat. However, the dispersion and smallholdings of wheat farmers, the lack of adequate storage capacity, the limited access of wheat growers to technical improvements 4/ and, in some cases, adverse climatic conditions, have reduced the effectiveness of the price support program. Thus, statistics show wide fluctuations in production but no growth or only slight increase (depending on the source) since 1960. Rice production is more competitive with world prices than wheat production; in fact, Ecuador used to export rice until the early sixties. In 1970 the support price was $150 per metric ton compared to $143 per metric ton for Thailand rice. As with wheat, most of the production comes from small farms, but a much higher percentage is subsistence production and thus is insensitive to prices. Despite the price support program, rice production has also fluctuated sharply and has not expanded significantly since the mid-1960s. With rising internal demand, the prospects of regaining an export position are dim.

Rapid growth of production, in particular cases where price-cost relations and marketing conditions have been favorable, shows that in general farmers do respond to profit incentives. The failure to induce changes in production for the domestic market via the price mechanism points to other rigidities that render price signals ineffective. Among these are the unequal distribution of land, systems of land tenure, inefficient marketing systems, lack of credit and unavilability of technical improvements.

The unequal distribution of land (see Table 7.3, Statistical Appendix) generates underemployment, inequality of rural incomes, and misallocation of land. The concentration of subsistence production on inefficiently small holdings results in the overcultivation of these holdings as well as the underemployment of their cultivators. An Inter-American

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4/ Although INIAP has developed improved wheat varieties for most of the country, only about 15 percent of total acreage is planted with certified seed.

Committee for Agriculture Development (CIDA) study estimated that 267,000 families, or 61 percent of the total, operated insufficient land to provide full and productive employment for a family whose work capacity under normal labor practices is equivalent to two man-years. 5/ Another 96,000 family units were landless rural laborers. The lowest decile of rural population earned only 2 percent of agricultural income and the lowest half only about 13 percent. In contrast, the top decile earned 58 percent of agricultural incomes (see Table 7.4, Statistical Appendix).

The unequal distribution of land and the inherent unequal distributions of income are common features of the Costa and the Sierra. However, prevailing systems of land tenure in the Sierra, where minifundio production is generally linked to haciendas, reinforce inefficient patterns of production. In various forms of land tenure the small subsistence plots have traditionally represented usufruct rights granted by landlords in exchange for labor obligations. 6/ Since minifundios are too small to absorb the labor potential of the families they sustain, the haciendas can draw on this labor force at abnormally low wage rates. The availability of cheap labor discourages the adoption of new techniques on the hacienda, while the cultivators of the intensely cultivated minifundios have no access to such improved techniques. As a result, since 1960, productivity per worker in agriculture has increased only 0.3 percent per annum, pointing to a low density of capital and stagnation in production methods.

This system results in the undercultivation of hacienda lands: just as labor is underemployed on the minifundio, land is underemployed on the hacienda. The pattern is substantiated by the inverse relationship between the productivity of land and farm size (see Table 7.5, Statistical Appendix). A more recent statistic shows that labor productivity varies directly with farm size (see Table 7.6, Statistical Appendix). Both relationships together confirm that labor intensity is inversely related to farm size. More equal distribution of land, i.e., the enlargement of minifundios at the expense of haciendas would increase productivity by reducing the underemployment of both land and labor. The present misallocation is even greater than the above relationships indicate if we consider that small farms are generally located on inferior lands and hillsides while hacienda lands occupy the most fertile areas. Efficient land use requires that more factors be applied to better land than to worse land. (Monoculture on subsistence farms and the fact that many of the intensively cultivated smaller farms are situated on unprotected hillsides has also led to severe soil erosion as each year large tracts of crop land under labor-intensive cultivation become unsuitable for agricultural production.)

5/ CIDA, Tenencia de Tierra y Desarrollo Socio-Economico del Sector Agricola-Ecuador, 1965, p. 15.

6/ For example, huasipungueros, a class of laborers attached to the land, had to work four to six days a week at wage rates ranging from nothing to half the wage rate of free labor, in exchange for the small plot and usually for some other privileges such as grazing cattle and gethering firewood on the landlord's land.

The Agrarian Reform and Colonization Act of 1964 set up the Ecuadorian Institute of Agrarian Reform and Colonization (IERAC), an autonomous agency entrusted with carrying out the aims of the law. Tables 7.7 and 7.8, Statistical Appendix, summarize IERAC's activity up to 1970. The Agrarian Reform Law specified the liquidation of huasipungueros and other "precarious" forms of tenure within twenty months after its passage. IERAC gave first priority to this task by seeking to establish the ownership rights of small holders and tenants. But there are strong indications that while servile forms of tenure were abolished on paper, the Reform has not succeeded in changing the economic relationship between the hacienda and the minifundio. A comparison of the Agricultural Census data of 1954 and of the Agricultural Survey of 1968 indicate that there has been no significant change in land tenure over a relatively long period of time (see Table 7.9, Statistical Appendix). In most cases, the reform only gave tenants title to the subsistence plots they had previously cultivated in exchange for obligations, leaving the hacienda intact. The average holding awarded to ex-peones for ten years of service to the haciendas was approximately 2.8 acres, leaving most families in economic dependence on the haciendas. After the reform, landlords often withdrew previous rights to grazing land and firewood from their ex-tenants, leaving them even worse off than before. Thus, the pattern of inefficient land use was not remedied by merely granting ownership right to small plots.

While land distribution and tenure reform will remain a precondition for the efficient use of factors of production, they are not sufficient to make production responsive to domestic market signals. Inefficient marketing organizations, lack of access to credit and improved techniques, and the residual nature of cash farming in small-scale farms prevent the responsiveness to domestic market conditions. Implicit in the promotion of domestic production is a greater support of small-scale farming than in the past. In contrast with export crops, the production of domestic crops is concentrated in smaller farms (see Table 7.10, Statistical Appendix). But most credit, improved inputs and technical assistance continue to flow into large-scale farming, and in the absence of government programs to support small farmers, a growing imbalance in patterns of production and income distribution seems inevitable. 7/ Such continued domination of credit and services by large-scale commercial farming would be to the detriment of the balanced growth of the whole economy. Not only does it lead to more unequal income distribution and patterns of production, but it prevents the generation of demand for manufactured products from the farm sector.

7/ For instance, dairy farming has become increasingly concentrated in large-scale farms. While total production and productivity are increasing due to improved inputs and techniques on larger-scale commercial farms, the lack of apprpriate channels to obtain and finance these inputs, coupled with a milk price freeze has curtailed the expansion and improvement of small-scale dairy farming, with the result that the overall number of milking cows has dropped.

Although data on the distribution of agricultural credit by size of a farm and crop are very scarce, it appears that hardly any credit is available for small-scale farming for domestic production. If only from an administrative point of view, private banks prefer to give loans to larger and more highly commercialized farms and plantations. In addition, much of small-scale farming is carried out under "precarious" forms of tenure or without any title to the land, and hence does not legally qualify for loans. Indivisibilities in machinery and equipment as well as lack of technological know-how of small farmers further reduce the feasibility of mechanizing individual small farms. Also, improvements in the production of goods that are not marketed cannot generate the monetary returns that are requisite to commercial financing, no matter how much labor or resources they may save. The large proportion of foodstuffs consumed on the farm is, therefore, another impediment to the flow of private resources into small-scale farming. 8/ Partly because of problems of small size, IERAC considers that cooperative projects are the only way to modernize small-scale farming. Several cooperative projects started as joint ventures of various institutions, e.g., IERAC would provide the land, INIAP would set up an extension service, the National Development Bank (BNF) would provide credit for production and the Ecuadorian Housing Bank (BEV) credit for housing. The success of projects is easily thwarted by the failure of any one of the institutions to cooperate. Banks in particular have been reluctant creditors to projects initiated by IERAC. This fragmentation of resources and effort has been conditioned by IERAC's scant human and financial assets. Strengthening the institutions responsible for land reform is necessary to transform scattered and unsuccessful projects into an integrated reform plan.

It is estimated that on the average, marketing costs run about 30 percent of production costs in domestic agriculture. Inefficient and/or monopolistic marketing systems are a serious impediment to the commercialization of small farming, and vice versa the lack of market outlets to small farmers serves the interest of the middleman. Larger commercial producers often market the surplus produce of small farms which they purchase at abnormally low prices. The lack of integration of subsistence farming to the money economy also serves the roving middleman who collects the surplus produce of small farms by truck. As a consequence of such marketing systems, market signals are not readily transmitted to the small producer, and increases in demand may merely add to intermediaries' profits. For example, livestock normally changes hands five to ten times before it reaches the slaughterhouse, and while prices paid to the beef grower rose from S/2-3 pound to S/3-4 pound over the last decade, the average retail price doubled from S/7 pound to S/14 pound.

Lack of adequate storage facilities is another aspect of deficient marketing systems. For off-farm storage of grains, there are some 83,000 tons of silo capacity and 92,000 tons of warehouse space compared with a total annual output of corn, wheat, barley, and paddy rice of around 620,000 tons. All but about 20,000 tons of this capacity is privately owned and operated.

8/ About half of corn, potato and barley, as well as minor livestock is consumed on the farm. The proportion is even higher for rice. Most wheat, however, is sold to local mills.

The storage deficit would be critical if a large proportion of corn and rice were not consumed on the farm. This deficiency, nevertheless, inhibits trade between the Costa and the Sierra and aggravates price fluctuations, thereby adding powerful disincentives for production. For example, the principal reason for the large month-to-month fluctuations in the price of potatoes is the almost complete lack of storage facilities. Large amounts of potatoes were wasted or fed to cattle in 1971. An association of producers sent representatives to other Latin American countries to explore export opportunities, but these efforts failed. Public investment in storage will be essential to avoid monopolistic practices in marketing and storage, which in the past have led to speculation especially in rice and wheat. The public marketing agency entrusted with regulating trade in key commodities, ENPROVIT, has had inadequate powers and resources to acquire adequate buffer stocks to eliminate speculation.

The government has started to give increased attention to marketing problems. A permanent FAO study group attached to the Ministry of Production researches marketing problems. In December 1970, Spain lent $5 million to Ecuador for the purchase of grain silos, driers and related equipment, as the first phase of a general marketing project for all agricultural commodities. A project to stabilize the maize trade between the Coast and the highlands is financed by Swiss capital, as well as by National Development Bank and National Finance Corporation. Only increased public participation in marketing systems can hope to reduce the number of intermediaries and the power of speculators. One step in this direction was the recent authorization of ENPROVIT to import wheat in competition with private importers. ENPROVIT will also operate new supermarkets in urban areas. Following recent punitive action against unscrupulous intermediaries in livestock, the government is expected to become increasingly active in livestock marketing as well, including nationalization of some major slaughterhouses.

In its "Philosophy and Plan of Action," the new government gave implicit recognition to the above problems by committing itself to land distribution, including compensated expropriation, and at the same time to the protection of efficiently run farm property. It pledged itself to the "democratization" of credit, to a massive step-up in the dissemination of technical information and aid, particularly to this reform sector, and to the improvement of present marketing systems and the control of intermediaries' margins. Unless these pronouncements are rapidly and effectively put into practice, there is little chance that agriculture, and with it the majority of the Ecuadorian population which depends on agriculture for a living, will play any significant role in or will enjoy the benefits of development in the years to come.

Public Investment

The share of fixed public investment in agriculture has remained relatively constant, oscillating around 10 percent of total public fixed

investment during 1966-71. In addition, there have been some credit lines financed by international organizations and channeled mainly through the Central Bank and the BNF. These credit lines have been mainly for livestock development and farm improvements, as well as for the purchase of agricultural machinery with suppliers' credits financing (Table 5.13, Statistical Appendix).

A major deficiency of public institutions in the agricultural sector, which largely explains the relatively low levels of public investment in agriculture, has been their laxity in the identification and preparation of adequate investment projects. In the past, public investment has been directed mainly to small colonization schemes, the construction of some storage and marketing facilities, and the purchase of agricultural machinery. At present, with the exception of irrigation projects, there are very few projects in a sufficiently advanced stage of preparation to be considered for investment in the near future. Among these, the government intends to continue the strengthening of research and extension facilities of INIAP with the assistance of the IDB; a foot and mouth disease eradication program, likely to be supported by the International Development Bank, should get started in 1973; a study to be financed by a United Nations Development Program grant scheduled to start in early 1973, will look at the economic feasibility of exploiting the forests in the northwestern lowlands, evaluating various alternative exploitation proposals and their requirements for infrastructure and processing equipment; and a number of official credit lines, with the financial assistance of AID, IDB and the World Bank, will provide funds for private investments leading to increased production of oil crops, African palm, cacao and livestock.

Because of its considerable effect on agricultural productivity, investment in irrigation deserves close attention and evaluation. Only about one half of the potentially irrigable agricultural land is presently being irrigated, and apparently it would be economically justified to expand the area. Lack of financial resources has been a major constraint in the past. Only 2.7 percent of public investment funds were budgeted for irrigation during 1966-70, and not all these amounts were actually made effective. The Ecuadorian Institute of Hydraulic Resources (INERHI), which is in charge of developing and managing the irrigation resources of the country (with the exception of the Guayas River basin), has been in the past technically strong on the civil engineering side, but substantially less equipped to deal with the agronomic and economic aspects of irrigation. This technical imbalance has prevented INERHI from developing and implementing a well-justified long-term irrigation program. Irrigation development should, however, accelerate in the future. The present Government assigns high priority to irrigation in its investment intentions, and this should be reflected in the forthcoming Development Plan for 1973-77. Also, approval in May 1972 of a Water Code which regulates the use of water and authorizes INERHI to fix and collect water charges to recover investments made from public funds could, if effectively implemented, contribute to the administrative and financial strengthening of the sector. Technical assistance to INERHI is now being provided by the IDB but further strengthening would still be essential in

order to carry out an enlarged irrigation program. In the longer run, however, the government should make a conscious effort to diversify its investment in agriculture, moving into projects that have a greater impact on the major socio-economic problems of the sector.

With respect to specific projects in the field of irrigation, the Montufar project in the Province of Carchi is the only major project currently under construction; the project is receiving financial support from the IDB and is expected to irrigate some 3,750 hectares by 1975. The Milagro project in the Guayas Province got underway in 1973 with financial assistance from the World Bank. It covers the irrigation of about 7,000 hectares and will benefit over 800 farms. Apart from Montufar and Milagro, there are a number of projects at an advanced stage of preparation and, if economically justified, they should be ready for the investment stage in two or three years from now. Such is the case of the Babahoyo and the first stage of the Daule-Peripa projects in the Guayas basin, the Carrizal-Chone project in Manabi, and the Cotopaxi Plan. The possibilities of utilizing for irrigation the residual waters of the recently constructed Poza Honda water supply scheme are also under study. Other major projects for which studies are expected to be carried out over 1973-74 include the Puyango-Tumbes project to be developed jointly by Peru and Ecuador, the Danco de Arena-Yaguachi project near the Milagro project and the Jubones project near Machala in the heart of the banana-growing area.

In the future, a very important part of the public investment effort in agriculture will have to be made indirectly through credit lines for on-the-farm investments and improvements to be executed by private farmers. When completed these various irrigation projects are likely to generate a high demand from farmers for financial and technical support to bring newly irrigated lands into full production. Thus, supervised credit lines will have to be made available to complement these irrigation investments. In addition, if the government engages in a process of agrarian reform, substantial needs for additional financial investment in the form of land purchases and credits for the beneficiaries will emerge. Increased public revenues from the petroleum sector, together with the financial assistance of international development agencies, are likely to provide sufficient funds to establish these credit lines. The major constraint, however, will be the technical assistance component that these credit lines will require. At present, financial intermediaries are not adequately staffed to handle these increased requirements, and agricultural technicians and extension workers are in short supply in the country. Unless a program for preparing medium level agricultural technicians is simultaneously carried out, the effectiveness of these investments will be greatly diminished.

C. Manufacturing

Recent Growth Trends

During the 1950s, manufacturing structure was dominated by small artisan and handicraft shops, not only in terms of the number of persons employed but also in the value of manufactures. In fact, over half of the total manufacturing output was from these nonfactory sources. Starting in the early 1960s, however, output of such handicraft or artisan operations began to stabilize, and recent increases in production have been the result of greater output by the factory sector.

Although factory production has become dominant both in value of production and employment, a significant portion of total manufacturing output and employment still arises in the handicraft-artisan sector. These activities are basically labor-intensive, with minimal use of machinery.

The passage of the Industrial Development Law in 1957 and the conversion in 1963 of the Government's financial agency--Comision de Valores--to a full development finance agency--Corporacion Financiera Nacional (CFN) --with funds for capital development of industry, seem to have been major stimuli to the expansion of manufacturing. Thus, in the early 1960s production started to react to the availability of fiscal incentives and credit, and manufacturing value added averaged 6.3 percent annual growth against average GDP increases of about 4.5 percent. This shift in growth was reflected in manufacturing's share of GDP going from about 15 percent in the 1950s to around 17 percent in the 1960s. Factory manufacturing appears to have been expanding much faster, accelerating its growth to close to 10 percent in the last years of the decade.

The acceleration and particularly the diversification of manufacturing brought with it proportionately greater emphasis on intermediate inputs and consumer-durable goods, which at present account for about 50 percent of manufacturing output as compared with about one-third in the early sixties. Most of production is oriented to the domestic market, with industrial exports accounting for around 5-10 percent of industrial output in the last few years. Half of these exports consist of sugar. The expansion of consumer-durable goods production seems to have been limited mainly by the reduced size of the domestic market, and the high production cost in relation to external markets.

There has been an increasing trend in the use of imported raw materials in manufacturing (46 percent of the value of output in 1961 against 52 percent in 1969), probably because the newer industries--those making metal products, machinery, chemicals and pharmaceuticals, paper and synthetic fibers--are largely based on foreign technology and more dependent on external sources for inputs. Most of the remaining inputs are agro-based or consist of processed fisheries products.

Unprocessed agricultural products have traditionally dominated exports. However, manufacturing exports--chiefly processed agricultural products and some manufactured goods--have recently begun to grow rapidly, although from a relatively low base. In 1971, these nontraditional exports increased by more than 60 percent over the previous year, mainly in response to the incentives provided by tax credit certificates and the interregional tariff reductions granted to Ecuador by other Andean Pact countries.

Labor Productivity, Employment and Wages

Labor productivity in manufacturing is regarded to be not only below the productivity levels in industrialized countries, but also below average for Latin America. This is a consequence of relatively less mechanization, obsolete equipment in some industrial branches, inadequate production planing and supervision and poorly trained workers.

Increases in employment have not kept pace with factory output, especially since 1969 when additions to factory payrolls dropped below 4 percent per annum; during 1964-69 they had ranged from 6 to 8 percent annually. Starting in 1968-69 investment to modernize and expand existing firms rose to 84 percent of all factory investments, with little increase in employment. This trend has undoubtedly continued and, although it has increased marginal investment per employee and output per worker, it has generated new factory employment at a rate substantially below the growth of urban economically active population.

The average annual wage and salary cost per employee has risen 6.2 percent per annum (in real terms) between 1964 and 1969. The real increase to the workers in the food industry, who made up almost 30 percent of all factory workers in 1969, was less than one percent. Some portion of the indicated pay raises reflect the greater expansion by 1969 of factories employing more skilled workers who receive higher wages than lesser skilled workers. As a result of the acceleration of inflation in the last two years, wage increases may have barely kept pace with the inflation rate.

Concentration of Output

Manufacturing industry in Ecuador is highly concentrated, both in terms of size of plants and geographical location. In 1969 less than 4 percent of plants accounted for 40 percent of factory employment, 60 percent of industrial payroll and 70 percent of production and value added. In some cases two or three plants account for the total output of the industry. This structure, while in part justified by the limited size of the market, does not provide for much competition nor for incentives to improve quality and reduce costs.

About 80 percent of Ecuador's manufacturing industry is geographically located in the Quito and Guayaquil areas. The government, through its incentive

laws and regional development programs, has attempted to encourage the development of manufacturing outside the two urban provinces of Guayas and Pichincha. There has been very little change, however, whether determined on the basis of employment, value of production or value added, since 1964. It seems that the location of a few factories outside of the two largest urban provinces responds more to the need of being near raw material sources (e.g., cement and other nonmetal mineral plants, sugar mills, fish canneries, petroleum refineries and some agricultural processing plants) than to the fiscal incentives for decentralization.

Manufacturing Investment

New fixed investment in manufacturing has increased rapidly in the 1960s, going from S/547 million in 1964 to S/1,001 million in 1969. Although the dominant and growing share of such investment (over two-thirds of total industrial investment in the period) resulted from expansion of existing firms, the latter accounted for only 41.5 percent of the new employment, indicating a shift towards more capital-intensive technology in existing plants.

Requests for classification of new factories under the Industrial Development Law in the period 1969-71 indicate investment intentions of the order of S/1.2 billion. If these investment intentions are carried out, they could bring an important increase in new plant investment, opening new product areas and encouraging a faster expansion in manufacturing. Because of their importance for longer term industrial viability, such planned new ventures should be closely monitored by the government and the implementation of the most promising ones should be actively encouraged.

Past Industrial Policies

The expansion of manufacturing in the past has been left largely to the initiative of the private sector. The government's action to stimulate and orient manufacturing development has been centered in the granting of fiscal incentives, the promotion of specific industries through various public and semi-public institutions and the provision of credit through public financial intermediaries.

Incentives. The Industrial Development Law, enacted in 1957 and amended several times, grants total exoneration of import duties on capital equipment and substantial reductions on imported inputs; also, reinvested profits are exempted from income tax. The high point in terms of numbers of firms classified under the Law was during the period 1963-65, averaging seventy-five firms per year. During the following years--1966-71--the average fell to forty-eight per year. Likewise, the total planned investment declined from an average of approximately S/600 million per year in 1963-65 to an annual average of about half this amount thereafter. This would seem to indicate that the effects of long-term credit availability--through the National Finance Corporation (CFN), starting in 1963--and the promotional efforts of the Industrial Development Center (CENDES), initiated in 1962, have complemented the incentives of the Law, encouraging investment intentions which otherwise might have not materialized.

On the whole, the Industrial Development Law has most probably stimulated new investments. The results seem to be, however, below expectations, considering the high cost for the Treasury in tax revenues foregone. The criteria of eligibility of industries to benefit from the Law have been too broad, and the screening of industries has been poor. As a result, the employment creation and the saving of foreign exchange objectives have not been met. When compared with actual results as recorded by the industrial censuses, the investment intentions declared by applicants for classification under the Law overestimated the labor requirements and the volume of exports, and underestimated the use of imported inputs. An important ingredient missing has been a continuous and coordinated evaluation of the actual uses and results of investment benefiting from fiscal incentives, with particular emphasis on the employment and foreign trade effects, to determine if corrective actions or policy changes are necessary to prevent a departure from the goals of industrial development.

Promotion. Industrial development and promotional activities are the main responsibility of the Industrial Development Center (CENDES), a public institution with representation from various public and private organizations and agencies. It prepares industrial feasibility and marketing studies, assists national and foreign investors with their investment plan; provides technical assistance to private firms, and is called upon by the public financial intermediaries (CFN and BNF) to assist their clients. A number of other agencies and institutions, among them CFN, COFIEC (a private development finance company), the Institute of Foreign Trade and the National Planning Board, engage in industrial studies and investigations, in some cases with external assistance.

On the whole, a significant amount of human and financial resources seem to be allocated to industrial promotion, and numerous studies have been made on export possibilities of a wide variety of products. Many have received favorable appraisals from both foreign and domestic prospective investors. However, the majority are still only "possibilities" due to marketing, infrastructure, legal, or other constraints, which did not receive any remedial attention from the government. Frequently, studies made under contract and receiving external financing have not been followed up and their recommendations have been ignored. Investigating businessmen have been discouraged by these problems--mostly ones which could not be effectively controlled or altered by any single firm. There have been many instances of duplication of efforts largely as a consequence of lack of coordinated planning and control. To some extent there has been a spirit of "free enterprise," with many agencies moving into areas where they believe technical assistance is needed and where the results would be helpful to the agency involved. There is, therefore, an urgent need for establishing and implementing a coordinated program for industrial promotion which will lead to the determination of priorities, the distribution of assignments in the field, the proper support of technical assistance projects by public agencies and the avoidance of duplication and poor utilization of information.

Credit. Until the mid-1960s no long-term credit was provided by financial institutions in Ecuador, except for some very limited amounts granted by the National Development Bank (BNF). Extensions of short-term credit by commercial banks took care of some medium-term needs, but this was available mainly for financially strong enterprises. A substantial portion of the development finance companies (COFIEC and CFN) loans were for working capital rather than fixed capital purposes. Those establishing new factories depended in large part upon their own and foreign financial participation, plus private equipment supplier credits. It has only been since 1968 that increasing amounts of longer-term credit have been available. The amounts available, however, still seem inadequate, accounting in 1971 for only 10 percent of the total credits advanced to manufacturing industries by the financial system. This has been a severe limitation for a faster expansion of the manufacturing sector.

The Andean Subregional Agreement

Andean Subregional Agreement was signed two years ago with the objective of creating a substantial market for Ecuador, Bolivia, Chile, Peru, Colombia and eventually Venezuela. Because of the less developed position of both Ecuador and Bolivia, they were given trade privileges and longer time periods for adjusting to a more open or integrated subregional market. Decision 29 of the Andean Commission set aside forty-nine products which Ecuador could ship to its then-three major Andean associates, starting January 1, 1971, without payment of duty and free of other restrictions. Only seven products were exported in 1970, valued at $659,000. In 1971 when the program was initiated, fifteen additional products were added to the above seven and the total official exports went up to $3,172,000. Depending upon the policies followed by the Andean governments during the next few years, and more particularly upon the reaction of producers of competitive products in the Andean Subregion, exports of the apertura products could in fact amount to as much as $10 million per year.

Decision 28 of the Andean Commission also reserved thirty-seven products for Ecuador which were not produced by any country in the subregion. Ecuador has twelve to eighteen months to prepare and present feasibility studies with an additional four to six years for the establishment of factories, after which the other Andean countries could move in where Ecuador has failed to implement. This listing is dominated by measuring devices for automotive use, time keeping mechanisms, small tools and equipment, special paper products and chemicals. These products present a number of production and marketing difficulties, requiring mass markets for economical operations and depending on satisfactory development of complex assembly processes using skilled labor and technology not abundant in Ecuador's present manufacturing environment. Others are subject to patent protection. In fact, the Institute of Foreign Trade and Integration analysis of the twelve more promising projects revealed that ten of these would require the use of foreign patents and supportive technical assistance. Although some estimates have been made that exports of these products could reach $10 million within four or five years, there is very little basis for such a projection, and it is

unlikely that these products will make a significant contribution to the export of manufactures during the 1970s.

The backbone of the Andean Accord is the Industrial Development Program (Decision 25) embracing some fifteen basic industrial groups. The intention is to plan production to meet likely area demand irrespective of national boundaries, and on scales appropriate for efficient production. Each participant is to present feasibility studies to the Andean Board which will in turn make recommendation to the Commission on the assignment of specific industries to countries. Approved factories will have free trade privileges within the subregion. These basic industries will require sizeable investments, and most likely the state will have to play a major role in their establishment and financing, possibly associating with foreign producers. Currently there are no concrete Ecuadorian proposals being studied and, because of the size and prolonged gestation period of these products, they can only be considered a long-term possibility.

The Government of Ecuador attaches relatively high priority to subregional integration. The implementation of the Industrial Development Law is being structured to give the highest incentives to projects that would fit into the Andean programs, and is allocating financial and human resources to preparing studies and investigations related to the Andean market. The benefits of Andean integration are, however, going to take some time to be achieved. Of the total nontraditional exports of $45 million in 1971 (including some agricultural products) only about 15 percent were for the subregion. Over three-fourths of all exports to the region are still bananas and cacao beans. Even the major exports to this region, processed fish and cacao products, so far constitute only 10 to 15 percent of the total exports of these products. The speed and comprehensiveness of the integration effort would have to be stepped up substantially to have a significant impact on manufacturing development in Ecuador in the foreseeable future.

Prospects for Industrial Development

The manufacturing sector has an important role to play in the economic and social development of Ecuador. Together with agriculture, manufacturing has the potential to generate new productive jobs in the intermediate period to absorb the foreseeable increases in the labor force as well as part of the current unemployment and underemployment. In the longer-term, it should replace the petroleum sector as the main generator of growth in the Ecuadorian economy.

In the past, the development potential of manufacturing has remained largely untapped, and its contribution to output, export diversification, employment and income distribution has been limited. The main constraints to a more vigorous expansion of manufacturing have been the small size of the domestic market; the high production costs and limited entrepreneurial initiative to penetrate external markets; and insufficient human,

physical and financial support for infrastructure. Although in the 1963 Development Plan, the government formulated a clear industrialization policy and established the legal framework for the implementation of this policy--including the creation of an interagency commission for the application of the Industrial Development law, which has been meeting regularly--in the past there have been some weaknesses in the administration and control of industrial incentives, as well as a poor coordination of the various agencies in charge of the application of industrial policies.

Domestic demand for manufactured products will undoubtedly expand as a result of the rapid growth of the economy and higher levels of public expenditure made possible by the petroleum sector expansion in the next few years. This demand could be reinforced if the government's stated intentions of improving living conditions and the levels of income of the poorest segments of the population are carried out. While the profit opportunities arising from an expansion of internal demand will give some impetus to industrial growth, the limited size of the potential domestic market will still preclude the development of industries very sensitive to economies of scale.

To the extent that Andean integration effectively reduces trade barriers, Ecuador will have preferential access to a market with a population ten times its own and a domestic product eighteen times as large. While there is little doubt that subregional integration has the potential to generate additional opportunities for Ecuador's manufactures, the limited progress achieved to date indicates that it will be a slow process. In any case, it is unlikely that in the longer-term domestic and regional markets alone will provide sufficient momentum for industrial production to substitute for petroleum induced growth. Considerable emphasis will have to be given to the promotion of industries oriented outside of the region.

Because of the limited number of skilled workers and industrialists with sufficient managerial experience and commercial aggressivity, Ecuador would have to concentrate initially on those product lines in which it has the greatest comparative advantage (i.e., labor intensive products, using cheap domestically produced inputs and oriented primarily to the protected domestic and regional markets). Ecuador must, however, build on this first step and organize an integrated and government-supported industrial production and export program based upon research, development, and promotion, providing sufficient guidance and incentives to attract both native and foreign financial, technical and managerial resources. This program must aim at a rapid transfer of technology and managerial knowledge into the country to enable it to compete successfully in world markets. Especially in those branches of manufacturing requiring more advanced management and technical know-how as well as marketing expertise in world trade, it will be necessary to encourage foreign participation in industrial equity and financing, according to national and subregional guidelines and regulations. Some of this technical knowledge exists in the subregion, and the Andean

Development Corporation could help to mobilize. Most of it, however, will have to be sought outside of the region, in which case the technical and financial assistance of bilateral and multilateral development agencies can be of crucial importance.

While the broadening of the enterprise and product base for future industrial expansion is likely to be carried out largely by the private sector, the government will also have to play a key role orienting, supporting and also participating directly in selected industrial activities. In this sense, the government has expressed its intention to reserve for the public sector those industries that could be considered as basic or strategic, such as steel, cement, basic chemistry and those derived from petroleum and other minerals. This increased government participation will require a substantially improved coordination between the industrial programming, financial and promotional activities carried out by public agencies.

The application of the Industrial Development Law will have to stress even more than before the employment generation capacity and the export orientation of industries aspiring to obtain tax incentives. Adequate follow-up procedures have to be instituted to ensure that the objectives of the Law are achieved in practice. There is a danger that, by strengthening the balance-of-payments position, earnings from petroleum exports will permit imports of a variety of goods which might otherwise be produced domestically at lower costs and contribute to the expansion of employment. This situation calls for an appropriate exchange rate policy and also for some degree of protection, within the framework of regional integration agreements, for infant industries. Such tariff protection, however, must be gradually reduced to encourage efficiency and competitiveness in external markets, and will have to be closely related to the levels of fiscal incentives and other export promotion efforts. Feasibility studies should evaluate the economic significance of the use of domestic raw materials and additional manpower, as well as the convenience of geographic decentralization of industries. Promotional programs should also conform to the national guidelines for industrial development.

The availability of public financial resources in the next few years will enable the government, with the assistance of international financial agencies, to provide increased financial assistance to the private sector, and to use the credit mechanism to orient industrial development to those production lines considered most dynamic and desirable for the balanced development of the country. In the past, industrial credit has been available mainly to large and medium-size firms. To achieve a faster expansion of manufacturing, it will be necessary to channel credit also to smaller enterprises, which have difficulty in obtaining credit at reasonable terms. This will in turn require more supervision and technical assistance from financial intermediaries than is considered "normal" in business operations, and will call for a strengthening of the technical staff of financial intermediaries, particularly by CFN and BNF.

But the ultimate results of the government's efforts to stimulate the manufacturing sector will depend not only on policy changes or improved coordination within the industrial sector. Complementary government action will be required in the education field to improve the skills and productivity of workers and the efficiency of management transport and power infrastructure must be planned and provided, marketing channels for domestic and external markets will have to be developed, technological know-how appropriate for the particular combination of productive factors and inputs have to be found and, probably most important, the lower income groups, presently operating at a nearly subsistance level, must be upgraded and integrated into the stream of economic life of the country. This can be accomplished by broadening the domestic market and increasing the effective demand for manufactured products. Appropriate government action in some of these fields will clearly be a precondition for accelerated industrial expansion.

D. Petroleum 9/

Past Production and Prospects

Petroleum was discovered in Ecuador on the Santa Elena peninsula in 1923. Production gradually rose to a maximum of 10,140 barrels daily in 1955, enabling the country to export small quantities. In 1956 production from the existing Santa Elena fields started to decline, and by 1958 Ecuador again became a net importer of crude petroleum and refined products. By 1971, domestic production contributed only 15 percent of local requirements while net imports accounted for an outflow of some US$17 million, the largest single drain on foreign exchange for the Ecuadorian economy.

A new phase in Ecuador's economic development began with the discovery of petroleum in the Oriente region in March 1967, the gradual development of a hydrocarbons resource base, the construction of the first major pipeline across the Andes and the beginning of petroleum exports in August 1972.

The area under concession in Oriente covers 6.6 million hectares of which about 1.1 million are controlled by a Texaco-Gulf partnership. The rest is held by a variety of foreign companies ranging from large international concerns to small independent companies. Petroleum exploration has been both costly and difficult, owing to the Oriente's remoteness and dense forestation. While most of the region has been already explored by geological and geophysical methods, only a very small portion has been proven by drilling. Actual and probable reserves in the Texaco-Gulf concessions are estimated to be in the neighborhood of 3 to 4 billion barrels--a potential production level of 400,000 barrels daily. Reserves in the rest of the basin area are more speculative. In Ecuador, the availability of crude petroleum east of the Andes is not sufficient to create a capacity for exports. Reserves must be such as to warrant the construction of pipelines. Because of the distance (500 kilometers) these pipelines have a capacity of not less than 150,000 barrels daily.

9/ See Annex C for a more detailed review of the Petroleum Sector.

It is technically feasible for Texaco-Gulf to connect new fields and increase pipeline capacity from the present 250,000 barrels daily to 400,000 barrels daily by 1975. On the premise that further discoveries are made in other areas, it is assumed that some 200,000 barrels daily would be available for export by mid-1979 and a second pipeline, possibly to the Guayaquil area, would have to be completed by that date (see Table 8.27, Statistical Appendix). These estimates imply the progressive development of a potential oil area huge in size and so for only barely explored.

Marketing of Petroleum

Initially some 50 to 60 percent of Ecuadorian exports of crude petroleum will go to refinery markets east of the Panama Canal, the balance being distributed along the Pacific Coast of North and South America. Oil moving through the Panama Canal will be refined principally in Trinidad, Puerto Rico and at Colon in Panama. In the longer run, an increasing proportion of crude exports is likely to move into the Caribbean and U.S. East Coast markets because of its product yields and its relatively low sulfur content.10/

In the Andean group, Chile and Peru are net importers of crude and refined products and both could provide a market for Ecuadorian petroleum during the next few years. Recently Peru has discovered oil in the same sedimentary basin area as Ecuador, and as a result it may become a net exporter of petroleum by the end of the decade. In Chile the outlook is different, since output of petroleum has stabilized while domestic demand is growing at around 8 percent annually. At this rate, Chilean imports could triple within the next ten years from the present level of 50,000 barrels daily. Colombia's petroleum production has been declining for some years, and if this trend persists, it would eventually become a market for petroleum from northern Ecuador.

During most of the 1960s, the price of petroleum experienced continued declines in the international markets. Events in 1970 and 1971 reversed this downward trend and resulted in increases of both f.o.b. realized prices and tax reference prices at the principal export centers. The major contributing factors were the sharper than expected increase in world demand, the constraints placed on the availability of oil by the closure of the trans-Arabian pipeline and the cutback in Libyan production, and the shortage of tankers which resulted from the increased reliance on long-haul crudes from the Persian Gulf. Further negotiations between the major oil exporting countries and the international oil companies are still taking place, and the upward trend in prices is likely to continue for some time. These developments have improved considerably the expectations of Ecuador with respect to government revenues and foreign exchange earnings from oil operations.

10/ Texaco-Gulf exports crude with an average API gravity of 28° and a sulfur content of 0.9 percent. The sulfur content of Ecuadorian crudes is not as low as the Indonesian (0.1 percent), Nigerian (0.15 percent) or Libyan (0.25 percent) crudes, but it is lower than most Venezuelan or Middle East crudes.

Contribution to Growth

Petroleum activities will generate significant contributions to public revenues and to foreign exchange earnings. Net foreign exchange earnings would increase from US$72 million in 1972 to US$290 million in 1977, and public revenues from about US$30 million to about US$190 million equivalent in 1977. Total contribution of petroleum to GDP is expected to increase from 2.6 percent in 1972 to about 9 percent in 1977. The capital intensive nature of the petroleum industry severely limits its direct contribution to development, with most of the income-creating effects being achieved indirectly through the use of government revenues.

Table 4: IMPACT OF PETROLEUM DEVELOPMENT, 1972-77
(millions of U.S. dollars)

	1972	1973	1974	1975	1976	1977
Foreign Exchange (current prices)						
Investment	108	48	68	52	129	129
less Imports	76	34	48	36	90	90
Total	32	14	20	16	39	39
Exports	53	192	193	240	328	322
less Remittances	13	45	44	53	71	71
Total	40	147	149	187	257	251
Total Foreign Exchange Earnings	72	161	169	203	296	290
Value Added (constant 1971 prices)						
Total GDP	1,823	2,099	2,239	2,434	2,693	2,880
Payments to Government /a	33	116	115	140	190	187
Wages and Salaries	2	5	6	8	10	12
Investment Income and Depreciation	13	43	42	49	65	63
Total	48	164	163	197	265	262
% Share of Petroleum Sector in GDP	2.6	7.8	7.3	8.1	9.8	9.1

/a Including 90 percent of profit sharing.

Development Issues

The major issues concerning future petroleum development in Ecuador are related to: (a) the structure of the tax system; (b) the contractual arrangements with foreign companies; and (c) the government's institutional and technical set-up to administer petroleum resources. The first two issues have a bearing on the incentives to carry out a sustained exploration and development program. The importance of these elements cannot be overemphasized. Under Ecuadorian conditions, it takes four to five years from

discovery to develop and bring an oil field into production. Thus, while a reduction in the exploratory effort will not affect oil exports in the short-term, it will have a determining effect on the longer-term productive capacity. The last issue reflects on the government's ability to protect the more immediate interests of the country adequately and at the same time ensure the longer-term viability and development of the resource.

The system of petroleum taxation in Ecuador comprises four major elements: royalty, income tax, export tax and employees' participation in profits. These last two elements set the Ecuadorian system apart from the existing systems of taxation in most petroleum producing countries, which are composed only of royalty and income tax. Thus, compared to other petroleum producing countries, the share of revenues related to the level of production is higher (55 percent) and that related to net profits, lower (45 percent). This system makes the tax structure relatively inflexible to changes in production costs in the different petroleum producing areas and could lead to the use of the tax reference price as an adjustment mechanism. The disadvantage of using the tax reference price as to reduce the tax burden and preserve the competitive position of crude exports in external markets, is that it does not lend itself to comparisons with other oil producing countries. In general, it would be desirable that the tax and participation system in Ecuador be brought into harmony with the system prevailing in the OPEC member countries.

The Hydrocarbons Law promulgated in September 1971 reduced the exploitation period after which the concessions revert to the State and increased minimum work obligations in comparison with existing concessions and contracts. While a subsequent decree softened up somewhat the dispositions of the Law, it forces the reversion of some four million hectares to the government in 1973 (to be developed directly by Ecuadorian State Petroleum Corporation or under exploitation contracts with private companies), leaving less than two million available for the companies. Whether or not the resulting size of the concessions will be sufficient to support a successful venture in Ecuador will very much depend on the results of explorations, costs of production and accessibility to markets, and the possibility of assembling a volume of production large enough to justify the construction of additional pipeline capacity.

The outstanding fiscal and contractual issues are very complex and can only be approached through the negotiation of a global and stable package of taxes and interrelated regulations. The aim is a maximum level of benefits from the point of view of the country without eliminating incentives for the further development of hydrocarbon resources. Since oil is a worldwide commodity, the tax-profit relationships can only be set according to Ecuador's position in the world oil economy vis-a-vis other producing countries regarding costs of production, distance to markets, quality of the crude, and stage of development of the resource.

Negotiations with the oil industry involving some of the most technically sophisticated companies in the business will require from the government a great deal of technical preparation and internal coordination. The Ministry of Natural Resources and Tourism (Directorate of Hydrocarbons) together with the Ecuadorian State Petroleum Corporation (CEPE) are in charge of the execution of petroleum policies. While the Directorate of Hydrocarbons has been operating for some time in the petroleum field, it would have to be substantially strengthened both in terms of organizational structure as well as in technical capacity (see Annex C for details). CEPE was created by law in 1971, but remained inactive until mid-1972 when the present government approved a revised version of the original Law. It will take at least one year to organize CEPE, select personnel and draw up a minimum work program. The appropriate staffing and organization of CEPE is of utmost importance and urgency, since at least 1.6 million hectares should have reverted to the State during July-August 1973 as part of the agreements governing the "model" contracts. The State may explore or exploit these areas only through CEPE. In addition CEPE will be in charge of managing the national refinery, now in the planning stage.

E. Issues and Public Investment Possibilities in Other Sectors[11/]

Fisheries

Ecuador's fisheries industry has a large potential. Ecuadorian offshore waters are influenced by the cold Humbolt current (which flows up the west coast of South America), by the warm Equatorial current and by the flow from the Guayas river. The currents and the river are rich in nutrients and bring about appropriate water temperatures and abundant fish populations. Both skipjack and yellow-fin tuna as well as shrimp and lobster, are found in the waters of Ecuador.

Fish production has undergone extraordinary growth in recent years, stimulated primarily by high U.S. demand for shrimp, lobster and tuna. Exports, most of which are processed, rose from $6.4 million in 1965 to $9.6 million in 1970 and $17.7 in 1971. The fishing fleet is privately owned, and is made up of some 300 or more vessels ranging up to 100 feet in size. Apparently this rapid expansion has led to overfishing of shrimp and overinvestment in shrimp trawlers in relation to known shrimp resources.

The fish-processing industry has been stimulated by tax advantages and import privileges granted to new industries. However, the growth has been unbalanced to the extent that no similar stimuli has been given to extractive activities, leading to overinvestment in processing facilities

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11/ For projects in the 1972-74 Pulbic Investment Program see Tables 5.1 to 5.13 in the Statistical Appendix.

relative to fishing vessels and harbor construction, which now represent the main bottlenecks to future expansion. A further imbalance in past expansion of the fisheries industries is that growth in the export market has not been paralleled by growth in domestic consumption. One reason is undoubtedly the lack of marketing facilities for fresh seafood, particularly a lack of ice-producing and unloading facilities at fish-landing sites. In contrast to export production, production for internal consumption is a nonmechanized artisan trade. Not only could fresh seafood become a more important source of food supply, but fishing should provide more of the fishmeal needed in the expansion of livestock and poultry production, as well as alleviate Ecuador's deficit in edible oils. Even fish oils continue to be imported at a rate about twice the domestic production.

Apart from studies for the improvement of fishing harbor facilities to be carried out with financial assistance from the World Bank, no significant investments by the public sector are foreseen for the immediate future. The government's plan to build a fisheries complex comprising a fleet of purse seiner vessels and onshore facilities, for which international bids were requested in December 1970, has been postponed. It is not yet clear when these plans might get underway. The government has decided to strengthen the administrative structure of the fisheries sector, and for this purpose has recently created the Directorate of Fisheries in the Ministry of Natural Resources. Within this institutional framework it also envisages the creation of the National Fisheries Enterprise.

Transport

The topography of Ecuador and the location of its two major cities have determined to a great extent the manner in which the country's transport sector has evolved. Until the mid-1950s Quito and Guayaquil were connected by railroad and air service, but there was no suitable all-year road connection. In the late 1950s and in the decade of the 1960s, Ecuador undertook a major effort to improve its road system, and by the end of 1970 a basic road network had been built linking the most important centers in the highlands and the coast. The transport infrastructure also includes 980 kilometers of railways connecting Quito, Guayaquil and Cuenca, a network of nineteen all-weather commercial airports serving the country's domestic and international requirements, three navigable rivers in the coastal region and seven maritime ports of which the most important is Guayaquil. While the emphasis on road construction is expected to continue in the next few years, the government has indicated that it also intends to carry out a major expansion of the nation's air transport facilities, and to undertake further development of the country's port system. Railway and inland waterways are used to a much lesser extent and, apart from a railroad rehabilitation program temporarily stalled but expected to resume in 1973, there are no immediate plans for major new investments in these areas.

Highways. Despite recent accomplishments in highway construction, large areas of Ecuador, such as the lowlands east of the Andes and most of

the northern coastal region, remain isolated. There also appears to be a large deficit in feeder roads from the rural zones to the main highways, which constitutes a hindrance to agricultural development.

Over the period 1966-70, road construction received by far the largest share of all fixed investment by the government, when more than one-third of all public investment was directed to this subsector. In this period the government carried forward its Second Highway Plan and various parallel programs, and completed a total of 1,008 kilometers of new roads and 1,866 kilometers of improved roads, including 1,874 kilometers of paved highways. This gave Ecuador, at the end of 1970, a road network of nearly 23,000 kilometers, including approximately 2,900 kilometers of paved roads and about 8,150 kilometers of gravel roads.

In 1969-70, Ecuador prepared its Third Highway Plan envisaging the construction of some 1,100 kilometers of roads. At the same time, the government approached the IDB for financial assistance for a separate program calling for the construction of nearly 400 kilometers of roads whose feasibility had been established by studies carried out under the Second Highway Plan. Implementation of the Third Highway Plan started in 1970, but some months thereafter the government began facing problems of cost overruns and insufficiently prepared projects. The new government has indicated that it intends to reexamine the suitability of several of the proposed investments under the Third Highway Plan, and asked the IBRD to help finance a study for this purpose. The study got underway in September 1972 and, pending its completion in mid-1973, most work under the Third Plan stopped. Some of the new roads under the new IDB financed program, which got underway in 1972, will open virgin areas in the eastern slopes of the Andes, establishing the first links in Southeast Ecuador between the highlands and the lowlands. Under future plans, these roads would be extended further to the north to link up with those being constructed to support oil development activities in the northeast.

The development of highway management has not been commensurate with the expansion of the country's highway system. While principal responsibility for the national network rests with the Ministry of Public Works, highway functions are still shared in varying degrees by many different regional and local authorities. This fragmentation of functions and resources has been a hindrance to effective planning and control and has led to the undertaking of projects without sufficient preparation and financing, giving rise to cost overruns, undue delays during construction, and unfulfilled contracts. Highway maintenance has not kept pace with the expansion of the road network either. This has led to a progressive deterioration of many highways. A study of highway maintenance undertaken by consultants under the Second Highway Plan recommended various steps to strengthen road maintenance administration, including the reorganization of the Department of Road Maintenance within the Ministry of Public Works, and procedural changes in the budgeting, cost control and procurement phases of road maintenance.

Due mainly to shortages of funds and staff, these changes had been only partially implemented as of the beginning of 1972. Enforcement of the vehicle weights and dimensions regulations revised under the Second Highway Plan would go a long way in avoiding damage to roads from overloaded trucks. The implementation of these regulations, opposed by truck owners, has been postponed a number of times, but there are indications that the new government soon intends to make them effective.

Public Investments in Highways: 1972-74. While road construction may be expected to continue receiving the largest share of public investment over the period 1972-74, the relative importance of this subsector is expected to decline from a level of about 35 percent of total public investment in 1971 to about 23 percent in 1974. One explanation for the decline is the government's desire to reexamine its Third Highway Plan, but perhaps a more important reason is the government's intention to shift the top priority in infrastructure development to the power sector.

Of the total S/2 billion estimated to be invested during 1972-74, some S/900 million will be devoted to completing ongoing projects under the Second Highway Plan and parallel programs. The Consortium Highway Program is expected to come to an end in 1973 with the completion of the maintenance part of the project and the improvement of some roads. Construction of some section of the Ambato-Banos-Puyo-Macas from the highlands to the Oriente got underway in 1972 with IDB financial support. As part of this project, the IDB will provide technical assistance for the training of personnel in maintenance operations. The government is also expected to carry forward some regional systems, giving emphasis to the Manabi and Loja Plans. A start towards solving the deficit in feeder roads from the rural areas to the main highways should be made in 1973-74 when the government begins a study with AID financial assistance to assess requirements in this area; consultants for this study should be selected in 1973.

Ports. Of Ecuador's seven ports, Guayaquil is by far the most important. In 1970 Guayaquil handled over 60 percent of the total volume of exports and imports. Of the six remaining, the ports of Bolivar, Esmeraldas and Manta have gained in importance in recent years. Puerto Bolivar, located some 70 kilometers south of Guayaquil and completed in 1968 to serve the new banana growing area, is now handling nearly 50 percent of all banana exports from Ecuador (estimated at 1.3 million metric tons in 1971); the rest goes mainly through Guayaquil. Esmeraldas, in northern Ecuador, is being enlarged to handle the additional traffic expected from petroleum export operations. The Port of Manta, located some 100 kilometers northwest of Guayaquil is becoming an active fishing port. In the last few years almost all investment in new port facilities has been directed to the development of the latter three ports.

In an attempt to centralize port policy and improve administration, the government passed a decree in September 1970 reorganizing the country's port system under the Ministry of National Defense. A second decree, enacted in January 1971, regulates the operation of the country's ports under separate Port Authorities. While the new structure represents considerable improvement over the past, the number of entities entrusted with responsibilities for overseeing port affairs seems unnecessarily large, and can lead to overlapping of functions and a general slowing down of the decision-making process.

Ecuador has a discriminatory port tariff policy, maintaining port charges at the smaller ports below Guayaquil rates to attract traffic. This has caused Guayaquil traffic to decline in the late 1960s, although it has since recovered to some extent. This policy, added to the lack of a comprehensive ports development plan, constitutes an obstacle to the rational use of Ecuador's ports. The government is aware of the problem and has approached the United Kingdom for assistance in carrying out a general ports study to serve as a basis for determining priority investments in this area, and, at the same time, to assess matters related to port management and administration. This study might get underway in 1973.

Public Investment in Ports: 1972-74. Total investments in ports in the years 1972-74 is expected to amount to about S/358 million, representing 4 percent of total fixed investments by the public sector during the period. Of the estimated expenditures, close to 60 percent is expected to be spent in the further improvement and expansion of the Port of Esmeraldas. Since the general ports study referred to above should examine the Esmeraldas project, the planned expansion might be delayed if revisions in the project are found necessary. Additional capacity in the Port of Guayaquil should not be required until at least 1975, but a program for renewal of equipment has been drawn up by the Guayaquil Port Authority and should get underway in 1973. The additional facilities at Manta, which include a deepwater pier, wavebreakers and new storage facilities, were completed in 1972. The development of El Oro Province in southern Ecuador will give additional traffic to Puerto Bolivar. A recent U.K. supported study for the development of the Jubones River basin, which lies in the area being served by Puerto Bolivar, has recommended an expansion program for the port to handle anticipated exports of orange juice, pineapples, cotton and processed fish. More detailed studies are planned before this expansion program can be carried out; if these studies can be undertaken in 1973, the expansion program should get started in 1974, assuming its priority is confirmed by the national ports study mentioned above.

Air Transport. Air transportation of passengers and freight has been rapidly increasing in the last few years. It has been estimated that the domestic service carried 347,000 passengers in 1970, representing an increase of more than 200,000 since 1965; the international air service carried 185,000 passengers in 1970 which is more than double the number carried in 1965. Freight traffic grew at a rate of about 20 percent for domestic and

35 percent for international traffic. The growing demand has increased the pressure on the government for improved air transport service. To meet the new requirements some new runways and terminal facilities have been built and others have been improved, and outmoded equipment has been replaced. In spite of these investments, several airports, including the country's two major airports at Guayaquil and Quito, are rapidly becoming inadequate to handle the growing traffic; moreover, except for the Guayaquil airport, they are operative only during daylight hours. In anticipation of an even faster rate of growth due to the impact of petroleum development, the Civil Aviation Directorate, which is the agency in charge of civil aviation matters, is preparing the groundwork for the expansion and improvement of various airports, including the Guayaquil and Quito international airports. AID will help finance the feasibility studies for the latter two airports for which consultants have recently been selected. Ecuador runs the risk of being excluded from future trunk-routes of western South America unless the expansion of its international air transport facilities is carried out in the near future.

Without necessarily postponing the most immediate requirements, it is important that future expansion of the system be undertaken within the context of an integrated air transportation development plan that would take into account the development of other modes of transportation as well. Such a plan would also need to consider the relevant institutional aspects. While the Civil Aviation Directorate has performed adequately in the past, it would need to be strengthened to operate, maintain and manage an expanded air transportation system.

Public Investment in Airports: 1972-74. Total public investment in airports in the years 1972-74 is expected to amount to about S/143 million, representing less than 2 percent of the total fixed investment by the public sector during the period. Studies for the expansion of the Quito and Guayaquil international airports are expected to get underway in 1973 with AID financial support. The studies should be completed in 1974 and the investment program begun in 1975. The expansion and/or improvement of the airports at Pastaza in the Oriente, Tulcan in the highlands, and Machala and Manta in the coastal region are also expected to be carried out during the period.

Telecommunications

Ecuador's telecommunications system grew reasonably fast in the period 1964-70. With regard to domestic service, the number of subscriber telephone lines increased from 46,800 to 95,600; an interurban telephone system with automatic dialing and a capacity of 600 channels was installed between Quito and Guayaquil, and telephone service from these two cities was extended to nearby cantonal seats. Concerning international service, telex terminals increased from 17 to 180, and traffic increased at an annual rate of about 30 percent. The Quito and Guayaquil telephone companies accounted for about three-quarters of the total investment during the period.

The country's telecommunications have not always been effectively administered in the past. The former three state enterprises--National Telephone Company, Quito Telephone Company and Guayaquil Telephone Company--functioned often without proper coordination, to the detriment of efficient service and adequate planning. A reorganization of the administrative setup was undertaken on the basis of legislation passed in February 1971. This legislation replaced the existing organizations with three agencies: Empresa de Telecomunicaciones Norte, Empresa de Telecomunicaciones Sur and Empresa de Cables y Radio del Estado. In October 1972 the government has taken a further step towards centralizing the system by creating the Instituto Ecuatoriano de Telecomunicaciones. Under the aegis of the Ministry of Public Works, the new Institute, which absorbs the above three agencies, is charged with the responsibilities of planning, administering and operating all telecommunication systems in the country. The new setup should lead to a more efficient administration of the system.

Public Investment: 1972-74. Telecommunications accounted for about 4 percent of total fixed investment by the government in 1966-70. Investments planned over 1972-74 are estimated at about S/515 million, representing 5.7 percent of the total public investment for the period. Expansion of the telephone service in Quito and Guayaquil and the interurban telephone system, being financed with suppliers' credits, will continue. Extension of the telex system for domestic and international service, also financed with suppliers' credits, will get underway. The expansion of the microwave system between Quito and Guayaquil and interconnections to provincial capitals, originally planned to start in 1972, has been postponed until 1974. A great improvement in international communications in 1972 has been the construction of a station to connect to the satellite communication system.

Electric Power

The development of Ecuador's power sector has not kept pace with the nation's electricity requirements; the result is that some 60 percent of the country's population is still deprived of the benefits of electric energy. Statistics for plants larger than 100 kilowatts (there is also an undetermined number of smaller plants) show that installed capacity increased from 175 megawatts in 1964 to 304 megawatts in 1970, or 10.1 percent annually. Generated energy for the same period increased from 524 gigawatt to about 949 gigawatts, or 10.3 percent annually. The 159 kilowatt-hours per capita generation in Ecuador in 1970 was quite low compared to Latin America's estimated average of about 480 kilowatt-hours per capita for the same year.

Electric power consumption is concentrated in the Guayaquil and Quito areas which are served, respectively, by Empresa Electrica del Ecuador (EMELEC), a subsidiary of Boise-Cascade, and Empresa Electrica Quito (EEQ), jointly owned by the Municipality of Quito and the Social Security Institute (Instituto Ecuatoriano de Seguridad Social). In 1969 EMELEC and EEQ together accounted for about 65 percent of the total generation in the country. Gaining importance as a power company is the Instituto Ecuatoriano de Electrificacion (INECEL), which was established in 1961 as a state power company with functions of a regulatory agency. Since 1964 INECEL has created three subsidiary companies and has bought shares in several others. In 1970

INECEL and its associated companies owned about 19 percent of the country's installed capacity, generating about 15 percent of all electric energy. In a few years, INECEL is expected to become Ecuador's principal power company, financing, constructing and operating practically all new generating and transmission facilities in the country. In August 1970 INECEL lost its autonomy to become an agency under the Ministry of Natural Resources and Tourism.

Increased power supply is essential to Ecuador's industrial growth, which is expected to accelerate in coming years due to oil development and Andean integration. In an effort to meet this challenge, the government has earmarked 50 percent of its royalties from oil production in the Texaco-Gulf concessions during 1972-75, and 35 percent thereafter, for a national electrification fund to be administered by INECEL. At the same time, INECEL has drawn up a development program for generation and transmission to meet main power requirements through 1990 comprising (i) the consolidation of the many small systems into ten regional companies, and the renovation, extension and interconnection of the individual distribution and generating systems in each region, (ii) the construction of four major hydroelectric stations--in Pisayambo, Paute, Toachi and Montufar--which would add some 450 megawatts in installed capacity in the next ten to fifteen years and (iii) a transmission system which would in due course integrate the whole country. While construction of the initial stage of Pisayambo has begun, the status of studies for subsequent phases of the program is such that much uncertainty now surrounds their opportune execution. Also, with the discovery of oil in the eastern part of Ecuador, the program may have to be modified if it it can be shown that the construction of steam-electric plant in the northern part of the country near the oil pipeline--which pass or somewhat south of Quito--would be justified.12/ Moreover, INECEL's organization will have to be strengthened and its operational procedures improved to carry out the programs and construct and operate the plants.

The implementation of INECEL's program calls for a considerable effort in terms of financial resources. Initial estimates place the cost of the program, including the program for regional companies, at about S/1.3 billion (US$52 million) to be spent over 1972-74, and as high as S/6.3 billion (US$250 million) for the decade. While the National Electrification Fund will help to finance local costs of generation and transmission facilities, electricity companies will have to contribute with their own funds towards the expansion of their own distribution facilities. At present, however, average revenues of electricity companies, except for EMELEC, EEQ and Empresa Electrica Cuenca, hardly meet the operational cash requirements due to low tariffs. In order, therefore, to allow the companies (or regional companies if created) to make a reasonable contribution

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12/ EEQ's consultants will study the possible location and justification of such plant in close cooperation with INECEL with funds being provided under the IDA credit for EEQ's Nayon project.

toward their expansion programs, adequate tariffs would have to be set and maintained and considerable institutional improvements would have to be undertaken.

Public Investment: 1972-74. Electric power has accounted for 5.3 percent of total public investment during 1966-70. As electric power now ranks highest in the government's list of priority areas for development, a substantial portion of public investment is expected to be directed to this sector within the next several years, reaching levels of about 22 percent of total public investment in 1973-74. Aside from the current expansion of Quito's electric system, which will add 48 megawatts to Quito's 1970 installed capacity of 63 megawatts, construction of the main works of Pisayambo's first stage (Pucara plant, 70 megawatts, at a cost of approximately US$40 million, started in the latter part of 1972 for completion by the end of 1975 or early 1976. Pisayambo's first stage, to be supported by a US$25 million loan from the IDB, will serve Quito and Ambato and intermediate towns in the central part of the country. Final engineering for the first stage (200 megawatts of the Paute project is also being financed by the IDB. This project, estimated to cost about US$100 million would serve Guayaquil and the main towns in southern Ecuador. Feasibility studies for the Toachi (150 megawatts, US$40 million) and Montufar (62 megawatts, US$23 million) projects, which would serve several northern provinces, should also get underway soon. Spain is financing the Montufar study, and Switzerland the feasibility study for Toachi as well as consultant services to advise INECEL on various aspects of its development program in generation.

Part of the income derived from oil royalties will also serve to promote the development of the regional systems until they gradually become integrated into the national system. AID will support the regional program through a US$3.55 million loan recently approved. Financial assistance amounting to about US$8 million has been obtained under a bilateral agreement with the United Kingdom. Based on INECEL current plans, the whole country would be integrated by 1985-89.

Education

Despite some progress promoted by an educational reform introduced in 1964, education in Ecuador continues to face serious problems. The illiteracy rate remains high, with an estimated 30 percent of the population still unable to read or write. There is also a problem of inadequate physical facilities, since rapidly rising enrollment is not being matched by a corresponding increase in the number of classrooms and related facilities. It has been estimated that the ratio of fifty-one students per classroom in primary schools in 1963-64, when 698,000 students were enrolled, had increased to sixty one in 1969-70, when over 900,000 were enrolled, with no prospects of arresting the trend. In the case of secondary schools, average classroom size grew from 38 students per classroom in 1963-64, when 96,000 students were enrolled, to 54 in 1969-70, when over 160,000 were enrolled. Enrollment

in higher education has also been increasing rapidly; the seven institutions--five universities and two polytechnics--reported a population of nearly 34,000 students in 1969-70, or an increase of about 180 percent since 1963-64.

Aside from inadequate physical facilities, the quality of Ecuador's education system remains low. There is a serious scarcity of trained teachers and teaching methods and curricula are often out of date. The dropout rate is quite high: of those enrolled in the first year of each level, only about 33 percent finish primary school, about 51 percent finish the first cycle of secondary schooling, and about 68 percent finish the second cycle. There is also too much concentration on the humanities and little on technical education. Thus, of those enrolled in secondary schools in 1969, some 62 percent were pursuing the humanities, 34 percent were taking up commerce and arts, and only 4 percent were enrolled in industrial and agricultural technical schools. The system is also hampered by administrative weakness and by the fact that the amounts earmarked for capital expenditures in the Ministry of Education's budget have not only been proportionately very low compared with those earmarked for current expenditures, but a consistently low percentage of the amounts earmarked have actually been made effective in recent years.

Ecuador has received considerable technical and financial support from international agencies in support of its educational efforts, but the shortage of counterpart funds has often hampered a more rapid implementation of these programs. The AID-supported primary school program which began in 1966 had aimed at constructing 3,000 classrooms by 1970 at a total cost of $11 million to accommodate some 84,000 students. However, only 748 classrooms had been built as of the end of 1971, and on the basis of current projections and revised costs it would appear that only about one-half of the originally projected classrooms will be constructed by the time the loan is completely disbursed in December 1973. At the secondary level, IDA is helping to finance a school construction program involving the expansion of twelve technical and general secondary schools, and the construction of sixteen new schools comprising one agricultural, four teacher training and eleven general secondary schools. Considerable time lost due to counterpart financing problems is gradually being recovered. When completed in late 1973 or early 1974 these schools should increase enrollment by over 13,000 students and have an output of 5,600 graduates per year. The IDB has assisted in financing the expansion of facilities at the universities of Quito and Guayaquil, and has also approved loans for the construction of new buildings and laboratories at the National Polytechnic School in Quito and at the Polytechnical School in Guayaquil. UNESCO and other U.N. agencies as well as several bilateral programs have also supported various projects mainly aim at improving the quality of the country's educational system. The government has recently created an Educational Credit Institute which is expected to receive financial assistance from AID. The institute will provide low interest loans to qualified students, act as a broker between institutions offering scholarships and students seeking financial support, provide general guidance to students in career and educational opportunities, and offer placement services to students completing their education.

Public Investments: 1972-74. Fixed public investment in education has been consistently low, amounting to only 6 percent of total public investment over 1966-1970. The share increases slightly in the ensuing years, and is estimated to have reached about 7.8 percent in 1972; it is expected to remain at that level in 1973, and then decline again to about 5.7 percent in 1974 when the current AID and IDA supported programs phase out. The second phase of these programs should, however, begin in 1974-75, bringing the level of investment to higher levels after 1975. AID is considering undertaking a sector study in 1973 prior to determining how best to provide new assistance to Ecuador's education, and a UNESCO mission is currently preparing a project identification report to help define the scope of possible further IBRD assistance to the secondary school development program. At the higher level, the Polytechnic Schools of Quito and Guayaquil will expand their facilities and strengthen their curricula with financial support from the Inter-American Development Bank.

Of crucial importance to the success of future development programs will be the availability of counterpart funds in adequate amounts. The participation of the education sector in the national budget has been increasing in recent years (from 21 percent in 1970 to 25 percent in 1972) and may increase slightly more in the next few years, but the tendency has been to assign only a small percentage of these increases to capital expenditures. With the forthcoming petroleum revenues, the government should be able to reverse this trend. A one-cent tax on each barrel of exported oil has been earmarked for educational purposes, and hopefully it will be used mainly in support of further investment programs.

Health and Sanitation

While progress has been made in recent years in improving the country's health situation, serious problems remain demanding urgent solution. In 1970, overall mortality stood at 11.7 per thousand inhabitants, and infant mortality at 91.1 per thousand inhabitants. It is estimated that 50 percent of the deaths are due to causes technically classified as preventable or which are responsive to present preventive techniques. Health services are limited in number and on the whole deficient in quality and cannot therefore be expected to cope with the increasing needs. Trained personnel are very scarce and approximately 65 percent of the population has very limited or no health services at all. In 1969 in the rural areas there was one medical doctor for every 10,000 persons and one dentist for every 33,000 persons.

The health problem is aggravated by the scarcity of drinking water and sewerage services. Although by 1970 over half the urban population was being served by water and sewerage systems, the percentage of rural population so served was insignificant, as shown by the table below.

Table 5: POPULATION SERVED BY WATER AND SEWERAGE SYSTEMS, 1970

1970 Population (thousands)		Drinking Water: Population Served Adequately (thousands)	Drinking Water: Percentage	Sewerage: Population Served Adequately (thousands)	Sewerage: Percentage
Urban	2,579	1,553	60.2	1,337	51.8
Rural	3,598	260	7.2	50	1.4
Total	6,177	1,813	29.4	1,387	22.4

Source: National Planning Board.

The public health sector is extremely decentralized in Ecuador. The Ministry of Health, created in 1967, has been only partially successful in its efforts to adopt a unified approach to the solution of health problems, and there are still a large number of independent or semiautonomous agencies often functioning without sufficient coordination. The inadequacy of the existing mechanism prevents, among other things, the collection of meaningful health statistics to serve as a basis for the planning of rational health programs. Clearly in need, therefore, is an institutional reform that would further centralize control of the sector under the Ministry of Public Health, thus assuring the effective utilization of scarce resources through adequate investment planning.

The Ecuadorian Institute of Sanitary Works (IEOS) was created in 1965 as the agency responsible for the provision of drinking water and sewerage works to all urban centers in the country, except Quito and Guayaquil, where such responsibilities remain with the respective municipal companies. This attempt toward centralization has not worked well in practice, however, because the Institute, not having been vested with sufficient authority from the beginning, cannot impose its policies or programs on the municipalities, but must first negotiate agreements with them. This causes delays in the execution of programs and prevents the adoption of a unified policy, including a rational tariff policy. With regard to the latter, current municipal legislation empowers the municipalities to establish tariffs to cover operation and maintenance costs. Few, however, do so.

Public Investment: 1972-1974. Investment in public health during the period 1966-70 was alarmingly low, as it amounted to around 2 percent of total public investment in each of those years. Sanitation facilities, however, received greater attention, as 11.5 percent of total public investment during 1966-70 was spent on water and sewerage works. The bulk of this investment went toward expanding the sewerage works of Quito and the water supply and sewer systems of eighteen other urban centers under a program which received financial support from IDB.

The level of investment in public health over the period 1972-74 should increase from 4.5 to 5.1 percent of total investment, which is a significant increase as compared with the period 1966-70. A major drive in the construction and equipment of health centers, mainly in the rural areas, will be undertaken with financing provided by suppliers' credits. The Guayaquil and Loja hospitals are expected to be completed during the period and, barring unforeseen delays, construction of the Guayaquil Children's Hospital and the Machala and Esmeraldas Provincial Hospitals should begin in 1974.

Due to major projects in Quito and Guayaquil, expenditures in drinking water and sewerage works are expected to increase considerably in the next few years. The 1972 share of 12.8 percent of total public investment should increase to about 14.5 percent in 1973 and 1974. The capital city of Quito will benefit most from this investment through the expansion and improvement of its water supply system at a cost of over S/750 million. This project, begun in 1969, is receiving financial support from the IDB. Planned for completion in 1972, it has suffered a number of delays; a somewhat enlarged project should now be completed by 1975. The expansion of the Guayaquil sewerage system will get underway in 1973 with IDB financing, and work will continue on a number of projects being financed with suppliers' credits. As a follow-up to an earlier IDB supported program, IEOS hopes to begin in 1973 a project to supply water and sewerage services to a number of cities not covered in the first plan. IEOS also hopes to carry out over the next three years a few smaller projects using its own resources. However, while considerable progress is anticipated in the provision of water and sewerage to many of Ecuador's urban centers, most of the large rural population will continue to be deprived of these essential services. Greater attention, backed by adequate resources, is required to improve this situation in the years to come.

Housing

Although only limited statistical information is available, the housing problem appears to be acute in Ecuador. The Ecuadorian Housing Bank (Banco Ecuatoriano de la Vivienda, BEV) estimates that 70 percent of the nation's housing units are below minimum standards. The rapid spread of urban slums (especially in Guayaquil) with no access to water, sewage disposal or electricity, constitutes a serious problem. Rough estimates indicate that some S/4.5 billion would be needed to meet present needs using the minimum acceptable type of housing unit.

Housing activities in Ecuador to date have not responded to the needs of the lowest income segments of the urban pouplation, and most projects have been directed at middle-income groups. The average cost of a publicly financed housing unit is estimated at S/80,000 which is well beyond the means of the poorer urban dwellers. There are two public institutions financing private housing construction: the Social Security Institute (Instituto Ecuatoriano de Seguridad Social, IESS) and BEV. In the period 1964-65, about 54 percent of all housing investment was financed by these two

agencies, and another 32 percent by foreign sources. The IESS, an autonomous institution, has been more active, using its accumulated savings to provide mortgage loans to insured persons. BEV depends for its operations on government's budgetary transfers which have never been too significant. Therefore, it has had to rely extensively on foreign lending and bond issues which private banks are required to purchase. BEV also promotes housing investment through savings and loan associations of which there are now ten in the country.

The public sector will have to assume increasing responsibilities for improving the conditions of urban growth. As an urgent step, it will have to exert greater efforts in providing the necessary housing infrastructure to absorb rapidly growing urban slums. AID is considering assisting BEV in a "sites and services" demonstration scheme in Guayaquil designed to serve families with monthly incomes of $100 or less. Under this project, expected to reach some 2,500 families, the site and the essential installations will be provided, and the houseowners will be required to install interior walls and carry out other work with their own resources to complete the houses. It is expected that this demonstration project will induce BEV to use more of its future resources for low-cost housing.

F. Overall Investment Requirements

In view of the higher levels of economic activity induced by the production and exportation of petroleum, the substantial development potential in other productive sectors (Sections B, C and E of this Chapter), the improved financial position of the public sector (Chapter IV), the favorable prospects for the external sector (Chapter V), and the profit opportunities emerging from the petroleum boom, GDP growth targets of the order of 10 percent for the whole economy and 8 percent for the nonpetroleum segment are feasible in the period 1973-77 provided that sound economic policies are followed. These levels of growth would result in average per capita incomes 30 percent higher in 1977 than at present and, hopefully, in a better distribution of these incomes. Average consumption per capita could grow at about 4 percent per year in the same period, improving considerably the standard of living of the population. The overall investment requirements emerging from these growth targets are formidable: gross domestic fixed investment would have to grow by almost 10 percent per year in 1973-77, yielding a cumulative volume of investment 75 percent larger than in the previous five year period. While from 1950 through the mid-1960s the investment ratio fluctuated around 13 percent of GDP, in the 1970s it will have to be consistently above 20 percent of GDP.

The bulk of investment will be in the petroleum sector. However, both public and private nonpetroleum investments will have to be considerably larger than in the past. As discussed in the previous sections of this

chapter, the needs and opportunities for public and private investments in the various sectors are considerable. To materialize, these investments will require adequate incentives, appropriate and stable economic policies, realistic planning for the public sector and orientation for the private sector and, most important, a complement of human resources in the form of capable administrators, innovative entrepreneurs and qualified workers. Since most of total investment--including petroleum--will still come from the private sector, the public share in total investment, despite the considerable expansion expected for public investment, will drop in the early 1970s, but then may go back again to around one-third of the total as petroleum investment declines.

The considerably larger investment requirements, the possible administrative and technical bottlenecks, and the higher levels of public investment expected to be going into indirectly productive or social sectors would point to a gradual decline in the overall productivity of investment. Thus, the incremental capital output ratio is expected to increase from the current 2.50 value to 2.85 by 1977 and remain at that level thereafter.

Private Investment

By far the major component of total private investment in the 1970s will be investments for exploration and development of the petroleum sector. In line with expected petroleum production, total petroleum investment (exclusive of new refineries) in the period 1973-77 should amount to S/10 billion, of which about 70 percent is expected to represent imported goods and services and the rest local currency expenditures. All this has been assumed to be direct foreign investment, although the recently created State Petroleum Company (CEPE) could participate directly in exploration and production activities. In the previous five years direct foreign investment in the petroleum sector reached about S/9 billion. Assuming the discovery of new fields in 1973-75, investment will peak in 1976-77 as a result of the development of those fields and the initiation of construction of a second pipeline. The critical date for a number of companies as far as investment decisions are concerned, will come in 1973 when they must decide whether to convert to exploitation arrangements, possibly under new rules, or to turn back their concessions. It will be of outmost importance for the materialization of projected petroleum investments - and of the overall growth targets of the economy - that reasonable incentives and stability of rules are provided. This is particularly relevant because of the early stage of development of the petroleum sector in Ecuador.

Nonpetroleum private investment requirements will also be extremely important, particularly in the manufacturing sector, if the diversification of the economy and the increased absorption of labor necessary during the 1970s are to take place. Direct foreign investment in nonpetroleum activities is expected to be necessary in those manufacturing industries heavily dependent on sophisticated technologies and marketing know-how not available

within the country. Since these direct foreign investments must conform to the guidelines for treatment of foreign capital adopted by the Andean Pact members, and part of it is likely to be associated with domestic capital, the levels projected are not very much above the investments recorded in the past few years.

Domestic nonpetroleum investment will, therefore, have to increase considerably, going from an average of about 8 percent of GDP in the 1960s to an average of about 12 percent of GDP in the 1970s. The increased economic activity and induced domestic demand generated by the petroleum sector are already stimulating private investments in various sectors. But undoubtedly to increase the private investment ratio to the levels projected will require substantial government assistance in the form of promotion and fiscal incentives, financial assistance, provision of productive infrastructure and a climate of administrative and political stability that stimulates private confidence. As mentioned earlier, properly administered the present system of incentives and promotion could go a long way in fostering and orienting private investments. In addition, there will be substantially improved prospects for capital transfers from the public to the private sector in the form of long-term credit lines for industrial and agricultural investments, for housing construction and, eventually, for equity participation in private enterprises. These types of government participation might even compensate for shortfalls in the public investment targets.

Domestic private investment requirements are going to be higher in those activities most immediately connected to the foreseeable increases in demand, such as food processing, textiles and small appliances industries, urban construction, and agricultural products for direct consumption, particularly livestock products because of their high income elasticity. Most of these activities are relatively labor intensive and should have, if properly oriented, important employment generating effects.

Public Investment

The level of fixed public investment in Ecuador remains low, although it increased from 4.9 percent of GDP in 1965 to 5.5 percent in 1971. From 1966 to 1971 fixed public investment grew at an average of about 8 percent per year, in real terms. The central government and the autonomous agencies together accounted for about 85 percent of public investment during 1966-70; the provincial and municipal governments shared the rest.

Constraints to a faster growth in public investment have been the country's limited capacity to prepare projects, the shortcomings in its administrative and managerial ability, and the frequent shortages of counterpart funds which have interfered with the execution of externally assisted projects. Also, a wide dispersion of investment functions among numerous entities has led to coordination problems and has adversely affected the utilization of available resources. In an attempt to reduce the latter problem, an administrative reform was undertaken in 1970-71 which aimed at a centralization

of the government machinery by bringing a number of autonomous institutions under the control of the relevant ministries. It is too early to evaluate the effects of this reform, but it is felt that, unless a proper mechanism to exercise the intended control is developed within each of the relevant Ministries, the results will be minimal. Another constraint is imposed by the lengthy bureaucratic procedures and lack of continuity at various levels in the Administration which have caused considerable lags in the utilization of external resources, on which public investment has depended heavily in the past.

Table 6: FIXED PUBLIC INVESTMENT BY SECTORS, 1966-71

(percentages)

	1966	1967	1968	1969	1970	1971
Agriculture	8.1	7.6	6.5	6.8	7.8	7.9
Irrigation	2.5	1.7	3.0	3.0	2.3	2.1
Energy	2.4	4.1	7.6	5.3	6.2	9.6
Transport	36.6	46.1	43.8	33.8	39.0	38.8
Highways	(34.0)	(43.3)	(39.7)	(30.8)	(34.1)	(35.0)
Airports	(1.6)	(1.5)	(1.5)	(2.1)	(2.7)	(1.1)
Telecommunications	6.1	1.2	5.6	4.8	3.3	2.7
Water and Sewerage	15.9	19.3	7.8	7.8	8.6	8.8
Education	4.4	4.3	7.3	7.0	6.5	3.9
Public Health	0.9	1.6	2.0	1.5	1.8	2.0
Others	23.1	14.1	16.4	30.0	24.5	24.2
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Table 5.1, Statistical Appendix.

Table 6 above indicates the shares of individual sectors in total public investment during the period 1966-71. An irregular sectorial behavior occurred in individual years, especially prior to 1969, reflecting administrative and financial constraints as well as the bunching of some major projects. Clearly standing out, however, is the heavy concentration of public investment on the development of infrastructural works. Among these, the main emphasis has been--albeit at a decreasing rate--on the transport sector. The share of this sector reached a peak in 1967 and declined ever since, although it continued to increase in absolute terms. The major portion of public investment in the transport sector during 1966-71 went to highway construction; a railway rehabilitation program was also undertaken, but ports and airports were relatively neglected. The heavy investments in the transport

sector were justified in view of the urgent need to establish in the country a basic highway network, which has now been practically completed. Water and sewerage have also accounted for a considerable share of public investment during 1966-71. This was also justified because of the need to remedy, at least in part, serious deficiencies in these services in several important cities. The share of the energy sector, low during 1966-70, rose after 1970 with the initiation of some major projects. Weak planning and inadequate tariffs, which have prevented electric companies from undertaking urgent expansion programs, have been two major causes for the low level of public investment in the energy sector prior to 1970. The situation is expected to change rapidly in response to the government's declared intention to give the energy sector top priority in the area of infrastructure development. The agriculture sector (including irrigation) does not show any noticeable variations from year to year, maintaining its share of about 10 percent of total fixed investment since 1966. There has been a general lack of well-conceived programs in this area due to institutional weaknesses in project preparation. Studies of some important irrigation projects are now underway, however, and public investment in irrigation, which ranks next to power in the government's priorities for future infrastructure development, is expected to accelerate rapidly increasing the share of agriculture in total government spending. Investment in education has taken only a small share of public investment in the period 1966-71. Were it not for financial assistance from international sources, capital expenditures in education would have probably remained at the pre-1968 levels of less than 5 percent of total investment. Investment in the health sector has been alarmingly low, having remained at levels of 2 percent or less during the period. Clearly greater efforts and resources are needed in this sector if many pressing problems are to be solved.

The government's historical sectorial investment series list all equipment and machinery separately instead of classifying it by sectors. The mission's attempt to identify some of this equipment and machinery and assign it to the corresponding sectors has been only partially successful. Much of the machinery and equipment has remained, therefore, unclassified and has been incorporated in the "Others" category. This explains the high percentage and irregular behavior of the "Others" item and also distorts to some extent the actual shares of sectors, such as energy, telecommunications, and transport, during the 1966-71 period.

Ecuador does not have a fully projectized public investment program at present, but one is being formulated within the framework of the 1973-77 National Development Plan recently prepared by the National Planning Board.

Ecuador's first attempt at investment planning was made in 1963 in conjunction with the 1964-73 National Development Plan. However, because the plan was probably somewhat optimistic from the start, and also because of uneven executing capacity of the public entities in charge of public investment, wide deviations occurred between the programmed composition of

public investment and actual implementation. In 1970 a new program for the period 1970-73 was formulated, but fiscal difficulties and lack of political support prevented this new plan from being officially adopted.

Ecuador's new government has indicated that it intends to restore to the National Planning Board the primary role it once had in the formulation of economic policy, and a first step in this direction has been the preparation of the 1973-77 economic plan. At the time of the Bank mission's visit, only provisional and still incomplete data on the new plan itself and on the public investment program were available. Accordingly, the 1972-74 public investment program presented in the statistical Appendix of this report (Tables 5.1 to 5.13) is partly based on an inventory of projects containing only preliminary data and preliminary projections as furnished by the National Planning Board, various government ministries, and some of the major operational agencies. It is also based on data obtained and discussions held with the major international lending agencies on the status of current projects. The mission has adjusted some of these figures whenever, in its judgement, time-lags were likely to occur in the preparation and/or execution of projects. In any case, the Planning Board's final investment program is most likely going to be somewhat different than the one formulated by the mission, and thus our estimates should be considered as indicative of investment levels that the mission considers feasible for the next few years.

Within the technical and managerial capability at present available in Ecuador and with the financial resources which the government will have at its disposal from both internal and external sources (Chapters IV and V), the overall levels of investment for 1972-74 emerging from a detailed analysis of investment possibilities in the various sectors are, in the mission's view, attainable. These investment levels, which are fully consistent with the overall investment requirements discussed in previous paragraphs, would imply real increases in public fixed investment of about 9 percent in 1972, 19 percent in 1973 and almost 22 percent in 1974. Although no sector analysis has been made for subsequent years, we feel that somewhat lower rates of growth, declining gradually to about 15 percent in 1977 and 10 percent in the 1980s, should also be feasible. Considering the length of the period over which these sustained rates of investment are projected and the vagueness of the project content after 1974, these levels of investment will imply a substantial government effort in the identification, preparation, execution, and administration of high priority investment projects.

According to the projects currently being considered and their likely calendar of execution during the next two or three years, the transport sector will still be the largest recipient of public investment with 29 percent of the expected public investment during 1972-74, followed by energy which is expected to receive nearly 20 percent, and water and sewerage with about 14 percent of total public fixed investment. While agriculture and public health are likely to increase slightly in relative terms,

their levels of investment will continue to be low. Direct fixed public investment in the industrial sector will be negligible. With the possible exception of projects in the energy and irrigation fields, there is an inadequate number of viable projects in a sufficiently advanced state of preparation to be carried out in the immediate future. Therefore, to shift the sectorial emphasis of public investment away from the physical infrastructural sectors and more towards the directly productive and social sectors - which is the present government's stated intention--will require a concerted effort to strengthen the agencies operating in these more difficult fields. The assistance of the international development agencies for this purpose might prove of crucial importance.

Table 7: INVESTMENT RATIOS, 1965-71 and PROJECTIONS, 1972-77
(in Millions of 1971 Sucres and percentages)

	Gross Domestic Product (GDP)	Gross Domestic Investment (GDI)	Private GDI		Public GDI	GDI as percentage of GDP			Share of GDI	
			Total 1/	Petroleum		Total	Petroleum	Public	Private	Public
1965	28850	3871	2471	-	1400	13.4	-	4.9	74.2	25.8
1966	30163	3859	2414	161	1444	12.8	-	4.8	62.6	37.4
1967	32036	4354	2772	156	1582	13.6	-	4.9	63.7	36.3
1968	33609	5236	3480	449	1756	15.6	1.3	5.2	66.5	33.5
1969	35567	6229	4383	1373	1846	17.5	3.9	5.2	70.4	29.6
1970	38517	7760	5619	1732	2141	20.2	4.5	5.6	72.4	27.6
1971	41232	9283	7018	3175	2265	22.5	7.7	5.5	75.6	24.4
1972	45578	10841	8377	2700	2464	23.8	5.9	5.4	77.3	22.7
1973	52479	10581	7644	1176	2937	20.2	2.3	5.6	72.2	27.8
1974	55984	11930	8358	1635	3572	21.3	2.9	6.4	70.1	29.9
1975	60839	12479	8264	1225	4215	20.5	2.0	6.9	66.2	37.8
1976	67334	16039	11150	2980	4889	23.8	4.4	7.3	69.5	30.5
1977	71996	17235	11612	2921	5623	23.9	4.1	7.8	67.4	32.6

1/ Includes increase in stocks

Source: Table 2.2, Statistical Appendix, and IBRD Staff Estimates.

IV. FINANCING OF DEVELOPMENT

Recent levels of gross domestic savings have stagnated around 11 to 12 percent of GDP, in contrast with rapidly increasing investment activities. The low average savings rate has resulted in an increasing share of capital formation in Ecuador being financed with external resources, mainly direct external capital from abroad destined to the petroleum sector. The sluggish behavior of savings applies both to the private and the public sectors, and in recent years is in sharp contrast with the rapidly increasing resource gap, as shown in Table 8. With net factor payments abroad at a relatively constant level of about 2 percent of GDP, gross national savings exhibited a similar trend to that of domestic savings.

To achieve the growth objectives that we believe feasible for the Ecuadorian economy in the 1970s, increased levels of investment and correspondingly higher levels of savings will be required. The effects of petroleum investment and production will be, however, of such magnitude that the savings capacity is not likely to be a constraint on growth provided consumption expenditures, public and private, are kept under control. During the 1970s the saving potential of the economy should be considerably higher as indicated by the smaller resource gap, and should permit the accumulation of badly needed foreign exchange reserves (in mid-1972 they were negligible). Gross domestic savings are expected to grow from the present 10 percent of GDP to over 20 percent in 1977. Over the period 1972-77, domestic savings should be capable of covering about 90 percent of domestic investment and national savings about 74 percent, compared with 68 and 56 percent respectively in 1966-71.

The extent to which the increased saving requirements of the economy are going to be met by the petroleum sector can be best illustrated by the ratio of nonpetroleum savings to nonpetroleum GDP. As shown in Table 8, this ratio need not be higher than 12 percent over 1972-77 to meet the overall saving targets. These savings requirements are of the same relative order of magnitude as those achieved prior to the petroleum discoveries with considerably lower levels of economic activity. Because of the increased external contribution, the overall increases in savings can take place simultaneously with a growth in per capita consumption of about 44percent per year in the 1970s. A pressing issue will be the removal of the institutional and technical bottlenecks that might obstruct the achievement of the private and public investment requirements and a more equitable distribution of the benefits of the development process. Another issue of critical significance is not to permit consumption to increase beyond reasonable proportions; this is of particular significance with respect to government nondevelopment expenditures which have shown a continuing tendency to increase sharply in the past.

Table 8 : SAVINGS /1 AND INVESTMENT, 1965-71 AND PROJECTIONS 1972-77

(Percentages of GDP)

	Gross Domestic Investment/GDP	Gross Domestic Saving/GDP			Gross National Savings/GDP	Resource Gap/GDP	Non-petroleum Savings/ Non-petroleum GDP
		Total	Private	Public			
1965	13.4	12.9	11.2	1.7	10.7	0.5	..
1966	12.8	12.8	10.2	2.6	10.6	-	..
1967	13.6	12.1	8.2	3.9	10.1	1.5	..
1968	15.6	11.5	9.2	2.3	9.4	4.1	..
1969	17.5	11.2	9.2	2.0	9.3	6.3	..
1970	20.2	13.6	11.1	2.5	11.6	6.5	..
1971	22.5	9.9	7.2	2.7	7.8	12.7	..
1972	23.8	15.2	11.5	3.7	13.0	8.5	10.9
1973	20.2	20.0	12.9	7.1	15.9	0.2	11.5
1974	21.3	20.7	13.8	6.9	16.5	1.9	11.3
1975	20.5	19.8	13.2	6.7	15.9	0.7	11.2
1976	23.8	23.1	15.4	7.7	18.9	0.7	11.9
1977	23.9	22.1	15.1	6.9	18.1	1.9	11.8

/1 For sake of consistency with available historical data, in this table savings have been calculated as the difference between investment and the resource gap, with no adjustment for change in terms of trade.

Source: Table 2.6, Statistical Appendix, and IBRD staff estimates.

A. Private Sector Financing

The stagnating trends of private savings and investment in recent years have been the result of a combination of factors, including the scarcity of profitable investment opportunities owing to the small size of the domestic market, limited government support in terms of complementary policies and infrastructural investments, and uncertainties associated with continued political instability.

Monetary and credit policies in Ecuador have been extremely vulnerable to the action of various pressure groups, including some within the central government. The vicious circle of uncontrolled expenditures and expanding deficits increasingly led to recurrent budgetary crises and inflationary financing from the Central Bank in 1960s. While the government was competing for credit with the private sector, the strong influence of the private sector in the formulation of monetary and credit policies resulted in sizeable increases in credit to the private sector in the last two years. 13/

Table 9: EXPANSION OF CREDIT BY THE BANKING SYSTEM
(in million Sucres and percentages)

		1969	1970	1971
(1)	Credit to Central Government (net)	1,567	2,134	2,770
	Gross credit to private sector	6,388	7,527	8,321
	Less: advance import deposits	-952	-1,181	-693
(2)	Net credit to private sector	5,436	6,346	7,628
(3)	Total Domestic Credit (net of advance import deposits)	8,110	9,796	12,145
(4)	Liabilities to Private Sector (net of advance import deposits)	8,708	10,358	11,926
Percentage increases in:				
	Net credit to Central Government (1)	46.8	36.2	29.8
	Net credit to private sector (2)	0.9	16.7	20.2
	Total domestic credit (3)	9.8	20.8	24.0
	Liabilities to private sector (4)	9.9	18.9	15.1

Source: Table 6.1, Statistical Appendix.

In an economy as open as Ecuador's, the excessive liquidity generated by such large credit expansion did not significantly affect the price level (price increases accelerated from 6.2 percent in 1970 to 9.6 percent

13/ The Monetary Board which is the supreme monetary authority of the country in charge of formulating policies in the monetary, tariff and exchange fields has been composed--until its modification by the present government--mainly by representatives of the private sector.

in 1971), but instead spilled over into the balance of payments in the form of increased imports and corresponding losses of reserves. Thus, in spite of unprecedented inflows of direct foreign investment associated with the oil sector, net reserves of the banking system declined by almost $30 million in 1971, corresponding to a sharp deterioration of the resource balance as imports grew by 29 percent and exports remained constant at the 1970 level. Even if the net increase in imports by the oil sector is excluded, the growth of imports would still be of the order of 18 percent. This left total net reserves at the end of 1971 at only $26.5 million, equivalent to about three weeks of imports of goods and nonfactor services.

This critical short-term situation was brought under control through the application of several emergency economic measures, including the reintroduction of a dual exchange market and advance import deposits, the arrangement of a t$40 million budget support loan from a U.S. commercial bank, an IMF stand-by operation for $18 million equivalent, and a fiscal and monetary program restricting Central Government spending and borrowing from the Central Bank, and imposing some curbs on the overall expansion of credit by the banking system.

Provided that sound economic policies are pursued, the situation after 1972 should begin to improve considerably as a result of petroleum production and exports. The saving capacity of both the public and the private sector should increase considerably. The central government, in a competitive position vis-a-vis the private sector with respect to funds, should be able to become a net lender through increased financial transfers and credit lines to the private sector.

The main issues concerning private sector financing will not be so much the availability of credit, but the orientation and quality of credit. As discussed in the agricultural and manufacturing sectors, the availability of credit has been heavily biased towards medium and large borrowers, and towards short-term working capital loans. Government monetary and credit policies must reverse these trends if the realization of the development potential of the country is to take place. In addition to this expanded role of financing, the quality and effectiveness of financing should be improved, bolstering the administration and supervision of credit, giving wider use to modern project evaluating techniques and expanding the investment options of the economy by making financing available for preinvestment and feasibility studies of promising project ideas.

B. Public Sector Financing

Historically, one of the major constraints on Ecuador's economic growth has been the low level of domestic savings which in turn limited the possible levels of investment. In recent years, the need to maintain fiscal

equilibrium in the central government in the face of continued pressure to increase current expenditures and transfers has led to periodic upward readjustments in taxes. As a result, tax revenues accruing to the public sector grew from less than 9 percent of GNP in the mid-1960s to some 13 percent in 1971 14/. However, since these increases were tailored to meet circumstantial demands from pressure groups, they were simultaneously consumed by nondevelopmental expenditures without any positive effect on the already eroded saving capacity of the public sector. Petroleum revenues will permit the public sector to break away, at least temporarily, from this trap of low savings and low investment, and in doing so they will relieve the immediate pressure on the nonpetroleum tax system to provide sufficient revenues to achieve fiscal equilibrium. However, the misallocation of resources and the distributive inequities resulting from deficiencies in the structure and performance rof the tax system will remain and, unless the government takes corrective measures in this area, are likely to be magnified by the unbalanced growth generated by the petroleum sector.

The major problems and weaknesses of the fiscal system in Ecuador, which have to a large extent prevented an adequate management of public finances, fall into three categories:

(a) On the revenue side, a substantial part of the public sector revenues has accrued outside of the central government and has been earmarked for various institutions and agencies in the rest of the public sector. These entities, in addition, have claimed substantial transfers from the central government to cover their deficits while, by contrast, the central government has been unable to capture part of the surpluses generated by other agencies. Another weakness has been the excessive dependency on foreign trade taxes with the result that, while import taxes have been eroded by widespread and uncontrolled industrial promotion exemptions, export taxes have been subject to political pressures of powerful exporting interests. The limited importance of the internal tax system reduces the government's ability to use taxes as an effective tool of economic policy and makes public revenues extremely vulnerable to fluctuation in external trade;

(b) On the expenditure side, the central government has not had the mechanisms nor the power to control and influence the growth

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14/ The total tax ratio (including taxes accruing outside of the public sector as defined by the National Planning Board) has, however, remained relatively constant at some 13 to 14 percent of GNP (see Table 5.19, Statistical Appendix). In comparative terms, Ecuador's total tax effort in the period 1966-1968 ranked above Colombia, Bolivia, Paraguay, Mexico and all the Central American countries in terms of tax ratios to GNP. It was, nevertheless, behind countries like Brazil, Chile and Venezuela, which had ratios of taxes to GNP of the order of 20 percent. See R.J. Chelliah,"Trends in Taxation in Developing Countries", IMF Staff Papers, (Washington, D.C., July 1971).

and allocation of current and capital expenditures to conform with the priorities and availability of financial resources of the public sector;

(c) On the financing side a similar dilemma exists since the various autonomous and semiautonomous bodies have had power to contract internal and external debts without conforming to national priorities, and in many cases the central government has had to assume responsibility for the service of these debts. In these circumstances, the central government is extremely prone to develop unfinanced gaps which can only be covered by Central Bank borrowing with the consequent destabilizing influence on monetary and balance-of-payments management.

To overcome these weaknesses will require some administrative changes which strengthen central government control over public finances and a substantial improvement in fiscal discipline to avoid inordinate expansion of expenditures. The present government is taking some steps to increase control over budgetary allocations; improve the level of knowledge and control of the finances of the rest of the public sector; make periodic evaluations of the expenditures of the various components of the public sector; centralize and increase control over external public borrowing; and relate budgetary appropriations to the objectives and priorities set up by the Overall National Development Plan. To achieve the latter objective, a biennial budget will be closely linked to short-term operational development plans.

All these changes would contribute to creating an administrative system better suited for adequate financial and developmental policies. Without these measures, the likelihood of the government carrying out a balanced investment program that would permit a sound allocation of the public revenues and foreign exchange generated by the petroleum sector is dim, since without a minimum control of revenues and expenditures no satisfactory allocation of current and capital expenditures can be expected. The speed with which these measures are adopted, as well as their effectiveness will weigh heavily on the actual outcome of public finances in the 1970s.

Public Revenues

In Ecuador, the central government (including the "special accounts" and some state enterprises) receives approximately half of the total tax yield. The other half is earmarked for "the rest of the public sector" which includes the 108 municipalities, nineteen provincial councils and hundreds of semi-public and private organizations. In addition, the central government transfers to "the rest of the public sector" some 10 to 15 percent of its own tax receipts so that it has at its disposal less than 40 percent of ptotal taxes collected.

The serious constraints such a system presents for the efficient management of public finances have been recognized and the tax system has undergone a series of radical reforms in the past ten years. The first important step towards remedying the excessive fragmentation of taxes was taken in 1964 when the then existing several hundred central, provincial and municipal taxes were sharply reduced in number. A parallel effort at reducing the excessive fragmentation of the public administration to make it operate more rationally met with only partial success. The Planning Board's recommendation that the Provincial Councils be suppressed was not implemented because of political opposition. Likewise, an attempt made in 1969 to rationalize the fiscal system through a requirement that the Provincial Councils prepare four-year financial plans have so far remained a dead letter. On the other hand, the municipalities have improved somewhat their financial management since their reorganization in 1966. Yet, they are still lacking in efficient administrative and technical personnel and have not made serious efforts in increasing their own revenues. The biggest administrative and financial burden is probably that of the "other autonomous entities" which comprise, in addition to a few important agencies, a large number of small organizations included in the public sector mostly under political pressure, and whose financial situation is generally precarious and subject to no control on the part of the central or local governments.

In 1970 and 1971, two further policy measures were taken with a view of simplifying and rationalizing the fiscal system. The first consisted of suppressing a number of regional development agencies of doubtful value and of attaching them to Provincial Councils or to various central government departments. The second and more important one consisted of the establishment of the "Fondo Nacional de Participaciones," which deserves brief examination. Until 1971, a substantial proportion of the funds earmarked for the various levels of government and public and private autonomous agencies was allocated to them not in the form of fixed sums periodically adjusted in accordance with genuine needs but of percentage shares in a large number of taxes and fees. Thus, when the yields of certain taxes rose or fell, the revenue of an unknown number of public and private agencies increased or declined irrespective of the services they were supposed to perform. Such a system was clearly inimical to public saving. For whereas a sudden increase in revenue tended to induce a corresponding increase in expenditure, financial difficulties resulting from an increase in expenditures or from an unexpected loss of revenue had to be generally solved by obtaining transfers from other public entities. To remedy this situation the decree establishing the Fondo de Participaciones reserves for the central government (Services and Development Budget) a number of major taxes and allocates other taxes to the rest of the public sector.

The major advantage of the Fondo is that it enables the Finance Minister for the first time: (a) to know with precision the exact amount of funds allocated to each of the various entities and (b) to refuse any unjustified increase in these funds. With these new powers the Minister will be able to require that the entities adopt standardized accounting procedures and that their books be regularly audited by central government

officials. He will furthermore be in a position to recommend, whenever necessary, that the recipients of public funds accruing to the Fondo de Participaciones should attempt to raise more of their own revenue, restrain their current expenditures and establish a rational order of priority for their investment plans.

A case might be made for earmarking taxes on grounds that (a) the automatic allocation of funds to local governments and public enterprises would improve the efficiency of spending by isolating these funds from the continued political changes of the central government; (b) the earmarking of revenue for specific projects reduces costs as it ensures continuity in the supply of funds and thus diminishes the risk of wasteful interruption of works; and (c) the reserving of local taxes for the satisfaction of local needs would make the community generally more willing to contribute the funds required. Ecuador's experience however, fails to demonstrate that these advantages have materialized. Public enterprises and local governments have been just as vulnerable to political changes as the central government, 15/ and the earmarking of taxes to solve their short run isolated problems led to an excessive fragmentation of public finances, making control and evaluation extremely difficult and resulting in misallocation of resources. Secondly, despite the earmarking, projects in Ecuador have been frequently interrupted for lack of funds. Thirdly, regardless of the earmarking of local funds for local governments or institutions, in many cases they were insufficient and had to be supplemented by government transfers or by foreign or local borrowing. Except in those cases where there is a clear advantage for earmarking, diversion of funds from one part of the public sector to another should take the form not of earmarking, but of straightforward transfers through appropriate channels that guarantee that these funds would be properly used and adequately audited. The situation of public enterprises should in particular be the subject of a special study with a veiw to ascertaining that they follow rational price, wage and employment policies, that their accounts are properly audited and that they are efficiently run under a stable management.

Next to the earmarking of taxes, the most striking characteristic of the Ecuadorian tax system is the inordinately high reliance on foreign trade taxes. Taken together, import duties and export taxes contribute over 50 percent of total tax intake (excluding social security contributions).

15/ The Ecuadorian railways, for example, have had no less than 34 general managers in twenty seven years from July 1, 1944--when they were nationalized--to April 15, 1971. In some years, such as 1966 and 1970, three general managers administered the railways in succession. Finally no one knows how the railways have used their funds since July 1964 when the Central Government Audit Department (Contraloria) was last enabled to examine their accounts. Junta Nacional de Planificacion y Empresa de Ferrocarriles del Estado, La Rehabilitacion de la Empresa de Ferrocarriles del Estado y las Alternativas para Continuar su Operacion. Quito, 1971.

This structural weakness affects the stability of the tax system--it makes it fluctuate with foreign trade fluctuations--as well as the flexibility of the system to serve as a useful tool for economic and fiscal policy, and limits seriously the government's ability to carry out serious financial programming. It might be relevant to note that the forthcoming petroleum taxes will also to a large extent fall in the foreign trade category.

The most important individual tax categories are Import Duties, Export Taxes, Income Tax, Property Taxes, Value Added Tax, and the Tax on gasoline. These taxes are the ones that have also the greatest potential to generate additional government revenues through improved administration and enforcement.

Import Duties: The rates of customs duties on the c.i.f. value of imports generally range between 20 percent on "essential" goods and 50 percent on consumer goods. For various consumer goods, however, they rise to much higher levels. Duties on cars which vary between 140 and 230 percent are clearly consumption taxes on luxury goods against which no valid objection can be raised. So far, they have not led to the establishment of a costly local automobile industry. Thus their positive revenue and redistribution effects have not been counteracted as yet by negative allocative effects. With most other consumer goods the situation is different, however. As customs duties rise to 170 to 190 percent for clothing, footwear, beverages and canned food, the old-established industries producing similar goods for the internal market are permitted to enjoy a degree of protection that cannot be justified by "infant industry" arguments. The protection both of new and of traditional industries is further strengthened by the requirement of prior import deposits now ranging between 100 and 130 percent of the value of imports, depending on the degree to which they are regarded as nonessential. With only few exceptions, the high level of protection has led to poor quality and high cost of domestic production and widespread smuggling.

Export Taxes: Export tax yields amount in normal times to roughly 8 percent of the total value of exports. But as some minor exports are exempt from the tax while others are subsidized, the effective rate of the tax on major exports is slightly higher than 8 percent. Most of the tax yields come from banana, coffee, cacao and sugar exports, which together represent roughly 80 to 90 percent of the total. Besides providing the government with additional revenue, the existing export taxes serve several useful purposes. For coffee and sugar, which are subject to international quota arrangements, they are a convenient means of adjusting supply to a strictly rationed market. The cacao tax, which is supplemented by a subsidy to the exporters of cacao derivatives, aims primarily at promoting the export of the manufactured goods at the expense of their raw materials, and it can further be justified by the fact that the major cacao producing countries levy their own exports taxes which are both steeply progressive and generally much higher than Ecuador's. Cacao trees require a combination of climate, soil and altitude seldom found, so that the supply of cacao must be regarded

as fairly rigid. While the export tax on banana might be placing Ecuador at a disadvantage with its competitors in the Caribbean, it must be observed, however, that in Ecuador an important part of the proceeds from the tax go back to banana planters through a plant disease control program sponsored by the government. For the above reasons, taxes on traditional exports could not only be maintained but might be made to rise with the sucre prices of these exports in relation to internal prices 16/. On the other hand, Ecuador needs to stimulate and diversify as much as possible its exports of nontraditional products (at present manufactures, fisheries products, and specialty crops). The prevailing fiscal incentives and subsidies for minor exports (those with an export value of less than US$3 million in 1969) have undoubtedly contributed to the increase in these exports in the last few years. While in the past these incentives have been quite onerous for the Treasury, particularly in view of the tight financial situation which the government has had to endure,17/ the revenues that will accrue from the petroleum sector would permit the continuation of these incentives until technological expertise and new markets for these products have been developed and the levels of output permit producers to take advantage of economies of scale. An important requisite would be that beneficiaries are scrutinized more rigorously than in the past and that the specific incentives be periodically reviewed to ensure that they are promoting development and not encouraging productive inefficiency or excessive profits.

Income Tax: The income tax is a progressive tax which, because of personal exemptions and corporate exclusions, has a very narrow base. These exemptions and exclusions, plus constant changes, make the law difficult to administer. Effective administration requires a high degree of technical

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16/ A different problem is that of windfall gains of the traditional export a sector following a devaluation, and the impact that a substantial expansion of the exporters income might have on the price level and on the volume of imports. There is little doubt that windfall gains must be severely taxed, both on grounds of equity and because they serve no useful economic purpose. That they had to be taxed in Ecuador, when the sucre suffered a 39 percent devaluation in 1970, was even more necessary to counteract the additional upward pressure on prices and consequent aggravation of the disequilibrium in the balance of payments induced by the persistent and substantial budgetary deficit, which coincided with the expanding money income of the export sector. In these circumstances the 10 to 15 percent supplementary export taxes which were, in fact, decreed by the authorities could be regarded as mild, and their later decision to lower the supplementary tax on bananas is the more difficult to justify. It is true, that, before devaluation, the maintenance of a fixed exchange rate, despite slowly rising internal prices, constituted an additional tax on exports. But as these were all the time increasing in vlume, it cannot be argued that the predevaluation profits of exporters were inadequate and had to be increased through devaluation.

17/ In March 1972 the government suspended the use of Tax Credit Certificates for tax payments until the second semester of 1973, to avoid a further drain of public revenues before the proceeds of petroleum taxes are on stream.

knowledge plus a system geared to keep current the regulations and interpretations. All countries have this problem; however, in Ecuador it seems particularly acute. As a result the tax base is so eroded that the rates have to be high in order to secure enough tax intake to run the government. The high level of evasion is partially caused by the complexity of the law. Efforts should thus be directed not to raising the rates but to preventing evasion. So far, the income tax accounts for only about one-tenth of tax revenue, and the ratio of income tax yields to GDP has invariably remained below 2 percent. This is clearly too low and a reasonable aim could be to double the ratio. Even if half the country's income is exempt from the tax the remaining half could reasonably be expected to pay it at an average rate of 8 percent. An important defect of the present income tax law is that it does not encourage corporate saving since undistributed profits are taxed at the same rate as dividends on nominal shares (20 percent).

Real Estate Tax: The property tax, rural and urban, is 2.5 percent of the total tax intake, which is low compared with countries similar to Ecuador. The trend indicates it is falling further behind. As a result the municipalities and provinces, which depend mainly on this tax, need increasing transfers from the central government to make up their budget deficits. Possibly more important, it reduces the incentive to make full use of productive farm land. A reasonable property tax would provide the provinces and municipalities enough resources to be self-supporting.

The intake from the taxation of urban and rural property in Ecuador has been as follows:

	(in million sucres)						
	1964	1965	1966	1967	1968	1969	1970
Urban	86.4	91.3	101.5	109.5	113.0	116.4	121.0
Rural	48.6	48.8	47.1	48.1	45.3	38.1	40.3
TOTAL	135.0	140.1	148.6	157.6	158.3	154.5	161.3

Comparing these data with national accounts, it follows that the increase in value added by agriculture from 1964 to 1970 was 57 percent (in current prices), while the rural property tax intake actually decreased during the period by 17 percent. The increase in collections on rural property is surprisingly low in light of the new construction and the inflation which has taken place.

Very little accurate cadastral information is available in Ecuador. Municipal authorities maintain lists of property with generally self-assessed valuations. The actual area of much of the rural land is unknown although there are lists, called Catastros de Predios Rurales, which are used by the officials of each canton as a basis for collecting rural property taxes.

The first step in the imposition of an adequate real estate tax that would make the municipalities and provinces independent with respect to their budget is an accurate and well-recorded cadastral survey that identifies each piece of land, rural and urban, in the country. This should provide enough information for a reasonable assessment of value of land. The second step is agreement on the standards and the preparation of the charts with which information above can be translated into an assessment. In the case of Ecuador, the assessment could be at 100 percent of the value, but with a relatively low structure of rates, set with the expectation that a good amount of untaxed land initially would be added to the rolls, and later on taxed at higher rates. The total tax intake, urban and rural, during the first year should not be more than double in order not to undermine taxpayer compliance.

The Value-added Tax: From 1966 to July 1970 industrialists had to pay a sales tax of 3.5 percent on the value of their output. No deduction was made for the tax already paid by the producers of their inputs, so that the sales tax was clearly cumulative. Yet from 1965 to 1969, its annual yields did not rise in real terms but oscillated between roughly S/71 million and S/86 million (at constant 1970 prices). The replacement of this tax in May 1970 by a 4 percent value-added tax collected at the retail end and payable on all merchandise transactions almost immediately led to considerably higher yields: S/172 million in the last five months of 1970 and S/450 million for the whole of 1971. 18/ This tax is now being attacked on the grounds that it has caused an acceleration in the rate of inflation. However, it is doubtful that the tax itself could be held responsible for the rise in the cost of living from around 5 to 6 percent in 1970 to 9 to 10 percent in 1971. The increase in import prices and, more importantly, the considerable expansion in the income of the export sector resulting from the August 1970 devaluation, added to the overall credit expansion and the growing government deficit, are more than sufficient to explain the higher rate of inflation. The introduction of the value-added tax must be regarded as an important improvement in Ecuador's tax system for--quite apart from its revenue raising effect--it has a distinct economic advantage over other forms of indirect taxation: that of equalizing the tax burden on the various categories of producers and traders and hence of creating no distortion in the allocation of resources.

The Tax on Gasoline: The present consumption of gasoline has been rising rapidly at an average rate approximating 10 percent per annum. In 1970, it amounted to 3.18 million barrels, that is, roughly 133.58 million gallons, and can thus be estimated at nearly 146.9 million gallons

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18/ It has been said that the increase in yields was due not to some virtue in the value-added tax but simply to the widening of the base and the increase in the rate of what fundamentally remains a sales tax. This deserves to be investigated. In any case, however, the tax must be given a reasonable chance to work.

for 1971 and 161.6 million gallons in 1972. Total revenue from the tax was about S/228.4 million in 1970 (S/1.71 per gallon). Revenues are estimated to be roughly S/251.3 million in 1971 and to S/276.4 million in 1972.

But the decision of the authorities to maintain the price of imported gasoline unchanged at its predevaluation level (S/2.79 for low-octane and S/3.29 for high-octane gasoline per gallon) and to compensate importers by means of Tax Credit Certificates has led to the grant of a sizeable subsidy to gasoline consumers amounting to roughly S/159 million in 1971 and S/192 million in 1972. This means that, despite the state's growing financial difficulties, the authorities have deemed fit to reduce the effective tax on gasoline from around S/228 million in 1970 to S/92 million in 1971 and S/84 million in 1972. On a per-gallon basis it will have declined from S/1.71 (7 U.S. cents) in 1970 to less than S/0.63 (2.5 U.S. cents) in 1971 and to nearly S/0.52 (2.08 U.S. cents) in 1972. This is difficult to justify.

The improvement of the road system in Ecuador is likely to have reduced the cost of operating motor vehicles substantially. It is thus only fair that part of this gain should revert to the State. The owners of lands adjacent to the new highways, as well as the road users--particularly the owners of passenger cars--could be expected to finance both the maintenance of the roads and overhead costs. Furthermore, the marginal cost of using the road has been estimated for some countries of Central America at roughly 0.1 U.S. cent per vehicle/kilometer, that is, about 5 U.S. cents per gallon for passenger cars. 19/ On this basis the present effective rate of the tax (2.08 U.S. cents) is obviously too low even to cover half the physical cost of using the road. Both the savings on operating expenses and the marginal cost of using the roads would call for increases in gasoline taxes.

Instead of increasing the nominal tax and maintaining the subsidy, the authorities could simply remove the subsidy and keep the tax at its present level. This alone would have the effect of restoring to the State substantial revenues (S/192.4 million this year) of which it has been deprived. At a later stage, depending on the state of public finance, the Government will be able to determine whether or not the tax should further be raised, particularly on high-octane gasoline.

From the analysis of the previous paragraphs, it appears that the failure of public revenue to raise sufficient funds to meet the public sector needs has been due not so much to defects in the tax system or in the levels of rates, but to laxity in its application. An additional factor complicating tax administration has been the extraordinary number of changes in the tax laws in the last few years.

19/ See A.A. Walters, The Economics of Road User Charges, World Bank Staff Occasional Papers, No. 5 (Washington, D.C., 1968).

In the immediate future, rather than seek the imposition of new taxes or the modification of those now existing for the purpose of expanding the volume of public saving, the authorities should direct their efforts to the effective application of the present tax system, its improvement, and, if need be, its further simplification and rationalization. The greatest potential in these areas appears to be in the income tax and in real estate taxes.

In the long run, however, some changes in the tax system may well be needed. Both for reasons of equity and to ensure a proper allocation of resources, import duties particularly on finished consumer goods should be revised downwards in the light of rationally planned industrialization, employment and trade policies, aiming to provide Ecuador with viable industries, capable of competing on equal terms—if not now, at least in the foreseeable future--with foreign industries. Also, additional public revenues can be obtained for financing road construction if its major beneficiaries--road users and the owners of land adjacent to public roads--are made to contribute in proportion with the benefits they derive from their use.

Estimates of public revenues for the 1970s have been made independently for the various nonpetroleum taxes, and for petroleum taxes. Nonpetroleum revenues have been estimated by assuming individual elasticities for major taxes with respect to relevant variables. These elasticities imply some degree of improvement in tax administration and enforcement of collections, particularly in the income and property taxes, as discussed in previous paragraphs. Export tax elasticity reflects the government's intentions of gradually eliminating some of nonpetroleum export taxes. Consumption and income taxes reflect the gradual monetization of the economy and the increases in per capita incomes. Barring changes in the tax rates or the introduction of new taxes, the overall tax elasticity (nonpetroleum) would be unlikely to exceed 0.9. However, with some minor changes in the tax system that would make it more progressive and administratively manageable (such as reassessment of real estate taxes, both rural and urban, and a reasonable tax on gasoline), the overall tax elasticity could be brought at least up to 1.0, increasing nonpetroleum tax intake by an additional S/1 billion during 1973/77. In the projections it has been assumed that such additional changes will be made. 20/

20/ Assumptions on tax elasticities for projections

Export tax	=	0.95 wrt merchandise exports
Import tax	=	1.00 wrt merchandise imports
Consumption tax	=	1.10 wrt private consumption
Income tax	=	1.05 wrt GDP
Property tax	=	1.00 wrt GDP
Other tax	=	1.00 wrt GDP
Nontax	=	1.05 wrt GDP

The basic parameters that will influence total government revenues from petroleum include the volume of production, net exports and local sales, operating costs, tax reference prices and the system of taxes and contributions. In Ecuador, further revenue may arise from: (a) bonus payments and direct investments by the industry in public works projects (obras de compensacion) in lieu of cash bonuses; and (b) investment income from contracts of "association." These latter payments have not been incorporated in the revenue estimates, nor are all of them applicable over the period under consideration. It is recognized that there are a number of issues yet to be resolved regarding the level and composition of taxes. However, for our fiscal projections, we have adopted the following assumptions: (a) royalty at 16.0 percent (as per the Hydrocarbons Law); (b) export tax at the full rate of 15 percent; (c) 15 percent of net income for profit sharing, of which one-tenth would go to the workers and nine-tenths to the government; (d) income tax of 44.5 percent; and (e) miscellaneous taxes amounting to 9 cents per barrel.

The absence of production or operating experience in northern Ecuador makes it necessary to estimate operating costs without reference to accounting records. A conservative figure of 60 U.S. cents per barrel for average operating and pipeline costs has been assumed for the purpose of projecting government revenue. 21/

On the basis of the above tax and cost conditions, and assuming a reference price of $2.50 per barrel, we obtain a government revenue of $1.36 per barrel. Conceptually this figure would be consistent with the per barrel revenue derived from the application of the Venezuelan or Middle East systems to cost conditions in Ecuador but at higher reference prices. For Ecuador, similar results can be achieved by raising the reference price above the $2.50 level and lowering or eliminating export taxes.

21/ The cost estimate is based on an initial production rate on the order of 2,500 barrels daily from wells of less than 10,000 feet. Depending on sustained production rates, these figures suggest average direct operating costs of between 25 and 35 U. S. cents per barrel including depreciation. On a comparative basis, operating costs in the Middle East are 5 to 12 U.S. cents per barrel for sustained production rates of 8,000 to 12,000 barrels daily per well and in Venezuela average costs are on the order of 42 to 49 U.S. cents per barrel. The actual level of costs will be heavily influenced by the natural decline of the producing fields and by the policies adopted with respect to depreciation. Assuming a fifteen-year period for both initial and subsequent investments, depreciation would amount to approximately 15 U.S. cents per barrel. Taking into account total investment, pipeline and marine terminal operating costs are calculated at 20 to 30 U.S. cents per barrel. An increased rate of throughput above its rated capcity would be reflected in lower unit operating costs.

	Reference Price	Illustrative Cost	Gov't Revenues	Tax-Paid Cost
	(U.S. dollars per barrel)			
Ecuadorian System	2.50	0.60	1.36	1.96
Middle East System	2.70	0.60	1.31	1.91
Venezuelan System	2.70	0.60	1.41	2.01

The tax paid cost for Ecuadorian crude shown above also falls within the limits which allow it to be considered as an alternative source of supply in a wide variety of markets. Adjustments for quality in some markets would enhance its attractiveness to the refiner.

Total public revenues for September-December 1972 from petroleum were initially estimated at S/828 million (US$33 million). 22/ In 1973, the first full year of operations, revenues will increase to S/2,900 million (US$116 million). For succeeding years through 1977, petroleum revenues are forecast to increase by about 13 percent annually. These forecasts assume that production will average 400,000 barrels daily by 1976 (see Table 8.27, Statistical Appendix). Given the uncertainties, these forecasts are highly conjectural; they represent the mission's best estimates of the implications of a given set of assumptions, which while reasonable are by no means certain. The various assumptions include: (a) forecasts of output based on the expectation that further reserves will be found; (b) estimates of costs under uncertain conditions of reservoir behavior; (c) assumptions that the per barrel revenues resulting from the application of calculated reference prices and tax rates will protect the interests of the country and at the same time allow Ecuadorian crude to enter world markets competitively in terms of tax paid cost; and (d) premises that realized f.o.b. prices will give the concession holders a share of net profits sufficiently attractive to allow for the future flow of investments directed toward the development of the resource. 23/

Public Expenditure

Public consumption: Encompassing government purchases of goods and services and wages and salaries, public consumption is the most critical policy variable in the hands of the government. When properly administered

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22/ The estimates of fiscal revenues in this report assume a petroleum production rate of 220,000 barrels per day starting September 1, 1972. In practice, this rate of production has been achieved only towards the end of 1972, with the consequent reduction in the reduction in the public revenues expectd from petroleum in 1972.

23/ For the fiscal projections, domestic sales have been valued at cost (including royalty and minor taxes) plus 20 percent as stipulated in the original Texaco-Gulf agreement.

and framed in an overall development plan, it is fairly difficult to compress, since an important part is made up of indispensable expenditures for operation and maintenance of basic infrastructure (teacher's salaries, road maintenance teams, etc.) as well as expenditures on needed social services (health clinics, police, etc.), all of which have an important bearing on development. On the other hand, public consumption is also the easiest policy variable to get out of control. On various occasions, previous governments in Ecuador have succumbed to political pressures for unjustified expenditures or have permitted the proliferation of an unnecessary bureaucracy. In other cases, there have been superfluous purchases of goods and services. These unjustified increases in public consumption, particularly since 1967-68, have eroded the saving capacity of the public sector and have had a crippling effect on the ability of the government to promote development.

Though responsibility for the inordinate increase in public consumption must primarily be attributed to the central government, it must be recognized that the latter's distribution of expenditure between its major functions was reasonably well balanced: the general services had the smallest share in the expansion of expenditure, and social and economic services, the largest. On the other hand much of the increase in expenditure on social services can be attributed to an expansion of the bureaucracy and higher wages and salaries in some sectors.

This lack of concern for budgetary equilibrium became particularly apparent in 1967-68 when the authorities decided to expand public consumption at the very time that they were embarking on an ambitious investment program without attempting at the same time to expand public revenue by a more thorough application of the existing tax laws. And it is this decision which must be regarded as primarily responsible for Ecuador's present financial difficulties: the deficit financed expansion of consumption and investment gave rise, on the one hand, to a substantial increase in imports, growing balance of payments disequilibria and a mounting foreign debt and, on the other, to a sharper rise in the internal price level which was fed by, and in its turn led to, successive salary increases and growing budgetary deficit, so that a vicious circle developed, which became more and more difficult to break.

In our fiscal estimates for the 1970s, current expenditures of the public sector (public consumption plus interest payments and current transfer payments to the private sector and abroad) are projected to increase at about 10 percent per year in real terms. This 10 percent rate of growth compares with an average increase of 5.4 percent in real terms in the 1965-70 period. This increase, in addition to providing improved remunerations for the public sector, would permit the necessary allocation to developmental expenditures complementary to the public investment program, and would leave sufficient room for a moderate level of expenditures on general services and defense. The increased current expenditures should enable the government to achieve its desired improvement in the quality of

these services. However, they do not leave much room for administrative wastage and presuppose that the government's present drive to increase administrative morality and efficiency is successful.

A sensitivity analysis of government expenditures indicates that any substantially higher growth rate of current expenditures would seriously undermine the public sector saving capacity and would hamper the government's overall growth objectives.

Financing of Public Investment

Public savings financed an important proportion of public investment expenditures (fixed and financial), averaging between 30 and 40 percent in the period 1965-71. Total domestic financing, including internal borrowing and capital receipts covered some 75 to 90 percent of public investment expenditures, with external resources increasing in the latter years. On the average, the central government has been an important contributor to public saving, if transfers are not taken into account. But every year between 10 and 15 percent of its current revenues are transferred to the rest of the public sector--especially to autonomous institutions--and to the private sector. Through the transfer mechanism, however, the deficits of the autonomous institutions were shifted to the central government increasing its deficit and forcing it to have recourse to Central Bank borrowing and issuing of bonds. While the central government borrowed heavily from the banking system, the rest of the public sector ran surpluses after investment in most years. An important part of these surpluses were channeled back to the private sector through equity investments and purchase of assets, or by being deposited in accounts in commercial banks.

The central government and other public entities expanded their investments considerably from 1967 to 1970 at the same time that their consumption of goods and services accelerated. As they failed to increase their revenues at the same pace, the overall deficit of the public sector began to grow rapidly from 1967 onwards and is now roughly twice as high as in 1965-66. Only part of the deficit could be covered by foreign loans and bond placements in the internal market. Since 1968 an important and growing part had to be financed by the Central Bank and in some cases the Government had to pay contractors of public works with dollar bonds, at a heavy cost to the Treasury.

Though the Social Security Institute is a major saver on current account and a minor spender on fixed capital formation, it cannot be relied upon to finance a substantial part of the public sector deficit by the purchase of government bonds, for a significant proportion of saving accumulated by the Social Security Institute is channeled into loans which it extends to insured persons, mostly on mortgages, and both the insured persons and the Institute tend to regard this financial assistance as part of the benefits provided by the social security scheme. Furthermore, the Institute

has substantial and rapidly increasing claims on the central government--now exceeding S/3.2 billion--arising from the latter's nonfulfillment of its legal obligation to pay social security contributions in its capacity as employer. Of this debt, roughly S/2 billion have been consolidated, and S/700 million are awaiting consolidation. The remainder of around S/500 million consists of government bonds. The Institute is reluctant to increase its government bond holdings (it has, in fact, tended to reduce them), as it is unwilling to immobilize an important part of its savings in long-term low interest bonds.

With the exception of commercial banks which are permitted to maintain part of their statutory reserves in the form of interest-bearing government securities, neither public nor private bodies or persons have been interested in buying government bonds unless these are purchased on the stock exchange where they can be obtained at a heavy discount. This is because of their long maturities (twenty years) and low interest rates (8 percent) in a context of increasing internal prices.

Public fixed investment has been projected to grow rapidly in the next few years, as the backlog of postponed and unfinished projects is eliminated. Towards the end of the 1970s, the rate of growth is projected to decline to about 10 percent per year in real terms. This still implies substantial increases in investment in absolute terms, since the growth is measured from a much larger base (the absolute level of investment may triple between 1972 and 1980).

Together with the increase in public fixed investment, there is an important increase in public credit lines made available to finance private investment. On the basis of the prospective operations identifiable at the time of the mission, public financial investment in credit lines is projected to increase from about S/400 million in 1972 to over S/1 billion in 1975, or the equivalent of 25 percent of public fixed investment. From 1976 onwards we have assumed that public financial investment in credit lines to the private sector is maintained at a level equivalent to 15 percent of fixed investment.

While these levels of investment are still well within the financial possibilities of the public sector, they assume a capacity to identify, prepare and execute investment projects that may well be beyond the immediate reach of the public administration, as past experience would seem to indicate.

The public investment requirements identified in Chapter III, Section F, would amount to a total of S/25.5 billion (expressed in 1971 Sucres) in the period 1973-77, including both fixed and financial investments. For the same period, the aggregate of public savings would amount to S/21.6 billion, i.e., about what would be required to cover 85 percent of the investment program.

Table 10: PUBLIC INVESTMENT EXPENDITURES AND THEIR FINANCING, 1965-71

(million sucres)

	1965	1966	1967	1968	1969	1970	1971
Public Investment Expenditures	1206	1221	1488	1569	1774	2361	2609
Financed by:							
Public Saving	363	597	968	613	629	871	1103
Capital Receipts	168	179	216	315	358	287	288
Foreign Borrowing (net) 1/	112	166	406	568	280	664	557
Domestic borrowing (net)	563	279	-102	73	507	539	661
(Banking System, net) 2/	(424)	(122)	(-237)	(401)	(549)	(445)	(773)
(Net transfer from financial entities and private sector)	(139)	(157)	(135)	(-328)	(-42)	(94)	(-112)

1/ As shown in the Balance of Payments (Table 3.1), converted into current sucres by the corresponding official exchange rates (17.82 for 1965-69, 21.28 for 1970 and 24.75 for 1971).

2/ As shown in the monetary accounts.

Source: Tables 5.16, 3.1, and 6.1, Statistical Appendix.

As can be seen from Table 11, the revenue generating capacity of petroleum is such that it could finance some three-quarters of total public investment in the period 1973-77. Clearly, public savings should not be a constraint to the growth of public investment in the 1970s, and eventually in the late 1970s public savings could contribute to the financing of part of private investment (over and above the credit lines assumed on financial investment) through equity participations in mixed enterprises, provided that adequate control over current expenditure growth is maintained.

In addition to the estimated public savings (we have assumed no net internal borrowing by the public sector), Ecuador could expect gross official capital inflows of some S/2.1 billion over the period 1973-77, on the basis of the existing pipeline of undisbursed foreign loans. Taking into account the prospective projects in which external multilateral and bilateral agencies are likely to exhibit an active interest, and the cost sharing principles which they have followed in the recent past, S/8.6 billion equivalent in external financing for new projects could be forthcoming during 1973-77. Over the same period, however, some S/8.2 billion in amortization and interest payments would fall due (S/5.2 billion on existing and S/3.0 billion on new loans), leading to a total net transfer of resources of only S/2.5. Gross external disbursements would amount to about 42 percent of total public investment expenditures, and net disbursements to about 21 percent.

The justification for the reliance on additional external capital inflows rests partly on balance of payments grounds, to finance the imported goods and services required to achieve the overall growth targets of the economy. The continuing participation of external development financing agencies, moreover, might well be essential to achieve the required levels of public investment in terms of identification, preparation and execution of high priority projects which would help to meet the Government's objectives in the fields of growth and improved income distribution.

Provided the behavior of public finances develops as expected and public savings and external borrowing reach the magnitudes indicated in Table 11, there should be no scarcity of financial resources. Indeed, were it not for absorptive capacity constraints, a larger public investment program would be warranted. It is, of course, quite possible that the government's administrative capacity to raise revenues and restrain current expenditures will fall short of the targets suggested in our earlier analysis, and a larger investment-savings gap might emerge. Moreover, under our assumptions of growth of petroleum output, the rate of expansion of petroleum revenues declines rapidly, and by 1977 an absolute decline takes place as total petroleum output stagnates in the face of increasing domestic consumption. Thus, another justification for a continued and sizable involvement of international development agencies assisting financially and technically the Government in its public investment efforts, is the time-bound nature of the financial relief provided by the discovery of petroleum, on the assumptions regarding petroleum developments which can now be made.

While in the determination of the cost sharing of externally financed projects we have assumed that external agencies will finance only the foreign exchange cost of projects, in areas such as education, agriculture and sanitation, where the requirements of imported goods and services are very small, it might be necessary to finance part of the local currency component in order to have a meaningful level of involvement in the preparation and execution of the projects.

Table 11: PUBLIC SAVINGS AND INVESTMENT, 1971-77
(In millions of 1971 sucres)

	1971	1972	1973	1974	1975	1976	1977	Total 1973-77
Public Investment	2,609	2,865	3,675	4,531	5,198	5,622	6,466	25,492
Fixed	2,265[a/]	2,465	2,939	3,575	4,215	4,889	5,623	21,241
Financial	344	400	736	956	983	733	843	4,251
Public Saving	1,103	1,696	3,749	3,601	4,066	5,214	4,996	21,626
Current revenues	7,091	8,275	10,976	11,541	12,790	14,798	15,525	65,630
(Petroleum)	-	(828)	(2,900)	(2,879)	(3,497)	(4,738)	(4,683)	(18,697)
(Other)	(7,091)	(7,447)	(8,076)	(8,662)	(9,293)	(10,060)	(10,842)	(46,933)
Current expenditures	5,988	6,579	7,227	7,940	8,724	9,584	10,529	44,004
Investment-saving gap	1,506	1,169	-74	930	1,132	408	1,470	3,866
Foreign borrowing (net)	557	2,904	1,088	1,045	812	1,208	1,244	5,397
Disbursements	1,148	3,787	2,236	2,231	2,040	2,108	2,178	10,793
Amortization	591	882	1,148	1,186	1,228	900	934	5,396
Overall surplus (-)[c/]	949[b/]	-1,735	-1,162	-115	320	-800	226	-1,531

a/ Purchase of existing assets and transfers to private sector and abroad.
b/ Includes capital receipts.
c/ Change in deposits in the banking system, and net domestic borrowing.

V. EXTERNAL TRADE AND FINANCES

Balance of payments constraints have in recent years seriously hindered economic growth. Historically, export earnings were used to make relatively stable factor income payments and the balance was spent on imports. Direct investment and other capital flows played a relatively minor role. In the second half of the 1960s, however, rapidly increasing import requirements, coupled with stagnating trends in major exports, have resulted in rising current account deficits requiring expanded external borrowing and depletion of foreign exchange reserves.

Ecuador's capacity to import and thus to sustain rising consumption and economic growth will be substantially enlarged during this decade as a result of petroleum exports. Petroleum will be the single most important export item in 1973, and by 1976 it will bring in more foreign exchange than all other commodities together. The emergence of petroleum as Ecuador's major export, however, entails some risk of future distortions. By strengthening the balance of payments, petroleum exports may hide unfavorable developments in the price-cost relationships and in the competitive position of the country's traditional and nontraditional exports, which from an employment point of view will remain far more important than petroleum. The income and balance-of-payments effects of petroleum exports may also put pressures on domestic costs. To avoid the danger inherent in the possible development of an exchange rate out of line with internal-external costs relationships, Ecuador's future exchange rate policy will have to be geared explicitly to taking into account not only the overall balance-of-payments situation, but also the international competitiveness of the main employment generating activities.

A. Recent Trends

The deterioration in the trade accounts which started in mid-1960s has continued into the 1970s and was quite prominent in 1971. The deficit on current account increased from $125 million in 1970 to $227 million in 1971. This happened in spite of the fact that merchandise exports, in the face of falling prices, maintained the record earnings of the previous year. A major portion of the approximately 34 percent increase in merchandise imports can be associated with the development of the oil sector. The direct foreign investment related to the oil sector increased from $64 million in 1970 to $127 million in 1971. The net public capital inflow declined slightly and the deficit on current account had to be financed by a reserve drawdown of the order of $30 million.

Table 12: BALANCE OF PAYMENTS, 1969-71
(US$ million)

	1969	1970	1971
Resource Balance	-110	-105	-209
Net Factor Payments	-27	-31	-31
Private Transfers	12	14	13
Current Account Balance	-125	-122	-227
Direct Investment	75	90	157
Net Public Inflow	16	31	23
(Gross)	(30)	(47)	(46)
(Amortization)	(14)	(16)	(24)
Others	39	3	18
Reserve Change (- = increase)	-5	-2	30

Source: Table 3.1, Statistical Appendix.

Merchandise Exports: For the period 1965-70, the four major exports (bananas, coffee, cocoa and sugar) accounted for about 88 percent of Ecuador's foreign exchange earnings. In 1971, there was a significant increase in minor exports (especially seafood and cocoa products) and their combined share of foreign exchange earnings increased to almost 20 percent. The government was instrumental in bringing about this increase by the implementation of export subsidies and other incentives for exports of industrialized products.

Table 13: COMMODITY EXPORTS, 1965-71
(US$ million)

	1965	1969	1970	1971	Growth Rate /a 1965-71
Bananas	96	207	123	112	2.9
Coffee	38	27	50	36	1.3
Cocoa	19	24	22	25	5.0
Sugar	7	11	9	14	11.0
Major Exports (% share)	(89.0)	(86.2)	(88.0)	(80.8)	
Minor Exports (% share)	(11.0)	(13.8)	(12.0)	(19.2)	
Seafood	6	11	10	18	15.6
Cocoa Products	-	2	2	5	59.4
TOTAL	180	196	233	232	4.3

/a Growth rates calculated by the method of least squares.

Source: Table 3.3, Statistical Appendix.

Though still the largest export item, banana's share in total exports 23/ declined from 53 percent in 1965 to approximately 48 percent in 1971.

23/ Banana exporters in Ecuador have traditionally undervalued their exports regarding the foreign exchange they surrender to the Central Bank. The following table on export prices prepared by FAO, even though it is only indicative since the unit values for indvidual countries cannot be fully substantiated, clearly brings about the vast differences in prices between Ecuadorian bananas and other exporting regions.

Unit Export Value, FOB
(US$ per ton)

	1967	1968	1969	1970
Ecuador	83	80	85	85
Central America	105	104	105	104
Caribbean	126	127	110	120
Asia	132	123	118	134

For purposes of balance of payments, both the Central Bank and the Planning Board adjust the prices upwards on the basis of information received from their embassies and consulates abroad.

International trade in bananas has been confined almost entirely to exports from developing countries to the high income markets of North America, Western Europe and Japan, with the volume of world trade growing at an annual compound rate of 4.1 percent between 1964-66 and 1969. Ecuador's main competitor has been Central America. Both regions are ideally suited to banana cultivation with Ecuador's geographical disadvantage being offset by extremely favorable climatic conditions, in particular the absence of recurring natural hazards such as windstorms and floods. Central America increased its world market share from 25 percent in 1964 to 37 percent in 1969, mainly at the expense of Ecuador. After 1969 Ecuador benefited from three years of production shortfalls in competing countries. The opening of the vast Japanese market due to crop damages in Taiwan resulted in Japan becoming the largest importer of Ecuadorian bananas.

Table 14: VOLUME OF ECUADORIAN BANANA EXPORTS, 1967-71
(Percent)

	1967	1968	1969	1970	1971
Germany	26	24	22	15	18
Japan	7	20	22	35	32
U.S.A.	38	30	26	25	21
(Share in World Trade)	(23)	(22)	(20)	(23)	(20)/a

/a Provisional.

Source: National Planning and Coordination Board.

The share of coffee exports in total exports declined from 21 percent in 1965 to just 15.5 percent in 1971. Production of coffee in 1971 is estimated at 1.2 million bags (72,000 metric tons), about 100,000 bags less than the record production of the previous year. On the average, coffee exports have hardly grown in the past several years. Cocoa bean production in 1971 is estimated at 65,000 metric tons, about 10,000 tons more than the 1970 crop due to favorable climatic conditions and the use of hybrid varieties which permit year-round harvesting. The exports of cocoa were about 39 percent higher in volume in 1971 but an 18 percent decline in world prices resulted in only a 14 percent increase in export value. Production of centrifugal sugar is estimated at a record 275,000 short tons in 1971, a 10 percent increase over the 1970 crop and exports have grown at an average of around 11 percent per year in 1965-71.

Among the minor exports (mostly manufactured items), seafood and cocoa products almost doubled in value compared to 1970 levels, thus increasing the share of minor exports from about 12 percent between 1965 and 1970 to a little over 19 percent in 1971.

Imports: In the period 1965-70 merchandise imports have been increasing gradually. The ratio of total imports to gross domestic product increased from 13.6 percent in 1965 to 15.8 percent in 1970. In 1971 imports increased by about $90 million and the import/GDP ratio jumped to 21.2 percent. A considerable portion of this increase is associated with the development of the petroleum sector. Nonpetroleum imports, however, also registered a considerable increase in 1971 compared to the 1970 levels.

As a result of recent expansions in the manufacturing sector, some import substitution in consumer goods has taken place over the last six years, as reflected by the declining proportion of consumer imports to total imports (19.5 percent of total nonpetroleum imports in 1971 compared to 23.8 percent in 1965).

On the basis of import permits issued and revised series prepared by the Central Bank 24/, merchandise imports are estimated to have increased by approximately 18 percent in 1971 or by 34 percent including petroleum sector imports. Imports associated with the development of the petroleum sector increased from $30 million in 1970 to $77 million in 1971. To meet the expanding demand for inputs for a rapidly growing manufacturing sector, imports of raw materials and intermediate goods increased by 23 percent. Capital goods imports increased by approximately 14 percent, due to a 35 percent increase in imports for manufacturing and a decline of 7 percent in capital goods imports for agriculture, transport and construction. The need to supplement the poorest wheat crop in many years, resulting from a combination of above average rainfall and low temperatures, accounted for an important part of the 15 percent increase in consumer goods imports. Another factor contributing to this increase was the removal of advance deposit requirements on most imports in June 1971.

24/ Import data are revised to include petroleum sector imports and some other imports for which no licenses are required. A net contraband estimate averaging about US$10 million is also included and is spread between consumer imports (75 percent) and capital imports (25 percent).

Table 15: STRUCTURE OF COMMODITY IMPORTS, 1965-71
(Percent)

	1965	1969	1970	1971	Growth Rate 1965-71
Consumer Goods	23.8	17.6	17.6	15.2	6.2
Fuels	7.5	5.2	6.3	5.9	9.9
Intermediate Goods	31.5	27.6	28.7	26.5	11.1
Capital Goods	37.0	37.0	35.7	30.3	10.6
Petroleum Sector	-	12.4	11.5	22.0	-
	100.0	100.0	100.0	100.0	
Imports/GDP (%)	13.6	15.2	15.8	21.2	14.4

Source: Table 3.4, Statistical Appendix.

Terms of Trade: Since the mid-1960s Ecuador enjoyed relatively favorable terms of trade, particularly in the period 1968-70. While the terms of trade moved unfavorably in 1971, they were still almost identical with the 1965 level. The rate of growth of the purchasing power of exports is estimated to have been 10.7 percent between 1965 to 1970 as compared to the 6.7 percent rate of growth in export earnings during the same period.

Table 16: TERMS OF TRADE, 1965-71

	1965	1966	1967	1968	1969	1970	1971
Export Price Index	88.4	92.6	93.7	100.2	106.7	105.0	100.0
Import Price Index	88.5	90.0	91.2	90.4	93.8	98.0	100.0
Terms-of-trade	99.9	102.9	102.7	110.8	113.8	107.1	100.0

Source: Table 3.9, Statistical Appendix.

Services Account: One of the factors responsible for the growth of the current account deficit has been the rapid deterioration on the services account. Since 1965 the deficit on services account has consistently been higher than the deficit on trade account. Nonfactor service payments increased by 17 percent between 1965 and 1971, while

receipts from the same grew at only 6 percent during the same period. A major portion of the net increase in payments has been the mounting net balance on freight, insurance and other transportation.

Capital Account: Until the mid-1960s direct foreign investment and other capital flows played a relatively minor role. In recent years, however, the rapidly deteriorating current account balance has been financed mostly by increased direct investments, especially in the petroleum sector, and by stepped up government borrowing (including loans from suppliers), averaging $42 million gross per year between 1968 and 1971 compared to only $22 million per year in the 1965-67 period. In 1971, however, even these growing capital inflows were not sufficient to cover the current account deficit and the Government had to resort to a reserve drawdown of the order of $30 million.

Table 17: EXTERNAL CAPITAL INFLOWS, 1965-71
(US$ million)

	1965	1969	1970	1971
Balance on Current Account	-18.1	-125.0	-121.9	-226.9
Direct Investment	9.9	75.3	90.0	157.0
(Petroleum Sector)	(-)	(47.9)	(64.5)	(127.0)
Net Public Inflow	6.3	15.7	31.2	22.5
Other Inflows (net)	-9.5	38.5	2.5	17.8
Change in Reserves (- equals increase)	11.4	-4.5	-1.8	29.6

Source: Table 3.1, Statistical Appendix.

Disbursements on loans to Ecuador by international development agencies (IBRD, IDA, IDB) and U.S. AID have been relatively small in the past. Because of increased commitments of these agencies in 1970, their share in total disbursements increased to 43 percent of gross disbursements in 1971 (28 percent excluding AID). However, disbursements still remained at levels lower than forecast at the time of making the loans. Delays in making loans effective and in the procurement phase of project implementation as well as shortages of counterpart funds are among the main reasons for disbursements having remained below expectations. New commitments by the three agencies in 1971 were very low, with AID signing new loans totalling $5.8 million, the IDB one loan for $2.8 million and the World Bank Group one loan for $8.0 million. The IDB approved during the year, however, three additional loans for a total of $30.3 million which were signed in April 1972.

Utilization of suppliers' credits and contractors' financing was particularly high in 1970 and out of a total of $50 million disbursed in that year, 66 percent came from these sources. Utilization of suppliers' credits and contractors' financing continued to be heavy in 1971 when credits totalling $39 million were signed, against $33 million in 1970. As a result of rapidly increasing borrowing, debt outstanding went up from $106 million at the beginning of 1967 to $219 million at the end of 1971 (from $206 million to $390 million including undisbursed). The increased use of contractors' financing is symptomatic of the tight budgetary situation since it eliminates the need for immediate budgetary contributions. It also reduces the need for maintaining high project standards and effecting institutional improvements, which generally are preconditions for lending by international agencies. The Government, confronted by immediate budgetary difficulties but with the prospect of substantial oil revenues in the near future, chose to bridge the gap by borrowing against future income. In early 1972, the Government borrowed a US$40 million budget support loan from U.S. commercial banks.

Financial terms related to long-term borrowings, extremely soft in the late 1950s, have been progressively hardening. Due to heavy reliance on suppliers' credits, the debt service ratio (as percentage of total foreign exchange earnings) increased from 6.3 percent in 1965 to 8.8 percent in 1970 and 12.0 percent in 1971. The structure and average terms of public debts contracted in the period 1965-71 are, however, still within satisfactory margins, with over 50 percent of debt having maturities of ten years or over, and an average interest rate of about 7 percent.

Table 18: PUBLIC EXTERNAL DEBT TERMS MATRIX
(Debts Contracted Between Jan. 1, 1965 to Dec. 31, 1971)

(in thousand US$)

Interest Rate	Maturity 1-5	5-10	10-15	Over 15	Unknown	Total
0-3	-	26,400	1,044	50,156	-	77,600
3-6	-	20,652	4,874	24,892	-	50,418
6-9	885	90,565	52,814	26,082	-	170,346
Over 9	-	-	-	6,000	-	6,000
Unknown	-	39	198	-	-	237
TOTAL	885	137,656	58,930	107,130	-	304,601

Average Interest Rate = 6.982%

Average Grace Period = 4.1 years

Average Maturity = 16.3 years

B. Future Prospects

Export Possibilities

The medium-term prospects of traditional exports (bananas, coffee, cocoa and sugar) are not very bright, even though the supply of the main products will be adequate to meet domestic and export demands. As a result of the leveling out of import demand in high-income countries, world trade in bananas in the present decade is expected to grow at a much lower rate than in the 1960s. Because bananas are a highly perishable commodity grown in the tropics but marketed in temperate zone importing countries, the production and distribution of bananas is marked by a high degree of integration. Ecuador is probably the only major exporting country where producers are not firmly linked by contract to major marketing organizations, a factor which might have limited its entry into the U.S. market which is dominated by a few companies with important producing/exporting interests in Central America. While Ecuador has been remarkably successful in converting from the Gros Michel variety (now with very limited outlets in world markets) to less fragile Cavendish varieties which in quality match the best Central American fruit, it is at a locational disadvantage in the U.S. market vis-a-vis Central American exports. Notwithstanding, the vulnerability of Central American production to climatic hazards is likely to induce the marketing companies to maintain or even increase Ecuador's share of the U.S. market to ensure a minimum stability of supply. Per capita consumption of bananas in the United States has, however, stabilized in the 1960's and, with the declining population growth rate, relatively little increase in demand for Ecuadorian bananas could be expected from this market over the medium-term.

A new factor in the world banana trade pattern is the rapid expansion of commercial production in the Far East, particularly the Philippines, oriented mainly to the Japanese market. In the near future Ecuador may ship only marginal quantities to Japan and in the longer run it seems reasonable to assume that trade in bananas in the Far East will become increasingly intraregional. Exports to the USSR and Eastern Europe, although small, have been growing rapidly and are expected to continue to increase in the future.

Given the expected slow growth in world demand for bananas and the expansion of output in a number of areas, in the absence of an international marketing agreement, there is a possibility of strong price competition in world markets. The strongest competition is likely to take place between Central and South America in particular, but pressure on prices is likely to be felt also by producers elsewhere. 25/ At best, prices are not expected to

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25/ The possibility of a serious imbalance appearing in the world banana market has led the FAO Study Group on Bananas to consider the feasibility of international arrangements. However, the Group concluded that it was still too early for any form of quota arrangement.

show any improvement; as a result, the overall value of Ecuadorian banana exports is likely to grow at a very slow rate.

The volume of production and exports of coffee is likely to continue growing at some 5 percent per annum during the next few years. During 1971, the Government began to implement a program to control further expansion of coffee production. However, the program has not been successful because bananas are being interplanted with coffee as a way to increase small farmers' incomes. The government also has plans to convert the poorer coffee areas to other crops such as corn and oilseeds, but financing for this program has not yet been found. In any case, at the present price, coffee is probably the most profitable alternative for those areas, reducing the atractiveness of coffee diversification schemes. Coffee prices, which increased substantially in the second half of 1972 with respect to earlier months, are expected to remain high at least for the next four or five years, and come down gradually thereafter as coffee stocks are rebuilt. In any case, the recent coffee price increases are likely to generate additional foreign exchange earnings of at least $60 million over the next five years, over previously expected levels.

Until the mid-1950s, cacao was the major export crop. However, production and yields have declined steadily because of plant diseases and poor cultivation practices. In the last few years production has gone up as a result of new plantings. However, the majority of the plantations are old, poorly kept and low yielding. Many will soon go out of production. The Ministry of Production in cooperation with international agencies has been developing disease resistant varieties with satisfactory results. These varieties, however, need advanced cultural practices and modern inputs which will require several years before they are sufficiently spread to have an impact on output. Ecuadorian cacao should command a premium price because of its desirable flavor. Improper processing methods, however, have deteriorated quality, limiting the acceptability of the beans and reducing the prices it commands in external markets. Prices are expected to remain stable more or less at the present level during the current decade. The value of cacao exports is, therefore, expected to grow very slowly during the next several years.

The expansion of sugar production during the past two years has created for the first time a sugar surplus. The record production in 1971 resulted in more than 125,000 short tons available for exports in 1971. Until now, sugar exports have been wholly dependent upon the quota for the U.S. market. Although sugar production is relatively efficient, the price of sugar in other importing countries in recent years has not been high enough to enable Ecuador to enter the international market in scale. Now, with an increased production and higher international prices, Ecuador will be in a position to look for new markets for its sugar. In any case, sugar consumption in the major importing countries is likely to grow slowly in the present decade due to the anticipated lower rate of population growth and to a high level of per capita consumption already achieved by these countries.

Among the minor (or nontraditional) exports, only seafood and cacao products have shown significant increases recently. Other products which have some potential for growth are tea, abaca (Manila hemp), specialty crops (such as mushrooms), flowers and some fruits. But the main thrust could be expected from industrialized and semi-industrialized products initially based on agricultural raw materials and maybe later on chemicals and petrochemicals. The Andean market offers some immediate scope for nontraditional exports. Long-term growth will have to depend, however, on exports outside the subregion. In the period 1965 to 1971, nontraditional exports have grown on the average by 12 percent per annum in dollar terms, although from a low base. It is expected that this growth will at least be maintained in the present decade.

Petroleum exports began in September 1972. Initial production was on the order of 220,000 barrels daily, and is expected to rise to 250,000 barrels daily in 1973 and 400,000 barrels daily by 1976. This projection assumes that the Texaco-Gulf partnership will connect new fields and increase pipeline capacity to 400,000 barrels daily by the second half of 1975 (cost: $15 to $20 million). For 1972, the realized price of Ecuadorian oil has been calculated at an average of $2.38 per barrel. In terms of similar crudes, the market price as a netback to Esmeraldas would result in a minimum of $2.25 per barrel and a maximum of $2.50. The f.o.b. realized price, however, is expected to increase, at least until 1975. It is assumed that the tax reference prices will increase and that the added costs in the form of taxes will be reflected in a 6 U.S. cents per barrel per year increase in the f.o.b. price of Ecuadorian crude 26/

Implicit in the pricing assumptions are judgments as to the distribution of petroleum exports. In view of import demand, market structure and the integrated nature of the industry, shipments from Ecuador will tend to move eastwards to the U.S. East Coast via the Caribbean refinery market. It is estimated that initially about 60 percent of Ecuadorian exports will go to these markets. With the higher volumes of production envisaged for 1973-74 and thereafter, the proportion could increase to around 65 or 70 percent. The effect of petroleum trade and capital movements on Ecuador's balance of payments is shown in Table 19. The net foreign exchange contribution of the sector will be on the order of $290 million in 1977, as against $72 million in 1972.

26/ The assumption is in line with the price and tax increases included in the Teheran agreement. The agreement states that prices will be increased by 2.5 percent per year plus 5 U.S. cents per barrel in January each year until 1975. In practice, however, price increases could be higher as a result of fast growing demand in major consuming countries and a decline in the purchasing power of the U.S. dollar.

Table 19: EFFECT OF PETROLEUM SECTOR OPERATIONS ON BALANCE OF PAYMENTS, 1972-77
(US$ million)

	1972	1973	1975	1977
Exports	53	192	240	322
Imports	76	34	36	90
Trade Balance	-23	158	204	232
Investment Income	13	45	53	71
Current Account	-36	113	151	161
Direct Investment	108	48	52	129
Net Effect	72	161	203	290

Source: IBRD staff projections.

The structure and growth rates of exports resulting from the assessment of export possibilities are summarized in Table 20. Traditional exports will grow at around 4 percent per year in the period 1971-77, compared with approximately 19 percent for total exports, and their share will drop from four-fifths to about one-third of merchandise exports. By 1977 petroleum exports will account for almost 50 percent of commodity exports.

Table 20: STRUCTURE OF MERCHANDISE EXPORTS, 1971-77
(Percent)

	1971	1972	1973	1977	Growth Rates /a 1971-77
Bananas	48.3	35.5	24.8	19.3	2.5
Coffee	15.7	16.5	11.5	10.0	8.5
Cocoa	10.9	7.7	5.2	4.4	2.8
Sugar	5.8	6.3	3.7	2.9	3.2
Subtotal	80.8	66.0	45.2	36.6	4.0
Other (nontraditional)	19.2	16.2	12.4	13.9	12.6
Total Nonpetroleum	100.0	82.2	57.6	50.5	5.9
Petroleum	-	17.8	42.4	49.5	-
Total	100.0	100.0	100.0	100.0	18.6

/a Based on trend values.

Source: Statistical Appendix Table 3.10.

The expansion of nontraditional exports (other than petroleum) will depend upon appropriate exchange rates, incentives and export promotion policies and, to some extent, the result of subregional and regional integration efforts. While the export potential of petroleum could generate enough foreign exchange to maintain high levels of economic growth during the 1970s, failure to implement a strong export diversification program would result in the reappearance of the balance-of-payments constraint once petroleum exports level off, and would be reflected in a sharp reduction of overall growth, or in increased external borrowing, higher debt service burden and a faster depletion of foreign exchange reserves.

Import Requirements

Relatively high levels of imports will be required to sustain the rates of growth of the economy envisaged for the present decade. Consumer goods imports are expected to grow through the mid-1970s at a somewhat faster rate than in the past, partly as a result of higher government consumption and more socially oriented investment expenditures, and partly because of increased overall levels of economic activity. Consumer goods imports are therefore expected to increase from an average of 3.5 percent of total consumption in the period 1965-71 to almost 4 percent in the period 1972-77. While initially the manufacturing sector will not be able to meet the sharp increases in demand--leading to a high initial growth of consumer imports--it is expected that a gradual process of import substitution will take place, encouraged by sound industrial policies and a reasonable degree of control of imports of nonessential consumer goods.

The projected high growth of nonpetroleum intermediate and capital goods imports (13 and 12 percent per annum, respectively) reflects the expected stepped up levels of economic activity in general and of manufacturing and construction in particular, as well as the import requirements emerging from the increased public investment program. Total nonpetroleum merchandise imports are expected therefore to increase from a level equivalent to 15 to 16 percent of nonpetroleum GDP in 1965-71, to almost 17 percent in 1972-77 (Table 3.16, Statistical Appendix). Direct investments by foreign petroleum companies in exploration, drilling and pipeline construction--with an import component estimated at about 70 percent--are expected to continue, peaking in 1976 and declining thereafter. Changes in the overall merchandise import coefficient will be heavily influenced by the fluctuations of petroleum investment.

Table 21: IMPORT REQUIREMENTS, 1971-77
(US$ million)

	1971	1972	1975	1977	Growth Rates /b 1971-77
Consumer Goods	53	57	72	85	8.2
Intermediate Goods	92	110	159	196	13.0
Capital Goods	105	115	159	207	12.1
Subtotal	271 /a	282	390	488	10.7
Petroleum Sector	77	76	36	90	3.1
Total	348	358	426	578	9.3

/a Including fuel imports.
/b Based on trend values.
Source: Mission projections

The nonpetroleum merchandise imports elasticity with respect to nonpetroleum GDP implied in our projections is 1.3 for the period 1972-77, which compares with an elasticity of 1.2 in the 1965-71 period. The elasticity of total imports to total GDP comes to 0.9, as a result of a decline in petroleum sector imports after the investment peak is reached in 1976.

Failure of the authorities to implement a program for development of an endogenous manufacturing capacity relying increasingly on domestic inputs, and for curtailing unnecessary consumer goods imports, would lead to balance-of-payments problems earlier than anticipated in this report. The levels of external borrowing requirements and the resulting debt service ratios are quite sensitive to unrestrained consumer goods imports.

External Capital and External Debt

Given the current account projections discussed above, balance-of-payments equilibrium would require gross capital inflows totaling some $911 million in the period 1973-77. This compares with a total of $675 million in the five-year period 1967-71. The expected sources and uses of this gross capital inflow are summarized on Table 22. The negative balance of goods and NFS which in the past has been a major claimant of external capital would now become considerably smaller in the period 1973-77, mainly as the result of increases in net petroleum exports, which more than offset the increased imports associated with petroleum development and with the carrying out of a much larger public investment effort.

Table 22: EXTERNAL CAPITAL REQUIREMENTS, 1971-77
(US$ million)

	Actuals 1971	Preliminary 1972	Projected 1973	1974	1975	1976	1977	Total 1973-77	Average 1973-77
Required Gross Inflow	251	221	131	180	170	187	243	911	182
USES									
Deficit on Current Account	-227	-185	-83	-130	-117	-147	-201	-678	-136
Goods and NFS balance	-209	-159	-10	- 55	- 31	- 41	- 92	-229	- 46
Factor payments	-31	- 41	-90	- 93	-105	-126	-129	-543	-109
Interest payments	(-7)	(- 13)	(-21)	(- 22)	(- 24)	(- 25)	(- 28)	(-120)	(- 24)
Investment income	(-24)	(- 28)	(-69)	(- 71)	(- 81)	(-101)	(-101)	(-423)	(- 85)
Transfers	13	15	17	18	19	20	20	94	19
Amortization of Debt	-24	- 36	-48	- 50	- 53	- 40	- 42	-233	- 46
SOURCES									
Direct Investment	157	138	78	100	86	164	167	595	119
(of which Petroleum)	(127)	(108)	(48)	(68)	(52)	(129)	(129)	(426)	
Gross Public Capital	46	108	93	95	88	93	98	467	93
Existing loans	46	79	51	27	6	2	2	88	18
New Loans 1/	-	29	42	68	82	91	96	379	75
(Suppliers credits)	(19)	(70)	(30)	(28)	(21)	(21)	(21)	(121)	(24)
Other Inflows 2/	18	47	-	-	-	-	-	-	-
Reserve Changes (- = increase)	30	- 72	-40	- 14	- 4	- 71	- 22	-151	- 30
Reserve Level	26	98	138	152	156	227	249		
Net Public Capital Inflow	22	72	45	45	35	53	56	234	47
Resource Balance/GDP (%)	-12.7	-8.6	-0.4	-2.2	-1.0	-1.2	-2.7		
Debt Service Ratio	12.0	15.0	14.2	14.6	13.8	9.7	10.2		

1/ Includes private financial institutions.
2/ Includes SDR allocations, short term capital and errors and omissions.

Source: IBRD staff projections.

Direct foreign investment is expected to be the main source of external capital and is estimated at US$595 million. Most of these foreign investments (US$426 million) would be destined to the petroleum sector. Gross public capital inflows are estimated to provide US$467 million, or an average of around US$93 million annually. The level of public borrowing in 1973-74 emerging from the mission's analysis of public investment possibilities can be considered a reasonable target according to the present state of preparation of known projects and the negotiations carried out with major international lenders. However, the project content of the public investment program for the latter years is still rudimentary, and the achievement of the projected levels of public investment will depend on the government's ability to step up considerably the identification, preparation, evaluation and execution of investment projects. Present capacity in this area is relatively limited, and it could benefit greatly from the accumulated expertise of international lending institutions. These new loans will help meet the resource gap and also enable the exchange reserves to recover to the equivalent of somewhat less than four months import requirements by 1977. The new loans will help in meeting technical assistance requirements, investment planning and institution building, and will facilitate a continued relationship with international lending agencies once petroleum earnings start to level off. The financing assumes disbursements on supplier's credits (excluding private financial institutions) of the order of $24 million per year, slightly higher than the levels disbursed in the past several years ($16 million per annum in 1967-71). This pattern of financing would lead to an improvement in the structure of the public external debt. The average terms of gross public capital inflow are assumed at 22 years maturity, 5.5 percent rate of interest and 3.5 years grace, better than in the past; these averages result from the expected terms of different sources of external finance which may be available. With these terms and on the basis of the foreseen large expansion in exports, the debt service ratio is expected to fall from 15 percent of exports of goods and services in 1972 to a little over 10 percent in 1977. At the same time, the capacity to import will be expanding at a high rate.

The alternative to pursuing the foregoing pattern of external borrowing is much less attractive. If the project preparation process does not proceed at the expected pace or does not meet the standards of evaluation of the international agencies, or if consumption expenditures get out of control, an increased level of supplier's credits would have to be included in the public capital mix and lending by international agencies would be proportionally reduced. This would lead to a deterioration of the structure of external public debt, larger debt service payments, and possibly less efficient investments (higher Incremental Capital Output Ratio), than projected in Table 22.

The situation described in the previous paragraphs, i.e., a declining resource gap and a sustained accumulation of foreign exchange reserves, can be expected to persist through the mid-seventies. Barring petroleum discoveries above those assumed in our projections, these trends would reverse themselves in the early eighties. A sharp drop in direct investment

in the petroleum sector and the expansion of the resource gap as a result of stagnating petroleum exports and continued increases in public expenditures will call for a rapid increase in net public capital inflows and a drawdown of reserves. If a growing part of these inflows would have to be obtained from supplier's credits on relatively more unfavorable terms, the debt service ratio would mount from its low of less than 10 percent in the mid-1970s to over 15 percent in the 1980s. This underscores the urgent need to utilize the resources available in the next several years to implement the previously indicated structural changes so that self sustained growth is not undermined.

The key assumption of the analysis in this report is that petroleum production will increase in successive steps to 400,000 barrels per day by 1975 and 600,000 barrels per day by 1980 (Statistical Appendix Table 8.27) and remain at that level thereafter. This assumption necessarily has a relatively high element of uncertainty. 27/ Should a different pattern of development of petroleum resources take place, its effects would, however, have a bearing mainly in the late 1970s, postponing or advancing the time when, in the face of growing domestic demand, petroleum export earnings start declining and thus exerting pressure on the balance of payments and on public finances. If additional reserves are not found, or if the present producing wells decline in yields very rapidly (as happened in neighboring Colombian fields), our estimate of output, while conservative in regard to expectations, could turn out to be optimistic compared with actual results. Also, if the petroleum companies and the government do not reach long-lasting agreements that, while protecting the interests of the country, provide adequate incentives for further development of the resource, exploration might be slowed down even if the prospects of success are good, again rendering our estimate optimistic. On the other hand, if exploration activities proceed normally and there are no unexpected declines in yields of productive wells, production possibilities could be larger and extend over a longer period than we have assumed. In spite of petroleum prospects, Ecuador will continue being for some time a less developed country in Latin America. Although the government has decided to tackle some of the problems and obstacles that have traditionally inhibited the development of the country, such as the low saving capacity of the public sector and its limited power to orient economic activity, the sluggish growth of the agricultural sector, and the insufficient development of nontraditional exports, to overcome these problems will require significant changes in the economic and administrative structure of the country which can only be bought about gradually. During this transition period, and given the uncertainties regarding the extent to which the development of the petroleum sector would permit counteracting the stagnation or slow growth of its traditional exports, Ecuador should continue receiving a part of its external financing in concessionary terms. With respect to the longer run, the terms of borrowing should depend on the prospects for further development of the petroleum sector, on the changes that take place in the productive structure, and on the degree of success achieved by the five-year development plan recently approved by the government.

27/ This uncertainty stems partly from the fact that there is still no official overall evaluation of proven and probable petroleum reserves. The government has engaged a consulting firm to provide such evaluation by mid-1973, and intends to use the results of this evaluation as an important ingredient in formulating its future petroleum policies. In the meantime the government is operating with a petroleum production perspective similar to the one assumed in this report.

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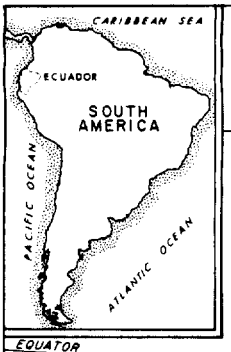
SEPTEMBER 1972



The boundaries shown on this map do not imply endorsement or acceptance by the World Bank and its affiliates.

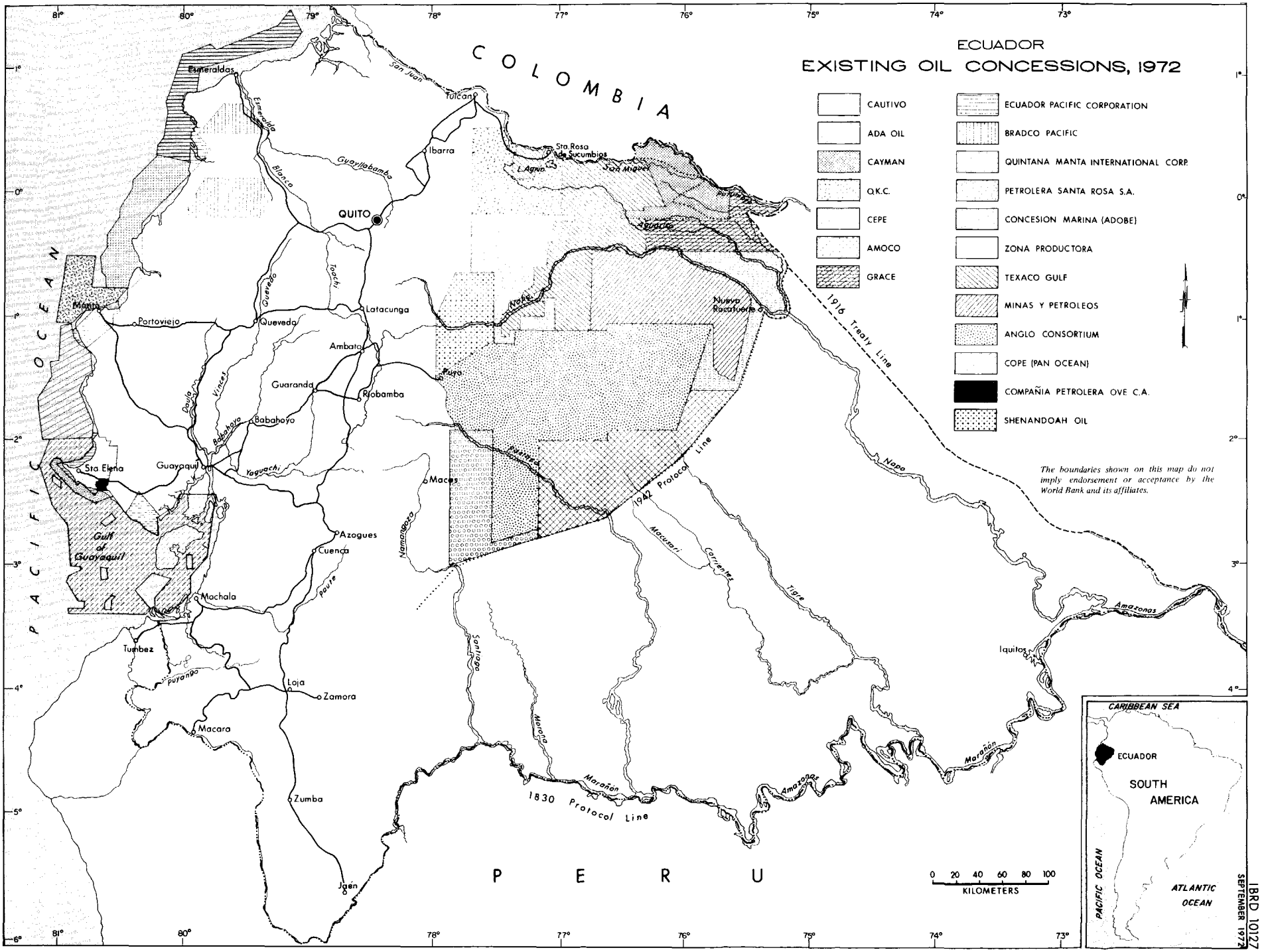
ECUADOR

- Consortium project roads
- Roads financed by IBRD Loan 176-EC
- Roads financed by IBRD Loan 94-EC to Comité Vialidad Guayaquil
- Existing roads
- Railways
- 1000 meter contour

CROP USE AREAS

- Cereals, corn, potatoes and livestock
- Irrigated sugar cane, corn and beans
- Coffee
- Rice, sugar cane and cattle
- Bananas, cacao and cattle
- Cotton, corn and beans

0 20 40 60 80 100 KM.



IBRD 10127
SEPTEMBER 1972

VOLUME II - STATISTICAL APPENDIX

LIST OF TABLES

I. POPULATION AND EMPLOYMENT

II. NATIONAL ACCOUNTS

III. BALANCE OF PAYMENTS

IV. EXTERNAL DEBT

V. FISCAL STATISTICS

VI. MONETARY STATISTICS

VII. AGRICULTURAL STATISTICS

VIII. MANUFACTURING AND PETROLEUM

I. POPULATION AND EMPLOYMENT

Table 1.1: END OF YEAR, CENSUS DATA, AND MID-YEAR POPULATION PROJECTIONS BY MAJOR REGIONS, 1950-76

(Thousands of persons)

Year	End of Year Total	Census Date [a] Total	Mid-Year Total	Mountains (10 Provinces)	Coast (5 Provinces)	Orient (4 Provinces)	Galapagos Islands
			Thousands of Persons				
1950	..	..	3,231	1,872	1,310	46.9	1.4
1951	..	..	3,318	1,904	1,364	48.4	1.5
1952	..	..	3,409	1,938	1,420	50.0	1.5
1953	..	..	3,506	1,975	1,478	51.8	1.6
1954	..	..	3,608	2,014	1,539	53.8	1.7
1955	..	..	3,717	2,057	1,602	56.0	1.7
1956	..	..	3,831	2,103	1,668	58.3	1.8
1957	..	..	3,952	2,150	1,739	60.9	1.9
1958	..	..	4,080	2,202	1,812	63.7	2.0
1959	..	..	4,214	2,258	1,887	66.7	2.1
1960	4,428	4,414	4,356	2,316	1,967	70.2	2.2
1961	4,579	4,565	4,506	2,375	2,055	73.7	2.3
1962	4,734	4,721	4,659	2,435	2,144	77.4	2.4
1963	4,896	4,883	4,818	2,502	2,232	81.5	2.5
1964	5,064	5,050	4,981	2,570	2,323	85.8	2.6
1965	5,237	5,223	5,150	2,640	2,418	90.2	2.8
1966	5,416	5,401	5,326	2,712	2,517	95.0	2.9
1967	5,601	5,585	5,508	2,786	2,619	99.9	3.1
1968	5,792	5,776	5,697	2,862	2,726	105.2	3.3
1969	5,990	5,973	5,892	2,941	2,837	110.6	3.4
1970	6,194	6,177	6,093	3,021	2,952	116.4	3.6
1971	6,402	6,384	6,297	3,102	3,070	122.2	3.7
1972	6,617	6,598	6,508	3,184	3,192	128.3	3.9
1973	6,838	6,819	6,727	3,270	3,318	134.6	4.1
1974	7,068	7,048	6,952	3,357	3,450	141.3	4.3
1975	7,305	7,284	7,185	3,446	3,586	148.3	4.5
1976	7,549	7,532	7,426	3,538	3,728	155.6	4.8

a Census date refers to November 25th.

Sources: Ministry of Economy, First Population Census of Ecuador, 1950, (Quito: General Bureau of Statistics and Censuses, June 1954), Vol. I, p. 7.

NEPCB, Population Projections of Ecuador, 1960-1980, (NEPCB, Technical Department, Division of Statistics and Censuses, no date), Table 6, pp. 19-20.

NEPCB (unpublished estimates prepared by the Section of Human Resources Programming, no date).

Mission estimates (for 1950-61).

Table 1.2: POPULATION GROWTH BY REGION, 1950-76

(Percentage)

Year	End of Year Total	Census Date /a Total	Mid-Year Total	Mountains (10 Provinces)	Coast (5 Provinces)	Orient (4 Provinces)	Galapagos Islands
			Annual Growth Rates /b				
1950	..	..	..	..	..	..	..
1951	..	..	2.7	1.7	4.1	3.2	4.1
1952	..	..	2.8	1.8	4.1	3.4	4.2
1953	..	..	2.8	1.9	4.1	3.6	4.3
1954	..	..	2.9	2.0	4.1	3.8	4.4
1955	..	..	3.0	2.1	4.1	4.0	4.5
1956	..	..	3.1	2.2	4.1	4.2	4.6
1957	..	..	3.1	2.3	4.1	4.4	4.7
1958	..	..	3.2	2.4	4.1	4.6	4.8
1959	..	..	3.3	2.5	4.1	4.8	4.9
1960	..	..	3.4	2.6	4.2	5.0	5.0
1961	3.4	3.4	3.4	2.6	4.2	5.0	5.0
1962	3.4	3.4	3.4	2.6	4.2	5.0	5.0
1963	3.4	3.4	3.4	2.7	4.1	5.0	5.0
1964	3.4	3.4	3.4	2.7	4.1	5.0	5.0
1965	3.4	3.4	3.4	2.7	4.1	5.0	5.0
1966	3.4	3.4	3.4	2.7	4.1	5.0	5.0
1967	3.4	3.4	3.4	2.7	4.1	5.0	5.0
1968	3.4	3.4	3.4	2.7	4.1	5.0	5.0
1969	3.4	3.4	3.4	2.7	4.1	5.0	5.0
1970	3.4	3.4	3.4	2.7	4.0	5.0	5.0
1971	3.4	3.4	3.4	2.7	4.0	5.0	5.0
1972	3.4	3.4	3.4	2.7	4.0	5.0	5.0
1973	3.4	3.4	3.4	2.7	4.0	5.0	5.0
1974	3.4	3.4	3.4	2.7	4.0	5.0	5.0
1975	3.4	3.4	3.4	2.7	4.0	5.0	5.0
1976	3.4	3.4	3.4	2.7	4.0	5.0	5.0

a Census date refers to November 25th.

b Annual growth rates were computed from unrounded estimates using compound table. Before 1962 growth rates were smoothed to show trends.

Source: See Table 1.1

Table 1.3: COMPOSITION OF POPULATION BY REGION, 1950-76

(Percentage)

Year	End of Year Total	Census Date Total	Mid-Year Total	Mountains (10 Provinces)	Coast (5 Provinces)	Orient (4 Provinces)	Galapagos Islands
			Percent of Total				
1950	..	..	100.0	57.9	40.6	1.5	0.0
1951	..	..	100.0	57.4	41.1	1.5	0.0
1952	..	..	100.0	56.8	41.7	1.5	0.0
1953	..	..	100.0	56.3	43.2	1.5	0.0
1954	..	..	100.0	55.8	42.7	1.5	0.0
1955	..	..	100.0	55.3	43.1	1.5	0.1
1956	..	..	100.0	54.9	43.5	1.5	0.1
1957	..	..	100.0	54.4	44.0	1.5	0.1
1958	..	..	100.0	53.9	44.4	1.6	0.1
1959	..	..	100.0	53.5	44.8	1.6	0.1
1960	101.6	101.3	100.0	53.2	45.1	1.6	0.1
1961	101.6	101.3	100.0	52.7	45.6	1.6	0.1
1962	101.6	101.3	100.0	52.3	46.0	1.6	0.1
1963	101.6	101.3	100.0	51.9	46.3	1.7	0.1
1964	101.6	101.4	100.0	51.6	46.6	1.7	0.1
1965	101.7	101.4	100.0	51.2	46.9	1.8	0.1
1966	101.7	101.4	100.0	50.9	47.2	1.8	0.1
1967	101.7	101.4	100.0	50.6	47.5	1.8	0.1
1968	101.7	101.4	100.0	50.2	47.8	1.9	0.1
1969	101.7	101.4	100.0	49.9	48.1	1.9	0.1
1970	101.7	101.4	100.0	49.6	48.4	1.9	0.1
1971	101.7	101.4	100.0	49.3	48.7	1.9	0.1
1972	101.7	101.4	100.0	48.9	49.0	2.0	0.1
1973	101.6	101.3	100.0	48.6	49.3	2.0	0.1
1974	101.6	101.3	100.0	48.3	49.6	2.0	0.1
1975	101.6	101.3	100.0	47.9	49.9	2.1	0.1
1976	101.6	101.3	100.0	47.6	50.2	2.1	0.1

Source: See Table 1.1

Table 1.4: URBAN AND RURAL POPULATION BY MAJOR REGIONS, 1960-75

(Thousands of Persons on November 25 of Each Year)

Year	Grand Total	Total		Mountains (10 Provinces)		Coast (5 Provinces)		Orient (4 Provinces)		Galapagos Islands
		Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Rural
1960	4,414	1,506	2,908	712	1,618	784	1,226	9.6	61.7	2.2
1961	4,565	1,592	2,973	746	1,649	835	1,257	10.2	64.9	2.3
1962	4,721	1,683	3,038	782	1,679	890	1,288	10.9	68.1	2.5
1963	4,883	1,779	3,104	819	1,709	948	1,320	11.6	71.6	2.6
1964	5,050	1,881	3,169	859	1,740	1,009	1,351	12.3	75.2	2.8
1965	5,223	1,988	3,235	900	1,770	1,075	1,383	13.1	79.0	2.9
1966	5,401	2,094	3,307	940	1,803	1,140	1,417	13.8	83.1	3.0
1967	5,585	2,206	3,379	981	1,836	1,210	1,452	14.6	87.4	3.2
1968	5,776	2,324	3,452	1,025	1,870	1,284	1,486	15.5	91.8	3.3
1969	5,973	2,448	3,525	1,070	1,904	1,362	1,521	16.4	96.5	3.4
1970	6,177	2,579	3,598	1,117	1,937	1,445	1,555	17.3	101.5	3.6
1971	6,384	2,707	3,677	1,162	1,974	1,526	1,592	18.2	106.5	3.8
1972	6,598	2,841	3,757	1,209	2,012	1,613	1,629	19.0	111.9	4.0
1973	6,819	2,981	3,838	1,257	2,049	1,704	1,667	20.0	117.4	4.2
1974	7,048	3,129	3,919	1,308	2,087	1,800	1,705	21.0	123.2	4.4
1975	7,284	3,283	4,001	1,360	2,124	1,901	1,743	22.0	129.4	4.6

Source: NEPCB (unpublished estimates prepared by the Section of Human Resources Programming, no date), and mission estimates.

Table 1.5: POPULATION PROJECTIONS BY AGE AND SEX, 1960-80

(Thousands of Persons on November 25 of Each Year)

Age and Sex Groups	1960	1965	1970	1975	1980
Total	**4,413.7**	**5,222.8**	**6,177.1**	**7,284.5**	**8,590.1**
0-9	1,530.1	1,830.7	2,125.3	2,440.2	2,824.1
10-11	225.1	282.7	344.9	401.9	462.2
12 and over	2,658.5	3,109.4	3,706.9	4,442.4	5,303.8
12-14	300.6	377.6	468.7	557.4	645.3
15-19	424.0	518.1	651.9	804.4	949.7
20-44	1,339.7	1,537.3	1,797.3	2,156.1	2,626.9
45-64	452.0	523.5	613.6	718.0	836.0
65 and over	142.7	152.9	175.4	206.5	245.9
Male Total	**2,206.1**	**2,611.7**	**3,088.0**	**3,641.4**	**4,295.2**
0-9	775.2	922.6	1,068.2	1,227.0	1,421.8
10-11	114.9	143.5	174.2	201.7	232.2
12 and over	1,316.0	1,545.6	1,845.6	2,212.7	2,641.2
12-14	152.9	192.2	236.8	260.8	324.0
15-19	210.9	264.0	331.4	406.3	477.0
20-44	657.7	755.4	890.6	1,076.3	1,319.0
45-64	227.0	260.8	303.0	351.4	405.7
65 and over	67.5	73.2	83.8	97.9	115.5
Female Total	**2,207.6**	**2,611.1**	**3,089.1**	**3,643.1**	**4,294.9**
0-9	754.9	908.1	1,057.1	1,213.2	1,402.3
10-11	110.2	139.2	170.7	200.2	230.0
12 and over	1,342.5	1,563.8	1,861.3	2,229.7	2,662.6
12-14	147.7	185.4	231.9	273.2	321.3
15-19	213.1	254.1	320.5	398.1	472.7
20-44	682.0	781.9	906.7	1,083.8	1,307.9
45-64	225.0	262.7	310.6	366.0	430.3
65 and over	74.7	79.7	91.6	108.6	130.4

Source: NEPCB, The Population of Ecuador, Its Main Characteristics (Document No. 03-02, reprinted January 19, 1972, prepared for the XIIIth Pan-American Congress on Childhood), and mission estimates.

Table 1.6: POPULATION GROWTH BY AGE AND SEX

(Percentage)

Age and Sex Groups	1960-65	1965-70	1970-75	1975-80
	Average Annual Growth Rates			
Total	3.7	3.7	3.6	3.6
0-9	3.9	3.2	3.0	3.1
10-11	5.1	4.4	4.7	3.0
12 and over	3.4	3.8	4.0	3.9
12-14	5.1	4.8	3.8	3.2
15-19	4.4	5.2	4.7	3.6
20-44	2.9	3.4	4.0	4.4
45-64	3.2	3.4	3.4	3.3
65 and over	1.4	2.9	3.5	3.8
	Average Annual Growth Rates			
Male Total	3.7	3.6	3.6	3.6
0-9	3.8	3.2	3.0	3.2
10-11	5.0	4.3	3.2	3.0
12 and over	3.5	3.9	4.0	3.9
12-14	5.1	4.7	3.7	3.1
15-19	5.0	5.1	4.5	3.5
20-44	3.0	3.6	4.2	4.5
45-64	3.0	3.2	3.2	3.1
65 and over	1.7	2.9	3.4	3.6
	Average Annual Growth Rates			
Female Total	3.7	3.6	3.6	3.6
0-9	4.1	3.3	3.0	3.1
10-11	5.3	4.5	3.5	3.0
12 and over	3.3	3.8	4.0	3.9
12-14	5.0	5.0	3.5	3.5
15-19	3.8	5.2	4.8	3.7
20-44	2.9	3.8	4.0	4.1
45-64	3.4	3.6	3.6	3.5
65 and over	1.3	3.0	3.7	4.0

Source: See Table 1.5

Table 1.7: MALE AND FEMALE POPULATION BY AGE, 1960-80

(Percentage)

Age and Sex Groups	1960	1965	1970	1975	1980
Male Total	100.0	100.0	100.0	100.0	100.0
0-9	35.1	35.3	34.6	33.7	33.1
10-11	5.2	5.5	5.6	5.5	5.4
12 and over	59.7	59.2	59.8	60.8	61.5
12-14	(6.9)	(7.4)	(7.7)	(7.7)	(7.5)
15-19	(9.6)	(10.1)	(10.7)	(11.2)	(11.1)
20-44	(29.8)	(28.9)	(28.9)	(29.6)	(30.7)
45-64	(10.3)	(10.0)	(9.8)	(9.6)	(9.5)
65 and over	(3.1)	(2.8)	(2.7)	(2.7)	(2.7)
Female Total	100.0	100.0	100.0	100.0	100.0
0-9	34.2	34.8	34.2	33.3	32.6
10-11	5.0	5.3	5.5	5.5	5.4
12 and over	60.8	59.9	60.3	61.2	62.0
12-14	(6.7)	(7.1)	(7.5)	(7.5)	(7.5)
15-19	(9.6)	(9.7)	(10.4)	(10.9)	(11.0)
20-44	(30.9)	(29.9)	(29.3)	(29.7)	(30.5)
45-64	(10.2)	(10.1)	(10.1)	(10.1)	(10.0)
65 and over	(3.4)	(3.1)	(3.0)	(3.0)	(3.0)

Source: See Table 1.5

Table 1.8: LABOR FORCE BY MAJOR ECONOMIC SECTORS, 1950-85
(thousands of persons and percent)

Major Economic Sectors	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
					Thousands of Persons					
Agriculture /a	626.1	644.0	662.4	681.2	700.7	720.6	741.2	762.3	784.1	806.5
Mining	5.0	4.9	4.7	4.6	4.5	4.4	4.3	4.1	4.0	3.9
Manufacturing	152.3	156.7	161.1	165.7	170.4	175.3	180.3	185.5	190.8	196.2
Construction	26.5	27.9	29.3	30.9	32.5	34.2	36.0	37.9	39.8	41.9
Electricity /b	1.1	1.2	1.4	1.6	1.8	2.0	2.3	2.6	2.9	3.3
Trade /c	67.9	70.1	72.3	74.5	76.9	79.3	81.8	84.4	87.1	89.8
Transportation /d	27.4	28.5	29.6	30.8	32.0	33.3	34.6	36.0	37.4	38.9
Services /e	110.8	116.0	121.6	127.4	133.4	139.8	146.4	153.4	160.7	168.3
Other /f	45.6	45.5	45.5	45.4	45.3	45.2	45.1	45.0	44.9	44.8
Total	1,062.7	1,094.8	1,127.9	1,162.1	1,197.5	1,234.1	1,272.0	1,311.2	1,351.7	1,393.6
					Annual Growth Rates					
Agriculture /a	..	2.9	2.9	2.8	2.9	2.8	2.9	2.8	2.9	2.9
Mining	..	-2.0	-4.1	-2.1	-2.2	-2.2	-2.3	-4.7	-2.4	-2.5
Manufacturing	..	2.9	2.8	2.9	2.8	2.9	2.9	2.9	2.9	2.8
Construction	..	5.3	5.0	5.5	5.2	5.2	5.3	5.3	5.0	5.3
Electricity /b	..	9.1	16.7	14.3	12.5	11.1	15.0	13.0	11.5	13.8
Trade /c	..	3.2	3.1	3.0	3.2	3.1	3.2	3.2	3.2	3.1
Transportation /d	..	4.0	3.9	4.1	3.9	4.1	3.9	4.0	3.9	4.0
Services /e	..	4.7	4.8	4.8	4.7	4.8	4.7	4.8	4.8	4.7
Other /f	..	-0.2	0.0	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Total	..	3.0	3.0	3.0	3.0	3.1	3.1	3.1	3.1	3.1
					Percent of Total					
Agriculture /a	58.9	58.8	58.7	58.6	58.5	58.4	58.3	58.1	58.0	57.8
Mining	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
Manufacturing	14.3	14.3	14.3	14.3	14.2	14.2	14.2	14.1	14.1	14.1
Construction	2.5	2.5	2.6	2.7	2.7	2.8	2.8	2.9	2.9	3.0
Electricity /b	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Trade /c	6.4	6.4	6.4	6.4	6.4	6.4	6.5	6.5	6.5	6.5
Transportation /d	2.6	2.6	2.6	2.6	2.7	2.7	2.7	2.8	2.8	2.8
Services /e	10.4	10.6	10.8	11.0	11.1	11.3	11.5	11.7	11.9	12.1
Other /f	4.3	4.2	4.1	3.9	3.8	3.7	3.5	3.4	3.3	3.2

Major Economic Sectors	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
					Thousands of Persons					
Agriculture /a	829.5	853.1	877.5	896.7	916.3	936.4	964.5	993.5	1,023.3	1,053.9
Mining	3.8	3.7	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3
Manufacturing	201.8	207.5	213.5	218.8	224.3	229.9	235.6	241.5	247.6	253.8
Construction	44.1	46.4	48.8	51.9	55.2	58.7	62.5	66.7	71.2	75.9
Electricity /b	3.7	4.2	4.7	5.0	5.3	5.6	6.0	6.4	6.9	7.4
Trade /c	92.7	95.6	98.7	102.2	105.8	109.6	114.3	119.3	124.4	129.8
Transportation /d	40.4	42.1	43.7	45.5	47.4	49.4	51.9	54.4	57.1	59.9
Services /e	176.4	184.8	193.5	199.9	206.4	213.1	221.8	230.9	240.3	250.2
Other /f	44.7	44.6	44.5	44.3	44.2	44.0	43.9	43.8	43.7	43.6
Total	1,437.1	1,482.0	1,528.5	1,568.0	1,608.7	1,650.6	1,704.6	1,760.6	1,818.7	1,878.8
					Annual Growth Rates					
Agriculture /a	2.9	2.8	2.8	2.2	2.2	2.2	3.0	3.0	3.0	3.0
Mining	-2.6	-2.6	-2.7	2.8	2.7	2.6	2.6	2.5	2.4	2.4
Manufacturing	2.8	2.8	2.9	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Construction	5.2	5.2	5.2	6.3	6.3	6.3	6.5	6.7	6.7	6.6
Electricity /b	12.1	13.5	11.9	6.4	6.0	5.7	7.1	6.7	7.8	7.2
Trade /c	3.2	3.1	3.2	3.5	3.5	3.6	4.3	4.4	4.3	4.3
Transportation /d	3.8	4.2	3.8	4.1	4.2	4.2	5.1	4.8	5.0	4.9
Services /e	4.8	4.8	4.7	3.3	3.2	3.2	4.1	4.1	4.1	4.1
Other /f	-0.2	-0.2	-0.2	-0.4	-0.2	-0.4	-0.2	-0.2	-0.2	-0.2
Total	3.1	3.1	3.1	2.6	2.6	2.6	3.3	3.3	3.3	3.3
					Percent of Total					
Agriculture /a	57.7	57.6	57.4	57.2	57.0	56.7	56.6	56.4	56.3	56.1
Mining	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Manufacturing	14.0	14.0	14.0	14.0	13.9	13.9	13.8	13.7	13.6	13.5
Construction	3.1	3.1	3.2	3.3	3.4	3.6	3.7	3.8	3.9	4.1
Electricity /b	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4
Trade /c	6.5	6.5	6.5	6.5	6.6	6.6	6.7	6.8	6.9	6.9
Transportation /d	2.8	2.8	2.9	2.9	3.0	3.0	3.0	3.1	3.1	3.2
Services /e	12.3	12.5	12.6	12.8	12.8	12.9	13.0	13.1	13.2	13.3
Other /f	3.1	3.0	2.9	2.8	2.8	2.7	2.6	2.5	2.4	2.3

Table 1.8: LABOR FORCE BY MAJOR ECONOMIC SECTORS, 1950-85
(thousands of persons and percent)

Major Economic Sectors	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Thousands of Persons																
Agriculture /a	1,085.4	1,119.2	1,154.1	1,190.2	1,227.3	1,265.8	1,305.0	1,345.4	1,387.2	1,430.2	1,474.4	1,518.0	1,562.9	1,609.2	1,656.8	1,705.6
Mining	4.4	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.8	5.9	6.1	6.2	6.4	6.5	6.7
Manufacturing	260.1	266.6	273.3	280.1	287.1	294.3	301.7	309.2	316.9	324.8	333.3	341.3	349.9	358.6	367.6	376.7
Construction	81.0	86.3	91.8	97.7	103.9	110.5	117.2	124.4	132.0	140.0	148.5	146.9	165.9	175.4	185.4	195.9
Electricity /b	7.9	8.3	8.9	9.4	10.0	10.6	11.2	11.9	12.6	13.4	14.2	15.1	16.0	16.9	17.9	19.0
Trade /c	135.4	141.5	147.7	154.3	161.2	168.4	175.8	183.5	191.6	200.0	208.8	217.7	226.9	236.5	246.5	257.1
Transportation /d	62.9	66.0	69.2	72.6	76.2	80.0	83.9	88.1	92.4	96.9	101.7	106.5	111.4	116.6	122.1	127.8
Services /e	260.3	271.3	282.7	294.6	307.0	319.9	333.3	347.2	361.7	376.9	392.7	408.6	425.2	442.4	460.3	479.0
Other /f	43.5	43.4	43.3	43.2	43.1	43.0	42.9	42.8	42.8	42.7	42.6	42.5	42.4	42.4	42.3	42.2
Total	1,940.9	2,007.1	2,075.7	2,146.9	2,220.8	2,297.6	2,376.3	2,458.0	2,542.8	2,630.7	2,721.8	2,812.7	2,906.8	3,004.4	3,105.4	3,210.0
Annual Growth Rates																
Agriculture /a	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.0	3.0	3.0	3.0	2.9
Mining	2.3	2.3	4.4	2.1	4.2	2.0	3.9	1.9	3.7	3.6	1.7	3.4	1.6	3.2	1.6	3.1
Manufacturing	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.4	2.5	2.5	2.5	2.5
Construction	6.7	6.5	6.4	6.4	6.3	6.3	6.1	6.1	6.1	6.1	6.1	5.7	5.7	5.7	5.7	5.7
Electricity /b	6.8	5.1	7.2	5.6	6.4	6.0	5.7	6.3	5.9	6.3	6.0	6.3	6.0	5.6	5.9	6.1
Trade /c	4.3	4.5	4.4	4.5	4.5	4.5	4.4	4.4	4.4	4.4	4.4	4.3	4.2	4.2	4.2	4.3
Transportation /d	5.0	4.9	4.8	4.9	5.0	5.0	4.9	5.0	4.9	4.9	5.0	4.7	4.6	4.7	4.7	4.7
Services /e	4.0	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.0	4.1	4.0	4.0	4.1
Other /f	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	0.0	-0.2	-0.2	-0.2	-0.2	0.0	-0.2	-0.2
Total	3.3	3.4	3.4	3.4	3.4	3.5	3.4	3.4	3.4	3.5	3.5	3.3	3.3	3.4	3.4	3.4
Percent of Total																
Agriculture /a	56.0	55.8	55.6	55.4	55.3	55.1	54.9	54.7	54.6	54.4	54.2	54.0	53.8	53.6	53.4	53.2
Mining	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Manufacturing	13.4	13.3	13.2	13.1	12.9	12.8	12.7	12.6	12.5	12.4	12.2	12.1	12.0	11.9	11.8	11.7
Construction	4.2	4.3	4.4	4.5	4.7	4.8	5.0	5.1	5.2	5.3	5.5	5.6	5.7	5.8	6.0	6.1
Electricity /b	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6
Trade /c	7.0	7.0	7.1	7.2	7.3	7.3	7.4	7.5	7.5	7.6	7.7	7.7	7.8	7.9	7.9	8.0
Transportation /d	3.2	3.3	3.3	3.4	3.4	3.5	3.5	3.6	3.6	3.7	3.7	3.8	3.8	3.9	3.9	4.0
Services /e	13.4	13.5	13.6	13.7	13.8	13.9	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9
Other /f	2.2	2.2	2.1	2.0	1.9	1.9	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.4	1.4	1.3

/a Includes agriculture, livestock, forestry and fishing.
/b Includes electric power, gas, water supply and sanitary services.
/c Includes wholesale and retail trade.
/d Includes transportation, storage, and communications.
/e Includes public and private services other than trade and transportation.
/f Includes activities not adequately defined.

Sources: NEPCB (unpublished estimates prepared by the Section of Human Resources Programming in September 1970), and Mission estimates.

Table 1.9: ESTIMATE OF INCOME DISTRIBUTION OF ACTIVE POPULATION, 1970

Income Class (sucres/year)	No. of People (thousands)	% of People (Cumulative)	% of Income (Cumulative)
Less than 2,000	356	18.8	2.3
2,000 - 3,000	572	48.5	8.5
3,000 - 5,000	237	60.9	12.2
5,000 - 7,000	128	67.6	15.7
7,000 - 10,000	115	73.6	19.9
10,000 - 15,000	126	80.2	26.8
15,000 - 20,000	84	84.6	33.7
20,000 - 25,000	90	89.3	42.9
25,000 - 30,000	56	92.2	49.5
30,000 - 40,000	48	94.7	57.1
40,000 - 50,000	33	96.4	63.6
50,000 - 60,000	29	97.9	70.6
60,000 - 100,000	21	99.0	79.2
More than 100,000	19	100.0	100.0

Source: National Planning and Coordination Board.

Table 1.10: AVERAGE PRODUCT OF LABOR BY SECTOR, 1960, 1970, 1972

(in 1970 sucres)

Sector	Average Product			Growth Rate %	Projected Growth Rate %
	1960	1970	1972	1960-70	1972-77
Agriculture	8,663	9,540	10,308	0.96	2.28
Manufacturing	19,748	26,870	29,760	2.73	6.01
Construction	18,925	22,692	26,651	1.83	0.07
Services	24,378	26,764	27,645	0.93	0.71
Petroleum			400,000		2.83
Average	14,141	17,399	18,971	2.10	4.63

Source: National Planning and Coordination Board.

II. NATIONAL ACCOUNTS

Table 2.1: EXPENDITURE ON GDP AT CURRENT MARKET PRICES, 1950-71

(Millions of Current Sucres)

a. 1950-60

Items	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
Available resources	6,798	7,726	8,374	9,171	10,337	11,030	11,272	11,755	12,165	12,724	14,071
Total consumption	6,015	6,722	7,466	7,908	8,706	9,224	9,492	9,944	10,393	10,803	11,920
Private consumption	5,018	5,672	6,343	6,654	7,372	7,850	8,125	8,537	8,980	9,270	10,107
General govt. consumption	997	1,050	1,123	1,254	1,334	1,374	1,367	1,407	1,413	1,533	1,813
Gross domestic investment	783	1,004	908	1,263	1,631	1,806	1,780	1,811	1,772	1,921	2,151
Increase in stocks	166	149	98	261	249	268	220	250	256	187	254
Gross domestic fixed investment	617	855	810	1,002	1,382	1,538	1,560	1,561	1,516	1,734	1,897
Private	420	602	530	653	922	901	977	997	949	997	986
Public	197	253	280	349	460	637	583	564	567	737	911
Exports of goods & NFS	1,390	1,229	1,708	1,716	2,153	2,070	2,097	2,377	2,312	2,454	2,524
Less: imports of goods & NFS	943	1,194	1,228	1,538	2,043	2,051	2,103	2,125	2,120	2,169	2,455
GDP at market prices	7,245	7,761	8,854	9,349	10,447	11,049	11,266	12,007	12,357	13,009	14,140
Less: net factor payments	177	147	306	286	273	308	369	376	304	385	395
GNP at market prices	7,068	7,614	8,548	9,063	10,174	10,741	10,897	11,631	12,053	12,624	13,745
Less: net indirect taxes	634	798	777	912	1,021	1,078	1,083	1,232	1,198	1,240	1,285
GNP at factor cost	6,434	6,816	7,771	8,151	9,153	9,663	9,814	10,399	10,855	11,384	12,460
Less: Depreciation	402	421	436	460	490	498	510	556	575	610	684
National income	6,032	6,395	7,335	7,691	8,663	9,165	9,304	9,843	10,280	10,774	11,776

b. 1961-71

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Available resources	15,193	15,995	17,371	19,667	20,892	22,829	25,512	28,601	32,340	37,427	46,452
Total consumption	12,879	13,760	14,922	16,966	18,103	19,908	22,097	24,322	27,011	30,349	37,169
Private cons. /a	10,812	11,605	12,690	14,376	15,427	17,425	19,279	20,937	23,316	26,020	32,243
General govt. cons. /a	2,067	2,155	2,232	2,590	2,676	2,483	2,818	3,385	3,695	4,329	4,926
Gross domestic invest.	2,314	2,235	2,449	2,701	2,789	2,921	3,415	4,279	5,329	7,078	9,283
Increase in stocks	267	276	303	362	383	406	446	505	585	780	1,042
Gross domestic fixed investment	2,047	1,959	2,146	2,339	2,406	2,515	2,969	3,774	4,744	6,298	8,241
Private /a	1,088	1,168	1,316	1,393	1,397	1,422	1,728	2,339	3,165	4,345	5,976
Public /a	959	791	830	946	1,009	1,093	1,241	1,435	1,579	1,953	2,265
Exports of goods & NFS	2,630	3,047	2,996	3,211	3,573	3,736	3,997	4,227	4,390	5,463	6,422
Less: imports of goods & NFS	2,746	2,938	2,930	3,464	3,678	3,731	4,381	5,362	6,301	7,760	11,642
GDP at market prices	15,075	16,104	17,437	19,414	20,787	22,834	25,128	27,466	30,429	35,130	41,232
Less: net factor payments	465	435	333	357	465	494	490	572	593	727	865
GNP at market prices	14,610	15,669	17,104	19,057	20,322	22,340	24,638	26,894	29,836	34,403	40,367
Less: net indirect taxes	1,237	1,212	1,524	1,816	1,665	1,832	2,322	2,600	2,746	3,030	3,348
GNP at factor cost	13,373	14,457	15,580	17,241	18,657	20,508	22,316	24,294	27,090	31,373	37,019
Less: Depreciation	763	782	817	1,027	1,067	1,113	1,150	1,210	1,225	1,600	2,100
National income	12,610	13,675	14,763	16,214	17,590	19,395	20,166	23,084	25,865	29,773	34,919

/a Data after 1964 relate to public and private sectors as defined by the NEPCB and are not comparable with preceding years.

Sources: Central Bank of Ecuador, National Economic Planning and Coordination Board, and Mission estimates.

Table 2.2: EXPENDITURE OF GDP AT CONSTANT 1971 MARKET PRICES, 1950-71

(Millions of Constant 1971 Sucres)

a. 1950-59

Items	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Available resources	13,577	14,809	15,535	16,731	18,133	18,779	19,493	20,075	20,646	21,562
Total consumption	12,013	12,885	13,851	14,427	15,272	15,705	16,415	16,982	17,639	18,307
Private consumption	10,022	10,872	11,768	12,139	12,932	13,364	14,050	14,580	15,241	15,709
General govt. cons.	1,991	2,013	2,083	2,288	2,340	2,341	2,364	2,403	2,398	2,598
Gross domestic investment	1,564	1,924	1,684	2,304	2,861	3,074	3,078	3,093	3,007	3,255
Increase in stocks	332	285	182	476	436	456	380	427	434	317
Gross domestic fixed invest.	1,232	1,639	1,502	1,828	2,425	2,618	2,698	2,666	2,563	2,938
Private	918	1,215	1,025	1,284	1,712	1,639	1,812	1,815	1,702	1,895
Public	314	424	477	544	713	979	886	851	861	1,043
Exports of goods and NFS	2,776	2,356	3,168	3,131	3,777	3,524	3,628	4,059	3,924	4,159
Less: imports of goods and NFS	1,884	2,289	2,278	2,806	3,584	3,492	3,638	3,629	3,598	3,676
GDP at market prices	14,469	14,876	16,425	17,056	18,326	18,811	19,483	20,505	20,972	22,045
Less: net factor payments	353	282	567	522	479	524	638	642	516	652
GNP at market prices	14,116	14,594	15,858	16,534	17,847	18,287	18,845	19,863	20,456	21,393
Less: net indirect taxes	1,266	1,529	1,441	1,664	1,791	1,835	1,873	2,104	2,028	2,101
GNP at factor cost	12,850	13,065	14,417	14,870	16,056	16,452	16,972	17,759	18,428	19,292
Less: depreciation	803	807	810	838	860	847	881	949	976	1,034
National income	12,047	12,258	13,607	14,032	15,196	15,605	16,091	16,810	17,452	18,258

b. 1960-71

Items	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Available resources	23,410	24,071	24,805	25,842	28,334	28,996	30,157	32,525	34,998	37,801	41,034	46,452
Total consumption	19,831	20,405	21,339	22,199	24,443	25,125	26,298	28,171	29,762	31,572	33,275	37,169
Private /a	16,815	17,130	17,997	18,879	20,712	21,411	23,018	24,579	25,620	27,253	28,529	32,243
General govt. /a	3,016	3,275	3,342	3,320	3,731	3,714	3,280	3,593	4,142	4,319	4,746	4,926
Gross domestic investment	3,579	3,666	3,466	3,643	3,891	3,871	3,859	4,354	5,236	6,229	7,760	9,283
Increase in stocks	423	423	428	451	521	532	536	569	618	684	855	1,042
Gross dom. fixed invest.	3,156	3,243	3,038	3,192	3,370	3,339	3,322	3,785	4,618	5,545	6,905	8,241
Private /a	1,640	1,724	1,811	1,957	2,007	1,939	1,878	2,203	2,862	3,699	4,764	5,976
Public /a	1,516	1,519	1,227	1,235	1,363	1,400	1,444	1,582	1,756	1,846	2,141	2,265
Exports of goods and NFS	4,199	4,167	4,725	4,457	4,626	4,959	4,935	5,096	5,172	5,131	5,990	6,422
Less: imports of goods &NFS	4,084	4,354	4,556	4,359	4,990	5,105	4,929	5,585	6,561	7,365	8,508	11,642
GDP at market prices	23,525	23,884	24,974	25,940	27,970	28,850	30,163	32,036	33,609	35,567	38,517	41,232
Less: net factor payments	657	737	675	495	514	645	653	625	700	693	797	865
GNP at market prices	22,868	24,147	24,299	25,445	27,456	28,205	29,510	31,411	32,909	34,874	37,720	40,367
Less: net indirect taxes	2,138	1,960	1,880	2,267	2,616	2,311	2,420	2,960	3,182	3,211	3,322	3,348
GNP at factor cost	20,730	21,187	22,419	24,178	24,840	25,894	27,090	28,451	29,727	31,663	34,398	37,019
Less: depreciation	1,138	1,209	1,213	1,216	1,480	1,480	1,470	1,466	1,480	1,432	1,754	2,100
National income	19,592	19,978	21,206	21,962	23,360	24,413	25,620	26,985	28,247	30,231	32,644	34,919

/a Data after 1964 relate to public and private sectors as defined by the NEPCB and are not comparable with the preceding years.

Source Central Bank of Ecuador, National Economic Planning and Coordination Board, and mission estimates.

Table 2.3: INDUSTRIAL ORIGIN OF GDP AT CURRENT FACTOR COST, 1950-71

(Millions of Current Sucres)

a. 1950-60

Sectors	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
GDP at factor cost	6,611	6,963	8,077	8,437	9,426	9,971	10,183	10,775	11,159	11,769	12,855
Agricultural sector /a	2,565	2,704	3,327	3,388	3,671	3,598	3,756	3,936	4,005	4,250	4,731
Nonagricultural sector	4,046	4,259	4,750	5,049	5,755	6,373	6,427	6,839	7,154	7,519	8,175
Commodity producing	1,419	1,507	1,675	1,805	2,002	2,162	2,254	2,357	2,475	2,663	2,973
Mining and quarrying	150	149	161	162	200	243	228	232	222	233	311
Manufacturing	1,055	1,137	1,237	1,324	1,437	1,499	1,564	1,625	1,739	1,830	2,011
Construction	180	181	222	248	279	311	354	380	388	462	499
Electricity /b	34	40	55	71	86	109	108	120	126	138	152
Services producing	2,627	2,752	3,075	3,244	3,753	4,211	4,173	4,482	4,679	4,856	5,151
Transportation /c	318	365	405	426	486	508	491	522	530	546	548
Trade /d	678	716	859	888	1,006	1,257	1,271	1,306	1,338	1,357	1,482
Banking /e	94	96	105	114	159	173	186	241	286	330	341
Ownership of dwellings	534	549	579	608	702	768	777	805	826	845	877
Services	621	636	699	731	841	900	821	976	1,049	1,096	1,150
Public administration /f	382	390	428	477	559	605	627	632	650	682	753

b. 1961-71

Sectors	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
GDP at factor cost	13,838	14,892	15,913	17,598	19,122	21,002	22,806	24,866	27,682	32,100	37,884
Agricultural sector /a	5,127	5,689	5,960	6,191	6,482	7,227	7,556	7,771	8,562	9,693	10,804
Nonagricultural sector	8,738	9,203	9,953	11,407	12,640	13,775	15,250	17,095	19,120	22,407	27,080
Commodity producing	3,180	3,366	3,709	4,371	4,749	5,110	5,762	6,301	7,184	8,441	10,119
Mining and quarrying	315	326	369	389	392	453	500	552	596	641	734
Manufacturing	2,112	2,283	2,523	3,039	3,299	3,501	3,884	4,209	4,764	5,438	6,412
Construction	574	560	593	698	788	845	1,040	1,147	1,350	1,803	2,302
Electricity /b	179	197	224	245	270	311	338	393	474	559	671
Services producing	5,531	5,837	6,244	7,036	7,891	8,665	9,488	10,794	11,936	13,966	16,961
Transportation /c	595	600	649	701	725	789	822	902	995	1,149	1,342
Trade /d	1,555	1,620	1,772	1,921	2,080	2,185	2,420	2,680	3,012	3,397	4,121
Banking /e	386	405	443	536	543	589	647	699	837	1,012	1,249
Ownership of dwellings	950	1,002	1,080	1,154	1,238	1,345	1,442	1,548	1,715	1,919	2,226
Services	1,180	1,293	1,313	1,573	1,989	2,245	2,657	3,141	3,474	4,086	4,925
Public administration /f	865	917	987	1,151	1,316	1,512	1,500	1,824	1,903	2,403	3,098

/a Includes agriculture, forestry, hunting and fishing.
/b Includes electric power, gas, water supply and sanitary services.
/c Includes transportation, storage and communications.
/d Includes wholesale and retail trade.
/e Includes banking, insurance, and real estate.
/f Includes defense.

Sources: Central Bank of Ecuador, National Economic Planning and Coordination Board, and mission estimates.

Table 2.4: INDUSTRIAL ORIGIN OF GDP AT CONSTANT 1971 FACTOR COST, 1950-71

(Millions of Constant 1971 Sucres)

a. 1950-60

Sectors	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
GDP at factor cost	13,203	13,345	14,984	15,392	16,535	16,976	17,610	18,401	18,939	19,944	21,387
Agricultural sector /a	5,123	5,182	6,172	6,181	6,440	6,126	6,495	6,722	6,797	7,202	7,871
Nonagricultural sector	8,080	8,163	8,812	9,211	10,095	10,850	11,115	11,679	12,142	12,742	13,516
Commodity producing	2,834	2,888	3,107	3,293	3,512	3,681	3,898	4,025	4,201	4,513	4,946
Mining and quarrying	300	285	298	296	351	414	394	396	377	395	517
Manufacturing	2,107	2,179	2,295	2,415	2,521	2,552	2,705	2,775	2,951	3,101	3,346
Construction	359	347	412	452	489	529	612	649	659	783	830
Electricity /b	68	77	102	130	151	186	187	205	214	234	253
Services producing	5,246	5,275	5,705	5,918	6,583	7,169	7,217	7,654	7,941	8,229	8,570
Transportation /c	635	700	751	777	853	865	849	891	900	925	912
Trade /d	1,354	1,372	1,594	1,620	1,765	2,140	2,198	2,230	2,271	2,300	2,466
Banking /e	188	184	195	208	279	295	322	412	485	559	567
Ownership of dwellings	1,066	1,052	1,074	1,109	1,231	1,307	1,344	1,375	1,402	1,432	1,459
Services	1,240	1,219	1,297	1,334	1,475	1,532	1,420	1,667	1,780	1,857	1,913
Public administration /f	763	748	794	870	980	1,030	1,084	1,079	1,103	1,156	1,253

b. 1961-71

Sectors	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
GDP at factor cost	21,924	23,094	23,673	25,354	26,539	27,743	29,076	30,427	32,356	35,195	37,884
Agricultural sector /a	8,123	8,822	8,866	8,920	8,996	9,547	9,633	9,509	10,008	10,628	10,804
Nonagricultural sector	13,801	14,272	14,807	16,434	17,543	18,196	19,443	20,918	22,348	24,567	27,080
Commodity producing	5,038	5,220	5,518	6,297	6,591	6,750	7,346	7,710	8,397	9,255	10,119
Mining and quarrying	499	506	549	560	544	598	637	675	697	703	734
Manufacturing	3,346	3,540	3,754	4,378	4,579	4,625	4,952	5,150	5,568	5,962	6,412
Construction	909	868	882	1,006	1,093	1,116	1,326	1,404	1,578	1,977	2,302
Electricity /b	284	306	333	353	375	411	431	481	554	613	671
Services producing	8,763	9,052	9,289	10,137	10,952	11,446	12,097	13,208	13,951	15,312	16,961
Transportation /c	943	931	966	1,010	1,006	1,042	1,048	1,104	1,163	1,260	1,342
Trade /d	2,464	2,512	2,636	2,768	2,887	2,886	3,085	3,279	3,521	3,724	4,121
Banking /e	612	628	659	772	754	778	825	855	978	1,109	1,249
Ownership of dwellings	1,505	1,554	1,607	1,663	1,718	1,777	1,839	1,894	2,005	2,104	2,226
Services	1,869	2,005	1,953	2,266	2,761	2,966	3,388	3,844	4,060	4,480	4,925
Public administration /f	1,370	1,422	1,468	1,658	1,826	1,997	1,912	2,232	2,224	2,635	3,098

/a Includes agriculture, forestry, hunting, and fishing.
/b Includes electric power, gas, water supply, and sanitary services.
/c Includes transportation, storage, and communications.
/d Includes wholesale and retail trade.
/e Includes banking, insurance, and real estate.
/f Includes defense.

Sources: Central Bank of Ecuador, National Economic Planning and Coordination Board, and Mission estimates.

Table 2.5: SAVING AND INVESTMENT AT CURRENT MARKET PRICES, 1950-71

(Millions of Current Sucres)

a. 1950-59

Items	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
	Gross Domestic Saving (GDS) and Gross Domestic Investment (GDI), by Sector									
Private sector /a										
Gross domestic savings	1,163	873	1,224	1,287	1,396	1,351	1,297	1,513	1,457	1,575
Gross domestic invest.	586	740	606	884	1,133	1,162	1,168	1,224	1,181	1,165
General government /a										
Gross domestic savings	67	166	164	154	345	474	477	550	507	631
Gross domestic invest.	197	264	302	379	498	644	612	587	591	756
Foreign sector										
Net imports of goods & NFS	-447	-35	-480	-178	-110	-19	6	-252	-192	-285
Plus: net factor payments	177	147	306	286	273	308	369	376	304	385
Net capital inflow	-270	112	-174	108	163	289	375	124	112	100
Net current transfers	13	22	24	18	26	14	16	32	43	56
	Sources of Saving									
GDP at market prices	7,245	7,761	8,854	9,349	10,447	11,049	11,266	12,007	12,357	13,009
Less: consumption	6,015	6,722	7,466	7,908	8,706	9,224	9,492	9,944	10,393	10,803
Gross domestic savings	1,230	1,039	1,388	1,441	1,741	1,825	1,774	2,063	1,964	2,206
Private	1,163	873	1,224	1,287	1,396	1,351	1,297	1,513	1,457	1,575
General government	67	166	164	154	345	474	477	550	507	631
Revenue	1,258	1,368	1,485	1,629	1,885	2,113	2,084	2,247	2,245	2,518
Expenditure	1,191	1,202	1,321	1,475	1,540	1,639	1,607	1,697	1,738	1,887
GDS, incl. net current transfers	1,244	1,061	1,412	1,459	1,767	1,839	1,790	2,095	2,007	2,262
GDS, incl. net current transfers	1,067	914	1,106	1,173	1,494	1,531	1,421	1,719	1,703	1,877
	Financing of Gross Domestic Investment (GDI)									
Gross domestic investment	783	1,004	908	1,263	1,631	1,806	1,780	1,811	1,772	1,921
Less: net capital inflow	-270	112	-174	108	163	289	375	124	112	100
Gross national saving	1,053	892	1,082	1,155	1,468	1,517	1,405	1,687	1,660	1,821
Less: depreciation	402	421	436	460	490	498	510	556	575	610
Net national savings	651	471	646	695	978	1,019	895	1,131	1,085	1,211

b. 1960-71

Items	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
	Gross Domestic Saving (GDS) and Gross Domestic Investment (GDI), by Sector											
Private sector /a												
Gross domestic savings	1,615	1,492	1,669	1,553	1,231	2,321	2,329	2,063	2,531	2,789	3,910	2,960
Gross domestic invest.	1,215	1,328	1,416	1,589	1,719	1,742	1,787	2,129	2,793	3,691	5,047	6,914
General government /a												
Gross domestic savings	605	704	675	962	1,217	363	597	968	613	629	871	1,103
Gross domestic invest.	936	986	819	860	982	1,047	1,134	1,286	1,486	1,638	2,031	2,369
Foreign sector												
Net imports of goods & NFS	-69	118	-109	-66	253	105	-5	384	1,135	1,911	2,297	5,220
Plus: net factor payments	395	465	435	333	357	465	494	490	572	593	727	865
Net capital inflow	326	583	326	267	610	570	489	874	1,707	2,504	3,024	6,085
Net current transfers	117	133	142	117	201	137	186	210	217	244	313	325
	Sources of Saving											
GDP at market prices	14,140	15,075	16,104	17,437	19,414	20,787	22,834	25,128	27,466	30,429	35,130	41,232
Less: consumption	11,920	12,879	13,760	14,922	16,966	18,103	19,908	22,097	24,322	27,011	30,349	37,169
Gross domestic savings	2,220	2,196	2,344	2,515	2,448	2.684	2,926	3,031	3,144	3,418	4,781	4,063
Private	1,615	1,492	1,669	1,553	1,231	2,321	2,329	2,063	2,531	2,789	3,910	2,960
General government	605	704	675	962	1,217	363	597	968	613	629	871	1,103
Revenue	2,860	3,276	3,540	3,913	4,612	3,557	3,671	4,335	4,667	5,136	6.176	7,091
Expenditure	2,255	2,572	2,865	2,951	3,395	3,194	3,074	3,367	4,054	4,507	5,305	5,988
GDS, incl. net cur. trans.	2,337	2,329	2,486	2,632	2,649	2,821	3,112	3,241	3,361	3,662	5,094	4,388
GDS, incl. net cur. trans.	1,942	1,864	2,051	2,299	2,292	2,356	2,618	2,751	2,780	3,069	4.367	3,523
	Financing of Gross Domestic Investment (GDI)											
Gross domestic investment	2,151	2,314	2,235	2,449	2,701	2,789	2,921	3,415	4,279	5,329	7,078	9,283
Less: net capital inflow	326	583	326	267	610	570	489	874	1,707	2,504	3,024	6,085
Gross national saving	1,825	1,731	1,909	2,182	2,091	2,219	2,432	2,541	2,572	2,825	4,054	3,198
Less: depreciation	684	763	782	817	1,027	1,067	1,113	1,150	1,210	1,225	1,600	2,100
Net national savings	1,141	968	1,127	1,365	1,064	1.152	1,319	1,391	11,362	1,600	2,454	1,098

/a Data after 1964 relate to public and private sectors as defined by the NEPCB and are not comparable with preceding years.

Sources: Central Bank of Ecuador, National Economic Planning and Coordination Board, and Mission estimates.

Table 2.6: SAVING AND INVESTMENT AT CONSTANT 1971 MARKET PRICES, 1950-71

(Millions of Constant 1971 Sucres)

Item	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Gross Domestic Saving (GDS) and Gross Domestic Investment (GDI), by sector																						
Private sector /a																						
Gross domestic savings	2,232	1,673	2,270	2,348	2,449	2,299	2,243	2,584	2,473	2,669	2,688	2,364	2,588	2,310	1,774	3,221	3,076	2,630	3,097	3,260	4,287	2,960
Gross domestic investment	1,170	1,418	1,124	1,613	1,987	1,978	2,020	2,090	2,004	1,974	2,022	2,104	2,196	2,364	2,476	2,418	2,361	2,714	3,418	4,314	5,533	6,914
General government /a																						
Gross domestic savings	134	318	304	281	605	807	825	939	860	1,069	1,006	1,115	1,047	1,431	1,753	504	789	1,235	750	735	955	1,103
Gross domestic investment	394	506	560	691	874	1,096	1,058	1,003	1,003	1,281	1,557	1,562	1,270	1,279	1,415	1,453	1,498	1,640	1,818	1,915	2,227	2,369
Foreign sector																						
Net imports of goods & NFS	-892	- 67	-890	-325	-193	- 32	10	-430	-326	-483	-115	187	-169	- 98	364	146	- 6	489	1,389	2,234	2,518	5,220
Plus: net factor payments	353	282	567	522	479	524	638	642	516	652	657	737	675	495	514	645	653	625	700	693	797	865
Net capital inflow	-539	215	-323	197	286	492	648	212	190	169	542	924	506	397	878	791	647	1,114	2,089	2,927	3,315	6,085
Net current transfers	26	42	45	33	46	24	28	55	73	95	195	211	220	174	290	190	246	268	266	285	343	325
Sources of Saving																						
GDP at market prices	14,469	14,876	16,425	17,056	18,326	18,811	19,483	20,505	20,972	22,045	23,525	23,884	24,974	25,940	27,970	28,850	30,163	32,036	33,609	35,567	38,517	41,232
Less: consumption	12,013	12,885	13,851	14,427	15,272	15,705	16,415	16,982	17,639	18,307	19,831	20,405	21,339	22,199	24,443	25,125	26,298	28,171	29,762	31,572	33,275	37,169
Gross domestic savings	2,456	1,991	2,574	2,629	3,054	3,106	3,068	3,523	3,333	3,738	3,694	3,479	3,635	3,741	3,527	3,725	3,865	3,865	3,847	3,995	5,242	4,063
Private	2,322	1,673	2,270	2,348	2,449	2,299	2,243	2,584	2,473	2,669	2,688	2,364	2,588	2,310	1,774	3,221	3,076	2,630	3,097	3,260	4,287	2,960
General government	134	318	304	281	605	807	825	939	860	1,069	1,006	1,115	1,047	1,431	1,753	504	789	1,235	750	735	955	1,103
Revenue	2,512	2,622	2,755	2,972	3,307	3,597	3,604	3,837	3,810	4,267	4,758	5,190	5,490	5,821	6,644	4,937	4,849	5,527	5,711	6,003	6,771	7,091
Expenditure	2,378	2,304	2,451	2,691	2,702	2,790	2,779	2,898	2,950	3,198	3,752	4,075	4,443	4,390	4,891	4,433	4,060	4,292	4,961	5,268	5,816	5,988
GDS, incl. net current transfers	2,482	2,033	2,619	2,662	3,100	3,130	3,096	3,578	3,406	3,833	3,889	3,690	3,855	3,915	3,817	3,915	4,111	4,133	4,113	4,280	5,585	4,388
GDS, incl. net current transfers	2,129	1,751	2,052	2,140	2,621	2,606	2,458	2,936	2,890	3,181	3,232	2,953	3,180	3,420	3,303	3,270	3,458	3,508	3,413	3,587	4,788	3,523
Financing of Gross Domestic Investment (GDI)																						
Gross domestic investment	1,564	1,924	1,684	2,304	2,861	3,074	3,078	3,093	3,007	3,255	3,579	3,666	3,466	3,643	3,891	3,871	3,859	4,354	5,236	6,229	7,760	9,283
Less: net capital inflow	-539	215	-323	197	286	492	648	212	190	169	542	924	506	397	878	791	647	1,114	2,089	2,927	3,315	6,085
Gross national saving	2,103	1,709	2,007	2,107	2,575	2,582	2,430	2,881	2,817	3,086	3,037	2,742	2,960	3,246	3,013	3,080	3,212	3,240	3,147	3,302	4,445	3,198
Less: depreciation	803	807	810	838	860	847	881	949	976	1,034	1,138	1,209	1,213	1,216	1,480	1,481	1,470	1,466	1,480	1,432	1,754	2,100
Net national savings	1,300	902	1,197	1,269	1,715	1,735	1,549	1,932	1,841	2,052	1,899	1,533	1,747	2,030	1,533	1,599	1,742	1,774	1,667	1,870	2,691	1,098

/a Data after 1964 relate to public and private sectors as defined by the NEPCB and are not comparable with preceding years.

Table 2.7: GROWTH OF SAVING AND INVESTMENT: TRENDS, SOURCES AND FINANCING, 1950-71

(Percentage)

Sources and Uses	1950	1951-1959	1960-1964	1965-1969	1967	1968	1969	1970	1971
				Gross Domestic Saving by Sector /b					
Growth rates: /a									
Total	..	5.9	-0.6	2.1	-0.0	-0.4	3.8	31.2	-22.5
Private	..	2.7	-6.6	2.9	-14.5	17.8	5.3	31.5	-31.0
General government	..	23.5	10.4	0.3	56.5	-39.3	-2.0	29.9	15.5
Contribution to growth: /c									
Private	..	48.6	-271.4 /d	97.2 /d	.. /e	.. /e	110.1 /d	82.4	-112.6 /d
General government	..	51.4	171.4 /d	2.8 /d	.. /e	.. /e	-10.1 /d	17.6	12.6 /d
Relative shares: /f									
Private	94.5	78.6	63.2	79.2	68.0	80.5	81.6	81.8	72.9
General government	5.5	21.4	36.8	20.8	32.0	19.5	18.4	18.2	27.1
				Gross Domestic Investment by Sector					
Growth rates: /a									
Total	..	8.7	2.6	10.1	12.8	20.3	19.0	24.6	19.6
Private	..	6.8	4.8	11.6	15.0	25.9	26.2	28.3	25.0
Public	..	12.8	-0.9	7.4	9.5	10.9	5.3	16.3	6.4
Contribution to growth: /c									
Private	..	57.5	112.5	72.9	71.3	79.8	90.2	79.6	90.7
Public	..	42.5	-12.5	27.1	28.7	20.2	9.8	20.4	9.3
Relative shares: /f									
Private	74.8	66.4	61.2	64.1	62.3	65.3	69.3	71.3	74.5
Public	25.2	33.6	38.8	35.9	37.7	34.7	30.7	28.7	25.5
				Financing of Gross Domestic Investment					
Growth rates: /a									
Net national saving	..	7.6	-3.2	3.3	1.8	-5.9	12.2	43.8	-59.2
Depreciation	..	2.8	5.9	-0.5	-0.3	1.0	-3.2	22.5	19.7
Net capital inflow	..	-6.1	21.1	31.1	72.7	87.3	40.2	13.3	83.6
Net current transfers from abroad	..	9.6	16.4	2.9	8.9	-0.8	7.4	20.4	-5.4
Contribution to growth: /c									
Net national saving	..	92.1	-68.9	17.0	6.5	-12.1	20.3	53.6	-104.6
Depreciation		23.1	75.5	-2.4	-0.8	1.6	-4.8	21.1	22.7
Net capital inflow		-15.2	93.4	85.4	94.3	110.5	84.5	25.3	181.9
Relative shares: /f									
Net national saving	83.1	58.5	48.0	37.8	40.7	31.8	30.0	34.7	11.8
Depreciation	51.3	34.1	34.3	32.3	33.7	28.3	23.0	22.6	22.6
Net capital inflow	-34.4	7.4	17.7	29.9	25.6	39.9	47.0	42.7	65.6
Net current transfers from abroad	1.7	1.8	5.9	5.4	6.1	5.1	4.6	4.4	3.5

/a Average annual rates of growth for periods are based on the least squares of logarithms. Base year precedes the years indicated for growth rates.
/b Data after 1964 relate to public and private sectors as defined by the NEPCB and are not comparable with preceding years.
/c Contribution to growth for periods is computed from the trend values derived by the least squares of logarithms.
/d Positive (negative) signs indicate above (below) average contribution either to positive or to negative increments.
/e Positive and negative contributions tend to offset each other and relate to a relatively small net total.
/f Shares for periods are computed from unweighted annual percentages to give equal weight to all years.

Sources: Tables 2.5 and 2.6 of the Statistical Appendix.

Table 2.8: AREA, POPULATION, GNP PER CAPITA, AND AVERAGE ANNUAL GROWTH RATES, MAJOR SOUTH AMERICAN COUNTRIES RANKED BY SIZE OF POPULATION, 1970 AND 1961-70 PERIOD

Country	Area (Million of Sq. Kms.)	Mid-Year Population 1970 (Thousands)	Mid-Year Population 1961-1970 (%)/a	GNP Per Capita 1970 (US$)	GNP Per Capita 1961-1970 (%) /a
Brazil	8.5	92,764	2.9	420	2.4
Argentina	2.8	23,212	1.5	1,160	2.5
Colombia	1.1	21,632	3.2	340	1.7
Peru	1.3	13,586	3.1	450	1.4
Venezuela	0.9	10,399	3.5	980	2.3
Chile	0.7	9,780	2.3	720	1.6
Ecuador	0.3	6,093	3.4	290	1.7
Bolivia	1.1	4,931	2.6	180	2.5
Uruguay	0.2	2,886	1.3	820	-0.4
Paraguay	0.4	2,379	3.1	260	1.3

/a Base year precedes the year indicated for growth rates.

Source: World Bank Atlas (1972).

Table 2.9: NATIONAL ACCOUNTS PROJECTIONS, 1972-77
(in millions of 1971 sucres)

	1971	1972	1973	1974	1975	1976	1977	Growth Rate /a 1972-77
1. Gross Domestic Income /1(iii) + 3(iii)/	41,232	45,577	52,387	55,828	60,624	66,990	71,392	9.1
(i) Gross National Product	40,367	44,581	50,307	53,791	58,411	64,492	69,127	9.0
(ii) Factor Income Payments	865	997	2,172	2,193	2,427	2,842	2,869	19.4
(iii) Gross Domestic Product	41,232	45,577	52,479	55,984	60,838	67,334	71,996	9.3
2. Gross Domestic Investment	9,283	10,841	10,581	11,930	12,479	16,039	17,235	10.9
Gross Fixed Investment	8,241	10,060	9,780	11,061	11,550	15,038	16,180	11.2
Public Investment	2,265	2,464	2,937	3,572	4,215	4,889	5,623	18.1
Private Investment	5,976	7,595	6,842	7,489	7,335	10,149	10,558	8.4
Increase in stocks	1,042	781	802	869	929	1,001	1,055	6.6
3. Resource Balance /3(iv) - 3(i)/	-5,220	-3,903	- 172	-1,220	- 618	- 821	-1,943	1.5
(i) Imports of Goods and NFS	11,642	11,863	11,840	13,022	13,663	16,135	17,250	8.5
(ii) Exports of Goods and NFS	6,422	7,960	11,761	11,957	13,260	15,657	15,911	13.5
(iii) Terms of Trade Effect /b	-	-	- 92	- 155	- 215	- 343	- 604	
(iv) Adjusted Exports of Goods and NFS	6,422	7,960	11,668	11,802	13,045	15,314	15,307	12.7
4. Gross National Savings /2 - 1(ii)/	3,198	5,941	8,237	8,517	9,434	12,376	12,423	15.4
5. Gross Domestic Savings /2+3/	4,063	6,938	10,409	10,710	11,861	15,218	15,292	16.0
Public Savings	1,103	1,696	3,749	3,600	4,066	5,214	4,995	20.4
Private Savings	2,960	5,242	6,660	7,110	7,815	10,004	10,297	14.3
6. Consumption /1-5/	37,169	38,639	41,978	45,118	48,763	51,772	56,100	7.6
Public Consumption	5,988	6,578	7,227	7,940	8,724	9,584	10,529	9.9
Private Consumption	31,181	32,061	34,751	37,178	40,039	42,188	45,571	7.1
As Percent of GDP								
Domestic Investment	22.5	23.8	20.2	21.3	20.5	23.8	23.9	
Domestic Savings	9.8	15.2	19.8	19.1	19.5	22.6	21.2	
Resource Balance	-12.7	- 8.6	- 0.4	- 2.2	- 1.0	- 1.2	- 2.7	
Terms of Trade Effect	-	-	- 0.2	- 0.3	- 0.4	- 0.5	- 0.8	
Basic Parameters: 1972-77								
Incremental Capital-Output Ratio	2.2 /c							
Import Elasticity	0.90 /d							

/a Growth rates are calculated by least square method (log Y = a + bt).

/b Defined as equal to (XPI/MPI - 1) *Xc, where XPI and MPI are the export and import price indices and Xc is the value of exports in constant prices.

/c $ICOR = \frac{EI_t - 1}{Y_t - Y_o}$; the ICOR for the non-petroleum sector increases from 2.55 in 1972 to 2.80 in 1977.

/d Elasticity of nonpetroleum merchandise imports to nonpetroleum GDP is projected at 1.25.

Source: IBRD Staff projections.

III. BALANCE OF PAYMENTS

Table 3.1: BALANCE OF PAYMENTS, 1965-71
(US$ million)

	1965	1966	1967	1968	1969	1970	1971 (Prel.)
1. Exports of Goods and NFS	197.7	203.3	218.0	225.1	219.7	256.1	256.9
Merchandise	180.3	186.2	201.0	210.7	196.1	232.8	232.1
Nonfactor Services	17.4	17.1	17.0	13.4	23.6	23.3	24.8
2. Imports of Goods and NFS	201.0	201.2	234.1	277.7	329.9	361.1	465.7
Merchandise	155.2	151.3	175.7	210.8	242.7	259.9	347.9
Nonfactor Services	45.8	49.9	58.4	66.9	87.2	101.2	117.8
3. Resource Balance	-3.3	2.1	-16.1	-52.6	-110.2	-105.0	-208.8
4. Net Factor Payments	-25.0	-25.2	-24.9	-27.1	-28.4	-33.5	-34.6
Interest Payments	-4.8	-5.4	-6.3	-7.2	-8.1	-9.9	-10.6
(Public Debt) /a/b/d	(-3.9)	(-3.8)	(-5.0)	(-6.0)	(-6.8)	(-7.0)	(-7.1)
(Private Debt, net)	(-0.9)	(-1.6)	(-1.3)	(-1.2)	(-1.3)	(-2.9)	(-3.5)
Investment Income	-20.2	-19.8	-18.6	-19.9	-20.3	-23.6	-24.0
5. Transfers	9.3	9.4	12.7	13.2	12.3	13.7	13.0
Private	2.2	2.8	5.0	4.7	5.3	5.4	5.0
Public	7.1	6.6	7.7	8.5	7.0	8.3	8.0
A. Balance on Current Account	-19.0	-13.7	-28.3	-66.5	-126.3	-124.8	-230.4
B. Capital Account							
1. Direct Investment /c	9.9	19.3	32.5	50.3	75.3	90.0	157.0
(Petroleum Sector)	(-)	(5.0)	(5.0)	(15.0)	(47.9)	(64.5)	(127.0)
2. Public Long-Term (Net) /d	6.3	9.3	22.8	31.9	15.7	31.2	22.5
Gross Disbursements /e	14.8	18.4	31.6	44.6	29.5	46.7	46.4
Amortization /b	8.5	9.1	8.8	12.7	13.8	15.5	23.9
3. SDR Allocation	-	-	-	-	-	4.2	3.5
4. Short-Term Capital /f	-8.6	-2.7	-18.6	-24.6	39.8	-1.2	17.8
5. Change in Reserves /g (- = increase)	11.4	-12.2	-8.4	8.9	-4.5	-1.8	29.6
Public Debt Service /d/a/b	12.4	13.0	13.8	18.7	20.5	22.5	31.0
Debt Service as % of Foreign Exchange Earnings	6.3	6.4	6.3	8.3	9.3	8.8	12.0

/a On public and public-guaranteed debt with a maturity of over one year.
/b Only on debt repayable in foreign currency.
/c Includes net private long-term capital in 1965-70.
/d As shown in IBRD external public debt statistics.
/e Loans disbursed in foreign currency, repayable in foreign and local currency.
/f Includes errors and omissions and difference between IBRD and Central Bank public long-term capital inflows.
/g As shown in the monetary statistics.

Source: Central Bank and IBRD staff estimates.

Table 3.2: BALANCE OF PAYMENTS, 1965-71

(U.S. $ million)

	1965			1966			1967			1968			1969			1970			1971 (est.)		
	Credit	Debit	Balance	Credit	Debit	Balance	Credit	Debit	Balance	Credit	Debit	Balance	Credit	Debit	Balance	Credit	Debit	Balance	Credit	Debit	Balance
Goods and Services	197.7	226.0	- 28.3	203.3	226.4	- 23.1	218.0	259.0	- 41.0	225.9	305.6	- 79.7	220.1	358.7	- 138.6	256.5	395.0	- 138.5	257.8	501.3	- 138.5
Merchandise f.o.b.	180.3	155.2	25.1	186.2	151.3	34.9	201.0	175.7	25.4	210.7	210.8	- 0.1	196.1	242.7	- 46.6	232.8	259.9	- 27.1	232.1	347.9	- 27.1
Non-monetary gold	0.4	---	0.4	0.3	---	0.3	---	0.9	- 0.9	---	1.9	- 1.9	---	2.3	- 2.3	---	2.4	- 2.4	---	2.4	- 2.4
Freight and insurance	---	17.9	- 17.9	---	20.9	- 20.9	---	24.3	- 24.3	---	28.0	- 28.0	---	31.9	- 31.9	---	36.5	- 36.5	---	51.2	- 51.2
Other transportation	---	5.4	- 5.4	0.2	6.1	- 5.9	0.9	7.2	- 6.3	1.0	8.8	- 7.8	1.1	9.2	- 8.1	1.1	9.3	- 8.2	1.1	9.5	- 8.4
Travel	7.4	7.6	- 0.2	7.5	8.2	- 0.7	7.7	8.1	- 0.4	8.0	8.6	- 0.6	9.4	9.4	---	10.0	9.8	0.2	10.0	9.0	1.0
Factor payments	---	25.0	- 25.0	---	25.2	- 25.2	---	24.9	- 24.9	0.8	27.9	- 27.1	0.4	28.8	- 28.4	0.4	33.9	- 33.5	0.9	35.5	- 34.6
i) Interest payments	(---)	(4.8)	(- 4.8)	(---)	(5.4)	(- 5.4)	(---)	(6.3)	(- 6.3)	(0.8)	(8.0)	(- 7.2)	(0.4)	(8.5)	(- 8.1)	(0.4)	(10.3)	(- 9.9)	(0.9)	(11.5)	(- 10.6)
ii) Investment income	(---)	(20.2)	(- 20.2)	(---)	(19.8)	(- 19.8)	(---)	(18.6)	(- 18.6)	(---)	(19.9)	(- 19.9)	(---)	(20.3)	(- 20.3)	(--)	(23.6)	(- 23.6)	(--)	(24.0)	(- 24.0)
Government	3.3	3.4	- 0.1	2.6	2.2	0.4	2.1	3.0	- 0.9	2.3	2.0	0.3	2.3	2.4	- 0.1	2.3	2.7	- 0.4	2.3	3.2	- 0.9
Other	6.3	11.5	- 5.2	6.5	12.5	- 6.0	6.3	14.9	- 8.6	3.1	17.6	- 14.5	10.8	32.0	- 21.2	9.9	40.5	- 30.6	11.4	42.5	- 31.1
Transfers	9.5	0.2	9.3	9.6	0.2	9.4	12.9	0.2	12.7	13.4	0.2	13.2	12.7	0.4	12.3	14.5	0.8	13.7	14.4	1.4	13.0
Private	(2.3)	(0.1)	(2.2)	(2.9)	(0.1)	(2.8)	(5.1)	(0.1)	(5.0)	(4.8)	(0.1)	(4.7)	(5.5)	(0.2)	(5.3)	(5.6)	(0.2)	(5.4)			(5.0)
Government	(7.2)	(0.1)	(7.1)	(6.7)	(0.1)	(6.6)	(7.8)	(0.1)	(7.7)	(8.6)	(0.1)	(8.5)	(7.2)	(0.2)	(7.0)	(8.9)	(0.6)	(8.3)			(8.0)
Balance on Current Account	207.2	226.2	- 19.0	212.9	226.6	- 13.7	230.9	259.2	- 28.3	239.3	305.8	- 66.5	232.8	359.1	- 126.3	271.0	395.8	- 124.8	272.2	502.6	- 230.4
Capital Account																					
Direct Investment /a	9.9	---	9.9	15.3	---	19.3	32.5	---	32.5	50.3	---	50.3	75.3	---	75.3	90.0	---	90.0	157.0	---	157.0
(Petroleum Sector)	(---)	(---)	(---)	(5.0)	(---)	(5.0)	(5.0)	(---)	(5.0)	(15.0)	(---)	(15.0)	(47.9)	(---)	(47.9)	(64.5)	(---)	(64.5)	(127.0)	(---)	(127.0)
Public Long-Term /b	14.8	8.5	6.3	15.4	9.1	9.3	31.6	8.8	22.8	44.6	12.7	31.9	29.5	13.8	15.7	46.7	15.5	31.2	46.4	23.9	22.5
S.D.R. Allocation			---			---			---			---			---	4.2	---	4.2	3.5	---	3.5
Short Term Capital /c	---	8.6	- 8.6	---	2.7	- 2.7	---	18.6	- 18.6	---	24.6	-24.6	39.8	---	39.8	-	1.2	-1.2	17.8	---	17.8
Change in Reserves (- = increase) /d			11.4			- 12.2			- 8.4			8.9			- 4.5			- 1.8			29.6

a Includes net private long-term capital in 1965-70.
b As shown in IBRD external public debt statistics.
c Includes errors and commissions and difference between IBRD and Central Bank public long-term capital inflows.
d As shown in the monetary statistics.

Source: Central Bank and IBRD staff estimates.

Table 3.3: MERCHANDISE EXPORTS,[/a] 1965-71

(Volume in thousands of metric tons, value in US$ million)

		1965	1966	1967	1968	1969	1970	1971
Major Exports								
Bananas:	Volume	1,200	1,265	1,263	1,252	1,190	1,364	1,351
	Unit Value (¢/kg)	8.0	8.3	8.3	8.4	9.0	9.0	8.3
	Value	95.9	105.3	104.8	104.7	107.1	122.8	112.1
Coffee:	Volume	47.6	43.1	57.9	49.2	38.2	52.6	46.4
	Unit Value (¢/lb)	36.5	33.9	31.2	31.6	31.7	43.6	35.8
	Value	38.2	32.1	39.8	34.2	26.6	50.5	36.5
Cacao:	Volume	39.3	32.2	45.0	65.5	32.6	36.7	50.9
	Unit Value (¢/lb)	22.1	24.3	25.0	27.0	34.2	27.6	22.7
	Value	19.1	17.2	24.8	38.9	24.5	22.3	25.4
Sugar:	Volume	65.1	59.3	67.7	70.9	101.2	64.6	85.9
	Unit Value (¢/lb)	5.1	5.1	5.0	5.1	4.9	6.6	7.1
	Value	7.3	6.6	7.5	7.9	10.8	9.4	13.5
Subtotal (as % of total)		160.5 (89.0)	161.2 (86.6)	176.9 (88.0)	185.7 (88.1)	169.0 (86.2)	205.0 (88.0)	187.5 (80.8)
Other Exports		19.8	25.0	24.1	25.0	27.1	27.8	44.6
Seafood		6.4	6.4	8.8	8.0	10.6	9.6	17.7
Pharmaceuticals		1.6	1.8	1.5	1.6	1.9	1.4	1.7
Oilseeds and Products		2.0	1.2	1.3	1.3	1.8	1.8	1.8
Cocoa Products		0.1	1.4	1.3	2.5	2.1	2.5	4.5
Banana Products		0.7	0.7	0.6	0.6	0.7	0.8	0.8
Straw Products		1.1	0.7	0.7	0.9	0.8	0.6	2.0
Pyrethrum		1.7	1.5	1.4	1.6	1.4	1.1	1.0
Wood and Wood Products		2.7	3.6	4.5	4.3	4.2	3.4	4.0
Minerals		0.6	1.4	1.1	1.0	1.0	0.9	2.0
Other		2.9	6.3	2.9	3.2	2.6	5.7	9.1
TOTAL		180.3	186.2	201.0	210.7	196.1	232.8	232.1

/a Banana and seafood prices have been adjusted for underinvoicing.

Source: Central Bank.

Table 3.4: MERCHANDISE IMPORTS (F.O.B.), 1965-71

(US$ million)

	1965	1966	1967	1968	1969	1970	1971
Consumer Goods	36.9	33.7	34.5	38.2	42.8	45.8	53.0
Nondurable	22.5	20.0	20.6	22.7	26.0	27.6	34.6
Durable	14.4	13.7	13.9	15.5	16.8	18.2	18.4
Fuels and Lubricants	11.7	6.6	9.6	9.9	12.7	16.4	20.6
Intermediate Goods	48.9	46.9	56.5	59.3	67.1	74.7	92.2
Agriculture	3.0	2.9	3.2	4.1	4.9	4.6	3.3
Industry	45.9	44.0	53.3	55.2	62.2	70.1	88.9
Capital Goods	57.4	62.8	73.6	96.9	89.9	92.7	105.4
Construction	6.2	8.6	6.0	8.6	9.7	11.0	8.5
Transport	14.3	16.7	19.1	29.6	32.3	32.1	31.6
Agriculture	3.5	3.3	3.6	3.6	5.7	4.3	3.8
Industry	33.4	34.2	44.9	55.1	42.2	45.3	61.5
Oil Sector	-	1.0	1.4	6.0	30.0	30.0	76.7
Others	0.3	0.3	0.1	0.5	0.2	0.3	-
TOTAL IMPORTS	155.2	151.3	175.7	210.8	242.7	259.9	347.9

Source: Central Bank of Ecuador.

Table 3.5: INDEX - MAJOR COMMODITY EXPORTS, 1965-71

(1971 = 100.0)

	1965	1966	1967	1968	1969	1970	1971
Bananas							
Volume	88.8	93.6	93.5	92.7	88.1	101.0	100.0
Unit Price	96.4	100.0	100.0	101.2	108.4	108.4	100.0
Value	85.5	93.9	93.5	93.4	95.5	109.5	100.0
Coffee							
Volume	102.6	92.9	124.8	106.0	82.3	113.4	100.0
Unit Price	102.0	94.7	87.2	88.3	88.5	121.8	100.0
Value	104.6	87.9	109.0	93.7	72.9	138.4	100.0
Cacao							
Volume	77.2	63.3	88.4	128.7	64.0	72.1	100.0
Unit Price	97.4	107.0	110.1	118.9	150.7	121.6	100.0
Value	75.2	67.7	97.6	153.1	96.4	87.8	100.0
Sugar							
Volume	75.8	69.0	78.8	82.5	117.8	75.2	100.0
Unit Price	71.8	71.8	70.4	71.8	69.0	93.0	100.0
Value	54.1	48.9	55.6	58.5	80.0	69.6	100.0

Source: Statistical Appendix, Table 3.3.

Table 3.6: EXPORTS /a (F.O.B.) TO ANDEAN COUNTRIES, 1965-70

(Thousand US$)

	1965	1966	1967	1968	1969	1970	Average 1965-70	% Share in Total	Growth Rate (%) 1965-70 /b
Bolivia	133	181	99	74	91	74	109	0.1	-14.0
Chile	1,982	3,725	4,398	4,769	5,162	5,600	4,273	2.6	19.6
Colombia	6,066	4,197	6,035	5,911	5,668	4,978	5,476	3.4	-0.3
Peru	1,018	941	565	288	345	1,010	694	0.4	-10.1
Total Andean	9,199	9,044	11,097	11,042	11,266	11,662	10,552	6.5	5.4
Other LAFTA	1,514	3,096	3,036	3,590	4,223	5,047	3,418	2.1	22.6
Total LAFTA	10,713	12,140	14,133	14,632	15,489	16,709	13,969	8.6	8.9
Total World	133,790	147,499	166,036	176,559	151,886	201,477	162,874	100.0	6.5

/a Based on Export Permits.
/b Based on trend values.

Source: Central Bank of Ecuador

Table 3.7: IMPORTS /a (C.I.F.) FROM THE ANDEAN COUNTRIES, 1965-70

(Thousand US$)

	1965	1966	1967	1968	1969	1970	Average 1965-70	As % of Total	Growth Rate (%) 1965-70
Bolivia	-	-	-	-	4	-	1	-	-
Chile	1,651	1,702	1,966	2,413	3,218	3,929	2,480	1.1	20.2
Colombia	4,550	4,271	5,974	6,889	15,363	18,471	9,253	4.3	36.9
Peru	806	552	829	1,483	2,006	2,578	1,376	0.6	34.1
Total Andean Countries	7,007	6,525	8,769	10,785	20,591	24,978	13,109	6.1	33.1
Other LAFTA Countries	12,461	7,470	13,710	14,781	15,007	9,584	12,169	5.6	2.5
Total LAFTA	19,468	13,995	22,479	25,566	35,598	34,562	25,278	11.7	18.0
Total World	168,904	171,934	202,685	244,451	261,885	247,578	216,240	100.0	10.1

/a Based on Import Permits Granted.

Source: Central Bank of Ecuador.

/a

Table 3.8: IMPORTS BY COUNTRY/REGION, 1965-70

(percent distribution)

	1965	1966	1967	1968	1969	1970
Canada	3.0	1.7	2.7	3.1	2.2	1.6
USA	40.8	38.5	38.9	35.0	32.4	32.6
Caribbean	1.6	1.4	1.5	1.5	1.4	2.3
Europe	34.8	40.8	36.1	40.5	36.2	34.7
of which (EEC)	(22.2)	(26.1)	(24.7)	(23.5)	(25.2)	(22.4)
(Germany)	(12.1)	(16.0)	(15.4)	(12.6)	(12.8)	(12.5)
Asia	7.2	8.0	8.4	7.8	9.7	11.1
(Japan)	(6.1)	(7.0)	(7.4)	(7.1)	(8.8)	(10.6)
LAFTA	11.5	8.1	11.1	10.5	13.7	14.0
Soviet Bloc	0.8	0.9	1.0	1.3	4.0	3.1
Africa	0.1	0.2	0.1	0.2	0.1	0.1
Oceania	0.2	0.2	0.2	0.2	0.4	0.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

/a Based on import permits granted.

Source: Central Bank of Ecuador.

Table 3.9: GAINS FROM TRADE, 1965-71

	Exports (Current US$ Million)	Export Price Index (1971=1.000)	Exports (Constant US$ Million)	Import Price Index (1971=1.000)	Terms of Trade Effect /a (US$ Million)	Index $\frac{XPI}{MPI}$ x 100
1965	197.7	0.884	223.6	0.885	-0.3	99.9
1966	203.3	0.926	219.5	0.900	6.3	102.9
1967	218.0	0.937	232.6	0.912	6.4	102.7
1968	225.1	1.002	224.6	0.904	24.3	110.8
1969	219.7	1.067	205.9	0.938	28.3	113.8
1970	256.1	1.050	243.9	0.980	17.4	107.1
1971	256.9	1.000	256.9	1.000	-	100.0

/a Terms of Trade Effect = (XPI/MPI - 1). Xc; where XPI and MPI are the export and import price indices, and Xc is the value of exports in constant prices.

Source: Statistical Appendix Tables 3.1, 3.10 and 3.11.

Table 3.10: EXPORT PRICE INDEX, 1960-70 /a
(1970 = 100)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	Weights
Major exports	76.8	77.6	87.6	87.6	92.1	82.3	86.3	85.6	82.4	86.4	100.0	87.9
Bananas	59.6	66.8	80.8	78.5	73.8	83.1	90.0	90.1	81.6	80.3	100.0	48.6
Coffee	62.8	48.9	52.6	58.2	58.8	83.8	77.6	71.6	72.4	72.4	100.0	18.1
Cacao	115.3	105.6	104.4	101.9	140.9	80.8	87.8	90.6	97.5	123.8	100.0	16.4
Sugar	48.9	63.8	64.9	81.9	84.0	76.6	76.6	76.6	76.6	73.4	100.0	4.8
Other primary	50.4	58.3	58.3	52.0	59.8	67.7	74.8	93.7	111.8	93.7	100.0	6.5
Other manufacturing	63.3	78.9	66.1	78.9	118.3	75.2	101.8	111.9	181.6	168.8	100.0	5.6
Chemicals & pharm.	107.7	92.3	84.6	84.6	100.0	92.3	92.3	84.6	92.3	107.7	100.0	4.2
Seafood	80.0	66.7	80.0	93.3	93.3	80.0	100.0	93.3	93.3	113.7	100.0	0.8
Others	53.1	79.0	60.5	75.3	125.9	71.6	103.7	119.8	212.3	188.9	100.0	0.7
All exports /b	74.4	76.5	84.5	84.8	91.4	81.0	86.5	87.6	89.9	91.5	100.0	100.0
(All exports /c)	(65.8)	67.6	74.7	75.0	80.9	84.3	88.0	89.1	95.3	101.0	100.0	
(All exports /d)	(65.8)	66.8	73.8	74.1	79.9	84.2	88.2	89.2	95.4	101.6	100.0	

/a Including all commodities with the exception of mining wastes and re-exports. The combined weight of these three is insignificant.
/b Based on unadjusted export permits.
/c Adjusted for banana prices from 1965 onwards.
/d Adjusted for both banana and seafood prices from 1965 onwards.

Source: Central Bank of Ecuador.

Table 3.11: IMPORT PRICE INDEX /a, 1960-70
(1970 = 100)

(weights)	Unit Export Price Indices U.S.A. (41.9)	Europe (44.5)	Japan (13.6)	Import Price Index (100.0)
1960	81.5	89.0	96.3	86.8
1961	83.1	89.9	93.6	87.5
1962	82.5	90.8	90.9	87.3
1963	82.4	91.7	90.0	87.5
1964	83.2	93.6	88.9	88.6
1965	85.8	95.4	87.8	90.3
1966	88.5	96.3	87.9	91.8
1967	90.3	96.3	90.6	93.0
1968	91.3	93.6	90.7	92.2
1969	94.6	97.2	94.8	95.7
1970	100.0	100.0	100.0	100.0

/a In 1970, the US provided 32.6 percent of Ecuador's imports, Western Europe 34.7 percent and Japan 10.6 percent. The remaining 22 percent came from LAFTA countries (14 percent), Eastern Europe (3.1 percent), Caribbean Countries (2.3 percent), Canada (1.6 percent), Oceania (0.4 percent) and Africa (0.1 percent). The Import Price Index for Ecuador corresponds to the unit export price indices of the U.S., Western Europe and Japan, weighted by these countries' relative importance in Ecuador's imports.

Source: Yearbook of International Trade Statistics and International Financial Statistics.

Table 3.12: MERCHANDISE EXPORTS, 1972-77

(Volume in thousands of metric tons, value in US$ million)

		Estimate	Projected				
	1971	1972	1973	1974	1975	1976	1977
Major Exports							
Bananas: Volume	1,351	1,272	1,348	1,379	1,403	1,432	1,460
Unit Value (¢/kg)	8.3	8.3	8.4	8.4	8.4	8.6	8.6
Value	112.1	105.6	112.9	115.5	117.5	123.1	125.5
Coffee: /a Volume	46.4	49.6	52.1	54.7	57.4	60.3	63.3
Unit Value (¢/lb)	35.1	45.1	45.5	45.9	46.2	46.4	46.6
Value	36.5	49.2	52.2	55.2	58.3	61.5	64.9
Cocoa: Volume	50.9	45.0	46.3	47.4	49.2	50.6	52.2
Unit Value (¢/lb)	22.3	23.0	23.3	23.7	24.0	24.4	24.8
Value	25.4	22.8	23.8	24.8	26.0	27.2	28.5
Sugar: /b Volume	85.9	106.3	98.7	96.3	98.8	101.5	104.2
Unit Value (¢/lb)	7.0	8.0	8.0	8.0	8.0	8.2	8.4
Value	13.5	18.7	16.6	16.4	16.9	17.8	18.7
Sub-total	187.5	196.3	205.5	211.9	218.7	229.6	237.6
Minor Exports	45.5	48.2	56.4	63.5	71.4	80.4	90.4
Total Non-Petroleum	232.1	244.5	261.9	275.4	290.1	310.0	328.0
Petroleum: Volume (mn. barrels)	-	22.34/c	78.85	77.15	93.60	128.10	125.70
Unit Value ($/barrel)	-	2.38	2.44	2.50	2.56	2.56	2.56
Value (million $)	-	53.2	192.4	192.9	239.6	327.9	321.8
Total Merchandise Exports	232.1	297.7	454.3	468.3	529.7	637.9	649.8

/a Coffee projections take into account the expected increase in prices due to the damage to Brazilian crop.

/b Volume includes 25,000 tons to the free market in 1972, declining to 10,000 tons in 1974. U.S. quota assumed to increase at the same rate (3%) as private consumption in the U.S.A. Price refers to the quota price; free market price same as the quota price in 1972, declining to 5.5 ¢/lb. in 1973.

/c September-December.

Source: mission projections.

Table 3.13: MERCHANDISE IMPORTS, 1971-77

(US$ MILLION)

	Actual 1971	Estimate 1972	Projected 1973	1974	1975	1976	1977
Consumer Goods	53.0	57.3	61.9	67.0	72.4	78.3	84.6
Intermediate Goods	112.8[a/]	110.3	130.1	143.9	159.0	176.7	196.0
Capital Goods	105.4	114.9	129.8	143.6	158.8	185.5	207.0
Subtotal	271.2	282.5	321.8	354.5	390.2	440.5	487.6
Petroleum Sector	76.7	75.6	33.6	47.6	36.4	90.3	90.3
Total	347.9	385.1	355.4	402.1	426.6	530.8	577.9

a/ Including fuels and lubricants valued at US$ 20.6 million.

Source: mission projections

Table 3.14: EFFECT OF PETROLEUM SECTOR OPERATIONS ON BALANCE OF PAYMENTS 1972-77

(US$ million)

	1972	1973	1974	1975	1976	1977
Exports	53.2	192.4	192.9	239.6	327.9	321.8
Imports	75.6	33.6	47.6	36.4	90.3	90.3
Trade Balance	-22.4	158.8	145.3	203.2	237.6	231.5
Investment Income	-12.9	-44.6	-44.0	-53.0	-71.4	-70.9
Current Account Balance	-35.3	114.2	101.3	150.2	166.2	160.6
Direct Investment	108.0	48.0	68.0	52.0	129.0	129.0
Net Effect	72.7	162.2	169.3	202.2	295.2	289.6

Table 3.15: BALANCE OF PAYMENTS, 1971-77

(US$ million)

	Actuals	Preliminary	Projected				
	1971	1972	1973	1974	1975	1976	1977
1. Exports of Goods and NFS	256.9	323.7	481.6	497.0	559.9	669.6	683.0
Merchandise	232.1	297.7	454.3	468.3	529.8	638.0	649.8
(Petroleum)	(-)	(53.2)	(192.4)	(192.9)	(239.6)	(327.9)	(321.8)
Nonfactor Services	24.8	26.0	27.3	28.7	30.1	31.6	33.2
2. Imports of Goods and NFS	465.7	482.5	491.9	551.7	590.6	710.7	775.1
Merchandise	347.9	358.1	355.5	402.1	426.6	530.8	577.9
(Petroleum)	(76.7)	(75.6)	(33.6)	(47.6)	(36.4)	(90.3)	(90.3)
Nonfactor Services	117.8	124.4	136.4	149.6	164.0	179.9	197.2
3. Resource Balance	-208.8	-158.8	- 10.3	- 54.7	- 30.7	- 41.1	- 92.1
4. Net Factor Payments	-34.6	-40.7	-90.4	-93.1	-105.0	-125.5	-129.2
Interest Payments	-10.6	(-12.5)	(-20.8)	(-22.5)	(-23.9	-25.4	-27.9
(Public Debt)	(-7.1)	(-12.5)	(-20.8)	(-22.5)	(-23.9)	(-25.4)	(-27.9)
(Private Debt)	(-3.5)	(-)	(-)	(-)	(-)	(-)	(-)
Investment Income	-24.0	-28.2	-69.6	-70.6	-81.1	-100.1	-101.3
(Petroleum)	(-)	(-12.9)	(-44.6)	(-44.0)	(-53.0)	(-71.4)	(-70.9)
5. Net Transfers	13.0	15.0	17.0	18.0	19.0	20.0	20.0
A. Balance on Current Account	-230.4	-184.5	-83.6	-129.8	-116.8	-146.6	-201.3
B. Capital Account							
1. Private Long-Term	157.0	137.6	78.2	99.8	85.5	164.3	167.3
(Petroleum)	(127.0)	(108.0)	(48.0)	(68.0)	(52.0)	(129.0)	(129.0)
2. Net Public Inflow	22.5	72.0	45.2	44.4	35.2	53.3	56.0
Existing Loans	22.5	42.8	20.3	- 4.4	-25.9	-26.2	-25.7
Gross Disbursements	46.4	78.8	51.3	27.4	5.9	2.5	1.7
Amortization	23.9	36.0	31.0	31.8	31.8	28.7	27.4
New Loans	-	29.2	24.9	48.8	61.1	79.5	81.7
Gross Disbursements	-	29.2	41.7	67.3	82.4	90.6	96.4
Amortization	-	-	16.8	18.5	21.3	11.1	14.7
3. SDR Allocation	3.5	3.5	-	-	-	-	-
4. Short-Term Capital /a	17.8	43.0	-	-	-	-	-
5. Change in Reserves (- = increase)	29.6	-71.6	-39.8	-14.4	- 3.9	-71.1	-22.0

/a including errors and omissions.

Source: IBRD staff projections.

Table 3.16: MERCHANDISE IMPORTS IN RELATION TO CONSUMPTION, INVESTMENT AND PRODUCT, 1965-77 /b

(million 1971 sucres and percentages)

	Consumption (1)	Consumer Imports (2)	(2)/(1) % (3)	Gross Fixed Investment (4)	Capital Imports (5)	(5)/(4) % (6)	Intermediate Imports (7)	Gross National Product (8)	(7)/(8) % (9)	Nonpetroleum Merchandise Imports/a (10)	Nonpetroleum Gross Domestic Product (11)	(10)/(11) % (12)	Total Merchandise Imports (13)	Total Gross Domestic Product (14)	(13)/(14) % (15)
Actuals															
1965	25,125	1,042	4.1	3,339	1,620	48.5	1,380	28,205	4.9	4,385	28,850	15.2	4,385	28,850	15.2
1966	26,298	935	3.6	3,322	1,772	53.3	1,302	29,510	4.4	4,175	30,163	13.8	4,202	30,163	13.9
1967	28,171	945	3.4	3,785	2,055	54.3	1,550	31,411	4.9	4,778	32,036	14.9	4,815	32,036	15.0
1968	29,762	1,055	3.5	4,618	2,845	61.6	1,640	32,909	5.0	5,665	33,609	16.8	5,830	33,609	17.3
1969	31,572	1,140	3.6	5,545	3,195	57.6	1,788	34,874	5.1	5,668	35,567	15.9	6,468	35,567	18.2
1970	33,275	1,168	3.5	6,905	3,130	45.3	1,905	37,720	5.0	5,865	38,517	15.2	6,630	38,517	17.2
1971	37,169	1,325	3.6	8,241	4,553	55.2	2,305	40,367	5.7	6,780	41,232	16.4	8,698	41,232	21.1
Estimate															
1972	38,640	1,404	3.6	10,060	4,705	46.8	2,703	44,581	6.1	6,922	44,118	15.7	8,812	45,578	19.3
Projected															
1973	41,978	1,489	3.5	9,779	3,946	40.4	3,128	50,307	6.2	7,738	47,427	16.3	8,561	52,479	16.3
1974	45,119	1,578	3.5	11,061	4,528	40.9	3,390	53,791	6.3	8,353	50,984	16.4	9,497	55,984	17.0
1975	48,762	1,673	3.4	11,550	4,528	39.2	3,674	58,411	6.3	9,016	54,808	16.5	9,874	60,838	16.2
1976	51,772	1,773	3.4	15,038	6,287	41.8	4,001	64,492	6.2	9,975	59,192	16.9	12,062	67,334	17.9
1977	56,100	1,880	3.4	16,180	6,641	41.0	4,351	69,127	6.3	10,826	63,928	16.9	12,871	71,996	17.9

/a Including fuel and lubricants, and other imports.

/b Imports in this table correspond to the dollar value of imports as shown in the Balance of Payments deflated by the Import Price Index (Statistical Appendix) Table 3.11) and expressed in 1971 sucres at the 1971 exchange rates.

Source: Appendix Tables 2.2, 3.4 and Mission estimates.

IV. EXTERNAL DEBT

Table No.

PRELIMINARY
06/21/72

Table 4.1: EXTERNAL PUBLIC DEBT OUTSTANDING AS OF DECEMBER 31,1971,

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

CREDITOR COUNTRY TYPE OF CREDITOR	DEBT OUTSTANDING DECEMBER 31,1971 DISBURSED	 UNDIS- BURSED	 TOTAL
FRANCE	5,175	13,294	18,459
GERMANY (FED.REP.OF)	5,693	-	5,693
HUNGARY	1,181	200	1,381
ITALY	19,722	7,100	26,822
JAPAN	-	6,191	6,191
MEXICO	3,391	4,234	7,625
SPAIN	10,531	8,000	18,531
SWEDEN	8,811	11,274	20,085
UNITED KINGDOM	1,079	-	1,079
USA	2,439	21,400	23,839
VENEZUELA	144	-	144
SUPPLIERS	58,166	71,683	129,849
FRANCE	645	1,955	2,600
ITALY	-	2,444	2,444
SWITZERLAND	330	2,404	2,734
USA	4,732	2,010	6,742
PRIVATE BANKS	5,707	8,813	14,520
UNITED KINGDOM	50	-	50
USA	2,697	-	2,697
PUBLICLY ISSUED BONDS	2,747	-	2,747
USA	-	10,016	10,016

PRELIMINARY

06/21/72

Table 4.1: EXTERNAL PUBLIC DEBT OUTSTANDING AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

CREDITOR COUNTRY / TYPE OF CREDITOR	DEBT OUTSTANDING DECEMBER 31,1971 DISBURSED	UNDISBURSED	TOTAL
PRIVATELY PLACED BONDS	-	10,016	10,016
FRANCE	253	2,137	2,390
USA	1,990	11,223	13,213
MULTIPLE LENDERS	-	5,934	5,934
OTHER PRIVATE FINANCIAL INST.	2,243	19,294	21,537
IBRD	31,952	14,090	46,042
IDA	7,865	16,735	24,600
IDB	13,578	3,930	17,508
LOANS FROM INTL. ORGANIZATIONS	53,395	34,755	88,150
CANADA	1,253	-	1,253
COLOMBIA	124	-	124
CZECHOSLOVAKIA	1,143	3,169	4,312
GERMANY (FED.REP.OF)	5,952	5,755	11,707
MEXICO	100	-	100
NETHERLANDS	-	500	500
POLAND	3,038	-	3,038
SWITZERLAND	-	232	232
UNITED KINGDOM	1,733	1,047	2,780
A.I.D.	69,285	13,132	82,417
EXPORT-IMPORT BANK	14,418	2,357	16,775
USA	83,703	15,489	99,192
LOANS FROM GOVERNMENTS	97,046	26,192	123,238

PRELIMINARY
06/21/72

Table 4.1: EXTERNAL PUBLIC DEBT OUTSTANDING AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

CREDITOR COUNTRY TYPE OF CREDITOR	DEBT OUTSTANDING DECEMBER 31,1971 DISBURSED	 UNDIS- BURSED	 TOTAL
TOTAL EXTERNAL PUBLIC DEBT	219,304	170,753	390,057

NOTE: DEBT WITH A MATURITY OF OVER ONE YEAR

ECONOMIC AND SOCIAL DATA DIVISION
ECONOMIC PROGRAM DEPARTMENT
JUNE 26, 1972

PRELIMINARY

06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

TOTAL

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	105,760	206,218	57,916	31,578	8,781	4,969	13,750	-9,783
1968	128,270	245,570	45,865	44,134	12,691	6,044	18,735	-244
1969	159,564	278,500	13,952	27,451	13,770	6,774	20,544	96
1970	173,748	278,778	76,512	43,318	15,484	7,017	22,501	-431
1971	201,387	339,375	68,547	41,761	23,892	7,111	31,003	6,027
1972	219,304	390,057	-	76,785	36,056	12,528	48,584	-612
1973	261,505	353,389	-	51,297	30,968	15,702	46,669	-
1974	281,834	322,421	-	27,452	31,829	16,486	48,316	-
1975	277,457	290,592	-	5,866	31,760	15,776	47,535	-
1976	251,564	258,832	-	2,494	28,714	14,194	42,907	-
1977	225,345	230,119	-	1,693	27,400	12,428	39,828	-
1978	199,638	202,719	-	2,111	26,094	10,767	36,862	-
1979	174,952	175,922	-	580	16,186	9,430	25,616	1
1980	159,346	159,737	-	80	13,572	8,370	21,942	-
1981	145,854	146,165	-	73	31,531	7,550	39,081	-
1982	114,396	114,634	-	238	9,813	6,891	16,705	-
1983	104,820	104,820	-	-	9,655	6,254	15,908	-
1984	95,166	95,166	-	-	8,601	5,627	14,229	-
1985	86,564	86,564	-	-	7,548	5,070	12,618	-
1986	79,016	79,016	-	-	7,277	4,570	11,847	-

NOTE: Includes service on all debt listed on Table 1 prepared June 26, 1972, with the exception of the following for which repayment terms are not available:

Suppliers - $612

This table excludes Repurchases of foreign currencies to the International Monetary Fund in the amount of $9.0 million during 1971, Repurchases to be made in 1972 in the amount of $6.7 million, and a Stand-by Arrangement of $17.9 million in 1972.

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

SUPPLIERS

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	7,415	28,573	38,578	8,450	2,135	847	2,982	-2,860
1968	13,730	62,156	25,037	22,347	5,049	1,341	6,390	3
1969	31,031	82,147	3,809	8,689	3,943	1,749	5,692	85
1970	36,399	82,098	33,427	25,834	5,719	1,692	7,411	-100
1971	56,414	109,706	29,592	11,522	10,982	1,109	12,091	1,533
1972	58,166	129,649	-	31,923	20,799	3,045	23,845	-612
1973	68,762	108,438	-	23,378	13,739	3,277	17,016	-
1974	78,401	94,699	-	14,481	14,295	3,250	17,545	-
1975	78,587	80,404	-	1,816	14,760	3,086	17,845	-
1976	65,645	65,645	-	-	11,602	2,352	13,955	-
1977	54,043	54,043	-	-	10,632	1,658	12,289	-
1978	43,411	43,411	-	-	11,721	1,000	12,722	-
1979	30,987	30,987	-	-	3,019	590	3,609	-
1980	27,968	27,968	-	-	2,681	389	3,070	-
1981	25,288	25,288	-	-	21,926	240	22,166	-
1982	3,362	3,362	-	-	292	214	506	-
1983	3,070	3,070	-	-	292	195	487	-
1984	2,777	2,777	-	-	292	176	468	-
1985	2,485	2,485	-	-	292	157	449	-
1986	2,193	2,193	-	-	292	138	430	-

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

PRIVATE BANKS

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	2,680	2,680	4,338	146	1,024	217	1,241	-
1968	1,802	5,994	2,530	2,152	775	331	1,106	13
1969	3,181	7,762	885	307	1,180	285	1,465	-235
1970	2,306	7,232	6,211	1,143	705	186	891	5
1971	2,744	12,743	2,302	3,819	887	217	1,104	362
1972	5,707	14,520	-	5,966	1,775	3,698	5,474	-
1973	9,898	12,745	-	2,303	1,266	5,238	6,505	-
1974	10,934	11,478	-	544	1,119	5,525	6,643	-
1975	10,360	10,360	-	-	1,119	5,299	6,418	-
1976	9,241	9,241	-	-	1,119	5,038	6,157	-
1977	8,122	8,122	-	-	1,119	4,778	5,896	-
1978	7,004	7,004	-	-	928	4,522	5,450	-
1979	6,076	6,076	-	-	993	4,277	5,270	-
1980	5,083	5,083	-	-	493	4,028	4,521	-
1981	4,590	4,590	-	-	493	3,808	4,301	-
1982	4,097	4,097	-	-	221	3,587	3,808	-
1983	3,875	3,875	-	-	221	3,390	3,612	-
1984	3,654	3,654	-	-	221	3,194	3,415	-
1985	3,432	3,432	-	-	221	2,997	3,219	-
1986	3,211	3,211	-	-	221	2,801	3,022	-

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

PUBLICLY ISSUED BONDS

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	4,227	4,227	-	-	170	124	294	-182
1968	3,875	3,875	-	-	178	101	279	-123
1969	3,574	3,574	-	-	182	85	267	-142
1970	3,250	3,250	-	-	192	75	267	-158
1971	2,900	2,900	-	-	156	86	244	5
1972	2,747	2,747	-	-	212	80	292	-
1973	2,535	2,535	-	-	218	74	292	-
1974	2,317	2,317	-	-	225	67	292	-
1975	2,092	2,092	-	-	231	61	292	-
1976	1,861	1,861	-	-	238	54	292	-
1977	1,623	1,623	-	-	245	47	292	-
1978	1,378	1,378	-	-	253	39	292	-
1979	1,125	1,125	-	-	244	32	276	-
1980	881	881	-	-	251	24	276	-
1981	630	630	-	-	259	17	276	-
1982	371	371	-	-	263	9	273	-
1983	107	107	-	-	107	2	109	-
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

PRIVATELY PLACED BONDS
USA
OFFICIAL LENDING

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1971	-	-	10,016	-	-	-	-	-
1972	-	10,016	-	10,016	-	-	-	-
1973	10,016	10,016	-	-	1,252	776	2,028	-
1974	8,764	8,764	-	-	1,252	676	1,928	-
1975	7,512	7,512	-	-	1,252	576	1,828	-
1976	6,260	6,260	-	-	1,252	476	1,728	-
1977	5,008	5,008	-	-	1,252	376	1,628	-
1978	3,756	3,756	-	-	1,252	275	1,527	-
1979	2,504	2,504	-	-	1,252	175	1,427	-
1980	1,252	1,252	-	-	1,252	75	1,327	-

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

PRIVATELY PLACED BONDS

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1971	-	-	10,016	-	-	-	-	-
1972	-	10,016	-	10,016	-	-	-	-
1973	10,016	10,016	-	-	1,252	776	2,028	-
1974	8,764	8,764	-	-	1,252	676	1,928	-
1975	7,512	7,512	-	-	1,252	576	1,828	-
1976	6,260	6,260	-	-	1,252	476	1,728	-
1977	5,008	5,008	-	-	1,252	376	1,628	-
1978	3,756	3,756	-	-	1,252	275	1,527	-
1979	[illegible]	2,504	-	-	1,252	175	1,427	-
1980	1,252	1,252	-	-	1,252	75	1,327	-

PRELIMINARY

06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

OTHER PRIVATE FINANCIAL INST.

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1968	-	-	6,601	-	-	-	-	-
1969	-	6,601	205	2,200	-	-	-	-
1970	2,200	6,806	11,068	1,555	1,755	346	2,101	-
1971	2,000	16,119	8,170	3,396	3,153	684	3,837	401
1972	9,243	21,537	-	8,212	1,638	207	1,845	-
1973	8,817	19,899	-	7,750	2,324	722	3,046	-
1974	14,243	17,575	-	3,332	2,400	1,116	3,516	-
1975	15,175	15,175	-	-	2,654	1,147	3,801	-
1976	12,522	12,522	-	-	2,654	940	3,593	-
1977	9,868	9,868	-	-	2,654	733	3,386	-
1978	7,214	7,214	-	-	2,654	526	3,179	-
1979	4,561	4,561	-	-	2,402	279	2,681	-
1980	2,159	2,159	-	-	756	130	886	-
1981	1,403	1,403	-	-	156	95	251	-
1982	1,247	1,247	-	-	156	85	240	-
1983	1,091	1,091	-	-	156	74	230	-
1984	935	935	-	-	156	63	219	-
1985	779	779	-	-	156	52	208	-
1986	624	624	-	-	156	41	197	-

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM INTL. ORGANIZATIONS
IBRD

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	34,161	39,002	4,000	1,618	1,718	1,918	3,636	-
1968	34,079	41,284	5,300	1,813	1,816	1,930	3,746	-
1969	34,076	44,768	-	1,808	2,038	1,994	4,032	-
1970	33,846	42,730	-	2,059	2,281	2,025	4,306	-
1971	33,624	40,449	8,000	735	2,407	1,990	4,397	-
1972	31,952	46,042	-	3,630	2,550	1,898	4,448	-
1973	33,041	43,492	-	3,116	2,913	1,972	4,885	-
1974	33,244	40,579	-	2,571	3,077	1,996	5,073	-
1975	32,738	37,502	-	1,474	3,500	1,962	5,462	-
1976	30,712	34,002	-	775	3,985	1,835	5,820	-
1977	27,502	30,017	-	562	3,991	1,646	5,637	-
1978	24,073	26,026	-	1,429	2,325	1,466	3,791	-
1979	23,177	23,701	-	264	2,481	1,408	3,889	1
1980	20,960	21,221	-	18	2,633	1,261	3,894	-
1981	18,345	18,588	-	5	2,799	1,097	3,896	-
1982	15,551	15,789	-	238	2,973	930	3,903	-
1983	12,816	12,816	-	-	3,165	749	3,914	-
1984	9,651	9,651	-	-	2,265	566	2,831	-
1985	7,386	7,386	-	-	2,205	418	2,623	-
1986	5,181	5,181	-	-	2,095	281	2,376	-

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM INTL. ORGANIZATIONS
IDA

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	63	8,000	-	369	-	-	-	-
1968	432	8,000	5,100	1,492	-	32	32	-
1969	1,924	13,100	-	1,774	-	61	61	-
1970	3,698	13,100	11,500	2,143	-	-	-	-
1971	5,841	24,600	-	2,024	-	43	43	-
1972	7,865	24,600	-	2,627	-	63	63	-
1973	10,492	24,600	-	4,069	-	86	86	-
1974	14,561	24,600	-	3,585	40	116	156	-
1975	18,106	24,560	-	2,476	80	141	221	-
1976	20,502	24,480	-	1,719	80	157	237	-
1977	22,141	24,400	-	1,131	80	168	248	-
1978	23,192	24,320	-	682	106	175	281	-
1979	23,769	24,215	-	316	131	179	310	-
1980	23,954	24,084	-	62	146	180	326	-
1981	23,870	23,936	-	66	246	179	425	-
1982	23,692	23,692	-	-	246	177	423	-
1983	23,446	23,446	-	-	246	175	421	-
1984	23,200	23,200	-	-	326	174	500	-
1985	22,874	22,874	-	-	406	171	577	-
1986	22,468	22,468	-	-	406	168	574	-

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM INTL. ORGANIZATIONS
IDB

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	6,520	12,341	2,500	1,711	766	337	1,103	-1
1968	7,464	14,074	-	3,226	834	436	1,270	-
1969	9,856	13,240	-	2,686	859	541	1,400	-
1970	11,683	12,381	4,500	346	998	619	1,617	-
1971	11,031	15,883	196	5,811	1,363	790	2,153	2,792
1972	13,578	17,508	-	2,071	1,291	766	2,057	-
1973	14,358	16,217	-	1,860	1,552	784	2,336	-
1974	14,665	14,665	-	-	1,814	762	2,576	-
1975	12,851	12,851	-	-	1,526	663	2,189	-
1976	11,325	11,325	-	-	886	581	1,467	-
1977	10,439	10,439	-	-	886	519	1,405	-
1978	9,553	9,553	-	-	886	457	1,343	-
1979	8,667	8,667	-	-	886	395	1,281	-
1980	7,781	7,781	-	-	886	333	1,219	-
1981	6,895	6,895	-	-	954	271	1,225	-
1982	5,941	5,941	-	-	954	209	1,163	-
1983	4,987	4,987	-	-	755	149	905	-
1984	4,232	4,232	-	-	542	100	642	-
1985	3,690	3,690	-	-	328	76	404	-
1986	3,362	3,362	-	-	328	61	389	-

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM INTL. ORGANIZATIONS

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	40,764	59,343	6,500	3,696	2,484	2,255	4,739	-1
1968	41,975	63,356	10,400	6,531	2,650	2,398	5,048	-
1969	45,956	71,108	-	6,268	2,897	2,596	5,493	-
1970	49,227	68,211	16,000	4,548	3,279	2,644	5,923	-
1971	50,496	80,932	8,196	8,570	3,770	2,823	6,593	2,792
1972	53,395	88,150	-	8,337	3,841	2,727	6,568	-
1973	57,891	84,309	-	9,045	4,465	2,842	7,308	-
1974	62,470	79,844	-	6,156	4,931	2,875	7,806	-
1975	63,695	74,913	-	3,950	5,106	2,765	7,871	-
1976	62,539	69,807	-	2,494	4,951	2,573	7,524	-
1977	60,082	64,856	-	1,693	4,957	2,333	7,290	-
1978	56,818	59,899	-	2,111	3,316	2,098	5,415	-
1979	55,613	56,583	-	580	3,498	1,982	5,480	1
1980	52,695	53,086	-	80	3,665	1,774	5,438	-
1981	49,110	49,421	-	73	3,999	1,547	5,546	-
1982	45,154	45,422	-	238	4,173	1,316	5,489	-
1983	41,249	41,249	-	-	4,166	1,074	5,240	-
1984	37,083	37,083	-	-	3,133	839	3,972	-
1985	33,950	33,950	-	-	2,939	665	3,604	-
1986	31,011	31,011	-	-	2,829	510	3,339	-

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

IN THOUSANDS OF U.S. DOLLARS

LOANS FROM GOVERNMENTS
CANADA

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	-	1,166	-	-	-	14	14	-
1968	-	1,166	-	536	-	14	14	-
1969	536	1,166	-	457	-	15	15	-
1970	993	1,166	-	104	-	16	16	81
1971	1,166	1,247	-	81	-	16	16	6
1972	1,253	1,253	-	-	-	9	9	-
1973	1,253	1,253	-	-	-	9	9	-
1974	1,253	1,253	-	-	-	9	9	-
1975	1,253	1,253	-	-	-	9	9	-
1976	1,253	1,253	-	-	15	9	25	-
1977	1,238	1,238	-	-	31	9	40	-
1978	1,207	1,207	-	-	31	9	40	-
1979	1,176	1,176	-	-	31	9	40	-
1980	1,145	1,145	-	-	31	9	39	-
1981	1,114	1,114	-	-	31	8	39	-
1982	1,083	1,083	-	-	31	8	39	-
1983	1,052	1,052	-	-	31	8	39	-
1984	1,021	1,021	-	-	31	8	39	-
1985	990	990	-	-	31	7	38	-
1986	959	959	-	-	31	7	38	-

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM GOVERNMENTS
COLOMBIA

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD		TRANSACTIONS DURING PERIOD					
	DISBURSED ONLY (1)	INCLUDING UNDISBURSED (2)	COMMITMENTS (3)	DISBURSEMENTS (4)	SERVICE PAYMENTS PRINCIPAL (5)	SERVICE PAYMENTS INTEREST (6)	SERVICE PAYMENTS TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	367	367	-	-	25	15	40	-26
1968	316	316	-	-	45	18	63	-9
1969	262	262	-	-	43	10	53	-6
1970	213	213	-	-	41	9	50	-6
1971	166	166	-	-	42	5	47	-
1972	124	124	-	-	46	5	51	-
1973	78	78	-	-	46	3	49	-
1974	32	32	-	-	32	1	33	-

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM GOVERNMENTS
CZECHOSLOVAKIA

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	-	5,000	-	-	-	-	-	-
1968	-	5,000	-	621	-	-	-	-
1969	621	5,000	-	-	209	3	212	-
1970	412	4,791	-	1,202	182	83	265	-
1971	1,432	4,609	-	8	297	172	469	-
1972	1,143	4,312	-	2,000	1,725	86	1,810	-
1973	1,418	2,587	-	1,169	1,725	49	1,774	-
1974	862	862	-	-	862	22	884	-

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM GOVERNMENTS
GERMANY (FED.REP.OF)

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	-	4,209	-	83	-	5	5	2
1968	83	4,211	-	45	-	-	-	-2
1969	126	4,209	2,186	679	-	22	22	391
1970	816	6,786	-	1,509	-	33	33	-
1971	2,325	6,786	3,785	3,148	79	87	166	1,215
1972	5,952	11,707	-	1,439	-	241	241	-
1973	7,391	11,707	-	2,877	-	284	284	-
1974	10,268	11,707	-	1,439	-	370	370	-
1975	11,707	11,707	-	-	166	411	577	-
1976	11,541	11,541	-	-	415	402	817	-
1977	11,127	11,127	-	-	664	382	1,046	-
1978	10,463	10,463	-	-	664	358	1,022	-
1979	9,798	9,798	-	-	664	333	998	-
1980	9,134	9,134	-	-	664	309	974	-
1981	8,470	8,470	-	-	664	285	949	-
1982	7,806	7,806	-	-	664	261	925	-
1983	7,142	7,142	-	-	664	237	901	-
1984	6,478	6,478	-	-	664	213	877	-
1985	5,814	5,814	-	-	664	189	853	-
1986	5,149	5,149	-	-	664	165	829	-

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

IN THOUSANDS OF U.S. DOLLARS

LOANS FROM GOVERNMENTS
MEXICO

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD		TRANSACTIONS DURING PERIOD					
	DISBURSED ONLY (1)	INCLUDING UNDISBURSED (2)	COMMITMENTS (3)	DISBURSEMENTS (4)	SERVICE PAYMENTS PRINCIPAL (5)	SERVICE PAYMENTS INTEREST (6)	SERVICE PAYMENTS TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	-	-	500	-	-	-	-	-
1968	-	500	-	500	50	16	66	-
1969	450	450	-	-	150	18	168	-
1970	300	300	-	-	100	8	108	-
1971	200	200	-	-	104	11	115	4
1972	100	100	-	-	50	6	56	-
1973	50	50	-	-	50	2	52	-

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31, 1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM GOVERNMENTS
NETHERLANDS

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1968	-	-	497	-	-	-	-	-
1969	-	497	-	-	-	-	-	3
1970	-	500	-	-	-	-	-	-
1971	-	500	-	-	-	-	-	-
1972	-	500	-	500	21	8	29	-
1973	479	479	-	-	42	30	72	-
1974	436	436	-	-	42	28	69	-
1975	396	396	-	-	42	25	67	-
1976	354	354	-	-	42	22	64	-
1977	313	313	-	-	42	20	61	-
1978	271	271	-	-	42	17	59	-
1979	229	229	-	-	42	14	56	-
1980	188	188	-	-	42	12	53	-
1981	146	146	-	-	42	9	50	-
1982	104	104	-	-	42	6	48	-
1983	63	63	-	-	42	3	45	-
1984	21	21	-	-	21	1	22	-

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM GOVERNMENTS
POLAND

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1968	-	-	800	-	-	-	-	-
1969	-	800	2,848	800	205	-	205	-
1970	595	3,443	-	-	22	4	26	-
1971	573	3,421	-	2,848	383	25	408	-
1972	3,038	3,038	-	-	448	180	628	-
1973	2,590	2,590	-	-	448	152	600	-
1974	2,143	2,143	-	-	448	124	572	-
1975	1,695	1,695	-	-	448	96	544	-
1976	1,247	1,247	-	-	393	68	461	-
1977	854	854	-	-	342	46	388	-
1978	513	513	-	-	342	26	367	-
1979	171	171	-	-	171	5	176	-

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM GOVERNMENTS
SWITZERLAND

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD		TRANSACTIONS DURING PERIOD					
	DISBURSED ONLY (1)	INCLUDING UNDISBURSED (2)	COMMITMENTS (3)	DISBURSEMENTS (4)	SERVICE PAYMENTS PRINCIPAL (5)	SERVICE PAYMENTS INTEREST (6)	SERVICE PAYMENTS TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1969	-	-	232	-	-	-	-	-
1970	-	232	-	-	-	-	-	-
1971	-	232	-	-	-	-	-	-
1972	-	232	-	232	77	4	81	-
1973	155	155	-	-	77	5	83	-
1974	77	77	-	-	77	2	80	-

PRELIMINARY

06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

IN THOUSANDS OF U.S. DOLLARS

LOANS FROM GOVERNMENTS
UNITED KINGDOM

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	325	1,680	-	371	-	42	42	-240
1968	619	1,440	-	514	-	50	50	-
1969	1,133	1,440	492	185	-	62	62	-
1970	1,318	1,932	-	122	-	79	79	-
1971	1,440	1,932	736	253	93	110	203	205
1972	1,733	2,780	-	1,047	50	130	180	-
1973	2,730	2,730	-	-	55	169	224	-
1974	2,675	2,675	-	-	89	165	255	-
1975	2,586	2,586	-	-	94	160	254	-
1976	2,491	2,491	-	-	99	154	253	-
1977	2,392	2,392	-	-	104	148	252	-
1978	2,287	2,287	-	-	106	141	248	-
1979	2,181	2,181	-	-	104	134	239	-
1980	2,076	2,076	-	-	106	128	234	-
1981	1,970	1,970	-	-	104	121	226	-
1982	1,866	1,866	-	-	106	115	221	-
1983	1,759	1,759	-	-	104	108	213	-
1984	1,655	1,655	-	-	106	102	208	-
1985	1,548	1,548	-	-	104	95	199	-
1986	1,444	1,444	-	-	106	88	195	-

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM GOVERNMENTS
USA
AID

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	40,657	75,464	2,000	12,407	996	1,006	2,002	-3,175
1968	52,068	73,293	-	5,644	1,038	1,040	2,078	-125
1969	56,675	72,130	3,295	3,650	1,898	1,110	3,008	1
1970	58,428	73,528	6,806	6,931	1,280	1,032	2,312	-1
1971	64,079	79,053	5,750	7,475	2,269	996	3,265	-117
1972	69,285	82,417	-	7,935	2,895	1,305	4,200	-
1973	74,325	79,522	-	3,597	2,904	1,332	4,236	-
1974	75,017	76,617	-	1,500	3,814	1,600	5,414	-
1975	72,704	72,804	-	100	4,083	1,611	5,694	-
1976	68,721	68,721	-	-	4,538	1,668	6,205	-
1977	64,183	64,183	-	-	4,549	1,537	6,086	-
1978	59,634	59,634	-	-	3,994	1,439	5,433	-
1979	55,640	55,640	-	-	2,978	1,327	4,306	-
1980	52,662	52,662	-	-	2,843	1,265	4,108	-
1981	49,819	49,819	-	-	3,070	1,240	4,309	-
1982	46,749	46,749	-	-	3,076	1,157	4,233	-
1983	43,673	43,673	-	-	3,082	1,074	4,156	-
1984	40,591	40,591	-	-	3,189	990	4,178	-
1985	37,402	37,402	-	-	2,976	904	3,880	-
1986	34,426	34,426	-	-	2,976	820	3,796	-

PRELIMINARY

06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM GOVERNMENTS
USA
EXPORT-IMPORT BANK

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	9,325	23,509	6,000	6,425	1,947	444	2,391	-3,301
1968	13,802	24,261	-	5,244	2,906	735	3,641	-1
1969	16,139	21,354	-	4,216	3,063	819	3,882	-1
1970	17,291	18,290	3,000	370	2,209	810	3,019	-252
1971	15,452	18,829	-	641	1,675	770	2,445	-379
1972	14,418	16,775	-	1,179	2,479	796	3,275	-
1973	13,118	14,296	-	1,179	2,356	734	3,090	-
1974	11,940	11,940	-	-	2,244	655	2,899	-
1975	9,696	9,696	-	-	1,806	529	2,336	-
1976	7,890	7,890	-	-	1,396	437	1,833	-
1977	6,493	6,493	-	-	810	363	1,173	-
1978	5,683	5,683	-	-	791	317	1,108	-
1979	4,892	4,892	-	-	788	271	1,060	-
1980	4,104	4,104	-	-	788	226	1,014	-
1981	3,316	3,316	-	-	788	180	968	-
1982	2,528	2,528	-	-	788	135	923	-
1983	1,740	1,740	-	-	788	89	877	-
1984	951	951	-	-	788	43	831	-
1985	163	163	-	-	163	4	168	-

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM GOVERNMENTS
USA

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	49,982	98,973	8,000	18,832	2,943	1,450	4,393	-6,476
1968	65,870	97,554	-	10,888	3,944	1,775	5,719	-126
1969	72,814	93,484	3,295	7,866	4,961	1,929	6,890	-
1970	75,719	91,818	9,806	7,301	3,489	1,842	5,331	-253
1971	79,531	97,882	5,750	8,116	3,944	1,766	5,710	-496
1972	83,703	99,192	-	9,114	5,374	2,101	7,475	-
1973	87,443	93,818	-	4,776	5,260	2,066	7,327	-
1974	86,958	88,558	-	1,500	6,058	2,255	8,313	-
1975	82,400	82,500	-	100	5,889	2,141	8,030	-
1976	76,610	76,610	-	-	5,934	2,104	8,038	-
1977	70,676	70,676	-	-	5,359	1,900	7,259	-
1978	65,317	65,317	-	-	4,785	1,756	6,541	-
1979	60,532	60,532	-	-	3,766	1,599	5,365	-
1980	56,766	56,766	-	-	3,631	1,491	5,122	-
1981	53,134	53,134	-	-	3,858	1,420	5,278	-
1982	49,277	49,277	-	-	3,864	1,291	5,155	-
1983	45,413	45,413	-	-	3,870	1,163	5,033	-
1984	41,542	41,542	-	-	3,977	1,033	5,010	-
1985	37,566	37,566	-	-	3,140	908	4,048	-
1986	34,426	34,426	-	-	2,976	820	3,796	-

PRELIMINARY
06/21/72

Table 4.2: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN FOREIGN CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM GOVERNMENTS

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	50,674	111,395	8,500	19,286	2,968	1,526	4,494	-6,740
1968	66,888	110,187	1,297	13,104	4,039	1,873	5,912	-137
1969	75,942	107,308	9,053	9,987	5,568	2,059	7,627	388
1970	80,366	111,181	9,806	10,238	3,834	2,074	5,908	-178
1971	86,833	116,975	10,271	14,454	4,942	2,192	7,134	934
1972	97,046	123,238	-	14,332	7,791	2,769	10,560	-
1973	103,587	115,447	-	8,822	7,703	2,771	10,474	-
1974	104,705	107,744	-	2,939	7,609	2,977	10,585	-
1975	100,036	100,136	-	100	6,639	2,842	9,481	-
1976	93,497	93,497	-	-	6,898	2,760	9,658	-
1977	86,599	86,599	-	-	6,542	2,504	9,046	-
1978	80,057	80,057	-	-	5,970	2,306	8,276	-
1979	74,087	74,087	-	-	4,778	2,095	6,873	-
1980	69,309	69,309	-	-	4,475	1,948	6,423	-
1981	64,834	64,834	-	-	4,699	1,843	6,542	-
1982	60,135	60,135	-	-	4,707	1,682	6,389	-
1983	55,428	55,428	-	-	4,711	1,519	6,231	-
1984	50,717	50,717	-	-	4,799	1,356	6,155	-
1985	45,917	45,917	-	-	3,939	1,200	5,139	-
1986	41,978	41,978	-	-	3,778	1,081	4,858	-

ECONOMIC AND SOCIAL DATA DIVISION
ECONOMIC PROGRAM DEPARTMENT
JUNE 26, 1972

Table 4.3: EXTERNAL PUBLIC DEBT OUTSTANDING AS OF DECEMBER 31, 1971

DEBT REPAYABLE IN LOCAL CURRENCY

IN THOUSANDS OF U.S. DOLLARS

CREDITOR COUNTRY TYPE OF CREDITOR	DEBT OUTSTANDING DECEMBER 31, 1971 DISBURSED	 UNDIS- BURSED	 TOTAL
DISBURSED IN LOCAL CURRENCY	-	1,549	1,549
JAPAN	-	1,549	1,549
DISBURSED IN LOCAL CURRENCY	34	-	34
UNITED KINGDOM	34	-	34
SUPPLIERS	34	1,549	1,583
DISBURSED IN FOREIGN CURRENCY	-	659	659
FRANCE	-	659	659
OTHER PRIVATE FINANCIAL INST.	-	659	659
DISBURSED IN LOCAL CURRENCY	28,050	2,097	30,147
DISBURSED IN FOREIGN CURRENCY	9,949	40,847	50,796
IDB	37,999	42,944	80,943
LOANS FROM INTL. ORGANIZATIONS	37,999	42,944	80,943
DISBURSED IN LOCAL CURRENCY	5,419	-	5,419
USA	5,419	-	5,419
LOANS FROM GOVERNMENTS	5,419	-	5,419
TOTAL EXTERNAL PUBLIC DEBT	43,452	45,152	88,604

NOTE: DEBT WITH A MATURITY OF OVER ONE YEAR.

ECONOMIC AND SOCIAL DATA DIVISION
ECONOMIC PROGRAM DEPARTMENT
JUNE 26, 1972

Table 4.4: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN LOCAL CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

TOTAL

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	33,031	56,413	2,500	3,906	1,641	1,046	2,687	-2,058
1968	33,237	55,214	3,000	4,037	2,010	1,252	3,262	-240
1969	35,265	55,964	1,500	3,959	2,243	1,055	3,298	-311
1970	36,980	54,910	40,931	6,685	3,022	1,175	4,197	-3,706
1971	39,958	89,113	2,034	6,211	2,719	1,461	4,180	176
1972	43,452	88,604	-	18,856	3,219	1,248	4,467	-
1973	59,089	85,385	-	15,712	3,699	1,759	5,458	-
1974	71,102	81,686	-	9,601	3,967	2,035	6,001	-
1975	76,737	77,719	-	982	5,492	2,066	7,558	-
1976	72,227	72,227	-	-	5,479	1,914	7,393	-
1977	66,749	66,749	-	-	5,400	1,751	7,151	-
1978	61,348	61,348	-	-	4,895	1,595	6,490	-
1979	56,454	56,454	-	-	4,825	1,452	6,277	-
1980	51,629	51,629	-	-	4,755	1,316	6,070	-
1981	46,874	46,874	-	-	4,753	1,181	5,934	-
1982	42,121	42,121	-	-	4,681	1,047	5,728	-
1983	37,440	37,440	-	-	4,135	922	5,057	-
1984	33,305	33,305	-	-	4,062	818	4,880	-
1985	29,243	29,243	-	-	3,632	715	4,346	-
1986	25,612	25,612	-	-	3,308	628	3,936	-

NOTE: INCLUDES SERVICE ON ALL DEBT LISTED IN TABLE 1 PREPARED JUNE 26, 1972.

Table 4.4: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN LOCAL CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

DISBURSED IN LOCAL CURRENCY

SUPPLIERS

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1970	-	-	31	31	-	-	-	-
1971	31	31	1,375	-	-	-	-	177
1972	34	1,583	-	1,033	144	25	169	-
1973	922	1,439	-	516	144	123	267	-
1974	1,294	1,294	-	-	144	136	280	-
1975	1,150	1,150	-	-	144	120	264	-
1976	1,005	1,005	-	-	144	105	249	-
1977	861	861	-	-	144	89	233	-
1978	717	717	-	-	144	74	218	-
1979	572	572	-	-	144	58	202	-
1980	428	428	-	-	144	43	187	-
1981	283	283	-	-	143	27	170	-
1982	141	141	-	-	141	12	152	-

Table 4.4: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN LOCAL CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)
DISBURSED IN FOREIGN CURRENCY
OTHER PRIVATE FINANCIAL INST.

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1971	-	-	659	-	-	-	-	-
1972	-	659	-	439	-	8	8	-
1973	439	659	-	220	101	37	138	-
1974	558	558	-	-	101	37	139	-
1975	456	456	-	-	101	30	132	-
1976	355	355	-	-	101	23	124	-
1977	253	253	-	-	101	16	117	-
1978	152	152	-	-	101	9	110	-
1979	51	51	-	-	51	2	52	-

Table 4.4: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN LOCAL CURRENCY

IN THOUSANDS OF U.S. DOLLARS

LOANS FROM INTL. ORGANIZATIONS
IDB
DISBURSED IN LOCAL CURRENCY

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	17,233	29,569	-	3,797	432	454	886	1
1968	20,599	29,138	-	3,571	629	540	1,169	-4
1969	23,540	28,505	100	1,940	760	567	1,327	-310
1970	24,720	27,535	4,500	3,227	874	706	1,580	-20
1971	27,074	31,141	-	1,970	993	737	1,730	-1
1972	28,050	30,147	-	917	1,395	542	1,937	-
1973	27,572	28,752	-	798	1,543	542	2,085	-
1974	26,827	27,209	-	382	1,609	531	2,140	-
1975	25,600	25,600	-	-	1,733	506	2,240	-
1976	23,867	23,867	-	-	1,694	470	2,164	-
1977	22,172	22,172	-	-	1,694	435	2,130	-
1978	20,478	20,478	-	-	1,694	401	2,095	-
1979	18,783	18,783	-	-	1,694	366	2,060	-
1980	17,089	17,089	-	-	1,694	331	2,026	-
1981	15,394	15,394	-	-	1,694	297	1,991	-
1982	13,700	13,700	-	-	1,694	262	1,956	-
1983	12,006	12,006	-	-	1,498	228	1,726	-
1984	10,508	10,508	-	-	1,425	199	1,624	-
1985	9,083	9,083	-	-	1,228	171	1,399	-
1986	7,855	7,855	-	-	1,137	148	1,285	-

Table 4.4: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN LOCAL CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM INTL. ORGANIZATIONS
IDB
DISBURSED IN FOREIGN CURRENCY

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	-	10,700	2,500	-	-	45	45	-
1968	-	13,200	3,000	466	-	66	66	-
1969	466	16,200	1,400	2,019	-	108	108	-
1970	2,485	17,600	36,400	3,427	-	177	177	-3,000
1971	5,912	51,000	-	4,241	204	475	679	-
1972	9,949	50,796	-	16,467	209	503	711	-
1973	26,208	50,587	-	14,178	1,041	926	1,967	-
1974	39,345	49,547	-	9,219	1,395	1,228	2,624	-
1975	47,169	48,151	-	982	2,796	1,333	4,128	-
1976	45,355	45,355	-	-	2,846	1,265	4,111	-
1977	42,510	42,510	-	-	2,846	1,183	4,029	-
1978	39,664	39,664	-	-	2,846	1,102	3,947	-
1979	36,818	36,818	-	-	2,846	1,020	3,865	-
1980	33,972	33,972	-	-	2,846	938	3,784	-
1981	31,126	31,126	-	-	2,846	856	3,702	-
1982	28,280	28,280	-	-	2,846	774	3,620	-
1983	25,435	25,435	-	-	2,637	694	3,331	-
1984	22,798	22,798	-	-	2,637	619	3,256	-
1985	20,160	20,160	-	-	2,404	543	2,947	-
1986	17,757	17,757	-	-	2,170	480	2,650	-

Table 4.4: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN LOCAL CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM INTL. ORGANIZATIONS
IDB

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	17,233	40,269	2,500	3,797	432	499	931	1
1968	20,599	42,338	3,000	4,037	629	606	1,235	-4
1969	24,006	44,705	1,500	3,959	760	675	1,435	-310
1970	27,205	45,135	40,900	6,654	874	883	1,757	-3,020
1971	32,986	82,141	-	6,211	1,197	1,212	2,409	-1
1972	37,999	80,943	-	17,384	1,603	1,045	2,648	-
1973	53,780	79,340	-	14,976	2,584	1,468	4,052	-
1974	66,172	76,755	-	9,601	3,004	1,759	4,763	-
1975	72,769	73,751	-	982	4,529	1,839	6,368	-
1976	69,222	69,222	-	-	4,540	1,735	6,276	-
1977	64,682	64,682	-	-	4,540	1,619	6,159	-
1978	60,142	60,142	-	-	4,540	1,502	6,042	-
1979	55,601	55,601	-	-	4,540	1,386	5,926	-
1980	51,061	51,061	-	-	4,540	1,269	5,809	-
1981	46,521	46,521	-	-	4,540	1,152	5,693	-
1982	41,980	41,980	-	-	4,540	1,036	5,576	-
1983	37,440	37,440	-	-	4,135	922	5,057	-
1984	33,305	33,305	-	-	4,062	818	4,880	-
1985	29,243	29,243	-	-	3,632	715	4,346	-
1986	25,612	25,612	-	-	3,308	628	3,936	-

Table 4.4: EXTERNAL PUBLIC DEBT AS OF DECEMBER 31,1971

DEBT REPAYABLE IN LOCAL CURRENCY

(IN THOUSANDS OF U.S. DOLLARS)

LOANS FROM GOVERNMENTS
USA
DISBURSED IN LOCAL CURRENCY

YEAR	DEBT OUTSTANDING BEGINNING OF PERIOD: DISBURSED ONLY (1)	DEBT OUTSTANDING BEGINNING OF PERIOD: INCLUDING UNDISBURSED (2)	TRANSACTIONS DURING PERIOD: COMMITMENTS (3)	TRANSACTIONS DURING PERIOD: DISBURSEMENTS (4)	SERVICE PAYMENTS: PRINCIPAL (5)	SERVICE PAYMENTS: INTEREST (6)	SERVICE PAYMENTS: TOTAL (7)	CANCELLATIONS, ADJUSTMENTS (8)
1967	15,798	16,144	-	109	1,209	547	1,756	-2,059
1968	12,638	12,876	-	-	1,381	646	2,027	-236
1969	11,259	11,259	-	-	1,483	380	1,863	-1
1970	9,775	9,775	-	-	2,148	292	2,440	-686
1971	6,941	6,941	-	-	1,522	249	1,771	-
1972	5,419	5,419	-	-	1,471	171	1,642	-
1973	3,948	3,948	-	-	869	132	1,001	-
1974	3,078	3,078	-	-	717	103	820	-
1975	2,362	2,362	-	-	717	77	794	-
1976	1,645	1,645	-	-	692	51	744	-
1977	952	952	-	-	614	27	641	-
1978	338	338	-	-	109	11	119	-
1979	229	229	-	-	89	7	96	-
1980	140	140	-	-	70	4	74	-
1981	70	70	-	-	70	2	72	-

ECONOMIC AND SOCIAL DATA DIVISION
ECONOMIC PROGRAM DEPARTMENT
JUNE 26, 1972

V. FISCAL STATISTICS

Table No.

Table 5.1: FIXED PUBLIC INVESTMENT BY SECTORS, 1966-76

(Millions of 1971 Sucres)

Sector	Actual Investment					Mission Estimates				Projection		
	1966	1967	1968	1969	1970	1971 /b	1972	1973	1974	1975	1976	1977
Agriculture	117	121	115	126	166	178	168	187	211			
Irrigation	36	27	53	55	49	47	93	111	185			
Energy	34	65	133	98	133	218	395	651	731			
Transport: Highways	491	685	698	568	729	794/c	630	637	827			
Transport: Ports	14	21	46	16	48	62	104	101	153			
Transport: Airports	23	24	26	39	57	24	40	55	48			
Telecommunications	88	19	99	88	71	61	193	133	189			
Water and Sewerage	230	306	137	144	184	200	315	428	518			
Education	64	68	129	130	140	88	193	228	204			
Public Health	13	26	35	28	38	45	110	141	184			
Others /a	334	220	288	553	525	548	224	267	325			
Total	1444	1582	1759	1845	2140	2265	2465	2939	3575	4215	4889	5623

/a Figures from 1966 to 1971 include investments in machinery and equipment, buildings and miscellaneous (see text Ch. III F). For 1972-74 a 10 percent allowance has been made for "Others" to account for miscellaneous minor investments in unlisted sectors and unforeseen capital expenditures.

/b Based on preliminary figures by the National Planning Board and adjusted by the mission.

/c Excludes investment in road construction by Texaco-Gulf (estimated at S/285 million).

Source: National Planning Board (for actual investments, 1966-70), mission estimates (see Statistical Appendix Tables 5.3 to 5.12.)

Table 5.2: FIXED INVESTMENT BY PUBLIC SECTOR, 1972-74
SUMMARY BY SECTORS

(In millions of 1971 sucres)

	1972			1973			1974			Total 1972-74		
	Total	Dom. Financing	Ext. Financing	Total	Dom. Financing	Ext. Financing	Total	Dom. Financing	Ext. Financing	Total	Dom. Financing	Ext. Financing
Agriculture	168	103	65	187	111	76	211	124	87	566	338	228
Central Government	149			168			190			507		
Rest of Public Sector	19			19			21			59		
Irrigation	93	35	58	111	47	64	185	73	112	389	155	234
Central Government	49			80			125			254		
Rest of Public Sector	44			31			60			135		
Energy	395	113	282	651	216	435	731	246	485	1,777	575	1,202
Central Government	175			476			635			1,286		
Rest of Public Sector	220			175			96			491		
Transport: Highways	630	422	208	637	395	242	827	533	294	2,094	1,350	744
Central Government	510			507			687			1,704		
Rest of Public Sector	120			130			140			390		
Transport: Ports	104	104	-	101	91	10	153	86	67	358	281	77
Central Government	104			101			153			358		
Rest of Public Sector	-			-			-			-		
Transport: Airports	40	15	25	55	18	37	48	16	32	143	49	94
Central Government	40			55			48			143		
Rest of Public Sector	-			-			-			-		
Telecommunications	193	-	193	133	-	133	189	-	189	515	-	515
Central Government	193			133			189			515		
Rest of Public Sector	-			-			-			-		
Water and Sewerage	315	130	185	428	173	255	518	197	321	1,261	500	761
Central Government	98			218			257			573		
Rest of Public Sector	217			210			261			688		
Education	193	99	94	228	115	113	204	101	103	625	315	310
Central Government	146			161			143			450		
Rest of Public Sector	47			67			61			175		
Public Health	110	27	83	141	36	105	184	52	132	435	115	320
Central Government	82			108			146			336		
Rest of Public Sector	28			33			38			99		
Others	224	105	119	267	120	147	325	143	182	816	368	448
Central Government	155			200			257			612		
Rest of Public Sector	69			67			68			204		
Total	2,465	1,153	1,312	2,939	1,322	1,617	3,575	1,571	2,004	8,979	4,046	4,933
Central Government	1,701			2,207			2,830			6,738		
Rest of Public Sector	764			732			745			2,241		

Source: Statistical Appendix, Tables 5.3 to 5.12.

Table 5.3: PUBLIC INVESTMENT PROGRAM, 1972-74

AGRICULTURE (EXCLUDING IRRIGATION)

	1972	1973	1974	Total 1972-74
	(In millions of 1971 Sucres)			
A. Central Government	149	168	190	507
INIAP - Agricultural Development /a	25	25	11	61
Forestry Development (Esmeraldas) /b	-	-	25	25
Foot and Mouth Erradication /c	-	15	23	38
Rural Development and Agrarian Reform /d	124	128	131	383
B. Rest of Public Sector	19	19	21	59
Rural Development /d	14	14	15	43
Other Programs	5	5	6	16
Total A + B	168	187	211	566
Domestic Financing	103	111	124	338
External Financing	65	76	87	228

/a The IDB has lent $2.2 million towards this project estimated to cost a total of $3.45 million, completion likely in 1974.

/b Feasibility study, to be financed in 1973 by a UNDP grant, is not included here. Scope and cost of project will depend on findings of feasibility study, but investment is foreseen to start in 1974 with an estimated 50 percent of requirements being externally financed.

/c The IDB is said to be considering a loan of about $3.0 million for this project expected to be implemented over a four to five year period.

/d In the absence of adequate information, these are mission projections based on historical data.

Sources: National Planning Board, Ministry of Production, mission estimates.

Table 5.4: PUBLIC INVESTMENT PROGRAM, 1972-74

IRRIGATION

	1972	1973	1974	Total 1972-74
	(In millions of 1971 Sucres)			
A. Central Government	49	80	125	254
Montufar /a	35	46	44	125
Milagro /b	-	13	38	51
Cotopaxi Plan /c	5	5	5	15
Carrizal-Chone /d	4	4	8	16
Poza Honda /e	-	-	10	10
Studies /f	5	12	20	37
B. Rest of Public Sector	44	31	60	135
Babahoyo /g	9	6	38	53
Guayas (Daule-Peripa) /h	29	17	12	58
Other works by Municipalities and Provincial Councils	6	8	10	24
Total A + B	93	111	185	389
Domestic Financing	35	47	73	155
External Financing	58	64	112	234

/a Project started in 1971 and includes an agrarian reform program in addition to irrigation. Total cost of project estimated at $6.0 million of which $4.1 million is being financed by the IDB.

/b Assumes a loan of about $4.5 million from the World Bank; project completion likely in 1976.

/c 1972-74 program covers studies being financed in part by IDB.

/d Program for 1972-74 covers feasibility studies being financed in part by the German Government.

/e Assumes 60 percent of costs will be externally financed.

/f Includes studies for Puyango-Tumbes (for which a loan of about $2.5 million is said to be under consideration by the IDB), **Banco de Arena/Yaguachi likely to be financed by the World Bank under its loan to the Milagro project, Jubones** (no external financing indicated), and miscellaneous studies.

/g Current studies, being supported by the IDB, should be completed in 1973; construction should start in 1974 at an estimated total cost of about $6.4 million, including on-farm development. The IDB has been requested to finance the project.

/h Program for 1972-74 covers feasibilities studies being **financed in part** by the IDB.

Sources: National Planning Board, INERHI, mission estimates.

Table 5.5: PUBLIC INVESTMENT PROGRAM, 1972-74

TRANSPORT: HIGHWAYS

	1972	1973	1974	Total 1972-74
	(In millions of 1971 Sucres)			
A) Central Government	510	507	687	1704
Second Highway Plan and Parallel Programs:				
Consortium Highway Project	138	15	-	153. /a
Quito-Ibarra-Tulcan (all sectors) /b	60	80	100	240
Biblian-Gun-San Antonio-Empalme con Chilcales/Bucay /c	70	77	78	225
Panamericana Norte (all sectors) /d	20	30	40	90
Guanujo-Guaranda-Babahoyo and others in same sector /e	40	60	100	200
Third Highway Plan /f	65	65	135	265
Roads in IDB supported Program /g	56	80	120	256
Penetration Roads to the Orient /h	18	20	20	58
Regional Programs				
Manabi Road Plan /i	21	28	37	86
Loja Road Plan /h	12	-	-	12
Other Roads /h	10	15	15	40
Feeder Roads Program	-	4	12	16 /j
Maintenance Equipment /k	-	33	30	63
B) Rest of Public Sector	120	130	140	390
Total A + B	630	637	827	2094
Domestic Financing	422	395	533	1350
External Financing	208	242	294	744

/a Consists of the undisbursed portion (S/102 million) of the loans by the Consortium of Agencies at the end of 1971 plus the corresponding counterpart contribution until completion of the project.

/b Currently estimated total cost of 246 Km. of roads is S/617 million; about S/377 million had been spent as of March 1, 1972.

/c Currently estimated total cost of 115 Km. of roads is S/534 million; about S/309 million had been spent as of March 1, 1972.

/d Currently estimated total cost of 163 Km. of roads is S/298 million; about S/19 million had been spent as of March 1, 1972.

/e Currently estimated total cost of 254 Km. of roads is S/614 million; about S/257 million had been spent as of March 1, 1972.

/f This plan, which should be completed in 1976-77, includes the following roads: Cuenca-Naranjal, Alausi-Bucay, Jipijapa-Manglaralto, Tulcan-Tulfino-Maldonado, Riobamba-Banos, Baba-Casa de Tejas, Loja-Zumba, Pindo-Zaracay, Puerto Ayora-Canal de Baltra, Otavalo-Garcia Moreno, Ambato-Guaranda, Santa Marta-Palenque, Quevedo-Moraspungo, El Tingo-La Merced. Thus far, supplier's credit financing for only the Loja-Zumba road (the major road in the Plan) has been sought. The investment program assumes that only one-third of the investment originally planned for 1972 and 1973 will be made effective (see text), and that 40 percent of the Plan will be externally financed beginning 1973. Current estimated cost of the entire Plan is S/1.36 billion.

/g IDB is financing US$18.0 million of total project cost estimated at US$29.1 million; completion in 1975-76. Roads covered by this program include Ambato-Banos, Puyo-Macas, Boliche-Puerto Inca, Milagro-Yaguachi, Banos-Puyo.

/h Financed fully by Central government.

/i Supplier's credit financing has been sought; estimated total cost S/165 million, about S/79 million spent as of March 1, 1972.

/j Estimated cost of feasibility study (assumed 80 percent AID financed).

/k Requirements for maintenance equipment are based on recommendations by the consultants under the Second Highway Plan; about S/25 million worth of these requirements are expected to be procured in 1972 under the Consortium Highway Project loans.

Sources: Ministry of Public Works, National Planning Board, mission estimates.

Table 5.6: PUBLIC INVESTMENT PROGRAM, 1972-74

TRANSPORT: PORTS

	1972	1973	1974	Total 1972-74
	(In millions of 1971 Sucres)			
Central Government	104	101	153	358
Esmeraldas /a	70	70	70	210
Manta	33	-	-	33
Guayaquil - Equipment Renewal /b	-	14	48	62
Puerto Bolivar Expansion /c	-	8	25	33
River Ports	1	2	2	5 /d
Studies	-	7	8	15/e
TOTAL	104	101	153	358
Domestic Financing	104	91	86	281
External Financing	-	10	67	77

/a Total cost of expansion program has been estimated at S/ 250 million with completion scheduled for 1975. No external financing being sought.
/b Cost of equipment renewal program is based on estimates of the Guayaquil Port Authority. Most urgent requirements amounting to S/ 14 million are expected to be financed by the Authority in 1973; remainder S/ 48 million are assumed to be externally financed.
/c 50 percent of expansion program assumed to be externally financed.
/d Covers mainly improvements in the ports of Quevedo and Babahoyo.
/e This represents the estimated cost of a national ports study; financial assistance for the study is said to be under consideration by the United Kingdom. The program assumes 80 percent of the cost will be externally financed.

Sources: National Planning Board, Guayaquil Port Authority, Ministry of Public Works, mission estimates.

Table 5.7: PUBLIC INVESTMENT PROGRAM, 1972-74

AIR TRANSPORT

	1972	1973	1974	Total 1972-74
	(In millions of 1971 Sucres)			
Central Government	40	55	48	143
Quito Airport	16	20	16	52 /a
Guayaquil Airport	10	20	19	49 /a
Expansion and/or improvement of various existing airports, including equipment /b	14	15	13	42
Total	40	55	48	143
Domestic Financing	15	18	16	49
External Financing	25	37	32	94

/a Includes improvements to existing facilities and estimated cost of feasibility study for major expansion; 60 percent external financing of improvements has been assumed. The feasibility study, assumed 80 percent AID financed, should be completed in 1974.

/b Includes airports at Pastaza, Tulcan, Machala and Manta; 60 percent external financing has been assumed.

Sources: National Planning Board, mission estimates.

Table 5.8: PUBLIC INVESTMENT PROGRAM, 1972-74

TELECOMMUNICATIONS /a

	1972	1973	1974	Total 1972-74
	(In millions of 1971 Sucres)			
Central Government	193	133	189	515
Expansion of Telephone Systems in Quito and Guayaquil	75	75	83	233
Inter-urban Telephone System	13	13	13	39
Manabi Program	-	20	30	50
Telex-Gentex System	15	25	25	65
Expansion of Microwave System	-	-	25	25
Satellite Communication Station	90	-	-	90
Expansion of Telephone Systems in various cities	-	-	13	13
Total	193	133	189	515
Domestic Financing	-	-	-	-
External Financing	193	133	189	515

/a Excludes postal service.

Sources: National Planning Board, mission estimates.

Table 5.9: PUBLIC INVESTMENT PROGRAM, 1972-74

ELECTRIC POWER

	1972	1973	1974	Total 1972-74
	(In millions of 1971 Sucres)			
A. Central Government	175	476	635	1286
Interconnected National System:				
Pisayambo (Stage I: Pucara) /a	75	250	300	625
Paute (Stage I: Molino) /b	13	43	50	106
Regional Systems: /c				
North (Tulcan-Ibarra)	20	17	13	50
North Central (Riobamba-Ambato)	35	38	56	129
South Central (Cuenca-Azoques)	3	17	20	40
South (Loja)	3	11	9	23
Esmeraldas	-	6	26	32
Manabi	12	15	30	57
Guayas-Los Rios	10	40	75	125
El Oro	-	10	15	25
Quito-Sto.Domingo	1	11	13	25
Studies /d	3	18	28	49
B. Rest of Public Sector	220	175	96	491
Empresa Electrica Quito: Nayon Expansion /e	220	170	61	451
Empresa Electrica Quito: Further Expansion /f	-	5	35	40
Total A + B	395	651	731	1777
Domestic Financing	113	216	246	575
External Financing	282	435	485	1202

/a Total cost of Stage I is about US$40 million, of which IDB is financing US$25.0 million; completion likely in late 1975 or early 1976.
/b 1972-74 program covers final studies and engineering for which IDB is financing US$2.7 million.
/c Includes investment by the Municipalities. External financing sources include AID (US$3.55 million) and UK Government (about US$8 million; negotiations not concluded).
/d Include studies and engineering for Toachi and Montufar, and further planning of interconnected national system.
/e Total cost of project is US$18.7 million of which IDA is financing US$6.8 million; completion in late 1974 or ea early 1975.
/f La Mica or thermal alternative; studies to be financed by IDA under Nayón credit.

Sources: INECEL; National Planning Board, and mission estimates.

Table 5.10: PUBLIC INVESTMENT PROGRAM, 1972-74

WATER AND SEWERAGE

	1972	1973	1974	Total 1972-74
	(In millions of 1971 Sucres)			
A. Central Government	98	218	257	573
Water supply and sewerage for 16 Cities /a	18	54	72	144
Water supply for various urban centers /b	25	63	75	163
Jipijapa - Pajan Project (water supply) /c	-	25	33	58
Cayambe-Pillaro-Atacames Project (Water supply) /d	6	3	-	9
Azoques Water Supply /d	-	12	10	22
IEOS Rural Program /d	-	11	17	28
Ministry of Public Works Programs /j	49	50	50	149
B. Rest of Public Sector	217	210	261	688
Quito Water Supply (Pita-Tambo) /e	75	75	81	231
Pita-Tambo (Complementary works) /f	15	45	90	150
Guayaquil Sewerage Project /g	60	75	75	210
Guayaquil Water Supply /h	15	15	15	45
Poza - Honda /i	33	-	-	33
Centro de Rehabilitacion Manabi /b	19	-	-	19
Total A + B	315	428	518	1261
Domestic Financing	130	173	197	500
External Financing	185	255	321	761

/a A loan of about US$10.9 million has recently been approved by IDB to support this program; completion likely in 1975

/b These projects are being financed fully with suppliers' credits.

/c Assumes 50 percent external financing will be required.

/d No external financing required.

/e IDB has lent US$12 million towards this project.

/f IDB, which is financing the first phase of the water supply expansion program for Quito, is said to be considering financing a major part of the complementary works. The program assumes that 80 percent of the additional works will be externally financed.

/g IDB is financing US$7.6 million of project cost estimated at US$11.6 million.

/h Based on a supplier's credit contracted late last year by Empresa de Agua Potable Guayaquil. No counterpart contribution has been assumed.

/i This is a combined water supply/irrigation project being financed in part by the Federal Republic of Germany.

/j Covers sewerage and water supply for Pujiti and sewerage for Riobamba; 1972 figure is Ministry's estimate. No external financing required.

Sources: National Planning Board, IEOS, Ministry of Public Works, mission estimates.

Table 5.11: PUBLIC INVESTMENT PROGRAM, 1972-74

EDUCATION

	1972	1973	1974	Total 1972-74
	(In millions of 1971 Sucres)			
A. Central Government	146	161	143	450
Primary School Development Program /a	43	44	-	87
Secondary School Development Program /b	95	105	28	228
Primary School Development (Phase II)	-	-	75	75
Secondary School Development (Phase II)	-	-	25	25
Other Primary, Secondary & Teacher Training Schools	8 /c	12	15	35
B. Rest of Public Sector	47	67	61	175
Escuela Politecnica, Quito /d	21	25	14	60
Escuela Politecnica del Litoral /e	11	26	30	67
Other schools and educational institutions	15	16	17	48
Total A + B	193	228	204	625
Domestic Financing	99	115	101	315
External Financing	94	113	103	310

/a This program began in 1966 with AID financial support in the amount of $5.3 million.
/b Cost of program, begun in 1968, is estimated at $10.2 million of which IDA is financing $5.1 million; covers secondary general and secondary vocational schools.
/c Includes S/ 3 million from Education Ministry's Budget and S/ 5 million from National Fund of Participations.
/d Project cost estimated at $2.55 million of which IDB will finance $1.5 million; completion likely in 1974.
/e Project cost estimated at $3.9 million of which IDB will finance $2.6 million; completion likely in 1975.

Sources: Ministry of Education; National Planning Board; mission estimates.

Table 5.12: PUBLIC INVESTMENT PROGRAM, 1972-74

PUBLIC HEALTH

	1972	1973	1974	Total 1972-74
	(In millions of 1971 Sucres)			
A. Central Government /a	82	108	146	336
Health Centers /b	32	63	63	158
Loja Hospital /c	25	25	28	78
Guayaquil Suburban Hospital	25	20	-	45
Guayaquil Children's Hospital /d	-	-	20	20
Machala Hospital /d	-	-	20	20
Esmeraldas Hospital /d	-	-	15	15
B. Rest of Public Sector /e	28	33	38	99
Hospitals and Equipment	28	33	38	99
Total A + B	110	141	184	435
Domestic Financing	27	36	52	115
External Financing	83	105	132	320

/a Malaria erradication program, being financed by AID, has been treated as current expenditures and not included here.
/b This program, 80 percent financed with supplier's credit, covers mainly rural areas. Contract completion date, initially 1972, will have to be renegotiated because of slow progress.
/c Fully financed with supplier's credit, completion in 1974.
/d Project under study, suppliers' credits covering 60 percent of cost has been assumed.
/e Figures for Rest of Public Sector were not available; projections shown are based on historical data.

Source: Ministry of Public Health, mission estimates.

Table 5.13: EXTERNAL FINANCING OF PUBLIC SECTOR CREDIT LINES, 1972-76
(in thousands of U.S. dollars)

	Foreign Lender	Domestic Agency	Total Financing	External Financing	Estimated Disbursements As of 12/31/71 Total	1972 Total	1972 Externally Financed	1973 Total	1973 Externally Financed	1974 Total	1974 Externally Financed	1975 Total	1975 Externally Financed	1976 Total	1976 Externally Financed
Agriculture															
Livestock I	IBRD	Min. Production	4,000	4,000	3,590	410	410	-	-	-	-	-	-	-	-
Livestock II	IDA	Min. Production	1,500	1,500	1,039	461	461	-	-	-	-	-	-	-	-
Livestock III	IDA	C.B. Trust Fund/Min. Prod.	10,000	10,000	-	1,800	1,800	2,500	2,500	3,000	3,000	2,100	2,100	600	600
Livestock Programs /c	Undetermined (IBRD likely)	C.B. Trust Fund/Min. Prod.	13,000	13,000	-	-	-	-	-	-	-	1,000	1,000	3,000	3,000
Agricultural Credit /d	Under Consideration by IBRD	C.B. Trust Fund/BNF	8,000	8,000	-	-	-	500	500	1,500	1,500	2,000	2,000	2,000	2,000
Agriculture Credit /b	Under Consideration by AID	C.B. Trust Fund	10,000	10,000	-	-	-	-	-	2,000	2,000	2,500	2,500	3,000	3,000
Agric. Dev. & Diversification	AID	C.B. Trust Fund/Min. Prod.	7,800	7,200	-	650	500	1,650	1,500	2,150	2,000	2,150	2,000	1,200	1,200
Land Sale Guaranty	AID	Min. Production	3,600	3,600	500	100	100	700	700	1,000	1,000	1,000	1,000	300	300
Cooperative Development	AID	Cooperative Bank	1,200	1,200	-	350	350	850	850	-	-	-	-	-	-
Agriculture & Industry	*IDB*	BNF	6,000	6,000	4,015	1,200	1,200	785	785	-	-	-	-	-	-
African Palm/Agric. Credit /e	Under Consideration by IDB	BNF	12,000	12,000	-	-	-	-	-	1,000	1,000	3,000	3,000	3,000	3,000
Agric. & Industrial Equipment	Bank of Czechoslovakia	BNF	5,000	5,000	2,320	400	400	600	600	600	600	600	600	480	480
Agricultural Equipment	Bankamar (Spain)	BNF	5,000	5,000	-	-	-	1,000	1,000	1,500	1,500	1,500	1,500	1,000	1,000
					11,464	5,371	5,221	8,585	8,435	12,750	12,600	15,850	15,700	14,580	14,580
Fisheries				/f											
Fisheries I	IBRD	Min. Natur. Res./CFN	4,710	4,710	138	1,200	1,200	1,300	1,300	1,410	1,410	662	662	-	-
Fisheries II	Undetermined (IBRD likely)	Min. Natur. Res./CFN	8,000	8,000	-	-	-	-	-	-	-	1,000	1,000	2,000	2,000
					138	1,200	1,200	1,300	1,300	1,410	1,410	1,662	1,662	2,000	2,000
Industry															
Industrial Development	IDB	CFN	4,996	5,000	2,793	1,200	1,200	1,003	1,003	-	-	-	-	-	-
Industrial Development	IDB	CFN	1,500	1,500	-	300	300	600	600	600	600	-	-	-	-
Industrial Dev. (Preinvestment)	*IDB*	CFN	1,500	1,500	*186*	400	400	500	500	414	414	-	-	-	-
Industrial Development	IDB	CFN	10,000	10,000	-	500	500	1,500	1,500	2,500	2,500	3,000	3,000	2,500	2,500
Small Enterprise Assistance	AID	C.B. Trust Fund/Min. Prod.	5,700	5,100	-	650	500	1,650	1,500	1,250	1,600	1,650	1,500	-	500
Export Credit	AID	C.B. Trust Fund/ICEI	10,000	5,000	-	-	-	2,000	1,000	4,000	2,000	3,000	1,500	1,000	500
DFC I	IBRD	CFN - COFIEC	8,000	8,000	-	2,500	2,500	4,000	4,000	1,500	1,500	-	-	-	-
DFC II	Under Consideration by IBRD	CFN - COFIEC	15,000	15,000	-	-	-	500	500	2,500	2,500	3,500	3,500	3,500	3,500
Small Industries	Under Consideration by IBRD	C.B. Trust Fund/Min. Prod.	5,000	5,000	-	-	-	-	-	750	750	1,000	1,000	1,250	1,250
Industrial Development	German Government	CFN	2,550	2,550	650	1,000	1,000	900	900	-	-	-	-	-	-
Industrial Development	Under Cons. by German Gov.	CFN	3,190	3,190	-	300	300	1,000	1,000	1,000	1,000	890	890	-	-
Industrial Development	Swiss Banks	CFN	2,320	2,320	920	700	700	700	700	-	-	-	-	-	-
Industrial Development	Swiss Government	CFN	230	230	100	130	130	-	-	-	-	-	-	-	-
Industrial Development	Dutch Government	CFN	500	500	250	250	250	-	-	-	-	-	-	-	-
Ind. Dev. & Feasibility Studies	Mediobanca (Italy)		1,500	1,500	-	-	-	400	400	400	400	400	400	300	300
Industrial Development	Eximbank Reportedly Approached	C.B. Trust Fund	2,000	2,000	-	-	-	-	-	500	500	1,000	1,000	500	500
					4,899	7,930	7,780	14,753	13,603	15,414	13,764	14,440	12,790	9,050	9,050
Education															
Education Development Credit	AID	Nat. Pl. Board/EIES	9,000	3,000	-	-	-	1,500	500	3,000	1,250	2,500	1,250	2,000	-
Housing															
Housing Program	Federal Home Loan	BEV	6,000	6,000	1,000	1,000	1,000	1,000	1,000	1,500	1,500	1,500	1,500	-	-
Housing Credits	Hale International	BEV	21,400	21,400	-	1,000	1,000	2,000	2,000	3,000	3,000	3,000	3,000	3,000	3,000
Sites and Services	Under Consideration by AID	BEV	3,000	3,000	-	-	-	500	500	1,000	1,000	1,000	1,000	500	500
Housing	Under Consideration by Proexpo (Colombia)	BEV	10,000	10,000	-	-	-	1,000	1,000	2,000	2,000	2,000	2,000	2,000	2,000
					1,000	2,000	2,000	4,500	4,500	7,500	7,500	7,500	7,500	5,500	5,500
TOTAL					17,501	16,501	16,201	30,638	28,338	40,074	36,524	41,952	38,902	31,130	31,130

a
b Including disbursements of credits to private sector carrying a Government guarantee.
Will cover *cacao and oil crops in southern part of Guayas Basin.*
c
d Will cover general agriculture.
Will cover poultry, pigs and on-farm development
e
f BNF is preparing separate proposals for Agricultural Credit ($10,000) and African Palm ($7,600), but both projects may be combined into a single project of about $10 - 12,000.
Total amount of IBRD loan is $5.3 million of which $0.59 million is earmarked for a training program and port studies.

Source: Mission estimates.

Table 5.14: CASH OPERATIONS OF THE CENTRAL GOVERNMENT, 1967-71
(In millions of Sucres)

	1967	1968	1969	1970	1971
Current revenue	2372.6	2527.3	2924.8	3713.8	4140.6
Tax revenue	2156.7	2308.2	2513.1	3403.6	3870.9
Direct taxes					
Export taxes	127.3	147.2	121.0	482.4	520.2
Income taxes	292.5	311.2	384.3	554.7	738.8
Taxes on banking operations	11.2	18.1	34.7	42.4	34.8
Property taxes	24.4	22.3	21.9	32.4	29.7
Indirect taxes					
Import duties	1293.6	1383.5	1399.2	1515.6	1766.1
Industrial production and consumption taxes	246.7	264.5	334.7	540.0	925.7
Transport taxes	13.0	13.2	14.1	28.5	36.4
Stamp taxes	104.0	132.0	145.4	165.3	114.0
Other taxes	44.0	16.2	57.8	46.9	60.0
Minus: CAT's & compensated revenues	-	-	-	-4.5	-354.7
Plus: Estimated oil revenues	-	-	-	-	-
Nontax revenues	215.9	219.1	411.7	310.2	269.7
Fees	51.2	67.8	54.4	104.2	169.7
Property income	30.6	46.8	223.8	106.5	26.8
Transfers from other public sector	8.4	16.7	18.4	18.8	18.3
Other income	125.7	87.8	115.1	80.7	54.9
Total Expenditure	-2413.4	-3424.1	-3686.7	-4656.8	-5056.5
Deficit (-)	-40.8	-896.8	-761.9	-943.0	-915.9
Financing	40.8	-896.8	-761.9	-943.0	-915.9
External (net)	38.1	70.1	-21.4	54.9	-59.5
Disbursements	127.9	164.1	107.9	163.6	103.7
Amortization (-)	-89.8	-94.0	-129.3	-108.7	-163.2
Internal bond issues (net)	35.7	338.9	224.1	220.2	452.0
Placements	177.4	565.8	420.0	430.7	734.0
Amortization (-)	-141.7	-226.9	-195.9	-210.5	-282.0
Other public entities & cash	10.9	9.6	-7.4	-13.8	124.3
Central Bank (net) /a	-185.0	545.0	496.0	551.0	627.0
Operations in transit /b	141.1	-66.8	70.6	130.7	-227.9

/a As shown in Central Bank accounts.

/b Difference between Central Bank accounts and Treasury accounts.

Sources: Central Bank and Ministry of Finance and staff estimates.

Table 5.15: FUNCTIONAL CLASSIFICATION OF CENTRAL GOVERNMENT EXPENDITURE, /a 1965-72

	1965	1966	1967	1968	1969	1970	1971 /b	1972/b
General Services	316	268	265	291	290	309	336	405
Presidency and Congress	50	56	47	26	39	26	14	17
Judiciary Affairs	33	35	34	44	42	42	53	64
Foreign Affairs	50	46	43	48	48	59	79	96
Finance Administration	157	108	99	103	111	120	120	144
Others	26	23	42	70	50	60	70	84
Social Services	596	583	651	924	1,036	1,180	1,356	1,741
Education	425	483	551	822	915	1,000	1,160	1,500
Health	-	-	-	77	91	150	166	205
Welfare /c	171	100	100	25	30	30	30	36
Economic Services	591	534	671	775	837	809	1,214	1,470
Public Works	445	445	569	614	747	700	990	1,200
Agriculture	146 /d	69	80	143	60	74	224 /e	270 /e
Industry and Commerce		20	22	18	30	35		
Defense and Police /f	564	597	579	691	878	1,045	1,174	1,380
Defense	428	483	456	527	714	840	944	1,100
Police	136	114	123	164	164	205	230	280
Total	2,067	1,982	2,166	2,681	3,041	3,343	4,080	4,996
Unallocable Expenditure	1,316	897	927	1,552	1,712	2,164	2,601	3,096
Pensions	84	54	56	74	74	69	103	209
Transfers	714	236	199	524	430	356	395	652
Interest	223	258	258	294	370	449	733	755
Amortization	246	295	331	444	619	570	750	760
Other	49	54	83	216	219	720	620	720
Grand Total	3,383	2,879	3,093	4,233	4,753	5,507	6,681	8,086

/a Includes some state enterprises and "special accounts", which represent some 10-12 percent of total.

/b Mission estimates based on Central Bank partial figures for 1970 and Ministry of Finance provisional accounts for 1971 together with latest revision of 1972 budget figures (April 1972)

/c Presumably included health in 1965-67.

/d Expenditure of Ministries of Development, Commerce and Banks.

/e The Ministries of Agriculture and Industry and Commerce have been replaced by the Ministries of Production, and of Natural Resources and Tourism.

/f Includes expenditure on internal affairs.

Source: Central Bank and Ministry of Finance.

Table 5.16: CENTRAL GOVERNMENT OPERATIONS, 1965-71[a]

(in millions of sucres)

	ACTUALS						Estimate
	1965	1966	1967	1968	1969	1970	1971
Current receipts	2184	2207	2699	2817	3261	4167	4864
of which: transfers from state enterprises	(-)	(-)	(-)	(-)	(-)	(-)	(-)
transfers from local governments	(7)	(7)	(9)	(14)	(14)	(15)	(16)
transfers from autonomous institutions	(6)	(5)	(3)	(4)	(4)	(5)	(6)
Current expenditure	2206	1949	2143	2761	3227	3845	4369
Purchase of goods and services	1699	1404	1610	2062	2293	2844	3277
Interest payments	235	305	275	315	386	609	691
Current transfers	272	240	258	384	548	392	401
of which: to state enterprises	(-)	(-)	(-)	(-)	(-)	(-)	(-)
to local governments	(-)	(4)	(4)	(21)	(34)	(1)	(-)
to autonomous institutions	(138)	(94)	(126)	(204)	(297)	(237)	(251)
Current surplus	-22	258	556	56	34	322	495
Capital receipts /b	10	16	8	18	91	26	29
of which: transfers from state enterprises	(5)	(6)	(7)	(17)	(18)	(17)	(19)
transfers from local governments	(-)	(-)	(-)	(-)	(1)	(1)	(1)
transfers from autonomous institutions	(1)	(-)	(1)	(1)	(1)	(1)	(1)
Investment expenditure	748	776	829	1004	1018	1278	1410
Fixed investment	571	625	644	758	819	768	922
Purchase of existing assets	95	88	154	71	21	265	170
Capital transfers	82	63	31	175	178	245	318
of which: to state enterprises	(7)	(53)	(3)	(66)	(59)	(37)	(45)
to local governments	(34)	(2)	(4)	(14)	(67)	(35)	(50)
to autonomous institutions	(-)	(-)	(19)	(83)	(2)	(151)	(187)
Overall surplus (+) or deficit (-)	-760	-502	-265	-930	-893	-930	-886

/a Includes General Budget, Independent Government Entities ("Entidades Adscritas"), Special Accounts and Schools.

/b Includes sales of existing assets and incoming capital transfers.

Source: National Planning and Coordination Board and mission estimates.

Table 5.17: OPERATION OF STATE ENTERPRISES, 1965-71 /a

	ACTUALS					Prelim.	Estimate
	1965	1966	1967	1968	1969	1970	1971
Current receipts	202	213	251	295	317	339	373
of which: transfers from Central Government	(-)	(-)	(-)	(-)	(-)	(-)	(-)
transfers from local governments	(-)	(-)	(-)	(-)	(-)	(-)	(-)
transfers from autonomous institutions	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Current expenditure	158	146	164	191	183	201	224
Purchase of goods and services	122	128	146	169	156	173	194
Interest payments	12	14	-	1	-	-	-
Current transfers	24	4	18	21	27	28	30
of which: to Central Government	(-)	(-)	(-)	(-)	(-)	(-)	(-)
to local governments	(-)	(-)	(-)	(-)	(-)	(-)	(-)
to autonomous institutions	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Current surplus	44	67	87	104	134	138	149
Capital receipts /b	7	53	3	66	59	37	45
of which: transfers from Central Government	(7)	(53)	(3)	(66)	(59)	(37)	(45)
transfers from local governments	(-)	(-)	(-)	(-)	(-)	(-)	(-)
transfers from autonomous institutions	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Investment expenditure	56	61	76	120	226	436	460
Fixed investment	42	53	64	71	114	329	350
Purchase of existing assets	9	2	5	7	85	80	80
Capital transfers	5	6	7	42	27	27	30
of which: to Central Government	(5)	(6)	(7)	(17)	(18)	(17)	(19)
to local governments	(-)	(-)	(-)	(-)	(-)	(-)	(-)
to autonomous institutions	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Overall surplus (+) or deficit (-)	-5	59	14	50	-33	-261	-266

/a Includes National Telecommunications Enterprise, National Railroads Enterprise, State Alcohol Enterprise, National Mail Enterprise, and Suppliers, Warehouses and Printing Enterprise.

/b Includes sales of existing assets and incoming capital transfers.

Source: National Planning and Coordination Board and mission estimates.

Table 5.18: OPERATIONS OF LOCAL GOVERNMENTS, 1965-71 /a

(Millions of Sucres)

	ACTUALS						Estimate
	1965	1966	1967	1968	1969	1970	1971
Current receipts	500	523	557	696	743	765	857
of which: transfers from Central Government	(-)	(4)	(4)	(21)	(34)	(1)	(-)
transfers from state enterprises	(-)	(-)	(-)	(-)	(-)	(-)	(-)
transfers from autonomous institutions	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Current expenditure	348	369	397	443	476	504	581
Purchase of goods and services	325	345	369	409	441	467	542
Interest payments	-	-	-	-	-	-	-
Current transfers	23	24	28	34	35	37	39
of which: to Central Government	(7)	(7)	(9)	(14)	(14)	(15)	(16)
to state enterprises	(-)	(-)	(-)	(-)	(-)	(-)	(-)
to autonomous institutions	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Current surplus	152	154	160	253	267	261	276
Capital receipts /b	60	28	33	52	107	66	80
of which: transfers from Central Government	(34)	(2)	(4)	(14)	(67)	(35)	(50)
transfers from state enterprises	(-)	(-)	(-)	(-)	(-)	(-)	(-)
transfers from autonomous institutions	(2)	(2)	(5)	(3)	(5)	(4)	(5)
Investment expenditure	176	161	170	223	287	330	381
Fixed investment	154	150	158	212	267	312	362
Purchase of existing assets	20	10	9	7	14	14	14
Capital transfers	2	1	3	4	6	4	5
of which: to Central Government	(-)	(-)	(-)	(-)	(1)	(1)	(1)
to state enterprises	(-)	(-)	(-)	(-)	(-)	(-)	(-)
to autonomous institutions	(1)	(1)	(3)	(4)	(5)	(3)	(4)
Overall surplus (+) or deficit (-)	+36	+21	+23	+82	+87	-3	-25

/a Includes Municipalities, Provincial Councils and Municipal Enterprises (Public Entities).

/b Includes sales of existing assets and incoming capital transfers.

Source: National Planning and Coordination Board and mission estimates.

Table 5.19: OPERATION OF AUTONOMOUS INSTITUTIONS, 1965-71 /a

(Millions of Sucres)

	ACTUALS						Estimate
	1965	1966	1967	1968	1969	1970	1971
Current receipts	822	838	970	1102	1164	1163	1270
of which: transfers from Central Government	(138)	(94)	(126)	(204)	(297)	(237)	(251)
transfers from state enterprises	(-)	(-)	(-)	(-)	(-)	(-)	(-)
transfers from local governments	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Current expenditure	633	720	805	902	970	1013	1087
Purchase of goods and services	530	606	693	745	805	845	913
Interest payments	-	-	-	-	-	-	-
Current transfers	103	114	112	157	165	168	174
of which: to Central Government	(6)	(5)	(3)	(4)	(4)	(5)	(6)
to state enterprises	(-)	(-)	(-)	(-)	(-)	(-)	(-)
to local governments	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Current surplus	189	118	165	200	194	150	183
Capital receipts /b	141	149	214	367	259	407	446
of which: transfers from Central Government	(-)	(3)	(19)	(83)	(2)	(151)	(187)
transfers from state enterprises	(-)	(-)	(-)	(-)	(-)	(-)	(-)
transfers from local governments	(1)	(1)	(3)	(4)	(5)	(3)	(4)
Investment expenditure	276	290	455	410	401	566	655
Fixed investment	242	265	375	394	379	544	631
Purchase of existing assets	31	23	74	10	14	15	15
Capital transfers	3	2	6	6	8	7	9
of which: to Central Government	(1)	(-)	(1)	(1)	(1)	(1)	(1)
to state enterprises	(-)	(-)	(-)	(-)	(-)	(-)	(-)
to local governments	(2)	(2)	(5)	(3)	(5)	(4)	(5)
Overall surplus (+) or deficit (-)	+54	-23	-76	+157	+52	-9	-26

/a Includes decentralized or autonomous entities, and public or private institutions with a social or public purpose. Excludes public financial entities (e.g. social security).

/b Includes sales of existing assets and incoming capital transfers.

Source: National Planning and Coordination Board and mission estimates.

Table 5.20: CONSOLIDATED OPERATIONS OF THE PUBLIC SECTOR, 1965-71

(Millions of Sucres)

	ACTUALS						Estimate
	1965	1966	1967	1968	1969	1970	1971
Current receipts	3557	3671	4335	4667	5136	6176	7091
Current expenditure	3194	3074	3367	4054	4507	5305	5988
Purchase of goods and services	2676	2483	2818	3385	3695	4329	4926
Interest payments	247	319	275	316	386	609	691
Transfers to private sector and abroad	271	272	274	353	426	367	371
Current account surplus	363	597	968	613	629	871	1103
Capital receipts /a	168	179	216	315	358	287	288
Investment expenditure	1206	1221	1488	1569	1774	2361	2594
Fixed investment	1009	1093	1241	1435	1579	1953	2265
Purchase of existing assets	155	123	242	95	134	374	279
Transfers to private sector and abroad	42	5	5	39	61	34	50
Overall surplus (+) and deficit (-)	-675	-445	-304	-641	-787	-1203	-1203

/a Includes National Telecommunications Enterprise, National Railroads Enterprise, State Alcohol Enterprise, National Mail Enterprise, and Suppliers, Warehouses and Printing Enterprise.

Source: National Planning and Coordination Board and mission estimates.

Table 5.21: CENTRAL GOVERNMENT CURRENT REVENUES 1965-71 /a
(in millions of sucres)

	ACTUALS						ESTIMATE
	1965	1966	1967	1968	1969	1970	1971/b
Current Revenue	2373	2408	2938	3094	3560	4486	5215
Petroleum	-	-	-	-	-	-	-
Nonpetroleum	2373	2408	2938	3094	3560	4486	5215
Tax	1797	1874	2306	2467	2665	3534	4165
Export	194	189	199	210	146	530	594
Import	896	998	1302	1388	1396	1521	1624
Sales and excise	228	217	268	311	386	604	1001
Income	278	293	312	331	417	560	580
Property	28	29	30	27	27	30	34
Other	173	148	195	200	293	289	332
Nontax	576	534	632	627	895	952	1050

/a Includes General Budget, Independent Government Entities ("Entidades Adscritas"). State enterprises, special accounts, and schools.

/b Based on Ministry of Finance partial data.

Source: National Planning and Coordination Board, Ministry of Finance and mission estimates.

/a

Table 5.22: REST OF PUBLIC SECTOR CURRENT REVENUES 1965-71
(in millions of sucres)

	ACTUALS						ESTIMATE
	1965	1966	1967	1968	1969	1970	1971
Current Revenue-	1184	1263	1397	1573	1575	1690	1876
Petroleum	-	-	-	-	-	-	-
Nonpetroleum	1184	1263	1397	1573	1576	1690	1876
Tax	691	723	788	917	920	1019	1178
Export	48	36	35	53	48	40	115
Import	174	138	159	134	156	203	238
Sales and excise	216	218	179	212	259	207	203
Income	27	41	34	85	85	97	112
Property	115	131	145	164	160	271	302
Other	111	159	236	269	212	201	178
Nontax	493	540	609	656	656	671	698

/a Includes Municipalities and Municipal Enterprises, Provincial Councils, decentralized or autonomous entities, and public or private institutions with a social or public purpose.

Source: National Planning and Coordination Board for 1965-70, and Ministry of Finance partial data and staff estimates for 1971.

Table 5.23: TOTAL PUBLIC REVENUE /a AND CENTRAL GOVERNMENT SHARE, 1965-71
(million sucres)

	1965		1966		1967		1968		1969		1970		1971	
	Total	CG/b	Total	CG	Total	CG	Total	CG	Total	CG	Total	CG	Total	CG
Total	3,906	1,980	4,254	2,192	5,000	2,626	5,517	2,911	6,365	3,356	6,995	3,791	6,987	4,120
Taxes	2,624	1,695	2,871	1,849	3,310	2,268	3,688	2,510	4,000	2,717	4,894	3,557	5,204	3,626
Export Taxes	290	152	276	130	282	140	307	153	301	157	613	515	770	480
Import Duties	1,018	806	1,201	962	1,568	1,303	1,703	1,460	1,739	1,447	1,882	1,565	1,823	1,520
Income Tax	370	295	400	323	429	337	433	358	536	453	759	577	717	546
Property Taxes /c	246	48	276	42	304	45	333	45	366	51	365	77	320	61
Transp. Taxes	45	24	47	27	52	30	63	37	78	48	61	31	88	62
Sales and Excise	533	274	529	265	560	285	640	300	738	399	911	574	1,107	838
Stamps	130	90	134	97	166	123	194	157	212	159	259	167	259	110
Others	10	6	8	3	9	5	15	-	30	3	51	51	120	9
Nontax Revenue	1,264	285	1,383	343	1,690	358	1,829	401	2,365	639	2,101	234	1,783	494
Fees	526	169	580	191	662	216	717	250	787	267	750	110	952	217
Income from Property	500	17	543	18	647	20	737	71	1,221	241	784	72	245	76
Oil Royalties														
Other Income	238	99	260	134	381	122	375	80	357	131	567	52	586	201
Tax Revenues as % of GDP	13.0		12.9		13.4		13.7		13.4		14.2		12.9	
Total Revenues as % of GDP	19.2		19.0		20.3		20.5		21.3		20.3		17.3	

/a Total public revenue excludes revenue of Social Security Institute and other public financial entities.
/b CG= Central Government.
/c These include rural and urban property taxes, taxes on inheritance and gifts, and other taxes lumped together under the title "Impuestos de Capital."

Observations: The figures from the two sources are calculated on an accrual basis. Central Bank figures include certain state enterprises and Cuentas Especiales in central government figures - whenever necessary allowance was made for them in Ministry of Finance figures. Both sources regard the Entidades Adscritas as public entities other than the central government. The sharp increase in the 1969 figures for income from property is partly due to advance payment of oil royalties.

Sources: Central Bank data for central government 1965-70, and for total 1965-69. Ministry of Finance data for total 1970 and for central government and total export taxes and import duties in 1971.

VI. MONETARY STATISTICS

Table No.

Table 6.1: SUMMARY ACCOUNTS OF THE CENTRAL BANK, COMMERCIAL BANKS AND THE NATIONAL DEVELOPMENT BANK, 1965-71

(In millions of sucres)

	1965/a	1966/a	1967/a	1968/a	1969/a	1969/b	1970/b	1971/b
				a. Central Bank				
Net international reserves	687	889	1049	846	924	1283	1379	661
Domestic credit	1582	1745	1716	2394	3298	2969	4174	4899
Central Government (net)	563	701	516	1061	1557	1550	2101	2727
Rest of public sector (net)	8	1	-52	-172	-89	-93	-247	-117
To banks	296	264	320	367	585	585	601	566
To private sector	562	585	549	712	825	825	1094	1154
Unclassified assets (net)	153	194	383	426	420	102/c	625	569
Liabilities to banks	611	770	819	983	1289	1316	1656	1966
Commercial banks	546	675	730	867	1165	1192	1471	1770
Development banks	65	95	89	116	124	124	185	196
Liabilities to private sector	1570	1773	1855	2154	2841	2844	3801	3493
Currency outside bank	1215	1320	1371	1564	1702	1702	2273	2342
Demand deposits	95	84	63	54	82	82	93	80
Advance import deposits	189	310	366	436	952	952	1181	693
Other	71	59	55	100	105	108	254	378
Capital and surplus	88	91	91	103	92	92	96	101
				b. Private Commercial Banks				
Net international reserves	64	81	73	115	118	164	23	39
Domestic reserves	587	756	833	1035	1366	1400	1652	2066
Domestic credit	2998	3224	3943	4733	5040	5067	5859	6663
Central Government (net)	4	2	6	7	17	17	33	43
Rest of public sector (net)	23	21	27	33	29	29	85	159
Development bank	2	1	-	-	3	3	4	6
Private sector	2537	2707	3286	3894	4099	4099	4878	5419
Unclassified assets (net)	432	493	624	799	892	919/c	859	1036
Liabilities	3282	3684	4399	5379	5936	6043	6831	7976
To Central Bank	65	33	67	86	91	91	123	42
To development bank	-	-	-	-	-	-	-	-
To private sector	3217	3651	4332	5293	5845	5952	6708	7934
Capital and surplus	386	397	473	531	617	617	736	828
Interbank shares	-19	-20	-23	-27	-29	-29	-33	-36
				c. National Development Bank				
Net international reserves	-	-	-	-	-	-	-	-
Domestic reserves	59	92	84	107	109	109	154	179
Domestic credit	1086	1022	1094	1174	1462	1522	1458	1684
Central Government (net)	-	-	-	-	-	-	-	-
Rest of public sector (net)	-57	-62	-71	-102	-138	-138	-162	-229
Commercial banks	1	-	-	-	-	-	-	-
Private sector	1007	1006	1108	1215	1464	1464	1555	1749
Unclassified assets (net)	135	78	57	61	136	196/c	65	164
Medium and long term Foreign liabilities	159	148	149	159	155	215	159	188
Domestic liabilities	447	474	475	544	782	782	773	944
To Central Bank	202	222	229	267	525	525	453	519
To commercial banks	41	48	59	73	73	73	89	126
To private sector	204	204	187	204	184	184	231	299
Capital and surplus	540	492	554	578	634	634	681	731

/a Accounts denominated at the rate of S/18 per US dollar.
/b Accounts denominated at the rate of S/25 per US dollar.
/c Includes devaluation adjustment.

Source: Superintendency of Banks, Central Bank of Ecuador, and IMF.

Table 6.2: SUMMARY ACCOUNTS OF THE BANKING SYSTEM, 1965-71

(In millions of US dollars)

	1965 /a	1966 /a	1967 /a	1968 /a	1969 /a	1969 /b	1970 /b	1971 /b
Net international reserves	751	970	1122	961	1042	1447	1402	700
Domestic credit	5367	5766	6496	8034	9297	9062	10977	12838
Central Government (net)	567	703	522	1068	1574	1567	2134	2770
Rest of public sector (net)	-26	-40	-96	-241	-198	-202	-324	-187
Private sector	4106	4298	4943	5821	6388	6388/c	7527	8321
Unclassified assets (net)	720	765	1064	1286	1448	1217	1550	1769
Interbank float	26	40	63	100	85	92	90	165
Medium- and long-term foreign liabilities /d	158	148	149	159	155	215	159	188
Liabilities to private sector	5446	6096	6915	8258	9550	9660	11539	12619
Money	2599	2931	3281	3845	4361	4361	5428	6058
Currency outside banks	1215	1320	1371	1564	1702	1702	2273	2342
Demand deposits	1384	1611	1910	2281	2659	2659	3155	3716
Quasi-money	2847	3165	3634	4413	5189	5299	6111	6561
Advance import deposits	189	310	366	436	952	952	1181	693
Other	2203	2387	2727	3370	3557	3667	4131	4975
Private capital and surplus	455	468	541	507	680	680	799	893
Official capital and surplus /e	540	492	554	578	634	634	681	731

/a Accounts denominated at the rate of S/18 per U.S. dollar.
/b Accounts denominated at the rate of S/25 per U.S. dollar.
/c Includes devaluation adjustment.
/d Includes counterpart funds and funds in administration.
/e National Development Bank.

Sources: Superintendency of Banks, Central Bank of Ecuador, and IMF.

Table 6.3: INTERNATIONAL RESERVES OF THE BANKING SYSTEM, 1965-71

(In millions of US dollars)

	1965	1966	1967	1968	1969	1970 /a	1971
Total net reserves	41.7	53.9	62.3	53.4	57.9	56.1	26.5
Central Bank (net)	38.1	49.4	58.3	47.0	51.3	55.2	24.9
Assets	45.9	61.1	69.1	57.3	65.0	83.3	62.8
Gold	11.2	11.0	17.1	26.2	22.1	19.0	18.7
Foreign exchange	30.4	45.2	43.6	17.6	27.5	40.6	27.9
IMF gold tranche position	-	-	-	0.5	-	-	-
SDR's	-	-	-	-	-	0.1	3.3
Payments agreements	-	-	3.7	7.1	8.1	9.0	7.4
Other assets	4.3	4.9	4.7	5.9	7.3	14.6	5.5
Liabilities	7.8	11.7	10.8	10.3	13.7	28.1	37.9
To IMF	6.0	11.0	10.2	-	12.3	13.7	5.5
Other liabilities	1.8	0.6	0.4	9.9	1.2	8.3	29.0
Payments Agreements	-	0.1	0.2	0.4	0.2	6.1	3.4
Commercial Banks (net)	3.6	4.5	4.0	6.4	6.6	0.9	1.6

/a Until the third quarter of 1970 the exchange rate used is S/18 per U.S. dollar. Afterwards it is S/25 per U.S. dollar.

Source: Central Bank of Ecuador.

VII. AGRICULTURAL STATISTICS

Table 7.1: AREA UNDER MAIN AGRICULTURAL CROPS, 1962-70

(In thousands of hectares)

	1962	1963	1964	1965	1966	1967	1968	1969	1970
Domestic Crops									
Rice	110	113	109	103	111	114	112	92	87
Barley	151	165	164	157	143	144	135	126	134
Corn	197	246	300	307	267	254	255	291	292
Wheat	84	67	71	69	65	80	79	79	76
Potatoes	33	32	39	44	44	48	49	41	47
Beans	42	48	56	55	82	79	86	85	82
Exportables									
Bananas	111	122	169	210	187	203	195	190	192
Cacao	147	167	163	247	291	264	253	228	228
Coffee	135	159	164	166	218	208	191	214	215
Sugarcane	65	72	93	97	113	119	122	124	125

Source: National Planning Board.

Table 7.2: PRODUCTION OF MAIN AGRICULTURAL CROPS, 1962-70
(Thousands of metric tons)

	1962	1963	1964	1965	1966	1967	1968	1969	1970
Domestic Crops									
Rice	103	105	91	86	111	111	65	83	117
Barley	104	121	80	92	77	81	76	78	110
Corn	137	190	127	189	175	228	129	141	170
Wheat	77	67	62	65	63	79	83	94	81
Potatoes	332	298	320	391	347	399	510	457	542
Beans	21	27	25	31	36	38	35	38	41
Exportables									
Bananas	2,308	2,296	3,037	3,067	2,744	4,355	3,920	5,388/a	3,688
Cacao	44	45	34	47	51	61	50	48	54
Coffee	53	55	46	65	74	66	63	56	60
Sugarcane	5,917	6,442	7,652	8,087	9,004	7,528	9,829	9,994	10,075

/a This figure was later revised downwards to 3,870.499 metric tons by the Ministry of Production.

Source: National Planning Board.

Table 7.3 NUMBER OF FARMS AND AREA, BY SIZE AND FORM OF TENURE, 1968

Farm Size Groups (Hectares)	All Forms of Tenure				Owner-Operated				Other Forms of Tenure			
	Number of Farms		Area		Number of Farms		Area		Number of Farms		Area	
	No.	Percent of Total	Hectares	Percent of Total	No.	Percent of Total	Hectares	Percent of Total	No.	Percent of Total	Hectares	Percent of Total
All Sizes	633,218	100.0	6,937,520	100.0	480,479	100.0	5,736,428	100.0	152,739	100.0	1,201,092	100.0
Less than 1	206,273	32.6	93,018	1.3	169,955	35.4	74,196	1.3	36,318	23.8	18,822	1.6
More than 1 to 5	264,074	41.7	615,556	8.9	181,354	37.7	420,660	7.3	82,720	54.2	194,896	16.2
More than 5 to 10	68,527	10.8	466,315	6.7	51,096	10.6	345,796	6.0	17,431	11.4	120,519	10.0
More than 10 to 20	36,228	5.7	485,572	7.0	29,118	6.1	388,805	6.8	7,110	4.7	96,767	8.1
More than 20 to 50	32,746	5.2	1,018,315	14.7	28,090	5.8	870,319	15.1	4,656	3.0	147,996	12.3
More than 50 to 100	15,555	2.5	976,653	14.1	12,447	2.6	810,074	14.1	3,108	2.0	166,579	13.9
More than 100 to 500	8,467	1.3	1,647,904	23.7	7,246	1.5	1,448,554	25.2	1,221	0.1	199,350	16.6
More than 500 to 1,000	922	(-0-	634,554	9.1	806	(-0-	548,201	9.5	116	(-0-	86,353	7.2
More than 1,000	426	(0.2 (-0-	999,633	14.5	367	(0.3 (-0-	829,823	14.5	59	(0.8 (-0-	169,810	14.1

Source: Encuesta Agropecuaria Nacional, 1968.

Table 7.4: AGRICULTURAL INCOME DISTRIBUTION, 1965

Decile	Percent of Total Income	Total Income (millions of sucres)	Income Per Active Person (Sucres)
First (lowest)	2.0	171.1	1,820
Second	2.4	205.2	2,183
Third	2.6	223.2	2,374
Fourth	3.0	257.4	2,738
Fifth	3.4	291.6	3,102
Sixth	4.6	392.4	4,174
Seventh	5.0	428.4	4,557
Eighth	6.6	565.2	6,013
Ninth	12.4	1,060.2	11,278
Tenth	58.0	4,959.0	52,755
TOTALS	100.0	8,553.6	9,100 (avg.)

Source: ECLA, El Segundo Decenio de las Naciones Unidas para el Desarrollo--El Desarrollo Agricola en America Latina, Document No E/CN.12/829 (1969?). Cited in Ecuador, Junta Nacional de Planificacion y Coordinacion Economica, Secretaria General de Planeacion Economica, El Desarrollo del Ecuador, 1970-1973.

Table 7.5: PERCENT DISTRIBUTION OF AGRICULTURAL PRODUCTION BY SIZE OF FARM AND REGIONS, 1954

(Total Production in Sucres)

Size of Farm (has.)	Total No. of Has.	Value of Production	% of Production			Production per ha.
			Total	Andean Region	Coastal Plain	
Less than 1	46,000	52,274,100	1.6	3.6	0.7	1,136
1.0 - 4.9	386,200	478,271,700	14.2	25.3	9.5	1,238
5.0 - 9.9	271,500	327,775,200	9.8	11.4	9.1	1,207
10.0 - 19.9	294,300	363,165,600	10.8	10.0	11.2	1,234
20.0 - 49.9	591,500	593,871,500	17.7	12.0	20.1	1,004
50.0 - 99.9	547,200	409,799,500	12.2	11.0	12.7	749
100.0 - 199.9	462,900	282,395,700	8.4	6.6	9.2	610
200.0 - 499.9	693,400	297,235,700	8.9	7.5	9.5	429
500.0 and over	2,706,700	549,705,400	16.4	12.2	18.0	203
	5,999,700	3,354,494,400	100.0	99.6	100.0	559 (avg.)

Source: Agricultural Census - 1954

Table 7.6: VALUE OF PRODUCTION PER PERSON BY SIZE OF FARM, 1968

Size of Farm (has.)	Thousands of sucres per worker
All sizes	3,290
0 - 1	575
1 - 4.9	1,426
5 - 9.9	2,630
10 - 19.9	4,206
20 - 49.9	4,838
50 - 99.9	6,760
500 - 999.9	13,552
1,000 and more	7,586

Source: Encuesta Agropecuaria Nacional, 1968.

Table 7.7: FAMILIES SETTLED BY THE AGRARIAN REFORM AND COLONIZATION PROGRAM, SEPTEMBER 1, 1964 THROUGH JUNE 30, 1970

	1964 /d	1965	1966	1967	1968	1969	1970 /e	Total /f
	Number of families							
Land Redistribution								
Through Expropriation /a	0	460	874	531	432	1,510	136	3,943
Through Tenancy Conversion /b	831	12,157	2,913	2,792	760	549	71	20,073
Of Public Lands /c	0	0	925	1,129	692	1,404	98	4,248
Total	831	12,617	4,712	4,452	1,884	3,463	305	28,264
Colonization	728	2,686	2,708	1,567	1,408	1,525	1,186	11,808
Total /f	1,559	15,303	7,420	6,019	3,292	4,988	1,491	40,072

/a And other means of making private land available for redistribution (i.e., reversiones and negociaciones).
/b Convicting "Formas Precarias de Teneneis" to ownership status.
/c Land held by the social security system.
/d September through December.
/e Through June.
/f Because of rounding data may not add to totals shown.

Source: IERAC, Estadisticas De Las Adjudicaciones Legalizadas En Reforma Agraria Y Colonizacion, September 1970.

Table 7.8: AREA SETTLED BY THE AGRARIAN REFORM PROGRAM, SEPTEMBER 1, 1964 THROUGH JUNE 30, 1970

	1964 /d	1965	1966	1967	1968	1969	1970/e	Total/f
	Thousand Hectares							
Land Redistribution								
Through Expropriation /a	0	10.1	10.5	7.5	9.8	14.7	2.5	55.0
Through Tenancy Conversion/b	2.2	46.5	14.6	12.7	8.8	2.8	0.2	87.8
Of Public Lands /c	0	0	1.7	4.9	2.4	3.2	0.3	12.6
Total	2.2	56.6	26.8	25.1	21.0	20.7	3.0	155.4
Colonization	17.6	97.8	92.1	58.4	43.0	59.6	47.2	415.8
Total /f	19.8	154.4	118.9	83.6	64.0	80.4	50.1	571.2

/a And other means of making private land available for redistribution (i.e., reversiones and negociaciones).
/b Convicting "Formas Precarias de Teneneis" to ownership status.
/c Land held by the social security system.
/d September through December.
/e Through June.
/f Because of rounding data may not add to totals shown.

Source: IERAC, Estadisticas De Las Adjudicaciones Legalizadas En Reforma Agraria Y Colonizacion, September, 1970

Table 7.9: CHANGES IN SIZE DISTRIBUTION OF FARMS FROM 1954 TO 1968

Size of Farms	Number of Farms			Total Area			Average Size		Percent Distribution: No. of Farms		Percent Distribution: Total Area	
	1954	1968	Percentage Increase	1954	1968	Percentage Increase	1954	1968	1954	1968	1954	1968
Less than 5 Has.	251,686	470,347	86.9	432,000	709,000	64.1	1.72	1.51	73.0	74.2	7.2	10.2
5 to less than 10 Has.	36,250	68,527	89.0	271,500	466,315	71.5	7.49	6.80	10.5	10.8	4.5	6.7
10 to less than 20 Has.	21,400	36,228	69.3	294,300	485,572	65.0	13.75	13.40	6.5	5.7	4.9	7.0
20 to less than 50 Has.	19,415	32,746	68.6	591,500	1,018,315	72.1	30.47	31.10	5.6	5.2	9.9	14.7
50 to less than 100 Has.	8,327	15,555	86.8	547,200	976,653	78.5	65.71	62.79	2.4	2.5	9.1	14.1
100 to less than 500 Has.	5,787	8,467	46.3	1,156,300	1,647,904	42.5	199.81	194.63	1.7	1.3	19.2	23.8
500 to less than 1,000 Has.	664	922	38.8	464,700	634,554	36.5	699.85	688.24	0.2	0.2	7.8	9.1
1,000 or more	705	426	- 39.4	2,242,000	999,633	- 55.4	3,180.14	2,346.55	0.1	0.1	37.4	14.4
Total Republic	344,234	633,218	83.9	5,999,500	6,937,946	15.6	17.43	10.96	100.0	100.0	100.0	100.0

Source: 1954 -- First Agricultural Census.
1960 -- National Agricultural Survey.

Table 7.10: DISTRIBUTION OF PRODUCTION OF SELECTED CROPS BY SIZE OF FARM, 1968

Crop	Total		Share in Harvested Area and total No. of Farms					
			Less than 5 Has.		5 - 99.9 Has.		Greater than 100 Has.	
	% of Harvested Area	% of Number of Farms	% of Harvested Area	% of Number of Farms	% of Harvested Area	% of Number of Farms	% of Harvested Area	% of Number of Farms
Corn	100.0	100.0	45.0	75.7	38.0	23.2	17.0	1.1
Yucca	100.0	100.0	30.6	47.7	51.9	50.2	17.5	2.1
Potato	100.0	100.0	39.2	83.7	27.2	85.0	33.6	1.3
Kidney Bean	100.0	100.0	39.8	69.5	38.6	28.8	21.6	1.7
Wheat	100.0	100.0	28.2	73.4	34.6	25.2	37.2	1.4
Rice	100.0	100.0	24.2	60.3	34.6	37.5	41.2	2.2
Coffee	100.0	100.0	16.3	41.9	55.0	55.4	28.7	2.7
Cocoa	100.0	100.0	6.0	27.1	46.1	68.2	47.9	4.7
Banana	100.0	100.0	3.0	26.6	26.9	66.2	70.1	7.1
Sugar Cane	100.0	100.0	10.1	50.6	26.9	45.9	63.0	2.5
Cotton	100.0	100.0	14.5	51.1	29.5	45.1	56.0	3.8

Source: Encuesta Agropecuaria Nacional, 1968.

Table 7.11: DISTRIBUTION OF TOTAL VALUE OF CROP PRODUCTION AND AREA IN CROPS /a BY SIZE OF FARM, 1968

Size of Farms Hectares	Value of Crop Production			Area in Crop			Value/Hectare
	Sucres	Percent	Percent cumulative	Hectares	Percent	Percent Cumulative	Sucres
0 to 1	147,831,694	3.2	3.2	76,498	3.9	3.9	1.932
1 to 5	652,978,934	14.1	17.3	417,402	21.5	25.5	1.564
5 to 10	439,654,674	9.4	26.7	257,351	13.3	38.7	1.708
10 to 20	473,760,537	10.2	36.9	203,919	10.5	49.3	2.323
20 to 50	756,468,074	16.3	53.2	285,300	14.7	64.0	2.651
50 to 100	580,091,658	12.5	65.7	197,381	10.2	74.2	2.939
100 to 500	943,320,196	20.3	86.0	306,453	15.8	90.0	3.078
500 to 1,000	392,062,061	8.5	94.5	123,408	6.4	96.3	3.177
1,000 and over	255,745,201	5.5	100.0	71,374	3.7	100.0	3.583
All Farms	4,641,913,029	100.0		1,939,086	100.0		2,394

/a Refers only to crops included in the calculation of Total Value of Crop Production.

Source: Encuesta Agropecuaria Nacional, 1968.

Table 7.12: VALUE OF PRODUCTION PER WORKER AND AVERAGE FARM SIZE, BY REGIONS AND PROVINCES, 1968

Regions and Provinces	Value of Prod. Per Worker (sucres)	Average Farm Size (hectares)
Ecuador, total	3,290	11.0
Sierra, total	2,141	6.8
Pichincha	5,275	23.7
Carchi	2,978	11.7
Cañar	2,408	6.9
Imbabura	2,025	6.8
Cotopaxi	2,120	6.2
Bolívar	1,904	5.9
Loja /a	909	5.3
Chimborazo	1,776	4.7
Azuay	770	3.8
Tungurahua	1,716	2.3
Costa, total	4,728	17.8
Esmeraldas	9,752	35.0
Los Ríos	7,048	26.3
Guayas	4,915	16.3
El Oro	3,871	19.4
Manabí	2,935	13.8

/a Suffered particularly hard from the 1968 drought.

Source: Encuesta Agropecuaria Nacional, 1968.

Table 7.13: REGIONAL DISTRIBUTION OF AGRICULTURAL PRODUCTION BY CROPS, 1968

(In percent)

	Total	Sierra	Coast	Oriente
Cotton	100.0	2.2	97.8	-
Rice	100.0	2.3	97.7	-
Bananas	100.0	23.7	76.3	-
Plantains	100.0	14.3	77.6	8.1
Coffee	100.0	11.3	87.4	1.3
Cacao	100.0	8.2	91.8	-
Corn	100.0	59.0	38.0	3.0
Peanuts	100.0	20.2	78.1	0.7
Pineapple	100.0	22.2	69.7	8.1
Cabbage	100.0	99.6	-	0.4
Green beans	100.0	81.8	18.2	-
Dry beans	100.0	95.9	3.3	0.8
Lima beans	100.0	98.7	1.3	-
Potatoes	100.0	99.8	0.2	-
Onions	100.0	100.0	-	-
Wheat	100.0	99.9	0.1	-
Barley	100.0	100.0	-	-
Peas	100.0	100.0	-	-
Milk	100.0	76.9	19.2	3.9
Livestock (stock)	100.0	54.2	41.6	4.2
Livestock (slaughtered)	100.0	54.6	34.4	11.0

Source: Encuesta Agropecuaria Nacional, 1968.

Table 7.14: CHANGES IN LAND USE 1954-1968

	1954 Census	1968 Encuesta (hectares)	Increase (Percent)	Rate of Growth (Percent Per Year)
Total area		27,067,000		
Number of farms	344,234	633,218	83.95	4.4
Area in farms	5,999,700	6,937,520	15.63	1.0
Percent of total area in farms	22.17%	25.63%		
Average acreage per farm	17.43	10.96	-37.12	-2.8
Size of modal farm	2.4	1.9	-20.83	-1.37
Area in annual crops	896,600	1,220,600	36.14	2.2
Area in semi-permanent crops		396,558		
Area in permanent crops	315,300	575,940	82.66	4.4
Area in all crops	1,214,900	2,193,098	80.52	4.3
Area in fallow or resting	348,000	445,955	28.15	1.8
Total crop land	1,562,900	2,639,053	68.86	3.8
Cropland in food crops	1,070,560	1,888,240	76.38	4.1
Average cropland per farm	4.53	4.17	-7.95	-0.5
Cultivated pasture	520,800	1,176,767	125.93	6.0
Total tillable land	2,181,000	3,815,820	74.96	4.1
Average per farm	6.40	6.03	-5.78	-0.4
Ratio tillable land to area in farms	34.69	55.00		
Ratio tillable land to total area	7.69	14.10		
Natural pasture	1,254,500	865,614	-31.00	-2.6
Total pasture	1,774,300	2,042,381	15.11	1.0
Total cropland and pasture	3,335,500	4,681,431	40.35	2.5
Average cropland and pasture per farm	9.69	7.39	-23.74	-1.55
Cropland and pasture as % of land in farms	55.59	67.48		
Cropland and pasture as % of total area	12.32	17.30		

Source: Primer Censo Agropecuario Nacional 1954. Ministerio de economia, Quito 1965.

Encuesta Agropecuario Nacional 1968. Secretaria General de Planeacion Economica, Junta de Planificacion y Coordinacion, Quito 1969.

Table 7.15: BANK CREDIT TO THE AGRICULTURAL SECTOR, 1950-71

(Millions of current sucres)

	Agricultural Credit by Type of Banking Institution				Total Bank Credit	Agricultural Credit as a % of Total Bank Credit
	Banco Ncl. de Fomento	Central Bank /a	Private Banks	Total		
1950	192.1	154.8	31.3	378.2	1,723,3	21.9
1951	161.3	149.9	20.2	331.4	1,924.7	17.2
1952	186.8	39.0	20.5	246.3	2,049.7	12.0
1953	195.0	23.3	31.2	249.5	2,218.9	11.2
1954	199.7	27.2	45.3	272.2	2,462.2	11.1
1955	260.6	36.1	53.2	349.9	2,823.6	12.4
1956	253.7	44.4	51.9	350.0	3,030.9	11.5
1957	301.6	36.8	67.7	406.1	3,383.5	12.0
1958	265.6	58.9	83.5	408.0	3,246.4	12.6
1959	189.5	40.0	93.6	323.1	3,281.1	9.8
1960	188.8	36.3	109.1	334.2	3,682.1	9.1
1961	234.2	114.2	102.5	450.9	4,044.2	11.1
1962	183.9	108.5	93.9	386.3	4,009.0	9.6
1963	201.9	104.4	98.8	405.1	4,382.6	9.2
1964	246.9	101.0	161.2	509.1	6,275.0	8.1
1965	253.4	133.1	344.0 /c	730.5	6,292.8	11.6
1966	304.8	153.2	482.4	940.4	6,487.0	14.5
1967	354.0	186.3	469.8	1,010.1	7,592.0	13.3
1968	438.9	148.1	481.4	1,068.4	8,984.5	11.9
1969	470.1	198.1	585.3	1,253.5	9,303.6	13.5
1970	531.0	215.3	840.5	1,586.8	11,309.5	14.0
1971/b	..	..	..	..	..	..

/a Direct credit by the Central Bank. Excluded are Central Bank credit to banking institutions, Central Bank credit for future exports, and utilization by the government of overdrafts on the Central Bank.

/b Partial figures for 1971 are:

. Private Banks:		BNF	
1970 Jan-June	403.1	1970 Jan-Aug.	346.1
1971 Jan-June	369.8	1971 Jan-Aug.	364.9

/c The substantial increase from the previous year is largely fictitious, since in order to meet a new legal stipulation to maintain agricultural credit at least 15 percent of their sight and term deposits, many loans merely secured by agricultural assets were simply reclassified as agricultural. Moreover, a large but undetermined fraction of all agricultural credit is for short-term working capital and as such not linked to net investment.

Source: Central Bank

VIII. MANUFACTURING AND PETROLEUM

Table No.

Table No.

Table No.

Table 8.1: INDUSTRIAL POWER SALES BY FOUR MAJOR UTILITY SELF GENERATORS OF POWER, 1968-71
(in millions of kwh)

CLASS OF POWER GENERATOR	1967	1968	1969	1970	1971
Total EMELEC, EE Quito, EE Cuenca, EE Ambato	-	157.7	176.4	191.1	208.3
Total Industrial Power Consumption in Ecuador (public and private)	215.9	242.9	283.5	320.8	359.2
Percent Four Utilities of Total Industrial Power Consumption	-	64.9	62.2	59.6	58.0
Annual Growth of Four Public Utilities (percent)	-	-	11.8	8.4	9.0
Annual Growth of Total Industrial Power Use in Ecuador (percent)	-	12.5	16.7	13.2	12.0

Source: INECEL

Table 8.2: INDUSTRIAL PURCHASERS OF ELECTRIC[/a] NUMBER AND YEARLY PERCENT CHANGE 1967-71

	1967	1968	1969	1970	1971
EMELEC - Guayaquil					
Number	1184	1242	1301	1375	1454
Percent Change	-	4.9	4.8	5.7	5.7
E.E. Quito					
Number	922	993	1027	1104	1170
Percent Change	-	7.7	3.4	7.5	6.0
E.E. Cuenca					
Number	272	303	320	351	390
Percent Change	-	11.4	5.6	9.7	11.1
E.E. Ambato					
Number	294	317	348	366	383
Percent Change	-	7.8	9.8	5.2	4.6
Total of above Number	2672	2855	2996	3196	3397
Percent Change	-	6.8	4.9	6.7	6.3

[/a] Industrial power users include small industry and artesan shops and possibly service establishments in addition to factories.

Source: INECEL

Table 8.3: IMPORTS FOR INDUSTRIAL USE BY TYPE, 1965 AND 1970

Product Categories	Value of Imports f.o.b. (US$thousand) 1965	1970	Average Annual Growth
Intermediate and Primary Products for Industry	50,408	71,652	7.3
Food	7,061	8,792	4.5
Non-food agricultural	18,269	17,272	-1.1
Mineral Products	14,547	24,499	11.0
Chemicals and Pharmaceuticals	10,531	21,089	14.9
Capital Goods for Industry	26,224	43,383	10.6
Office and Scientific Machinery and Equipment	3,618	5,218	7.6
Equipment	915	1,506	10.5
Parts and accessories for Industrial Machinery	2,472	4,285	11.6
Industrial Machinery	15,031	27,427	12.8
Other Fixed Equipment	4,188	4,947	3.4

Data based on import permits; actual imports may be less than indicated by permits granted.

Source: Central Bank Bulletins.

Table 8.4: NEW FIXED INVESTMENTS IN FACTORY MANUFACTURING, 1964-69

(Amounts in thousands of sucres)

Year	Total	New Firms	Expansion of Existing Firms	Investment in Existing Firms as % of total Investment
1964	546.5	238.2	308.3	56.4
1965	400.7	106.0	294.7	73.5
1966	537.2	168.9	368.3	68.6
1967	951.4	463.7	487.7	51.3
1968	899.7	286.3	613.4	68.2
1969	1001.0	160.2	840.8	84.0
1964-1969 Total	4336.5	1423.3	2913.2	67.2
Increase in Employment (Number)	,15731	8266	7465	47.5
New Investment per Employee Added	S/276,000	S/172,000	S/390,000	--

Source: National Planning Board, Industrial Census (Annual)

Table 8.5: TOTAL NEW INVESTMENT REGISTERED UNDER INDUSTRIAL PROMOTION LAW, NATIONAL AND FOREIGN, 1957-70

Year	Total Investment (in S/ million)	National Investment (in S/ million)	National Investment (in % of total)	Foreign Investment (in S/ million)	Foreign Investment (in % of total)
1957	52.936	30.812	58	22.124	42
1958	41.309	40.079	97	1.230	3
1959	102.832	90.232	88	12.600	12
1960	63.473	63.473	100	-	-
1961	69.991	49.093	70	20.898	30
1962	127.465	122.225	96	5.240	4
1963	135.217	100.807	74	34.410	26
1964	290.610	231.108	80	59.502	20
1965	309.088	226.605	73	82.483	27
1966	175.220	90.535	52	84.685	48
1967	175.748	133.175	76	42.573	24
1968	181.765	179.110	98	2.655	2
1969	318.131	214.550	67	103.581	33
1970	166.269	98.542	59	67.727	41

Source: Ministry of Production

Table 8.6: FIRMS REGISTERED UNDER THE INDUSTRIAL DEVELOPMENT LAW (LEY DE FOMENTO), NUMBER, EMPLOYMENT, INVESTMENT, PRODUCTION, VALUE ADDED, MATERIALS USED AND ORIGIN - NEW AND EXISTING - 1957-71

Years	Classification	Number of Firms	Employment	Investment (S'000)	Value of Production (S'000)	Value Added (S'000)	Primary Materials (S'000)		Foreign as % of Total	Primary Materials Total (S'000)
							National	Foreign		
1957	New	6	327	52,936	113,746	21,244	1,793	64,706	97.3	66,499
	Existing	--	--	--	--	--	--	--	--	--
1958	New	13	663	44,081	74,158	19,966	42,090	5,602	11.7	47,692
	Existing	2	216	9,586	4,886	2,490	1,979	60	2.9	2,039
1959	New	9	675	100,438	156,010	32,828	48,886	25,523	34.3	74,409
	Existing	5	1,304	78,927	43,423	23,214	9,036	7,743	46.1	16,779
1960	New	17	434	69,130	126,675	26,357	69,483	15,141	17.9	84,624
	Existing	8	1,889	204,113	85,920	30,129	19,799	24,026	54.8	43,825
1961	New	15	644	197,420	261,935	74,837	58,892	80,491	57.7	139,383
	Existing	13	1,468	472,404	229,854	61,561	58,679	27,360	31.8	86,039
1962	New	28	1,048	127,618	123,819	31,951	43,615	24,800	36.3	68,415
	Existing	16	2,029	316,476	258,006	62,700	81,558	51,816	38.8	133,374
1963	New	43	1,489	119,179	341,260	92,588	48,152	157,985	76.6	206,137
	Existing	25	2,460	533,923	302,017	105,096	85,881	51,253	37.4	137,134
1964	New	49	1,863	286,628	334,080	96,628	59,226	115,689	66.1	174,915
	Existing	22	1,412	285,148	183,951	47,449	37,694	49,631	56.8	87,325
1965	New	58	2,132	304,508	600,129	162,265	156,030	201,230	56.3	357,260
	Existing	27	2,308	318,730	299,609	81,968	70,117	99,175	58.6	169,292
1966	New	26	732	175,908	200,960	49,553	61,177	49,990	50.0	111,167
	Existing	24	1,244	138,483	130,293	28,172	38,571	34,773	47.4	73,344
1967	New	34	1,146	175,747	459,914	87,102	278,124	40,402	12.7	318,526
	Existing	18	1,231	192,049	137,787	44,518	49,118	16,196	24.8	65,314
1968	New	32	978	181,766	344,000	85,070	110,158	67,125	37.9	177,283
	Existing	10	533	97,576	165,661	23,874	88,535	23,933	21.3	112,468
1969	New	41	1,800	336,761	534,989	150,437	175,828	123,368	41.2	299,196
	Existing	17	645	105,903	176,059	37,762	59,571	34,617	36.7	94,188
1970	New	32	1,384	166,268	332,939	102,243	66,119	80,333	54.8	146,452
	Existing	13	559	92,340	84,291	21,767	22,847	16,641	42.1	39,488
1971	New	25	1,483	728,897	596,683	248,809	181,994	52,656	22.1	234,650
	Existing	16	1,306	109,842	227,999	62,154	102,191	31,040	23.3	133,231
	Total	644	35,402	6,022,785	6,931,052	1,914,732	2,127,143	1,573,305		3,700,448
	New	428	16,798	3,067,285	4,601,297	1,281,878	1,401,567	1,105,041		2,506,608
	Existing	216	18,604	2,955,500	2,329,755	632,854	725,576	468,264		1,193,840

Table 8.7: INDUSTRIES CLASSIFIED UNDER THE INDUSTRIAL DEVELOPMENT LAW, 1957-71

Number of Firms, Investment and Category

(Value in Thousands of sucres)

YEAR	CLASS	NO OF FIRMS	INVESTMENT TOTAL	DEBT	SPECIAL		CATEGORY A		CATEGORY B		INSCRIBED	
					No.	INVESTMENT	No.	INVESTMENT	No.	INVESTMENT	No.	INVESTMENT
1957	New	6	52,936	8,823	-	----	-	----	2	8,575	4	44,361
	Existing	-	------		-	----	-	----	-	----	-	----
1958	New	13	44,081	3,391	-	----	4	13,509	7	29,472	2	1,100
	Existing	2	9,586	4,793	-	----	1	9,347	1	239		
1959	New	9	100,438	11,160	-	----	4	87,914	4	11,024	1	1.500
	Existing	5	78,927	15,785	-	----	-	----	5	78,927	-	----
1960	New	17	69,130	4,066	-	----	3	24,012	9	39,693	5	5,425
	Existing	8	204,113	25,514	-	----	3	40,266	4	149,383	1	14,464
1961	New	15	197,420	13,161	-	----	2	162,000	8	28,632	5	6,788
	Existing	13	472,404	36,339	-	----	3	417,450	9	53,101	1	1,853
1962	New	28	127,618	4,558	-	----	6	104,760	13	14,279	9	8,579
	Existing	16	316,476	19,780	-	----	3	224,315	12	90,761	1	1,400
1963	New	43	119,179	2,772	-	----	10	39,064	25	73,555	8	6,560
	Existing	25	533,923	21,357	-	----	7	392,424	15	132,962	3	8,537
1964	New	49	286,628	5,650	4	80,303	12	107,567	28	91,699	5	7,059
	Existing	22	285,148	12,961	-	----	4	181,661	15	96,756	3	6,731
1965	New	58	304,508	5,250	1	16,114	17	156,404	29	113,634	11	18,356
	Existing	27	318,730	11,805	-	----	2	71,027	15	217,389	10	30,314
1966	New	26	175,908	6,766	2	74,934	6	35,351	12	61,039	6	4,584
	Existing	24	138,483	5,770	0	----	3	38,971	8	29,416	13	70,096
1967	New	34	175,747	5,169	-	----	13	127,842	14	41,335	7	6,570
	Existing	18	192,049	10,669	-	----	4	96,730	7	58,054	7	37,265
1968	New	32	181,766	6,680	2	72,500	7	37,971	22	68,592	1	2,703
	Existing	10	97,576	9,758	-	----	2	55,380	6	35,304	2	6,892
1969	New	41	336,761	8,214	5	139,408	9	98,234	24	96,585	3	2,534
	Existing	17	105,903	6,230	-	----	2	16,678	14	86,921	1	2,303
1970	New	32	166, 268	5,196	1	----	7		22		2	
	Existing	13	92,340	7,103	1	----	2		7		3	
1971/	New	25	728,897	29,156	2	----	9		16		3	
	Existing	16	109,842	10,652	-	----	11		9		-	

	Total	644	6,022,785		18	383,259*	156	2,538,877*	362	1,707,327*	117	295,975*
	New	428	3,067,285		17	383,259*	109	994,628*	23	678,114*	72	116,119*
	Existing	216	2,955,500		1		49	1,544,249*	127	1,029,213*	45	179,856*

*Excludes 1970 and 1971

Source: Ministry of Production

Table 8.8: INDUSTRIES CLASSIFIED UNDER THE INDUSTRIAL DEVELOPMENT LAW BETWEEN 1957 AND 1969
NUMBER OF NEW FIRMS, AMOUNT OF INVESTMENT, BY CLASSIFICATION, CATEGORY AND SUBINDUSTRY

(Values in Thousands of Sucres)

Code	Industrial Category	No. of Firms	Total Investment	CATEGORIES							
				Special		"A"		"B"		Inscribed	
				No.	Investment	No.	Investment	No.	Investment	No.	Investment
20	Food	95	518,603	4	79,194	49	365,414	37	68,788	5	5,207
21	Beverages	20	36,317	-	---	2	17,812	2	1,795	16	16,710
23	Textiles	51	196,253	-	---	4	27,240	43	165,013	4	4,000
24	Shoes and Clothing	2	3,432	-	---	-	---	2	3,432	-	--
25	Wood and Cork	11	65,458	2	35,630	4	24,209	4	4,688	1	931
26	Furniture	5	19,985	-	---	1	15,448	3	3,856	1	681
27	Paper	10	217,079	1	70,000	1	42,000	7	103,879	1	1,200
28	Printing	6	10,272	-	---	-	---	-	---	6	10,272
29	Leather and Skins	1	917	-	---	-	---	1	917	-	--
30	Rubber	4	33,181	-	---	1	24,000	3	9,181	-	--
31	Chemicals	35	329,732	1	42,696	14	237,021	16	48,161	4	1,854
32	Petroleum and Coal	5	63,148	-	---	1	13,655	4	49,493	-	--
33	Non-metallic Minerals	30	230,858	2	39,860	3	100,901	23	88,625	2	1,472
34	Basic Metals	4	151,369	2	105,369	2	46,000	-	---	-	--
35	Metal Products	30	133,874	2	10,510	3	52,495	14	43,887	11	26,982
36	Non-electric Machinery	3	12,678	-	---	1	10,000	1	1,178	1	1,500
37	Electrical Machinery	17	44,713	-	---	4	9,914	12	33,271	1	1,528
38	Transport	5	12,898	-	---	3	8,518	1	3,000	1	1,380
39	Miscellaneous	37	91,350	-	---	-	---	24	48,949	13	42,401
	Totals	371	2,172,117	14	383,259	93	994,527	197	678,113	67	116,118

Source: Ministry of Production

Table 8.9: TOTAL INDUSTRY CREDITS THROUGH ECUADORIAN FINANCIAL INSTITUTIONS, 1965-71

(in millions of S/)

Years	Central Bank (Direct)	Private Banking System	C.B. and Private Banks		Total Development Banks		Total Internal Credits	
			Amount	% Change	Amount	% Change	Amount	% Change
1965	647.4	491.0	1,138.4	-	64.3	-	1,202.7	-
1966	544.7	580.0	1,124.7	-1.2	169.5	163.6	1,394.2	15.9
1967	454.2	638.5	1,092.7	-2.8	233.2	37.6	1,325.9	-4.9
1968	623.4	681.8	1,305.2	19.4	289.9	24.3	1,595.1	20.3
1969	692.1	853.6	1,545.7	18.4	347.2	19.8	1,892.9	18.7
1970	904.2	1,134.3	2,038.5	31.9	365.8	5.4	2,404.9	27.0
1971	847.4/a	1,457.7/a	2,305.1	13.1	460.3	25.8	2,765.4	15.0
Annual Average Change 1965-1971				12.5		38.8		14.9

/a Data for first semester of 1971, expanded to annual total by ratio of first semester 1970 to total 1970.

Note: Development banks, include Banco Nacional de Fomento, CFN and COFIEC. Private foreign suppliers' credit excluded. Data for CFN and COFIEC are disbursements; for BNF, credits granted.

Source: Central Bank.

Table 8.10: TOTAL INTERNAL FINANCIAL INSTITUTION AND FOREIGN SUPPLIERS' CREDITS (PRIVATE) TO INDUSTRY, 1965-71

(Amounts in millions of Sucres)

	Credit to Industry from				
	Domestic Fin. Inst.		Private Foreign Supplier Credits /a		
Years	Value	Percent Change	Value	Percent Change	Total Value
1965	1,202.7	-	1,081.2	-	2,283.9
1966	1,394.5	15.9	1,030.0	-4.7	2,424.5
1967	1,325.9	-4.9	1,076.1	4.5	2,402.0
1968	1,595.1	20.3	1,434.3	33.3	3,029.4
1969	1,892.9	18.7	1,701.9	18.7	3,594.8
1970	2,404.9	27.0	3,204.4	88.3	5,609.3
1971	2,765.4	15.0	2,561.8	-20.1	5,327.2

/a 1971 estimated, basis January-May data 1970 and 1971.

Note: Some private supplier credits are to importers of consumer products, and for uses by nonindustrial sectors. In 1969 term credit to private importers of List 2 products (largely consumer goods) was 17.6 percent. The amount of such nonmanufacturing credit is not known.

Source: Central Bank.

Table 8.11: CFN LOAN APPROVALS AND PROJECT COSTS, 1963-71

	1963-71			
	Investment Total (in millions of S/)	CFN Approved Loans	Percentage Distribution of CFN Loans (%)	CFN Loans as Percent of Investment
Fishing	98.2	65.5	4.8	66.7
Mining	9.4	3.9	0.3	41.5
MANUFACTURING				
Food, Beverages and Tobacco	622.1	340.2	24.9	54.6
Textiles Clothing, Shoes and Leather Products	641.2	220.1	16.1	34.3
Furniture and Wood Products	18.2	7.8	0.6	42.8
Paper and Printing	271.7	86.0	6.3	31.6
Chemicals	273.2	194.2	14.2	71.1
Nonmetallic Products	225.3	97.4	7.1	43.2
Basic Steel	40.2	16.3	1.2	40.5
Metal Products and Machinery	206.2	110.6	8.1	53.6
Miscellaneous Manufacturing	5.2	2.8	0.2	53.8
Total Manufacturing	2303.3	1075.4	78.8	46.7
Electricity	1205.3	104.2	7.6	8.6
Restaurants	1.5	0.6		40.0
Hotels	241.2	115.5	8.5	47.9
Grand Total	3858.9	1365.1	100.0	35.4

Less than .005

Source: CFN

Table 8.12: CFN: LOAN DISBURSEMENTS BY SECTOR, 1963

(Amounts in S/millions)

	1963-67	1968	1969	1970	1971	Total 1963-71
Fishing	-	1.2	8.5	2.3	1.8	13.8
Mines and Minerals	-	-	-	2.7	1.2	3.9
Manufacturing						
Food Beverages and Tobacco	55.2	45.6	50.4	42.5	25.2	218.8
Textiles, Clothing and Leather	42.5	18.1	9.3	12.4	38.6	120.9
Wood including Furniture	0.5	0.6	1.5	0.2	1.8	4.7
Paper and Printing	22.6	7.8	13.0	24.7	5.1	73.1
Chemicals, Pharmaceuticals and Petroleum Products	40.3	14.0	2.2	20.9	23.3	100.7
Nonmetallic Minerals	5.3	5.3	3.7	4.5	38.3	57.0
Basic Metals	7.9	0.3	1.6	-	1.8	11.7
Metal Products and Machinery	16.9	22.1	7.0	10.5	21.7	78.3
Other Manufacturing	0.8	0.1	0.3	-	-	1.3
Total Manufacturing	192.2	113.8	89.0	115.6	155.8	666.5
Electric, gas and water	-	0.6	1.6	13.5	15.1	30.8
TOTAL	192.2	115.6	99.1	134.1	173.9	715.0

Source: CFN

Table 8.13: ECONOMIC IMPACT OF CFN LOANS: INVESTMENT, EMPLOYMENT, SALARIES AND BALANCE OF PAYMENTS, 1963-1971

(Value in million sucres)

Years	Investment			New Employment (No.)	Average Salary (sucres)	Balance of Payments Impact	
	Total	CFN Loans Approved	Other Funds			Import Savings	Export Earnings
1963-67	916.5	375.3	541.2	2450	25,400	181.6	90.9
1968	579.6	182.3	397.3	908	29,500	99.6	100.7
1969	435.1	175.8	259.2	876	28,400	104.4	42.6
1970	326.5	145.8	180.7	715	30,700	72.8	58.0
1971	1744.6	411.1	1333.5	2425	36,900	223.4	174.0

Source: CFN

Table 8.14: COFIEC MANUFACTURING LOAN DISBURSEMENTS, 1966-71

Year	No. of Loans	Loan Disbursements (in thousands of sucres)	Annual Percent Change	Average loan (thousands of sucres)	Share of Mfg. Loans in Total amount of Loans (percent)
1966	41	47,820.3	-	1,166	82.7
1967	78	111,319.3	132.8	1,427	79.0
1968	146	137,620.1	23.6	943	67.0
1969	357	208,979.6	51.9	585	56.4
1970	287	199,111.2	-4.7	694	55.3
1971	287	228,913.4	15.0	798	51.5

Source: COFIEC

Table 8.15: NUMBER AND VALUE OF LOANS GRANTED AND RENEWED TO SMALL INDUSTRY AND COMMERCE DURING 1964-70

Year	Number	Amount (S/000)
1964	3,959	104,737.2
1965	3,582	64,149.9
1966	3,198	67,800.4
1967	3,558	94,117.0
1968	3,757	95,712.6
1969	3,871	122,854.9
1970	2,647	111,338.2

Source: Banco Nacional de Fomento (BNF).

Table 8.16: FOREIGN PRIVATE SUPPLIER CREDIT FOR LIST 1 ITEMS, 1969, BY TERM

Term	(Value US$ c.i.f.)	Percent of Total	Cumulative Percent
Up to 90 days	31,951	25.5	25.5
90 - 180 days	40,957	32.6	58.1
180-270 days	5,992	4.8	62.9
270 - 1 year	26,410	21.1	84.0
1 - 3 years	11,919	9.5	93.5
3 - 5 years	5,280	4.2	97.7
5 - 10 years	1,850	1.4	99.1
more than 10 years	-	-	-
Indeterminate	1,101	0.9	100.0
TOTAL	125,460	100.0	

Source: Central Bank, Bulletins.

Table 8.17: OFFICIAL EXPORTS BY CATEGORY AND PRINCIPAL PRODUCTS, 1960-71

(Data in '000's)

Articles	1960		1961		1962		1963		1964		1965		1966		1967		1968		1969		1970		1971	
	Net Kilos	$ FOB	Net Kilos	$ FOB	Net Kilos	$ FOB	Net Kilos	$ FOB	Net Kilos	$ FOB	Net Kilos	$ FOB	Net Kilos	$ FOB	Net Kilos	$ FOB	Net Kilos	$ FOB	Net Kilos	$ FOB	Net Kilos	$ FOB	Net Kilos	$ FOB
Agriculture	1,017,272	94,491	948,390	83,835	996,947	102,520	1,142,088	112,347	1,184,129	111,631	988,037	112,139	1,186,326	124,142	1,262,375	140,466	1,387,918	149,709	1,266,243	120,826	1,448,097	171,070	1,477,284	168,037
Forestry	5,321	1,385	4,814	1,267	6,163	1,381	8,896	1,629	11,126	1,847	14,409	2,278	13,567	2,832	15,184	3,754	11,790	3,845	12,918	3,741	12,060	3,210	14,126	3,827
Livestock	86	162	125	149	53	138	337	264	666	390	31	114	33	139	28	133	33	124	30	110	388	234	4,168	2,033
Fisheries	5,107	1,440	6,756	2,285	5,590	2,393	4,850	2,229	6,075	2,359	7,299	3,016	7,404	3,173	12,309	3,928	9,216	3,588	14,041	5,275	11,317	5,269	17,678	10,875
Poultry	-	-	8	2	-	-	2	-	15	2	8	2	-	-	-	1	-	-	-	-	-	-	-	-
Mining	993	798	555	693	24,443	1,110	26,462	1,220	19,874	1,436	24,667	583	62,667	1,434	38,000	1,087	43,528	958	47,463	1,043	44,299	913	97,716	2,019
Manufacturing	46,418	4,162	46,016	6,291	92,786	9,785	84,310	10,429	84,013	12,576	134,277	15,193	107,263	15,369	115,391	16,319	104,555	17,865	136,509	20,686	143,889	20,371	166,660	29,949
Chemicals & Pharmaceuticals	200	911	288	1,117	275	1,050	265	962	258	1,153	385	1,557	424	1,760	416	1,493	390	1,617	404	1,899	330	1,423	229	1,748
Hats & Other Straw Articles	122	1,116	53	488	55	470	41	385	57	606	87	999	58	628	78	834	93	1,181	104	1,183	176	1,797	163	2,044
Fruit Juices & Preserves	-	-	-	-	667	220	1,302	421	1,558	536	187	45	175	41	110	25	254	58	218	50	125	30	249	89
Sugar & Panela /a	42,586	1,230	39,831	2,733	87,675	6,525	77,100	6,431	78,063	7,473	120,553	7,901	94,573	7,032	102,020	8,006	92,739	8,146	123,133	10,989	130,792	10,138	145,206	14,173
Soluble Coffee	-	-	-	-	15	18	4	4	-	-	5	24	1	1	1	1	1	2	2	3	7	15	-	-
Cacao Products	30	26	23	24	5	5	8	9	9	13	186	112	1,645	1,431	1,775	1,313	2,450	2,505	2,442	2,075	3,173	2,548	5,653	4,545
Processed Banana Products	75	27	305	110	-	-	9	6	5	5	1,923	719	2,047	706	1,612	557	1,760	633	1,937	711	2,250	810	2,103	752
Processed Fish	968	508	2,922	1,330	1,878	1,006	1,671	1,016	1,985	1,181	2,450	1,277	1,663	1,059	2,615	1,625	2,308	1,378	1,987	1,469	2,288	1,538	4,821	3,750
Pyrethrum Extracts	7	125	22	364	21	355	45	867	60	1,214	78	1,655	73	1,529	62	1,389	74	1,563	69	1,357	53	1,081	34	791
Wood Products	-	-	2	1	-	-	-	-	559	185	1,276	416	2,803	772	2,836	782	1,557	415	1,746	498	967	232	849	266
Animal Food	2,231	114	2,478	74	2,081	83	3,654	153	1,243	56	6,912	366	3,497	190	3,716	138	2,583	126	1,893	51	689	50	1,168	86
Vegetable Oils	102	67	74	39	103	42	-	-	10	5	162	15	92	50	45	39	9	59	41	26	76	76	8	96
Others	97	38	18	11	11	11	211	175	206	149	73	107	212	170	105	117	337	182	2,533	375	2,963	633	6,177	1,609
Waste and Re-exports	1,231	123	1,108	150	1,549	102	3,213	319	4,140	123	9,029	465	7,336	410	7,380	348	3,968	470	2,736	205	6,004	410	4,380	283
Total	1,076,428	102,560	1,007,772	94,672	1,127,531	117,429	1,270,158	128,437	130,038	130,364	1,177,757	133,790	1,384,596	147,499	1,450,667	166,036	1,561,008	176,559	1,479,949	151,886	1,666,054	201,477	1,782,012	217,023

/a Includes centrifugal and non centrifugal sugar (panela) and syrup.

Source: Ministry of Finance and Central Bank of Ecuador.

Table 8.18: EXPORTS OF ECUADOR TO ANDEAN SUBREGION, 1970 AND 1971
(Thousands US$)

Country and Product	1970	1971	Percent Change
Total	659.1	3,172.0	381.3
Colombia	545.6	2,276.7	317.3
Peru	0.5	459.4	818.8
Chile	113.0	435.9	285.8
Products			
Tuna	158.8	522.7	229.2
Sardines	385.4	1,715.7	345.2
Cocoa Products	50.7	409.8	708.3
Plywood	-	143.2	-
Stoves, Refrigerators, and Household Products	34.4	204.0	493.0
Other /a	29.8	176.6	493.0
Total	659.1	3,172.0	381.3

/a Principally, clothing, zippers, machetes, canned pineapple, canned meat.

Source: Institute of Foreign Commerce and Integration

Table 8.19: ESTIMATES OF POSSIBLE EXPORTS OF 25 PRODUCTS TO ANDEAN SUBREGION (PRODUCTS FREE OF DUTY, JANUARY 1, 1971)
(Thousands US$)

Item	Possible Exports Minimum	Maximum
Cheese	480	960
Canned meat	150	400
Canned tuna	260	1,040
Canned sardines	290	1,160
Cocoa butter	800	1,600
Cocoa products	230	795
Canned pineapple and juice	120	300
Common salt	21	81
Scalopine	534	534
Food dyes of vegetable origin	205	354
Detergents for textiles	425	600
Fiberglass bathroom products	76	266
Fiberboard and plywood	100	334
Twine, cordage, rope of jute, hemp or similar fibers of synthetic	110	275
Outer garments and their accessories, knitted or crocheted, not elastic nor rubberised, made of artificial or synthetic fibers	1,440	4,000
Nonelectric stoves for domestic use	404	188
Collapsible tubular containers, of aluminium	60	120
Aluminium kitchen articles	80	1,263
Machetes (hewing tools)	60	360
Electric refrigerators for domestic use	740	1,512
Non-electric refrigerators for domestic use	193	386
Wood furniture, parts	180	1,500
Brushes (pig bristles)	85	140
Zippers	270	405
Ballpoints, including parts	210	420
TOTAL	7,523	18,993

Source: Institute for Foreign Trade and Integration, Quito.

Table 8.20: FIRST TRANCHE FROM THE COMMON LIST OF L.A.F.T.A.[a]

07.01.0.04	Fresh garlics
08.01.0.02	Bananas
09.01.1.01	Raw grain coffee
11.04.0.01	Banana flour
13.03.1.02	Pyrethrum extract
15.07.2.10	Purified palm oil
18.01.0.01	Raw grain cocoa
18.04.0.01	Cocoa oil, cocoa butter
18.05.0.01	Nonsweetened cocoa powder
20.06.1.10	Canned tropical papaya, natural
20.06.2.10	Canned tropical papaya, in syrup
20.07.1.99	Tropical papaya juice
23.01.1.02	Fish meal
38.11.1.01	Pyrethrum insecticides
44.23.0.01	Parquet flooring
46.02.1.01	Mocora or Toquilla straw fabric
65.02.0.99	Toquilla or Mocora straw headpiece hats

[a] Ecuadorian export products liberated from import restrictions by Chile, Colombia and Peru as of April 14, 1970. Resulting increase in Ecuadorian exports in 1970 estimated at $2.0 million.

Source: Institute for Foreign Trade and Integration, Quito.

Table 8.21: PRODUCTS NOT PRODUCED IN THE SUBREGION AND NOT RESERVED FOR SECTORAL INDUSTRIAL DEVELOPMENT PROGRAMS TO BE MANUFACTURED BY ECUADOR

	Products	Period of Time to study the project	Period of Time to carry out the project
29.04.3.07	Sorbitol (Hexano-Hexanol)	1½ years	5 years
29.10.1.08	Piperonil butoxide	1 year	4 years
29.16.3.01	Salicylic acid	1 year	4 years
43.01.1.04	Protective paper for checks	1½ years	6 years
48.01.9.02	Condenser paper	1½ years	6 years
48.01.9.04	Paper manufactured with 100% cotton or hemp fibers, ungummed and free of mineral compounds	1½ years	6 years
48.01.9.99	Electrical insulation paper	1½ years	6 years
48.01.9.99	Wrapping paper	1½ years	6 years
48.01.9.99	Stiff cardboard with specific gravity greater than 1, manufactured by machine	1½ years	6 years
74.17.1.01	Cooking stoves, exclusively of Primus type	1 year	4 years
74.17.8.01	Parts and spares for Primus type stoves	1 year	4 years
82.04.0.04	Blowtorches	1 year	4 years
83.07.1.01	Oil or kerosene pressure lamps	1 year	4 years
83.07.8.01	Parts and spares for oil or kerosene pressure lamps	1 year	4 years
84.15.9.01	Airconditioners, sealed units whose power is equivalent to or greater than 1/2 h.p.	1 year	4 years
84.50.1.01	Gas blowtorches (gas apparatus from welding and cutting)	1 year	6 years
84.50.8.01	Parts and spares for gas blowtorches	1 year	4 years
84.01.9.99	Pneumatic tire valves	1 year	4 years
85.05.0.01	Manual electromechanical tools and machine tools (with motor attached)	1½ years	5 years
85.19.8.01	(Nonheating)carbon resistors	1½ years	5 years
90.23.0.99	Thermometers for motor vehicles	1½ years	5 years
90.24.9.02	Motor vehicle gasoline gauges	1½ years	5 years
90.27.0.01	Speedometers	1½ years	5 years
90.28.5.01	Thermometers for motor vehicles	1½ years	5 years
90.28.6.99	Electric Thermometers for motor vehicles	1½ years	5 years
90.29.0.01	Electric gasoline gauges for automobiles	1½ years	5 years
90.29.0.01	Parts and spares for motor vehicle thermometers	1½ years	5 years
90.29.0.02	Parts and spares for motor vehicle gasoline gauges	1½ years	5 years
90.29.0.04	Parts and spares for speedometers	1½ years	5 years
90.29.0.05	Parts and spares for motor vehicle electric thermometers and gasoline gauges	1½ years	5 years
91.02.0.90	Other watches or clocks (including alarm) with small-sized mechanisms, nonelectric	1½ years	5 years
91.08.0.02	Dashboard clocks for automobiles	1½ years	5 years
91.04.0.03	Tower and building clocks and the like	1½ years	5 years
91.04.0.99	Other clocks with other than small-sized mechanisms	1½ years	5 years
91.07.0.01	Small sized mechanisms, finished, for watches and clocks listed under item 91.02.0.98	1½ years	5 years
91.08.0.01	Other finished mechanisms for watches and clocks	1½ years	5 years
91.10.8.01	Parts and spares for cases of other watches and clocks	1½ years	5 years
91.11.9.01	Main spring for watches and clocks	1½ years	5 years
91.11.9.02	Hands of watches and clocks	1½ years	5 years
91.11.9.99	Other parts and spares for watches and clocks	1½ years	5 years

Source: Institute for Foreign Trade and Integration, Quito.

Table 8.22: OIL CONCESSIONS IN EASTERN ECUADOR

	Date of Contract	Area '000 Has.	Area '000 Acres
Texaco de Petroleos de Ecuador C.A. and Gulf Ecuatoriana de Petroleos S.A.	March 5, 1964 and Revised June 27, 1969	500.0	1,235.5
Cia Petrolera Pastaza C.A. and Aquarico S.A /a	February 23, 1966 Revised June 26, 1969	650.0	1,606.2
Total Texaco/Gulf		1,150.0	2,841.7
Anglo Ecuadorian Oilfields Ltd.	July 12, 1968	400.0	988.4
Cia. Ecuatoriana de Petroleos S.A.	July 12, 1968	395.3	976.8
Anglo Ecuadorian Oilfields Ltd.	July 12, 1968	400.0	988.4
Cia. Ecuatoriana de Petroleos S.A.	July 12, 1968	400.0	988.4
Superior Petroleum del Ecuador S.A.	July 12, 1968	395.1	976.3
Cia Minera del Napo S.A.	July 12, 1968	383.4	974.4
Total Anglo Consortium /b		2,373.8	5,892.7
Cia. Minas y Petroleos S.A /c	August 26, 1961, and Revised July 12, 1968	437.5	1,081.1
Cia. Petrolera Yasuni C.A./d	July 16, 1968	400.0	988.4
Total Amerada Hess Group		837.5	2,069.5
Cia. Petrolera Curaray S.A /e	July 12, 1968	400.0	988.4
Amoco Ecuador Petroleum Co /f	July 14, 1970	400.0	988.4
Total Amoco		800.0	1,976.8
Shenandoah Oil Corporation	August 2, 1968	380.0	939.0
Grace Oil and Minerals Inc. (Sun)	August 2, 1968	332.0	820.4
Compania OKC Corp. /g	February 20, 1970	400.0	988.4
Cayman Corporation /g	March 6, 1970	335.0	827.8
TOTAL		6,608.3	16,356.3

/a Norsul Oil and Mining Ltd. and Phoenix Canada Oil Co. Ltd. have a 2 percent overriding royalty.
/b Anglo Consortium comprises Anglo-Ecuadorian Oilfields Ltd. (16.7%), Superior Oil Company (33.3%) Union Oil (33.3%) and Standard Oil, California (16.7%).
/c Norsul Oil and Mining Ltd. and Phoenix Canada Oil Co. Ltd. retain a 5 percent carried interest. The present royalties rate for this concession is only 6 percent.
/d Norsul Oil and Mining Ltd. and Phoenix Canada Oil Co. Ltd. retain a 15 percent carried interest.
/e Cia. Petrolera Curaray S.A. retains an 8 percent carried interest.
/f Contract of Association; participation in equity by the State up to 35% according to the level of production once the original investment has been recovered.
/g Contracts of Association.

Table 8.23: GEOLOGICAL AND GEOPHYSICAL ACTIVITIES, 1966-70[/a]
(Party Months)

	1966	1967	1968	1969	1970
Surface Geology	30.00	16.00	14.25	14.00	11.20
Seismograph	19.50	26.50	30.50	34.00	57.60
Gravimeter	4.00	-	-	1.00	0.50
Air Magnetometer	1.50	0.25	2.75	4.00	-
Aerial Photography	-	-	1.50	-	-
Total	55.00	42.75	49.00	53.00	69.30

/a Includes activity in the coastal area, offshore and Oriente.

Source: Ministry of Natural Resources.

Table 8.24: WELLS COMPLETION IN ECUADOR, 1966-70/a

	Oil	Gas	Dry Abandoned	Total	% Success	Susp.
Exploration						
1966	22	1	8	31	74	(3)
1967	12	0	2	14	86	
1968	5	-	3	8	63	
1969	7	-	1	8	88	
1970	12	2	6	20	70	
Development						
1966	15	-	-	15	100	-
1967	19	0	1	20	95	
1968	12	-	-	12	100	
1969	5	-	1	6	83	
1970	15	-	2	17	88	
Total						
1966	37	1	8	46	83	(3)
1967	31	0	3	34	91	
1968	17	-	3	20	85	
1969	12	-	2	14	86	
1970	27	2	8	37	78	

/a Includes wells completed in the coastal area, offshore and Oriente.

Source: Ministry of Natural Resources.

Table 8.25: WELLS COMPLETED IN EASTERN ECUADOR, 1967-72

	1967	1968	1969	1970	1971	1972/a
Texaco/Gulf	5	6	8	28	35	40
Minas y Petroleos	-	-	-	4	2	-
Anglo Group	-	-	-	-	2	4
Cayman	-	-	-	-	3	1
Amoco	-	-	-	-	-	2
Sun	-	-	-	-	-	2
Total	5	6	8	32	42	49

/a Mission Estimate.

Source: Company reports to Ministry of Natural Resources.

Table 8.26: CRUDE PETROLEUM PRODUCTION, 1951, 1961, 1966-71

Year	Bls.	B/d
1951	2,741,935	7,512
1961	3,027,134	8,294
1966	2,660,130	7,288
1967	2,271,605	6,224
1968	1,815,083	4,959
1969	1,607,618	4,404
1970	1,480,037	4,054
1971	1,354,389	3,711
Average Annual Rate of Change		
1961-66	-2.6	
1966-71	-12.6	
1961-71	-7.7	

Source: Ministry of Natural Resources.

Table 8.27: PETROLEUM PRODUCTION AND INVESTMENT, 1972-80

	Output[a] '000 bls/d	mil.bls.	Investment[b] mil. US$
1972	200 [c]	26.8	108
1973	250	91.3	48
1974	250	91.3	68
1975	300	109.5	52
1976	400	146.0	129
1977	400	146.0	129
1978	400	146.0	129
1979	500	182.5	66
1980	600	219.0	43

[a] Petroleum output estimate assumes that Texaco-Gulf connects new fields and increase pipeline capacity to 400,000 barrels per day during the second half of 1975. The development of new fields continues and by 1976-77 a decision is made to construct a second pipeline to start operating in mid-1979 and bring total production to 600,000 bls/d by 1980.

[b] It has been assumed that an investment of $600 is required to fund and develop a barrel/day of initial productive capacity, and that there is a 12 percent decline in productivity of existing wells. In addition, allowance has been made to cover the increase in capacity of the Texaco-Gulf pipeline and the construction of a second pipeline and the related investment in trading and storage facilities at the meritime terminal.

[c] September-December, 1972.

Source: IBRD staff estimates.

Table 8.28: PETROLEUM INVESTMENT, 1964-71
(millions of sucres)

	Current				Constant (1971)			
	Expl. Dev.	Pipe-lines	Roads	Total	Expl. Dev.	Pipe-lines	Roads	Total
1964	32.3	-	-	32.3	46.5	-	-	46.5
1965	53.3	-	-	53.5	74.0	-	-	74.0
1966	71.0	-	-	71.0	93.9	-	-	93.9
1967	197.0	-	-	197.0	251.1	-	-	251.1
1968	421.7	-	-	421.7	515.9	-	-	515.9
1969	536.3	160.4	5.0	701.7	626.9	187.5	5.8	820.2
1970	699.1	817.6	285.0	1801.7	766.5	896.4	312.5	1975.4
1971	2167.1	1170.7	285.0	3622.8	2167.1	1170.7	285.0	3622.8

Source: Based on data from National Planning Board.

Table 8.29: DOMESTIC CONSUMPTION OF REFINED PRODUCTS, 1961, 1966-71

(barrels daily)

	1961	1966	1967	1968	1969	1970	1971	Annual Growth Rates 1961-1966	1966-1971	1961-1971
Products										
Gasoline	4,594	6,299	7,096	7,773	8,319	9,225	9,799	6.5	9.2	7.9
Kerosine /a	957	1,978	2,231	2,582	2,960	2,954	2,497	15.6	4.7	10.0
Diesel Oil	1,953	2,882	3,272	3,840	4,107	4,787	5,579	8.1	14.0	11.1
Residual Fuel Oil	3,052	3,646	3,815	4,647	5,421	5,927	6,482	3.6	12.2	7.8
LPG	15	64	75	110	127	192	186	33.6	23.8	28.6
Others	291	658	472	657	639	790	457	17.7	-7.0	4.6
TOTAL	10,862	15,527	16,961	19,609	21,573	23,875	25,000	7.4	10.0	8.7
(Per cent Distribution)										
Gasoline	42.3	40.6	41.8	39.6	38.5	38.6	39.2			
Kerosine /a	8.8	12.7	13.2	13.1	13.8	12.5	10.0			
Diesel Oil	18.0	18.6	19.3	19.6	19.0	20.0	22.3			
Residual Fuel Oil	28.1	23.5	22.5	23.7	25.1	24.8	25.9			
LPG	0.1	0.4	0.4	0.6	0.6	0.8	0.8			
Others	2.7	4.2	2.8	3.4	3.0	3.3	1.8			
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0			

/a Includes turbo-fuel

Source: National Planning Board

Table 8.30: NET IMPORTS OF PETROLEUM, 1961, 1966-71

Year	Barrels (thousands)	CIF Value (thousands of U.S. Dollars)	CIF Price (U.S. Dollars per barrel)
1961	1,131	2,604	2.30
1966	3,039	6,727	2.21
1967	3,962	9,072	2.29
1968	5,720	13,304	2.33
1969	5,969	12,952	2.17
1970	6,904	14,560	2.11
1971	8,490	17,690	2.08

Source: National Planning Board, Central Bank of Ecuador.

Table 8.31 U.S. DEMAND AND SUPPLY OF PETROLEUM, 1970-85

(thousands of barrels daily)

	1970	1975	1980	1985
Total Demand	14,986	18,581	22,549	26,186
Domestic Production				
Lower 48 States	11,328	10,480	9,760	9,180
North Slope	-	600	2,030	2,030
Total	11,328	11,080	11,790	11,210
Imports				
Crude Petroleum	1,324	4,090	6,520	10,190
Fuel Oil	1,528	2,200	2,800	3,100
Other	566	800	950	1,100
Total	3,418	7,090	10,270	14,390
Changes in Stocks, Loss, etc.	240	411	489	586

Source: National Petroleum Council.

Table 8.32: SUPPLY AND DEMAND OF CRUDE PETROLEUM AND REFINED PRODUCTS IN CHILE AND PERU, 1970

(thousands barrels daily)

	Chile	Peru
Domestic Demand	88.5	91.0
Production of Crude	34.1	72.0
Imports		
Crude	40.1	10.8
Products	13.9	10.9
Total	54.0	21.7
Changes in Stocks and Bunkers	0.4	-2.7

Source: U.S. Bureau of Mines. International Petroleum Annual.

Table 8.33: CARIBBEAN REFINERIES OWNED BY POTENTIAL PRODUCERS IN ECUADOR, 1962

Company	Place	Refinery	Capacity (B/D)
Texaco	Point-a-Pierre	Texaco Trinidad Inc. (100%)	355,000
Texaco	Colon	Refineria Panama S.A. (66.6%)	100,000
Texaco	Forte-de-France	S.A. de la Raffinerie deux Antilles (11.5%)	11,000
Gulf	San Juan	Caribbean Gulf Refining (100%)	40,000
Ameraca Hess	St. Croix	Hess Oil Virgin Islands(100%)	450,000
Standard(California)	Freeport	Bahamas Oil Refining Co. (50%)	250,000

Table 8.34: DISTANCES AND DURATION OF VOYAGES BETWEEN ESMERALDAS AND SOME PRINCIPAL PORTS

	Distance (nautical miles)	Voyage (Days) /a at 14 knots	at 16 knots
Esmeraldas - /b Los Angeles	6,258	22.63	20.30
Esmeraldas /b Valparaiso	4,458	17.27	15.61
Esmeraldas /b Philadelphia	4,764	20.18	18.40
Esmeraldas /b Trinidad	3,152	15.38	14.21

/a The voyage refers to the round trip and includes 3 days for lay time (for loading and discharge) and one day for approach time to ports. An additional day is included for each crossing of the Panama canal.

/b Distances from Tumaco have been used.

Table 8.35: COMPARATIVE TAX PAID COSTS OF SOME REPRESENTATIVE CRUDES, JANUARY - MARCH 1972

(US$ per barrel)

Crude API Gravity FOB Port	Venezuelan 17°API W. Venez.	Venezuelan 20°API W. Venez.	Venezuelan 31°API W. Venez.	Arabian Heavy 27°API Rastanura	Arabian Medium 31°API Rastanura	Iranian Light 34°API Kharg Isl.	Iraq /a 30°API- Tripoli/Banias	Libya /b 40°API Libyan Ports	Nigeria /b 34°API Bonny
Base Posted/Tax Price	2.763	2.901	3.035	2.059	2.187	2.274	2.971	3.217	3.022
Adjustment for Devaluation	-	-	-	0.175	0.186	0.193	0.266	-	-
Temporary Premium-Suez	-	-	-	-	-	-	0.120	0.120	0.120
Temporary Premium-Freight	0.050	0.050	0.050	-	-	-	0.045	0.049	0.034
Price for Tax Purposes	2.813	2.951	3.085	2.234	2.373	2.467	3.402	3.386	3.176
Royalty	0.400	0.557	0.579	0.279	0.297	0.308	/a	0.423	0.397
Operating Cost	0.490	0.420	0.420	0.150	0.120	0.120	0.16	0.300	0.350
Taxable Net Income	1.923	1.974	2.086	1.805	1.956	2.039	/a	2.662	2.429
Income Tax	1.116	1.145	1.210	0.993	1.076	1.121	/a	1.465	1.336
Fiscal Participation									
Royalty	0.400	0.557	0.579	0.279	0.297	0.308	/a	0.423	0.397
Income Tax	1.116	1.145	1.210	0.993	1.076	1.121	/a	1.465	1.336
	1.516	1.702	1.789	1.272	1.373	1.429	2.034	1.888/d	1.753/c
Tax Paid Cost	2.006	2.122	2.209	1.422	1.493	1.549	2.194	2.188	2.103

/a Calculation based on a border value of $3.074. Tax paid costs include payments to Syria.
/b Less than 0.25 percent sulfur.
/c Includes US$0.020 for harbor dues
/d Excludes $0.090 for retroactive payments.

Source: Mission Estimates.

Table 8.36: TAX PAID COSTS OF SOME REPRESENTATIVE CRUDES, JANUARY - MARCH 1972

(US$ per barrel)

Crude	f.o.b.	API	Costs	Taxes	Tax Paid Costs
Venezuela					
TJL	W. Venez.	31°	0.420	1.789	2.209
TJM	W. Venez.	26°	0.420	1.702	2.122
Bachaquero	W. Venez.	17°	0.490	1.516	2.006
Persian Gulf					
Iranian Light	Kharg Isl.	34°	0.120	1.429	1.549
Arab Medium	Rastanura	31°	0.120	1.373	1.493
Arab Heavy	Rastanura	27°	0.150	1.272	1.422
Indonesia /a					
Minas	Dumai	35°	0.200	1.632	1.832 /a

/a Bank estimate.

Source: See Table 8.35 for details.

Table 8.37: PRICE AND TAX PAID COST COMPARISONS, FOB ESMERALDAS,[a] 1972

(US$ per barrel)

	API Gravity	Tax Reference Prices[b] W75	W80	W85	Tax Paid Costs W75	W80	W85
U.S. East Coast							
Venezuelan	26°	2.729	2.717	2.705	1.950	1.938	1.926
Arabian	31°	2.807	2.849	2.891	1.927	1.969	2.011
Trinidad							
Venezuelan	20°	2.692	2.678	2.664	1.913	1.899	1.885
Arabian	31°	2.706	2.744	2.782	1.826	1.864	1.902
U.S. West Coast							
Venezuelan	20°	3.008	3.079	3.091	2.289	2.300	2.141
Arabian	31°	2.858	2.904	2.950	1.978	2.024	2.070
Minas	35°	3.153	3.158	3.185	1.980	2.006	2.032
Yokohama							
Arabian	31°	2.120	2.111	2.101	1.240	1.231	1.221
Minas	35°	2.396	2.368	2.339	1.217	1.189	1.159
Valparaiso							
Venezuelan	26°	3.106	3.120	3.133	2.327	2.341	2.354
Arabian	31°	2.881	2.928	2.973	2.001	2.048	2.093

/a Netback values obtained adding freight from point of origin to port of discharge less freight to esmeraldas. For some long voyages a spread of worldscale of 10-20 points has been used. No adjustments have been made for quality differentials.

/b Published by Petroleum Intelligence Weekly February 7, 1972. Venezuelan prices, Bank estimate.

Table 8.38: WORLDSCALE FREIGHT RATES /a

		Base US$/Long Ton	W=100 US$/Bl.	W60	W65	W70	W75	W80	W85	W90	W95	W100
To Los Angeles												
Dumai	35° API	7.22	0.95792	0.575	0.623	0.671	0.718	0.766	0.814	0.862	0.910	0.958
Rastanura	34° API	9.91	1.32280	0.794	0.860	0.926	0.992	1.058	1.124	1.191	1.257	1.323
Rastanura	31° API	9.91	1.34733	0.808	0.876	0.943	1.010	1.078	1.145	1.213	1.280	1.347
Punta Cardon	31° API	4.66	0.63356	0.380	0.412	0.443	0.475	0.507	0.538	0.570	0.602	0.634
Punta Cardon	26° API	4.66	0.65365	0.392	0.428	0.458	0.490	0.523	0.556	0.588	0.621	0.654
Esmeraldas /b	28° API	3.11	0.43075	0.258	0.280	0.302	0.323	0.345	0.366	0.388	0.409	0.431
To Valparaiso												
Dumai	35° API	9.41	1.24847	0.749	0.812	0.874	0.936	0.999	1.061	1.124	1.186	1.248
Rastanura	31° API	9.23	1.25488	0.753	0.816	0.878	0.941	1.004	1.067	1.129	1.192	1.255
Punta Cardon	26° API	4.28	0.60035	0.360	0.390	0.420	0.450	0.480	0.510	0.540	0.570	0.600
Esmeraldas /b	28° API	2.43	0.33657	0.202	0.219	0.236	0.252	0.269	0.286	0.303	0.320	0.336
To Yokohama												
Dumai	35° API	3.15	0.41793	0.251	0.272	0.293	0.313	0.334	0.355	0.376	0.397	0.418
Rastanura	31° API	5.91	0.80350	0.482	0.522	0.562	0.603	0.643	0.683	0.723	0.763	0.804
Esmeraldas /b	28° API	7.08	0.98062	0.588	0.637	0.686	0.735	0.784	0.834	0.883	0.932	0.981
To Philadelphia												
Rastanura	34° API	10.00	1.34282	0.806	0.873	0.940	1.007	1.074	1.141	1.209	1.276	1.343
Rastanura	31° API	10.06	1.36772	0.821	0.889	0.957	1.026	1.094	1.163	1.231	1.299	1.368
Punta Cardon	31° API	2.04	0.27735	0.166	0.180	0.194	0.208	0.222	0.236	0.250	0.263	0.277
Punta Cardon	26° API	2.04	0.28615	0.172	0.186	0.200	0.215	0.229	0.243	0.258	0.272	0.286
Esmeraldas /b	28° API	3.73	0.51663	0.310	0.336	0.362	0.387	0.413	0.439	0.465	0.491	0.517
To Trinidad												
Rastanura	31° API	8.67	1.17874	0.707	0.766	0.825	0.884	0.943	1.002	1.061	1.120	1.179
Punta Cardon	26° API	1.01	0.14167	0.085	0.092	0.099	0.106	0.113	0.120	0.128	0.135	0.142
Esmeraldas /b	25° API	3.03	0.41967	0.252	0.273	0.294	0.315	0.336	0.357	0.378	0.399	0.420

/a 1972 base rates as modified.
/b These rates are calculated in terms of the base worldscale rate from the Port of Tumaco to the north of Esmeraldas.

Table 8.39: FREIGHT DIFFERENTIALS TO ESMERALDAS

(U.S. Dollars per Barrel)

WORLDSCALE	U.S. EAST COAST		TRINIDAD		U.S. WEST COAST			YOKOHAMA		VALPARAISO	
	TJM 26° API	ARAB 31° API	TJM 26° API	ARAB 31° API	TJM 26° API	ARAB 31° API	MINAS 35° API	ARAB 31° API	MINAS 35° API	TJM 26° API	ARAB 31° API
W60	-0.138	0.511	-0.167	0.455	0.134	0.550	0.317	-0.106	-0.337	0.164	0.536
W65	-0.150	0.553	-0.181	0.493	0.145	0.596	0.343	-0.115	-0.365	0.178	0.604
W70	-0.162	0.595	-0.195	0.531	0.156	0.641	0.369	-0.124	-0.393	0.191	0.649
W75	-0.172	0.639	-0.209	0.569	0.167	0.687	0.395	-0.132	-0.422	0.205	0.696
W80	-0.184	0.681	-0.223	0.607	0.178	0.733	0.421	-0.141	-0.450	0.219	0.743
W85	-0.196	0.724	-0.237	0.645	0.190	0.799	0.448	-0.151	-0.479	0.232	0.789
W60-70		0.459		0.413		0.506	0.273	-0.204	-0.435		0.524
W65-75		0.502		0.451		0.553	0.300	-0.213	-0.463		0.571
W70-80		0.544		0.489		0.598	0.326	-0.222	-0.491		0.617
W75-85		0.587		0.527		0.644	0.352	-0.231	-0.521		0.663
W60-75		0.434		0.392		0.485	0.252	-0.253	-0.484		0.508
W65-80		0.476		0.430		0.531	0.278	-0.262	-0.512		0.555
W70-85		0.518		0.468		0.577	0.305	-0.272	-0.541		0.600
W55-75				0.333							
W60-80				0.371							
W65-85				0.409							

Freight from the export point to the principal market less freight to Esmeraldas. Freight differentials with two worldscale rates are based on the premise that larger tankers are utilized for the longer haul and that relatively less time is spent loading and discharging.

Table 8.40: ESTIMATED GOVERNMENT UNIT PETROLEUM REVENUE,[a] 1972-77
(U.S. dollars per barrel)

	1972	1973	1974	1975	1976	1977
Royalty/Export Tax	0.66	0.69	0.71	0.74	0.74	0.74
Income Tax	0.45	0.47	0.51	0.53	0.53	0.53
Profit Sharing [b]	0.14	0.14	0.14	0.15	0.15	0.15
Others	0.09	0.09	0.09	0.09	0.09	0.09
Total	1.34	1.39	1.45	1.51	1.51	1.51

[a] Unit figures are lower if local sales are included. Basic costs $0.60/Bl. Initial reference price $2.50/bl and initial realized price $2.38/bl.

[b] Represents profit sharing less 10 percent estimated to be distributed either directly or indirectly to industry workers and employees.

Source: Mission Estimates.

Table 8.41: SUMMARY AND COMPARISON OF SOME CLAUSES OF THE HYDROCARBONS LAWS, CONCESSIONS AND CONTRACTS IN FORCE IN ECUADOR

	HYDROCARBONS LAW SEPT, 1971	TEXACO-GULF CONCESSION 1969	AMOCO CONTRACT OF ASSOCIATION, 1970	ANGLO "MODEL" CONCESSION 1968
1. Duration	5 years if no commercial production achieved. 20 years from the date of commercial production, renewable for a further period of 10 years.	5 years exploration followed by 40 years exploitation period, renewable for a further 10 years.	5 years exploration period followed by 40 years exploitation period.	5 years exploration followed by 40 years exploitation period renewable for a further period of 10 years.
2. Area	200,000 has.	Originally 1.43 million has. Reduced to 0.5 million has.	400,000 has.	400,000 has.
3. Exploration Obligations	$8.00 per ha. per year. Minimum one well per 100,000 has. Also $40,000 per ha 1/ in first 3 years of exploitation period.	-	First year $160,000 Second year $320,000 Third year $600,000 Fourth & Fifth year $1.32 MM. Minimum of 3 exploratory wells. Also $360,000 per year in exploitation period until oil in commercial quantities is found.	Minimum investment $1.2 MM. in exploration phase. Completion of at least one exploratory well.
4. Bonuses - Signature	Minimum $2.00 per ha.- exploration. Minimum $6.00 per ha.- exploitation.		$650,000 on signature $2.4 MM when production reaches 50,000 bld.	
5. Bonuses - Compensatory Investments	Minimum $8.00 per ha. of the exploitation area.	$35.5 million over a 10 year period for construction and maintenance of highways.		
6. Rentals	Exploration period $0.40/ha. For first five years of exploitation period, $2.00 per ha. per year and thereafter $4.00 per ha. per year.	First 10 years, $0.20/ha. Second 10 years $0.24/ha. Third 10 years $0.28/ha. Fourth 10 years $0.32/ha.	Exploration period, $0.20/ha. per year. Exploitation period $0.32/ha. per year.	Exploration period $0.04-0.08 per ha. per year. Exploitation period. First 10 years - $0.20/ha. Second 10 years - $0.24/ha. Third 10 years - $0.28/ha. Fourth 10 years - $0.32/ha.
7. Relinquishment	60% of the total area at end of exploration period. No one may retain more than 160,000 has. during the exploitation period.	Concessionaire may relinquish acreage at any time.	Company must relinquish up to 150,000 has. by end of exploration period.	Company must relinquish up to 150,000 has. by the end of the exploration period.
8. Royalty	12.5% of crude oil produced up to 29,999 bld; 14.0% up to 59,999 bld. and 16.0% over this amount. Royalty valued on basis of reference price.	11.5% of clean oil produced. Price for royalty purposes calculated on a formula basis for inter-affiliate sales, and on actual market price for third party sales.	12.5% of clean oil produced. Oil valued on either actual sales price to third party or in accordance with FOB prices in other export centers plus a freight differential to markets where Ecuadorian crude is sold.	10% of clean oil produced. Oil valued on actual sales price to third party or for inter-affiliate sales in accordance with FOB price in other export centers plus freight differentials to market where Ecuadorian crude is sold.
9. Income Tax	Prevailing rate calculated on reference price base.	Prevailing rate.	Prevailing rate.	Prevailing rate.
10. Transport	State may construct, operate and manage pipelines, gasolines and other means of transportation.	Ownership of Lago Agrico-Esmeraldas line will pass to Government after amortization.	If company constructs a pipeline, once amortized, it will become the property of the Government.	If company constructs a pipeline, once amortized, it will become the property of the Government.
	Participation by State not less than 5% of pipeline tariff. Preference shall be given to national flag tankers.	A variable percent of pipeline tariff will be paid to Government.		
11. Natural Gas	Natural gas belongs to the State but may be used for exploitation, reinjection into reservoir, and transport operations.	-	-	-
12. Ecuadorian Personnel	Technical 75% Administrative 90% Other 95%	Technical 50% Administrative 80% Other 90%	Technical 50% Administrative 85% Other 99%	Technical 50% Administrative 80% Other 95%
13. Supply of Oil for Domestic Purposes	Ministry may demand supply of oil for industrial and refining needs in the country.	When oil is supplied for refining needs in the country, price will not be below cost of production and transport plus 20% of this cost.	Ministry may demand up to 20% of production belongs to company. Price will not be below the effective cost plus a percentage to be determined.	Ministry may demand up to 20% of production including royalty oil. Price will be set on the basis of actual cost plus a percentage to be determined.
14. Participation	-	-	15 to 35% according to production level, net of cost once initial investment has been recovered by the company.	-

1/ Converted at a rate of S/25.00 = $1.00.

IX. PRICES AND WAGES

Table No.

Table 9.1: GDP DEFLATOR, WHOLESALE PRICE INDEX, MAJOR CONSUMER PRICE INDEXES AND WEIGHTED AVERAGE ANNUAL EXCHANGE RATES, 1950-71
(1965=100)

Year	GDP Deflator	National WPI	CPI		Exchange Rate		
			Quito	Guayaquil	Weighted Average Index	Sucres Per US$	Parity Sucres Per US$
1950	69.5	..	..	..	87.9	16.02	15.15
1951	72.4	..	76.3	76.0	90.1	16.43	15.15
1952	74.8	..	78.9	..	86.0	15.67	15.15
1953	76.1	..	79.3	..	85.8	15.64	15.15
1954	79.1	88.3	82.2	..	86.0	15.67	15.15
1955	81.5	87.9	83.3	..	88.1	16.07	15.15
1956	80.3	86.6	79.4	..	88.8	16.20	15.15
1957	81.3	89.6	80.0	85.5	88.7	16.18	15.15
1958	81.8	89.5	81.3	86.0	86.5	15.76	15.15
1959	81.9	88.2	81.4	85.6	89.2	16.26	15.15
1960	83.4	86.8	82.6	85.4	89.2	16.25	15.15
1961	87.6	91.0	86.0	90.2	97.8	17.82	18.18/a
1962	89.5	92.3	88.5	91.1	107.4	19.57	18.18
1963	93.3	95.3	93.7	91.9	101.9	18.57	18.18
1964	96.3	98.8	96.9	95.2	99.8	18.18	18.18
1965	100.0	100.0	100.0	100.0	100.0	18.22	18.18
1966	105.1	102.7	104.1	103.3	101.6	18.53	18.18
1967	108.9	104.7	108.1	109.1	102.4	18.66	18.18
1968	113.4	106.2	112.7	111.3	104.7	19.08	18.18
1969	118.7	111.0	119.9	116.6	104.5	19.05	18.18
1970	126.6	116.6	126.0	123.1	117.5	21.42	25.00/a
1971	138.8	..	136.6	135.2	138.1/b	25.17/b	25.00

/a Change occurred in July.
/b Mission estimates.

Sources: Central Bank of Ecuador, National Economic Planning and Coordination Board; National Institute of Statistics; Institute of Economic and Political Research of the State University of Guayaquil; mission estimates.

VOLUME III - ANNEXES

LIST OF ANNEXES

CURRENT ECONOMIC POSITION AND
LONG-TERM PROSPECTS OF ECUADOR

TABLE OF CONTENTS

VOLUME III

LIST OF TABLES

TECHNICAL NOTE ON NATIONAL ACCOUNTS

I. Introduction

Annex A presents the findings and recommendations on Ecuador's national accounts; the related basic statistics are reviewed in Annex B below. The discussion focuses on the estimating procedures and alternative estimates produced by the Central Bank of Ecuador (CBE) and the National Economic Planning and Coordination Board (NEPCB). The summary of major findings and recommendations focuses on major problems, the details being given and supported by a more comprehensive discussion and tables in the subsequent sections of this Annex. The recommendations relate to various improvements in the estimating procedures of national accounts. The basic statistical sources and methodology, however, also require a thorough review to establish more meaningful priorities for data collection and processing

The mission is aware of the extremely limited human and budgetary resources available for the statistical work in Ecuador, and especially for the national accounts. The various methodological shortcomings encountered by the mission are frequently the result of shortcuts and expediency rather than lack of the necessary expertise. Although Ecuador provides little professional training in statistics, it nevertheless has several competent experts in national accounts and basic statistics with varying degrees of foreign training who are aware of the major deficiencies and who would be able to bring about considerable improvements if the necessary resources were made available.

II. Summary of Major Findings and Recommendations

This summary outlines the methodologies used by the CBE and the NEPCB for deriving the major aggregates of national accounts. The CBE prepares most of the original estimates; the NEPCB updates, projects, and adjusts them for long-range planning and policy purposes. Both agencies use the old system of the U.N. national accounts. In view of considerable data problems, the new U.N. system may not be adopted for several years. The immediate improvement of the existing system of national accounts is of greater importance.

The CBE makes global estimates of the GDP at current prices, derives the major expenditure components of the GDP, and estimates the GDP by industrial origin. It also prepares in considerable detail the revenue and expenditure accounts of the general government and the external transactions, showing in condensed form the other accounts of the old U.N. system--all at current prices. Prior to 1968, the CBE used to calculate a general price index for deflating all GDP components. In recent years, apparent deficiencies in consumer price indexes and a complete absence of wholesale price indexes compelled the CBE to suspend temporarily the deflation of national accounts. The NEPCB has carried on the deflation work, even without the most inadequate price deflators, because it needs the national accounts at constant prices for planning purposes.

In the preparation of national accounts, the CBE has tried to allow and make necessary adjustments for the deficiencies in the basic statistics. Whenever feasible, the CBE conducted its own surveys and made numerous inquiries every year to collect the data necessary for the national accounts. It employed up to eighteen full-time economists in the 1950s for evaluating and incorporating all the basic relevant data into an almost complete set of national accounts. With a gradual deterioration of basic statistics, the burden of providing all the necessary data for the national accounts increased and priorities shifted to other areas. The CBE gradually reassigned its national accounts experts, reducing their number from eighteen to only one part-time specialist.

Such a drastic staff reduction accompanied by a gradual deterioration of basic statistics compelled the CBE to modify its approach to the work on national accounts in the middle 1960s. Instead of aggregating the various components of national accounts from basic data, the CBE started regressing them on several readily available time series. Moreover, to cut corners, the CBE consolidated many detailed breakdowns and less important series into broader aggregates, finally abandoning all attempts to deflate the national accounts. While the use of regressions may produce sufficiently meaningful extrapolations for a few years, this shortcut method often results in misleading and estimates--of which the Ecuadorian experience has contributed several examples pointed out below. Their number would have been larger if the CBE experts had not employed various tests of consistency and reasonableness by deriving some estimates from alternative sources.

The National Institute of Statistics (NIS) has recently been reorganized into an autonomous agency associated with the NEPCB although it still appears to be weak in modern sampling techniques and data processing. At present, it has no staff for constructing the estimates for the national accounts. However, after the NIS has been sufficiently strengthened to produce meaningful, relevant, and timely statistics, it should establish a National Accounts Division (NAD), which would assume the responsibility for

the national accounts work of the CBE and the NEPCB. As a major user of basic statistics, the NAD would exert a beneficial influence on the NIS priorities and standards with respect to its basic statistics (see Annex B for further details).

Price and production indexes should be improved and better adapted to the deflation needs of national accounts. The present deflation based on CPI's is inadequate. Each component of national accounts should be deflated with the most appropriate component of the CPI or the WPI. The price indexes of various cities should be aggregated, by components with proper regional weights, into national CPI and WPI. Whenever appropriate, industrial and agricultural production indexes should be computed and used for extrapolating the corresponding components of the national accounts at constant prices. The estimates at current prices would then be obtained by means of specific price indexes.

The following discussion presents a general picture of the CBE and NEPCB methodologies with selected illustrations drawn from recent experience. The mission tried to use the same data and methodology with a few changes whenever they produced significantly improved results. The primary objective of the mission in the area of national accounts has been to ascertain the basis for the present estimates rather than to develop a new set of national accounts. The latter undertaking would not have been feasible with the time and basic data at the disposal of the mission.

III. Estimation of the GDP at Current Market Prices

For 1969 and 1970, the CBE has estimated the GDP at current market prices by simple linear regression from the average monthly means of payment at the disposal of the public. The latter variable is readily available, and it has shown a remarkably stable relationship--even for the years when the two variables were estimated independently--of about eleven percent of GDP in the 1950s and 12 percent for most of the 1960s (see Table A-1), implying a slight decline in the velocity of the circulation of money. Such a secular decline has been observed in many countries. The expansion of the monetized sector tends to replace the barter economy of the subsistence sector. This has a double effect. More money is needed: (1) for transactions--as a medium of exchange, and (2) for value transfers in time and place--as a store of value. Instead of goods, means of payment are used for accumulating wealth. Thus, relatively, more money is needed per value unit of the GDP. Therefore, the increasing ratio of the money supply to the GDP is very plausible for Ecuador.

The preliminary GDP estimate extrapolated by the regression on the means of payment is then adjusted on the basis of changes in foreign trade, current and capital expenditure of the public sector, construction permits, output of selected industrial products, and various

Table A-1: GDP AT CURRENT MARKET PRICES, ECUADOR, ESTIMATING PROCEDURE FOR 1970-1972

Year	GDP at Current Market Prices (Millions of Sucres)	Means of Payment at the Disposal of the Public (Monthly Averages in Millions of Sucres)	Means of Payment (Percent of GDP)
	Y	X	%
1950	7,245	803	11
1951	7,761	866	11
1952	8,854	947	11
1953	9,349	1,080	12
1954	10,447	1,205	12
1955	11,049	1,215	11
1956	11,266	1,239	11
1957	12,007	1,311	11
1958	12,357	1,362	11
1959	13,009	1,474	11
1960	14,140	1,627	12
1961	15,075	1,731	11
1962	16,104	1,840	11
1963	17,437	2,054	12
1964	19,414	2,362	12
1965	20,787	2,411	12
1966	22,834	2,615	11
1967	25,128	2,962	12
1968	27,466	3,398	12
1969	30,717	3,693	12
1970	37,575	4,549	12
1971	44,673	5,435	12
1972	53,205	6,500	12

The above variables produced the following estimating equation for GDP at current market prices:

$$Y_i = 1{,}130.33 + 8.01147X_i$$

This equation produced the following estimates:

$$Y_{1970} = 37{,}574.5$$

$$Y_{1971} = 44{,}672.6$$

$$Y_{1972} = 53{,}204.9$$

The CBE computed a slightly different estimating equation ($Y_i = 1{,}130.13 + 8.011311X_i$).

Source: Central Bank of Ecuador, National Income Division; mission estimates.

other indicators. In addition, the CBE takes into consideration expert appraisals produced by various government agencies and international organizations. The integration of all this information in a GDP estimate cannot be objective. It usually results in several tentative hypotheses, the most plausible of which is finally accepted. This estimating procedure can be illustrated by GDP estimates prepared for recent years.

Given the inflation rate by the Quito CPI of 5.0 percent in 1970 and the increase in the GDP at current market prices of 21.6 percent implied by the regression on the means of payment, the real rate of growth of 15.8 percent appeared to be on the high side. Making allowance for higher price changes, the CBE estimated the price deflator at 7.1 percent for 1970. However, even with this higher price deflator, the real growth of GDP comes to 12.4 percent for 1970. In order to bring it down to a more reasonable level of about 8 percent, the CBE reduced the GDP at current market prices from 37,574 (as given by the regression) to 35,743 million sucres. For 1969, the preliminary GDP estimate of 30,317 million sucres implied only 1.85 percent rate of growth in the per capita national income. This estimate appeared on the low side, and four other alternative estimates with higher growth in the per capita income were considered (30,843; 31,048; 31,282; and 36,112). The lower of the latter four estimates appeared most plausible, and it was finally adopted for 1969. Similar considerations determined the estimates of GDP at current market prices in 1968, 1967, 1966 and 1965. For 1964 and earlier years, the GDP was estimated by the aggregation of value added by sectors. These procedures are discussed below.

The NEPCB estimated the GDP by converting exports and imports from the balance of payments dollar values with different exchange rates, and although it used essentially the same consumption and investment estimates as the CBE, its estimates of imports became larger and those of GDP somewhat smaller. The details of these NEPCB estimates are discussed below.

IV. Major Components of the Expenditure on the GDP

Private consumption. This GDP component is derived as a residual by subtracting gross domestic capital formation from the available resources. In the 1950s, the CBE tried to check this component by estimating independently private consumption expenditure. The absence of necessary data made such estimates of private consumption expenditure almost impossible, and their preparation has been suspended.

General government expenditure. The National Income Division (NID) of the CBE estimates general government consumption expenditure from the accounts of Central, provincial, and municipal governments. The consumption expenditure of the Ecuadorian Social

Table A-2: GENERAL GOVERNMENT AND PUBLIC SECTOR CONSUMPTION EXPENDITURE AT CURRENT MARKET PRICES, ECUADOR, 1960-1970
(Millions of Current Sucres)

Consumption Expenditure	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Central Bank of Ecuador Estimates											
Employee Compensation											
General government	1,158	1,166	1,252	1,373	1,576	1,766	2,008	2,091	2,751	3,234	n.a.
Plus: other entities	-48	91	74	48	55	59	66	81	97	110	n.a.
Public sector	1,110	1,257	1,326	1,421	1,631	1,825	2,074	2,172	2,848	3,344	n.a.
Purchases of goods and services 1/											
General government	655	901	903	859	1,014	1,072	1,211	1,311	1,308	1,326	n.a.
Public sector	576	739	751	761	896	906	830	902	1,259	1,312	n.a.
Consumption expenditure											
General government	1,813	2,067	2,155	2,232	2,590	2,838	3,219	3,402	4,059	4,560	4,980
Public sector	1,686	1,996	2,077	2,182	2,527	2,731	2,904	3,074	4,107	4,656	n.a.
National Economic Planning and Coordination Board Estimates											
Public sector consumption	..	..	..	..	2,387	2,628	2,809	3,158	3,743	4,171	5,115

1/ Purchases of goods and services exclude purchases from within the specified sector. Therefore, the general government purchases (and consumption expenditure) may exceed those of the public sector as a whole.

Sources: Central Bank of Ecuador, National Income and Fiscal Studies Divisions; National Economic Planning and Coordination Board.

Security Institute is also included while the consumption expenditure of government enterprises and public corporations is excluded from general government and implicitly included in the private sector. These classifications are consistent with the U.N. system of national accounts.

The Fiscal Studies Division of the CBE and the NEPCB have also estimated public consumption which includes over 500 autonomous entities, government enterprises, and public corporations. According to the CBE estimates, general government accounts for about 97 percent of the employee compensation of the public sector. The general government purchases of goods and services exceed those of the public sector. This is possible because the intrasector transactions are excluded and the general government agencies make purchases from the rest of the public sector. The latter are included in the general government but are excluded from the public sector (see Table A-2). The NEPCB has also estimated public sector consumption which tends to be lower (except in 1967 and 1970) than that estimated by the CBE (see Table A-2). The methodological details of the latter estimates are not available.

Gross domestic fixed investment (GDFI). The National Income Division of the CBE estimates first the public GDFI from the data compiled by the Fiscal Studies Division for the public sector as a whole (which includes government enterprises and public corporations). The latter Division classifies annual expenditure of each entity, aggregating new GDFI by major components. The National Income Division adds financial investments of the public sector in land, buildings, and other real estate to the new GDFI to obtain its own estimate of gross domestic fixed capital formation which it uses in the national accounts (the U.N. system of national accounts excludes financial investment).

The NEPCB makes further upward adjustments in the public GDFI, including several additional autonomous entities as well as the deferred payments for financing public GDFI of the preceding year (see Table A-3). The methodological details of these adjustments are not available. A comparison of the CBE and the NEPCB estimates of GDFI by type of asset shows that the NEPCB estimates tend to be higher than those of the CBE for other construction although they tend to be lower for machinery and buildings (see Table A-3). These differences may partly be attributed to the different coverage of autonomous agencies although an exhaustive comparative study of the two sets of data for all of the 500 autonomous entities could not have been undertaken within the scope of the present mission.

The CBE estimates the private GDFI as a residual by subtracting the public GDFI from the total GDFI. The NEPCB adopts the CBE estimate of the total GDFI and derives the private GDFI by subtracting its own estimate of public GDFI (see Table A-4). Thus, both agencies use the same total GDFI and different estimates for the private and public sectors.

Table A-3: PUBLIC SECTOR GROSS DOMESTIC FIXED INVESTMENT AT CURRENT MARKET PRICES, ALTERNATIVE CBE AND NEPCB ESTIMATES, BY TYPE OF ASSET, ECUADOR, 1964-1970
(Millions of Current Sucres)

	1964	1965	1966	1967	1968	1969	1970
Public new GDFI	875	886	844	998	1,242	1,522	1,874
Plus: land, etc. 1/	71	47	38	130	26	75	n.a.
GDFI in CBE national accounts 2/	946	933	882	1,128	1,268	1,597	n.a.
Plus: adjustment 3/	7	111	245	154	243	38	n.a.
GDFI in NEPCB national accounts 4/	953	1,044	1,127	1,282	1,511	1,635	2,013
Public new GDFI, by type of asset, total:							
CBE	875	886	844	998	1,242	1,522	n.a.
NEPCB	908	1,009	1,093	1,246	1,371	1,453	1,846
Machinery and equipment:							
CBE	144	188	171	166	206	239	n.a.
NEPCB	123	170	204	219	159	205	394
Buildings:							
CBE	150	113	94	134	206	245	n.a.
NEPCB	87	78	49	91	151	120	169
Other construction:							
CBE	581	585	579	698	830	1,038	n.a.
NEPCB	698	761	840	936	1,061	1,128	1,283

1/ Includes CBE estimates of land, buildings, and other real estate financial investments of the public sector.
2/ CBE estimates of public GDFI used in CBE national accounts.
3/ Includes deferred payments for financing public GDFI of the preceding year and additional autonomous entities.
4/ NEPCB estimates of public GDFI used in NEPCB national accounts.

Source: Central Bank of Ecuador; National Economic Planning and Coordination Board; mission estimates.

Table A-4: ESTIMATION OF TOTAL AND PRIVATE SECTOR GROSS DOMESTIC FIXED INVESTMENT AT CURRENT MARKET PRICES, ECUADOR, 1964-70
(Millions of Current Sucres)

	1964	1965	1966	1967	1968 1/	1969 1/	1970 1/
Central Bank of Ecuador Estimates							
Regressed total GDFI	2,339	2,406	2,515	2,969	3,272	3,963	4,296
CBE adjustment	-	-	-	-	502	781	n.a.
CBE total GDFI	2,339	2,406	2,515	2,969	3,774	4,744	n.a.
Less: CBE public GDFI	946	933	882	1,128	1,268	1,597	n.a.
CBE private GDFI	1,393	1,473	1,633	1,841	2,506	3,147	n.a.
National Economic Planning and Coordination Board Estimates							
CBE total GDFI	2,339	2,406	2,515	2,969	3,774	4,744	6,298
Less: NEPCB public GDFI	953	1,044	1,127	1,282	1,511	1,635	2,813
NEPCB private GDFI	1,386	1,362	1,388	1,687	2,263	3,109	3,485

1/ Preliminary.

Source: Central Bank of Ecuador, National Income Division; National Economic Planning and Coordination Board

The CBE estimates the total GDFI by regression. It first converts the GDFI from the current into constant prices, expresses the latter as an index, and regresses it for 1969-70 on three related indexes: (1) GDFCF of the general government (which is not available and is replaced with public sector GDFCF), (2) unweighted volume index of cement production and (3) quantum index of imported capital goods (see Table A-5). The latter index has not been available since the middle 1960s and it had to be estimated from other data on imports. It was apparently lagged one year although this could not be established with certainty because the computational details of this quantum index are not available. It was computed from the volume of imported capital goods and the 1960 unit price. The cement production was similarly calculated from the metric tons and the average 1960 cement price. The results at constant prices were converted to index numbers which the CBE used in the regression for deriving GDFCF estimates as far back as 1964.

Depreciation. The CBE estimates the provision for fixed capital consumption as a percentage of preceding year's GDFCF. The latter are further adjusted by the statistical discrepancy in the reconciliation of the account showing the finance of gross capital formation. In the latter account, the CBE reconciles the depreciation with the surplus or deficit of the nation on current account, gross domestic saving, and the gross capital formation. The depreciation allowances have thus been significantly adjusted, especially for recent years (see Table A-6).

Increase in stocks. The CBE has estimated the changes in stocks from the data of the Finance Ministry for 1950-53. It first estimated increases in stocks at current prices, deflated them with the GDP deflator, and calculated an average annual increase per capita. In the 1960s the NID has used the changes in the volume of exports and imports rather than the population growth. The changes in stocks have been further adjusted in recent years to show smooth and gradual increases.

Exports and imports. The CBE National Income Division derives exports and imports of goods and nonfactor services from the balance of payments data in U. S. dollars. It converts each entry at the exchange rate applicable to each foreign exchange market. Thus, in 1968 and 1969, the CBE distinguished between exchange rates in the official market (17.82 sucres for exports and 18.18 sucres per U. S. dollar for imports) and those in the free market (22.15 and 22.26, respectively). For the first half of 1970 (through June 21), it used 21.55 and 21.71 sucres per U. S. dollar for the free market. From June 22 till August 17, in the so-called parallel market, the CBE used 23.20 as a buying and 23.43 sucres as a selling rate, and from August 17 till the end of 1970, the CBE used again two sets of rates: 24.75-25.25 sucres for the "unified" and 27.00-28.00 sucres for the "black" market. Aggregating separately the dollar and the sucre amounts, the

Table A-5: GROSS DOMESTIC FIXED CAPITAL FORMATION AT CURRENT MARKET PRICES, ECUADOR, ESTIMATING PROCEDURE FOR 1969 AND 1970

Year	Gross Domestic Fixed Capital Formation (Millions of Sucres)			Independent Variables (Indexes, 1965 = 100)		
	Current Prices	At 1965 Prices	Index Y	X_1	X_2	X_3
1957	1,561	1,920	79.8	61.0	52.2	47.7
1958	1,516	1,853	77.0	64.2	53.9	52.2
1959	1,734	2,117	88.0	81.1	52.9	47.8
1960	1,897	2,272	94.4	97.6	61.6	60.1
1961	2,047	2,337	97.1	102.8	67.0	58.4
1962	1,959	2,186	90.9	84.8	65.3	46.6
1963	2,146	2,300	95.6	89.0	79.1	58.0
1964	2,339	2,426	100.8	101.4	89.2	80.8
1965	2,406	2,406	100.0	100.0	100.0	100.0
1966	2,515	2,393	99.5	94.5	115.8	107.0
1967	2,969	2,726	113.3	120.9	131.6	126.5
1968	3,272	2,893	120.2	133.0 1/	146.1	140.2
1969	3,963	3,289	136.6933	171.2	153.5	153.3
1970	4,296	3,330	138.4013	176.3(p)	154.2	158.7

1/ The index value computed from the CBE data for 1968 is 135.9.

Independent Variables:

X_1 = GDFCF of the general government
X_2 = Cement production
X_3 = Quantum index of imported capital goods.

The above variables produced the following estimating equation for GDFCF at constant 1965 factor cost:

$$Y_i = 45.0670 + 0.4311X_1 + 0.2375X_2 - 0.1216X_3$$

This equation produced the following final estimates:

$$Y_{1969} = 3,289$$

$$Y_{1970} = 3,330$$

The CBE computed the same estimating equation.

Source: Central Bank of Ecuador, National Income Division.

Table A-6: GROSS FIXED CAPITAL CONSUMPTION ALLOWANCES, ECUADOR, ESTIMATING PROCEDURE FOR 1968-1970
(Millions of Current Sucres and Percent)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
GDFCF	1,897	2,047	1,959	2,149	2,339	2,406	2,515	2,969	3,774	4,744	6,298
Unadjusted GFCCA (as 43% of the GDFCF in preceding year)	-	816	880	842	924	1,005	1,035	1,081	1,277	1,623	2,040
Plus: reconciliation adjustment	-	-53	-98	-25	103	62	78	69	-67	-398	-440
Adjusted GFCCA	684	763	782	817	1,027	1,067	1,113	1,150	1,210	1,225	1,600
GFCCA in percent of adjusted GDFCF of the preceding year	-	40.2	38.2	41.7	47.8	45.6	46.3	45.7	40.8	32.5	33.7

Sources: Central Bank of Ecuador, National Income Division; mission estimates.

CBE has derived for 1970 the average weighted exchange rates of 21.33 for exports and 21.49 for imports, with an overall weighted average of 21.42 sucres per U. S. dollar.

The Foreign Trade Section of the NEPCB has used somewhat different exchange rates and made other adjustments in converting the balance of payments data from US dollars into sucres. Further discrepancies arise from the different treatment of services. In addition to investment income, the NID classifies services and commissions on loans and donations as factor payments; the balance of payments and the NEPCB include these as nonfactor services with imports. To this extent, the NID tends to understate the imports and to overstate the net factor payments. The net capital inflow data show relatively smaller discrepancies than its two major components (see Table A-7). Using the balance of payments data and the NID weighted average exchange rate for imports, the Mission estimated the total value of imports in sucres which approximates the NEPCB estimates (see Table A-7). The same procedure produced also the NEPCB estimates of exports.

V. Estimation of the GNP at Market Prices and the National Income

The CBE and the NEPCB estimate the GNP at current market prices by deducting net factor payments to abroad from the GDP at current market prices. Subtracting the net indirect taxes from the GNP is obtained (see Tables 2.1 and 2.2 of the Statistical Appendix to the main report). The factor payments are overstated and the indirect taxes understated by items which are classified differently by the IBRD, the IMF, and the U.N. system of national accounts. The major discrepancies are discussed below.

Net factor payments. The CBE derives factor payments from the balance of payments data, converting the U. S. dollars into sucres at various exchange rates (similarly to the foreign trade data). The items classified as investment income payments include dividends and interest on direct investment as well as other dividends and interest (IMF charges, interest on external debt, bank interest and net portfolio investment income). Moreover, real estate transactions

Table A-7: EXPORTS AND IMPORTS OF GOODS AND NONFACTOR SERVICES, NET FACTOR PAYMENTS AND NET CAPITAL INFLOW, COMPARISON OF ALTERNATIVE ESTIMATES, ECUADOR, 1960-71

Alternative Sources	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
	Exports of Goods and Nonfactor Services in Millions of Current Sucres											
NID (CBE) exports[1]	2,530	2,524	3,081	3,024	3,245	3,618	3,726	4,041	4,258	4,183	5,437	..
Plus: discrepancy	-6	+106	-34	-28	-34	-45	+10	-44	-37	-19	-43	..
NEPCB exports[1]	2,524	2,630	3,047	2,996	3,211	3,573	3,736	3,997	4,221	4,164	5,394	6,422
Mission estimates	2,524	2,630	3,047	2,996	3,211	3,573	3,736	3,997	4,227	4,390	5,463	6,422
	Imports of Goods and Nonfactor Services in Millions of Current Sucres											
NID (CBE) imports[1]	2,476	2,581	2,929	2,940	3,334	3,574	3,604	4,209	5,134	5,842	7,043	..
Plus: discrepancy	-21	+167	+9	-10	+130	+104	+127	+172	+214	+486	+552	..
NEPCB imports[1]	2,455	2,748	2,938	2,930	3,464	3,678	3,731	4,381	5,348	6,328	7,595	11,642
Mission estimates	2,455	2,748	2,938	2,930	3,464	3,678	3,731	4,381	5,362	6,301	7,760	11,642
	Net Imports of Goods and Nonfactor Services in Millions of Current Sucres											
NID (CBE)	-54	57	-152	-84	89	-44	-122	168	876	1,659	1,606	..
Plus: discrepancy	-15	61	43	18	164	149	117	216	251	505	595	..
NEPCB	-69	118	-109	-66	253	105	-5	384	1,127	2,164	2,201	..
Mission estimates	-69	118	-109	-66	253	105	-5	384	1,135	1,911	2,297	5,220
	Net Factor Payments in Millions of Current Sucres											
NID (CBE)	398	460	439	333	488	566	613	662	751	985	1,432	..
Plus: discrepancy	-3	5	-4	0	-131	-101	-119	-172	-177	-392	-666	..
NEPCB	395	465	435	333	357	465	494	490	574	593	766	..
Mission estimates	395	465	435	333	357	465	494	490	572	593	727	865
	Net Capital Inflow in Millions of Current Sucres											
NID (CBE)	344	517	287	249	577	522	491	830	1,627	2,644	3,038	..
Plus: discrepancy	-18	66	39	18	33	48	-2	44	74	113	-71	..
NEPCB	326	583	326	267	610	570	489	874	1,701	2,757	2,967	..
Mission estimates	326	583	326	267	610	570	489	874	1,707	2,504	3,024	6,085

1/ Includes goods and nonfactor services

Sources: NEPCB, Foreign Trade Yearbook (for 1957 through 1969), Central Bank of Ecuador; mission estimates.

Table A-8: NET FACTOR PAYMENTS, ESTIMATING PROCEDURE, ECUADOR, 1968-1970
(Millions of Current Sucres)

		1968		1969		1970	
1.	Investment payments		570.3		592.6		727.2
a.	Dividends and interest on direct investment	441.4		445.2		513.8	
b.	Other dividends	-10.7		-7.5		15.8	
c.	Interest on external debt	138.2		141.8		194.3	
d.	Bank interest	..		7.3		..	
e.	IMF charges	3.6		3.6		5.5	
f.	Portfolio investment	-2.2		..		-2.2	
g.	Net lease, rent, and income of the US embassy in Quito	..		2.2		..	
2.	Other factor payments 1/		1.8		..		..
3.	Net factor payments: (1) Mission estimates		572.1		592.6		727.2
	(2) NEPCB estimates		574		593		766
4.	Nonfactor payments 2/		179.3		392.6		704.8
a.	Services and commissions on direct investment	..		219.5		460.2	
b.	Services and commissions on public debt	86.8		..		..	
c.	Services and commissions on loans	83.6		43.6		122.5	
d.	Services and commissions on donations			129.5		119.9	
e.	Film rentals	8.9		..		2.2	
5.	Net factor payments: CBE estimates		751.4		985.2		1,432.0

1/ Comprises payments to foreign technicians.
2/ The CBE classifies these non-factor services as factor payments.

Sources: Central Bank of Ecuador, Department of Economic Research; National Economic Planning and Coordination Board.

Table A-9: NET FACTOR PAYMENTS, COMPARISON OF ALTERNATIVE ESTIMATES, ECUADOR, 1960-70.

Alternative Sources	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
	Millions of US Dollars										
Balance of payments investment income	22.8	23.2	19.9	16.7	19.3	25.0	25.2	24.9	27.1	28.4	33.5
	Millions of Sucres										
Balance of payments investment income 1/	345	422	362	304	351	455	458	453	493	516	609
NEPCB net factor payments	395	465	435	333	357	465	494	490	574	593	766
CBE net factor payments	398	460	439	333	488	566	613	662	751	985	1,432

1/ Based on the official selling rate of 15.15 sucres per US dollar for 1960 and 18.18 sucres for 1961-70.

Sources: IMF Balance of Payments Division, Balance of Payments Yearbook, Vols. 17-22 (for 1966-1970); CBE, Memoria (issues from 1962 through 1969) and unpublished estimates for 1968-1970; National Economic Planning and Coordination Board; mission estimates.

such as the lease, rent and income of the U. S. embassy in Quito are also included in investment income. Other factor payments include payments to foreign technicians. No estimate is included for Ecuadorian labor income earned abroad because it is believed to be negligible. The sum of the above net amounts approximates net factor payments (see Table A-8).

The CBE has included certain other items as factor payments which appear in the unpublished statement of the balance of payments. A detailed breakdown and description of these additional items is not available, and their classification as factor payments may not be established with certainty. They include services and commissions on direct investment, public debt, loans and donations. To some extent these finance charges are akin to other returns to capital, and they could be classified as factor payments. However, the IMF and the IBRD normally classify them with nonfactor services rather than with factor payments. Payments for film rentals belong also to nonfactor services (see Table A-8).

The net factor payments of Ecuador thus consist mostly of investment income which appears in the balance of payments. Relatively higher amounts in sucres and a higher implicit exchange rate for the NEPCB factor payments indicate that they are more inclusive than those shown in the balance of payments (see Table A-9). Prior to 1964, the CBE and the NEPCB made relatively small adjustments and they differed insignificantly. Starting in 1964, however, the National Income Division of the CBE began including considerable additional amounts into net factor payments. This dicrepancy increased from 37 percent in 1964 to 87 percent in 1970 (see Table A-9). The NEPCB estimates are, on the other hand, close to those prepared by the ission for 1968-70, and in the absence of more detailed data, they have been adopted also for earlier years.

Indirect taxes and subsidies. The U.N. system of national accounts includes as indirect taxes all taxes assessed on producers for the production, sale, purchase or use of goods and services which they charge to production expense. The indirect taxes estimated by the CBE comprise import duties (including consular rights and import permit stamps), consumer taxes (including net value of consumption for monopoly products), taxes on transactions (excise taxes and registration fees), and other indirect taxes (see Table A-10). The U.N. system of national accounts requires that the operating surplus of fiscal and similar government monopolies be reduced by the normal (or average) profit margin earned by private business firms in the same industrial branches. It appears that the available data do not permit such adjustments in Ecuador. Moreover, the CBE classifies the export taxes as direct, following apparently the argument that Ecuadorian exporters face perfectly elastic demand in the world markets for their products. Being unable to raise prices by the amount of export taxes, the exporters

Table A-10: NET INDIRECT TAXES, ECUADOR, 1960-1970
(Millions of Current Sucres)

Taxes and Subsidies	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Central Bank of Ecuador Estimates											
Import taxes 1/	642	655	669	861	1,060	1,018	1,201	1,568	1,703	1,739	n.a.
Consumer taxes 2/	437	434	418	467	557	454	432	462	533	686	n.a.
Transaction taxes 3/	35	36	38	41	47	45	53	64	75	75	n.a.
Other indirect taxes	191 4/	172	193	198	248	265	285	325	379	370	n.a.
Total indirect taxes	1,305 4/	1,297	1,318	1,567	1,912	1,782	1,971	2,419	2,690	2,870	n.a.
Less: subsidies	20	60	106	43	96	117	139	97	90	124	n.a.
Net indirect taxes	1,285	1,237	1,212	1,524	1,816	1,665	1,832	2,322	2,600	2,746	n.a.
NEPCB Estimates											
Net indirect taxes	1,285	1,237	1,212	1,524	1,816	1,665	1,832	2,322	2,600	2,746	3,030
Mission Estimates											
Export taxes	175	212	245	267	360	290	276	282	307	301	n.a.
Total adjusted net indirect taxes	1,440	1,449	1,457	1,791	2,176	1,955	2,108	2,604	2,907	3,047	n.a.

1/ Includes consular rights and import permit stamps.
2/ Includes net consumption value of state monopoly products.
3/ Includes certain excise taxes and registration fees.
4/ For 1960, the FSD of the CBE estimated other indirect taxes at 171 mil. sucres and total indirect taxes at 1,285 mil. sucres but the NID raised the latter to 1,305 mil. sucres, apparently to keep the net indirect taxes of 1,285 mil. unchanged after 20 mil. sucres of subsidies had been estimated.

Sources: Central Bank of Ecuador and National Economic Planning and Coordination Board.

charge these taxes to profits rather than to production expenses. This controversial issue has been raised in several countries, and it remains open for discussion in Ecuador. The exclusion of export taxes understates the GDP at market prices.

The NEPCB uses essentially the CBE estimates of indirect taxes and subsidies (see Table A-10). Subsidies are relatively small in Ecuador. They include tax credit certificates which can be credited to future tax payments. Subsidies also include the cost of pesticide fumigation of banana plantations.

VI. Industrial Origin of the GDP at Factor Cost

The CBE estimates the industrial origin of the GDP by regressing each GDP component on selected indicators. The NEPCB adjusts these estimates further for consistency with its estimates of exports, imports, and the GDP. The NEPCB adjustments are relatively minor. The following discussion focuses on the CBE methodology for deriving the GDP by industrial origin.

Agriculture GDP. Agriculture is still by far the largest economic sector in Ecuador, employing more than half of its people. Its relative importance in total GDP has declined, however, from 37 percent in 1960 to 31 percent in 1970. Agriculture GDP includes estimates for 13 major and 59 minor crops, livestock products, poultry and eggs. Rough estimates for hunting, forestry and fishing are also included. The volume of crop production, which accounts for about 70 percent of the gross value of output in this sector, is estimated from the 1954 Census of Agriculture and the Ministry of Production data based on the annual reports of agricultural extension workers. For the 1950s and most of the 1960s the CBE has estimated first the gross value of output and then derived the value added by subtracting the nonfactor inputs. Since 1969, the CBE has used regressions for deriving the agriculture GDP.

The CBE estimates the gross value of agricultural production for thirteen major crops, which account for over 80 percent of the total value of all agricultural crops, multiplying the volume of output by estimated prices of each commodity (see Table A-11). Special adjustments are made for major exports. Thus, for banana and plantains, which account for about one-third of the total value of all crops, their gross value is estimated separately for exports and for domestic consumption (see Table A-12). Inasmuch as the export permit declarations are understated, the CBE has used the estimates of the National Banana Bureau (NBB). The CBE has also adjusted upwards the banana export prices for most of the 1960s. Given the volume of domestic production and exports of bananas

Table A-11: MAJOR AGRICULTURAL CROPS--VOLUME, PRICES AND VALUE OF PRODUCTION, ECUADOR, ESTIMATING PROCEDURE FOR 1969-1972

Agricultural Crops	1969				1970				1971	1972
	Metric Tons (000)	Prices Sucres per Quintal	Prices Sucres per M. Ton	Million Sucres	Metric Tons (000)	Prices Sucres per Quintal	Prices Sucres per M. Ton	Million Sucres	Million Sucres	Million Sucres
				13 Major Crops						
1. Bananas[a]	4,316.0	b/	b/	3,314.5	b/	b/	b/	3,740.7	3,834.9	3,916.3
2. Barley	77.7	90.98	1,977.9	153.6	110.0	90.3	1,963.0	215.9	250.0	280.0
3. Beans	37.9	307.48	6,684.6	253.3	41.3	307.6	6,687.0	276.2	310.0	340.0
4. Castor beans	23.8	b/	b/	45.2	16.5	91.8	1,995.7	32.9	35.0	40.0
5. Cocoa	48.0	b/	b/	614.8	b/	b/	b/	599.6	761.6	715.5
6. Coffee	55.9	b/	b/	643.3	b/	b/	b/	1,239.3	1,175.3	1,222.0
7. Corn	222.5	b/	b/	533.8	271.5	108.0	2,347.8	637.4	720.0	810.0
8. Cotton (raw)	23.6	176.70	3,841.5	90.5	7.6	193.7	4,210.9	32.0	46.0	60.0
9. Onions	96.0	111.25	2,418.6	232.1	94.9	118.8	2,582.6	245.1	280.0	320.0
10. Paddy[c]	288.0	151.25	3,288.2	947.0	407.2	161.4	3,508.7	1,428.7	1,500.0	1,700.0
11. Potatoes	456.7	78.45	1,727.2	788.8	541.8	85.8	1,865.2	1,010.6	1,130.0	1,270.0
12. Sugar cane	11,886.6	..	87.8	1,043.6	(9,500.0)	..	(90.0)	855.0	1,060.2	1,200.0
13. Wheat	94.1	118.08	2,567.1	241.6	81.0	..	(2,700.0)	218.7	250.0	300.0
Major crops	17,626.8	..	..	8,902.1	..	..	..	10,532.1	11,353.0	12,173.8
				59 Minor Crops						
Minor crops	1,130.8	..	..	2,163.5	..	..	..	2,136.7	2,425.0	2,800.0
				72 Agricultural Crops						
Total	18,757.6	..	..	11,065.6	..	..	..	12,668.8	13,788.0	14,973.8

a/ Includes plantains.

b/ See detailed calculations in tables below.

c/ Output in metric tons adjusted to the level of output reported by the National Committee for Rice.

Sources: Central Bank of Ecuador, National Income Division; Ministry of Production, General Bureau of Planning, Division of Statistics; mission estimates.

Table A-12: BANANAS AND PLANTAINS--VOLUME, PRICES, AND VALUE OF PRODUCTION, CONSUMPTION AND EXPORTS, ECUADOR, ESTIMATING PROCEDURE FOR 1969-1972

Items	1969	Jan.-July 1970	Aug.-Dec. 1970	1970	1971	1972
Volume in Thousands of Metric Tons						
Domestic production a/	4,316.0	..	..	4,136.7	3,805.8	3,800.0
Less: NBB exports	1,189.7	..	..	1,364.0	1,351.0	1,319.0
Domestic consumption	3,126.3	..	..	2,772.7	2,454.8	2,481.0
Domestic and Export Prices						
Domestic price per 30 kgs. bunch (sucres)	12.71	..	..	11.50	12.60	13.80
Domestic price per metric ton (sucres)	423.67	..	..	383.33	420.00	460.00
Export price per metric ton, unadjusted (US$)	56.03	..	..	69.12	74.87	75.82
Plus: export price adjustment (US$)	30.84	..	..	20.89	8.15	8.33
Export price per metric ton, adjusted (US$)	86.87	..	..	90.01	83.02	84.15
Value of Production, Consumption, Exports, and Balance of Payments Adjustment						
Exports (thousands of US$)	66,653	44,532	49,745	94,277	101,154	100,000
Exchange rate (sucres per US$)	17.82	17.82	24.75	21.48	25.00	25.00
Unadjusted exports (mil. of sucres)	1,187.7	793.5	1,231.2	2,024.7	2,528.9	2,500.0
Balance of payments adjustment (thousands of US$)	36,700	24,492	4,008	28,500	11,000	11,000
Exchange rate (sucres per US$)	21.86	21.86	24.75	22.92	25.00	25.00
Balance of payments adjustment (millions of sucres)	802.3	554.0	99.2	653.2	275.0	275.0
Adjusted exports (thousands of US$)	103,353	69,024	53,753	122,777	112,154	111,000
Adjusted exports (millions of sucres)	1,990.0	1,347.5	1,330.4	2,677.9	2,803.9	2,775.0
Domestic consumption (millions of sucres)	1,324.5	..	..	1,062.8	1,031.0	1,141.3
Production (millions of sucres)	3,314.5	..	..	3,740.7	3,834.9	3,916.3

a/ Includes plantains.

Sources: Central Bank of Ecuador, National Income Division; Ministry of Production, General Bureau of Planning, Division of Statistics; mission estimates.

and plantains, the CBE derives the implicit domestic consumption and values it at unweighted average consumer prices reported by the Ministry of Production (see Table B-15), supplemented by estimates of its own (see Table A-15)[28]. The prices for bananas, plantains and other agricultural crops are generally higher than the farm-gate prices. Thus, the gross value of production includes transportation costs and trade margins.

The CBE follows a similar estimating procedure for deriving the volume, prices, gross value of production, consumption and exports of cocoa, coffee, castor beans, corn and six minor selected crops with sizeable export shares (see Tables A-13, A-14 and A-16). In each case, the volume of exports is subtracted from the domestic production to estimate implicit domestic consumption. The latter is multiplied by average domestic prices to obtain the total value of domestic consumption. The addition of the value of exports and the value of domestic consumption gives the value of total production. The remaining eight major and fifty-three minor crops are valued at domestic wholesale prices (see Tables A-11 and A-15). Finally, the CBE aggregates the gross value of production for all thirteen major and fifty-nine minor crops (see Tables A-11).

Livestock and kindred products, which account for about a fifth of the total value of agricultural production in Ecuador, comprise meat, milk, eggs and wool. The estimates of meat production are built up from the per capita consumption of beef, lamb, pork and poultry

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28 The CBE tries to review the basic data cautiously and judiciously, rejecting or adjusting inadequate statistical information. Nevertheless, the overwhelming inadequacies and continuous revisions of basic statistics make it very difficult to avoid occasional slipups. Thus, estimating the 1969 GDP at factor cost originating in agriculture, the CBE used a preliminary estimate of 5,833,562 metric tons of bananas reported for 1969 by the Ministry of Production and arrived at an estimate of 8,874 million sucres for the agricultural GDP in 1969. Subsequently, the Ministry of Production published a revised estimate of 5,388,099 metric tons which it later revised further down to 3,870,499 metric tons of bananas for 1969 (see errata to the Ministry of Production, General Bureau of Planning, Department of Statistics, Estimation of Harvested Area and Agricultural Production of Ecuador, Year 1969, no publication date). Using the latest figure shown in the errata, the GDP in agriculture is reduced from 8,874 to 8,462 million current sucres and its real growth drops from 8.7 to 4.0 percent in 1969. The CBE will probably lower its estimate in the next round of revisions.

Table A-13: COCOA--VOLUME, PRICES, AND VALUE OF PRODUCTION, CONSUMPTION AND EXPORTS, ECUADOR, ESTIMATING PROCEDURE FOR 1969-1972

Items	1969	Jan.-July 1970	Aug.-Dec. 1970	1970	1971	1972
			Volume in Metric Tons			
Domestic production	47,993	..	..	53,584	65,900	60,300
Less: exports	32,649	23,290	13,396	36,686	50,900	45,000
Domestic consumption	15,344	..	..	14,606	15,000	15,300
			Domestic and Export Prices			
Domestic price per 46 kg. quintal (sucres)	534.7	..	..	467.1	390.0	400.0
Domestic price per metric ton (sucres)	11,625	..	..	10,154	8,478	8,696
Export price per metric ton (US$)	750.10	618.94	586.37	607.04	499.00	517.00
			Values of Exports and Production			
Exports (thousands of US$)	24,490	14,415	7,855	22,270	25,376	23,300
Exchange rate (sucres per US$)	17.82	17.82	24.75	20.26	25.00	25.00
Exports (millions of sucres)	436.4	256.9	194.4	451.3	634.4	582.5
Domestic consumption (millions of sucres)	178.4	..	..	148.3	127.2	133.0
Total production (millions of sucres)	614.8	..	..	599.6	761.6	715.5

Sources: Central Bank of Ecuador, National Income Division; Ministry of Production, General Bureau of Planning, Division of Statistics; mission estimates.

Table A-14: COFFEE--VOLUME, PRICES, AND VALUE OF PRODUCTION, CONSUMPTION, AND EXPORTS, ECUADOR, ESTIMATING PROCEDURE FOR 1969-1972

Items	1969	Jan.-July 1970	Aug.-Dec. 1970	1970	1971	1972
			Volume in Metric Tons			
Domestic production	55,893	..	..	60,427	64,400	68,600
Less: exports	38,161	16,911	35,664	52,575	46,400	49,600
Domestic consumption	17,732	..	..	7,852	18,000	19,000
			Domestic and Export Prices			
Domestic price per pound (sucres)	4.3	..	..	5.6	4.1	4.4
Domestic price per metric ton (sucres)	9,505.6	..	..	12,362.0	9,050.8	9,713.0
Export price per metric ton (US$)	696.34	..	..	960.84	736.64	837.00
			Value of Exports and Production			
Exports (thousands of US$)	26,639	15,599	34,917	50,516	36,494	41,500
Exchange rate (sucres per US$)	17.82	17.82	24.75	22.61	25.00	25.00
Exports (millions of sucres)	474.7	278.0	864.2	1,142.2	912.4	1,037.5
Domestic consumption (millions of sucres)	168.6	..	..	97.1	162.9	184.5
Total production (millions of sucres)	643.3	..	..	1,239.3	1,075.3	1,222.0

Sources: Central Bank of Ecuador, National Income Division; Ministry of Production, General Bureau of Planning, Division of Statistics; mission estimates.

Table A-15: MINOR AGRICULTURAL CROPS--VOLUME, PRICES AND VALUE OF PRODUCTION, ECUADOR, ESTIMATING PROCEDURE FOR 1969-1972

# Minor Crops	Metric Tons	Domestic Prices in Sucres per 46 Kg. Quintal	Domestic Prices in Sucres per Metric Ton	Value in Sucres (000)
1. Abaca	3,500	b/	b/	18,700
2. Anise	276	900.00	19,566.00	5,400
3. Annato	1,150	b/	b/	8,776
4. Apples	4,546	281.00	6,108.94	27,771
5. Apricots	280	250.00	5,435.00	1,522
6. Avocados	23,768	251.00	5,456.74	129,696
7. Bananas (oritos)	8,015	10.00	217.40	1,742
8. Beans (lima)	10,963	161.62	3,513.62	38,520
9. Beets	3,142	85.70	1,863.12	5,854
10. Cabbage	92,906	72.00	1,565.28	145,424
11. Carrots (white)	2,760	84.00	1,826.16	5,040
12. Carrots (yellow)	3,477	78.60	1,708.76	5,941
13. Cassava	390,177	44.20	960.91	374,925
14. Cauliflower	4,745	212.00	4,608.88	21,867
15. Cherimoya	7,700	183.32	3,985.38	30,687
16. Chili	2,009	163.30	3,550.14	7,131
17. Citron	21,015	21.00	456.54	9,594
18. Coconuts	42,785	64.00	1,391.36	59,529
19. Flax	20	700.00	15,218.00	304
20. Garlic	3,830	404.00	8,782.96	33,639
21. Goosefoot	828	72.00	1,695.72	1,404
22. Grapes	1,285	1,040.00	22,609.60	29,053
23. Grapefruit	10,219	50.21	1,091.56	11,154
24. Lemons	15,324	181.20	3,939.29	60,365
25. Lentils	1,142	536.61	11,665.90	13,322
26. Lettuce	10,982	61.00	1,326.14	14,563
27. Lupines	1,461	159.92 a/	3,476.66	5,079
28. Mamey	2,189	135.00	2,935.00	6,424
29. Mandarins	11,058	248.00	5,391.52	59,619
30. Mangoes	12,007	30.00	652.20	7,831
31. Melons	715	b/	b/	750
32. Oats	221	208.00	4,521.92	999
33. Oranges	154,866	61.00	1,326.14	205,374
34. Oranges (small green)	25,150	144.00	3,130.56	78,733
35. Papaya	29,738	76.40	1,660.94	49,392

See footnotes at end of table.

Table A-15 -- Continued

# Minor Crops	Metric Tons	Domestic Prices in Sucres per 46 Kg. Quintal	Domestic Prices in Sucres per Metric Ton	Value in Sucres (000)
36. Palm (African)	10,050	116.70	2,537.06	25,497
37. Peaches	2,489	183.50	3,989.29	9,929
38. Peas (green)	11,103	179.30	3,897.98	43,279
39. Peanuts	5,858	345.00	7,500.30	43,937
40. Pears	2,934	131.50	2,858.81	8,388
41. Pineapples	57,292	b/	b/	107,014
42. Plums	1,840	280.00	6,087.20	11,200
43. Potatoes (sweet)	11,311	61.10	1,328.31	15,024
44. Pyrethrum	1,586	b/	b/	9,548
45. Ranunculus	12,079	64.00	1,391.36	16,806
46. Rye	2,622	135.00	2,934.90	7,695
47. Sapota	7,341	50.00	1,087.00	7,980
48. Sesame	1,675	291.41	6,335.25	10,611
49. Sisal	21,839	253.00	5,500.22	120,116
50. Sour grass	7,820	65.00	1,413.10	11,050
51. Soya c/	472	90.00	1,956.60	943
52. Soya c/	552	90.00	1,956.60	1,080
53. Squash	19,269	31.00	673.94	12,986
54. Sweet lime	603	120.00	2,608.80	1,572
55. Tea	273	180.00	3,913.19	1,068
56. Tobacco	1,494	b/	b/	19,190
57. Tomatoes	25,194	192.00	4,174.08	105,162
58. Watermelons	5,481	164.82	3,583.19	19,639
59. Other	15,407	..	..	77,677
Total for 59 minor crops	1,130,831	..	..	2,163,515

a/ The 1968 price for lupines (item 27) of 145.46 sucres per quintal was raised by 9.94 percent which corresponds to the average increase in food prices for the city of Quito.

b/ See tables below.

c/ Soya beans appear twice with the same prices and different quantities.

Sources: Central Bank of Ecuador, National Income Division; Ministry of Production, General Bureau of Planning, Division of Statistics.

Table A-16: SELECTED AGRICULTURAL CROPS--VOLUME, PRICES AND VALUE OF PRODUCTION, CONSUMPTION AND EXPORTS, ESTIMATING PROCEDURE FOR 1969-1972

	Exports					Domestic Consumption			Production	
	Metric Tons	Price per M. Ton (US$)	U.S. Dollars (000)	Exchange Rate	Sucres (000)	Metric Tons	Price per M. Ton (Sucres)	Sucres (000)	Metric Tons	Sucres (000)
Selected Major Crops										
Castor beans	16,159	111	1,793	17.82	31,951	7,614	1,739	13,242	23,773	45,194
Corn	200	55	11	17.82	196	222,286	2,401	533,653	222,486	533,849
Selected Minor Crops										
Abaca	456	265	121	17.82	2,156	3,044	5,435	16,544	3,500	18,700
Annato	161	211	34	17.82	606	989	8,261	8,170	1,150	8,776
Melons	242	79	19	17.82	339	473	870	411	715	750
Pineapples	1,681	169	284	17.82	5,060	55,611	1,833	101,953	57,292	107,014
Pyrethrum	143	699	100	17.82	1,782	1,443	5,382	7,766	1,586	9,548
Tobacco	18	3,556	64	17.82	1,140	1,476	12,229	18,049	1,494	19,190

Source: Central Bank of Ecuador, National Income Division.

projected for 1969-1973.[29] Meat prices also reflect transportation costs and trade margins. The per capita consumption multiplied by the mid-year population of Ecuador yield total consumption which is assumed to be roughly equal to the volume of production. Multiplied by corresponding prices for each of the four meat types, the CBE obtains the gross value of meat production (see Table A-17).

The production of milk is estimated from the projected number of milking cows multiplied by the projected average annual milk production per cow. The former projection assumes an accelerating rate (from 2.8 percent in 1970 to 3.7 percent in 1972) and the latter is based on a decelarating rate (3.7 percent in 1969 and 2.6 percent in 1972), the production growing at about a constant rate of 6.2-6.4 percent per year. Estimating the total human consumption of milk, the CBE adjusts these production data (provided by the Ministry of Production) for the milk consumption by calves and for small losses and additives. The total milk consumption is then multiplied by the average consumer price per liter of milk to estimate the gross value of milk production. The gross value of egg production is similarly estimated from the projected per capita annual consumption of eggs multiplied by the total projected population and by the consumer prices for eggs. The gross value of wool production is based on the projected sheep herds, the average annual production of wool per head projected by the Ministry of Production and adjusted upward according to the estimates prepared by the National Association of Sheep Growers (ANCO) and the consumer prices for wool (see Table A-18).

The above national accounts estimates of livestock and livestock products are projections which are based either on constant or on accelerating growth rates. The use of wholesale and retail instead of farm-gate prices tends to raise the level of the estimated production. Although the higher level of production is to some extent corrected by regressions, the projections nevertheless impart a continuous growth to the estimated livestock production, as the estimates for meat are aggregated with those of the other livestock products (see Table A-19).

The estimates for hunting, forestry and fishing are very crude extrapolations based either on the assumption that the output failed to increase at all (e.g., hunting in 1966, 1967, and 1969 and forestry in 1969) or that the increase reflected upward price changes, or some real growth, e. g., the fishing in 1967 and in 1971. Inasmuch as the forestry and fishing account for less than 10 percent of the total gross value of the agricultural sector, the limitations of these estimates add relatively little to the range of uncertainty which pervades the estimated total agricultural production (see Table A-20).

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29 Nelson Jaramillo, Projections of Livestock Population, 1969-1973 (Quito: Ministry of Production, Department of Livestock, no publication date).

Table A-17: GROSS VALUE OF MEAT PRODUCTION, ECUADOR
ESTIMATING PROCEDURE FOR 1969-1972

	1969	1970	1971	1972
Consumption per capita:				
Beef (kgs.)	7.11	7.21	7.38	7.58
Lamb (kgs.)	1.12	1.16	1.24	1.34
Pork (kgs.)	4.06	4.38	4.82	5.33
Fowl (kgs.)	1.50	1.60	1.70	1.80
Mid-year population ('000)	5,889.5	6,092.9	6,297.	6,508.3
Total consumption = production:				
Beef (m. tons)	41,875	43,930	46,473	49,333
Lamb (m. tons)	6,596	7,068	7,809	8,721
Pork (m. tons)	23,911	26,687	30,353	34,689
Fowl (m. tons)	8,834	9,749	10,705	11,715
Total production (m. tons)	81,216	87,434	95,340	104,458
Prices (sucres per kg.):				
Beef	15.79	16.53	18.53	20.40
Lamb	13.00	13.22	14.82	16.30
Pork	14.59	14.99	16.80	18.50
Fowl	23.81	24.25	27.43	30.20
Gross value of production:				
Beef	661.2	726.2	861.1	1,006.4
Lamb	85.8	93.4	115.7	142.2
Pork	348.9	400.0	509.9	641.7
Fowl	210.3	236.4	293.6	353.8
Total (mil. sucres)	1,306.2	1,456.0	1,780.3	2,144.2

Sources: Ministry of Production, Department of Livestock; Central Bank of Ecuador, National Income Division; National Institute of Statistics, Division of Price and Labor Statistics; mission estimates.

Table A-18: PRODUCTION OF MILK, EGGS AND WOOL, ECUADOR, ESTIMATING PROCEDURE FOR 1969-1972

Indicators	1969	1970	1971	1972
Raw Milk Production				
Milking cows (thousands of heads)	437.3	453.6	464.7	476.8
Annual production per cow (liters)	1,280	1,310	1,360	1,410
Total gross production (mil. lit.)	559.7	594.2	632.0	672.2
Less: consumed by calves (mil. lit.)	2.8	3.0	3.2	3.4
Unadjusted consumption (mil. lit.)	556.9	591.2	628.8	668.8
Losses and additives (mil. lit.)	0.2	-0.2	0.2	0.2
Adjusted consumption (mil. lit.)	557.1	591.0	630.0	670.0
Price (sucres per liter)	1.76	2.0	2.2	2.4
Total gross value (mil. sucres)	980.6	1,182.0	1,386.0	1,608.0
Egg Production				
Consumption per capita (Kg.)	4.0	4.5	4.8	5.0
Mid-year population (thousands)	5,889.5	6,092.9	6,297.2	6,508.3
Total production (metric tons)	23,558	27,418	30,227	32,542
Price (sucres per kg.)	14.70	14.8	18.26	21.0
Total gross value (mil. sucres)	346.4	406.8	551.9	683.3
Wool Production				
Sheep herds (thousands of heads)	2,230.9	2,307.6	2,388.8	2,474.1
Wool production per head (grams)	439	464	507	546
Total wool production[a] (m. tons)	980	1,070.0	1,210.0	1,350.0
Adjusted for undervaluation[b] (m. tons)	1,990.6	2,060.0	2,460.0	2,750.0
Price (sucres per kg.)	16.34	19.40	21.73	24.34
Total gross value (mil. sucres)	32.5	40.0	53.5	66.9

a/ Ministry of Production, Department of Livestock.
b/ The National Association of Sheep Growers (ANCO) adjusted for the undervaluation in 1969, the Central Bank of Ecuador made the adjustment for 1970, and the mission adjusted for 1971 and 1972.

Sources: Ministry of Production, Department of Livestock; Central Bank of Ecuador, National Income Division; National Institute of Statistics, Division of Price and Labor Statistics; mission estimates.

Table A-19: OUTPUT OF LIVESTOCK AND KINDRED PRODUCTS, ECUADOR, SUMMARY OF ESTIMATES FOR 1969-1972
(Gross Value of Production in Millions of Current Sucres)

Livestock and Kindred Products	1969	1970	1971	1972
Beef	661.2	726.2	861.1	1,006.4
Lamb	85.8	93.4	115.7	142.2
Pork	348.9	400.0	509.9	641.7
Fowl	210.3	236.4	293.6	353.8
Milk	980.6	1,182.0	1,386.0	1,608.0
Eggs	346.4	406.8	551.9	683.3
Wool	32.5	40.0	53.5	66.9
TOTAL	2,665.7	3,084.8	3,771.7	4,502.3

Source: Tables 17 and 18 above.

Table A-20: GROSS VALUE OF AGRICULTURAL PRODUCTION, ECUADOR, SUMMARY OF ESTIMATES, 1960-1972
(Millions of Current Sucres)

Year	13 Major and 59 Minor Crops	Livestock	Hunting	Forestry	Fishing	Total	Annual Growth Rate
1960	5,867.6	1,303.6	2.4	432.7	168.4	7,774.7	..
1961	6,307.2	1,397.6	2.3	462.9	189.8	8,359.8	7.5
1962	7,342.3	1,507.4	2.3	481.6	175.8	9,509.4	13.8
1963	7,673.3	1,660.5	2.4	510.3	191.4	10,037.9	5.6
1964	7,980.9	1,656.4	2.5	551.0	176.1	10,366.9	3.3
1965	8,970.1	1,801.3	2.6	600.2	230.7	11,604.9	11.9
1966	9,581.6	1,973.8	2.6	653.7	228.8	12,440.5	7.2
1967	9,943.6	2,113.6	2.6	711.9	320.9	13,092.6	5.2
1968	9,661.9	2,178.6	3.0	861.3	325.7	13,030.5	-0.5
1969	11,065.6	2,665.7	3.0	861.3	330.1	14,925.7	14.5
1970	12,668.8	3,084.8	3.2	930.0	359.1	17,045.9	14.2
1971	13,778.0	3,771.7	3.3	1,000.0	575.0	19,128.0	12.2
1972	14,973.8	4,502.3	3.4	1,100.0	660.0	21,239.5	11.0

Sources: Central Bank of Ecuador, National Income Division, mission estimates.

Agricultural nonfactor inputs are subtracted from the gross value of agricultural production as a whole, that is, from the total value of crops, livestock products, hunting, forestry and fishing. Such a global adjustment can only be very crude. For the 1950s. the CBE adopted average Latin American ratios for agricultural nonfactor inputs, as reported at a national accounts conference in Rio de Janeiro in the mid-1950s. For the 1960s, the CBE replaced the average Latin American estimates by Ecuadorian nonfactor input ratios, as estimated by the NEPCB in 1963 (see Table A-21). The NEPCB estimates for 1963 were extrapolated backwards to 1960 and forwards to 1968 for all the relevant major agricultural expenditure categories. First, the CBE made the adjustment for the higher retail and wholesale prices by subtracting the transport and handling cost and the wholesale margin from the gross value of production to arrive at the farm-gate value of production. Next, it subtracted the total intermediate consumption, including seeds, fertilizer, pesticides, fodder, vaccine and medicine, fuel and lubricants, packing and binding, maintenance and interest and commissions. Since the detailed components were estimated only for 1963, the CBE extrapolated their combined value for all the other years of the 1960s. Subtracting it from the value of production at farm-gate, the CBE obtained the GDP at market prices (or gross value added) in agriculture.

For the 1950s and most of the 1960s, the CBE estimated separately for agriculture net factor payments to abroad, indirect taxes, and subsidies in order to arrive at the GNP and GDP at factor cost originating in agriculture (see Table A-21). These estimates were then integrated in the national accounts as a GDP at current factor cost originating in agriculture, hunting, forestry and fishing (cf. 4,731 million sucres for 1960 in Tables A-21 and A-22). Starting in 1969, however, the above procedure of subtracting the extrapolated 1963 values of nonfactor inputs and other components was replaced with an alternative procedure based on the regression of the value added or GDP on the gross value of production in agriculture, hunting, forestry and fishing (see Table A-22). The latter method is not necessarily inferior to the former inasmuch as hardly any basic data are available for estimating the various components of nonfactor inputs.[30]

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[30] Although the regression method may be considered superior on analytical grounds, it is probably inferior to the ratio method in practical work because it is cumbersome and mechanical. It obscures the crude nature of basic estimates and makes it more difficult to introduce fragmentary information into the estimates. In the absence of computer programs, arithmetic errors tend to creep into the calculations of regressions. Notwithstanding the erudition of the CBE professional staff, the CBE has obtained different estimating equations than the results produced by an electronic computer for the same data and regression method. Thus, the CBE estimated agriculture GDP at 10,271 million current sucres in 1970 although the regression equation which it used yields only 9,652 million sucres for the same year. Moreover, the same basic data fed into an electronic computer produced a somewhat different estimating equation which yielded a still different estimate of 9,693 million sucres for 1970. The correction of these apparent arithmetic errors reduces the 1970 agricultural GDP by 6 percent. A ratio method would probably have avoided the arithmetic errors. Moreover, requiring less laborious computations, the ratio method can be used with greater ease and speed for revisions at more frequent intervals, as new basic data become available.

Table A-21 : GDP AT CURRENT FACTOR COST ORIGINATING IN AGRICULTURE, HUNTING, FORESTRY AND FISHING, ECUADOR, ESTIMATING PROCEDURE FOR 1960 - 1965
(Millions of Current Sucres)

Major Output and Input Expenditure Categories	1960	1961	1962	1963	1964	1965
Gross value of production	7,660	8,381	9,256	9,794	10,003	10,702
Less: transport and handling cost	980	1,098	1,222	1,273	1,251	1,370
Less: income of wholesalers	844	965	1,055	1,117	1,100	1,220
Value of production at farm gate	5,836	6,318	6,979	7,404	7,652	8,112
Less: intermediate consumption	828	913	1,009	1,076	1,061	1,178
(a) Seeds	..	..	..	254	..	..
(b) Fertilizer	..	..	..	72	..	..
(c) Pesticides	..	..	..	72	..	..
(d) Fodder	..	..	..	281	..	..
(e) Vaccine and medicine	..	..	..	10	..	..
(f) Fuel and lubricants	..	..	..	33	..	..
(g) Packing and binding	..	..	..	115	..	..
(h) Maintenance	..	..	..	132	..	..
(i) Interest and commissions	..	..	..	107	..	..
GDP at m.p. (value added)	5,008	5,405	5,970	6,328	6,591	6,934
Less: net factor payments to abroad	-30	-28	-19	-4	-38	-27
GNP at market prices	4,978	5,377	5,951	6,324	6,553	6,907
Less: indirect taxes	-334	-338	-353	-411	-497	-487
Plus: subsidies	57	60	72	43	97	35
GNP at factor cost	4,701	5,099	5,670	5,956	6,153	6,455
Plus: net factor payments to abroad	30	28	19	4	38	27
GDP at factor cost	4,731	5,127	5,689	5,960	6,191	6,482

Source: Central Bank of Ecuador, National Income Division. The data are based on a study by Jan B. Van As and Manuel Arias B., Program of Agricultural Development, Goals and Projections, 1963-1973 (Quito: NEPCB, March 30, 1964).

Table A-22: GDP AT CURRENT FACTOR COST ORIGINATING IN AGRICULTURE, FORESTRY, HUNTING AND FISHING, ECUADOR
ESTIMATING PROCEDURE FOR CALENDAR YEARS 1969-1972
(Millions of Sucres at Current Factor Cost)

Year	Agriculture, Hunting, Forestry, and Fishing	
	GDP	Gross Value of Production
	Y	X
1960	4,731	7,774.7
1961	5,127	8,359.8
1962	5,689	9,509.4
1963	5,960	10,037.9
1964	6,191	10,366.9
1965	6,482	11,604.9
1966	7,227	12,440.5
1967	7,556	13,092.6
1968	7,771	13,030.5
1969	8,562	14,925.7
1970	9,693	17,045.9
1971	10,804	19,128.0
1972	11,930	21,239.5

The above variables produced the following estimating equation for GDP at current factor cost originating in agriculture, forestry, hunting, and fishing:

$$Y_i = 602.02734 + 0.53333X_i$$

This equation produced the following estimates:

$Y_{1969} = 8,461.8$ $\quad$ $Y_{1971} = 10,803.6$

$Y_{1970} = 9,693.1$ $\quad$ $Y_{1972} = 11,929.7$

The CBE computed a different estimating equation ($Y_i = 671.01111 + 0.52688X_i$) which led to different estimates:

$Y_{1969} = 8,874$

$Y_{1970} = 9,652$ (CBE estimate is 10,271)

Source: Central Bank of Ecuador, National Income Division; mission estimate.

Reviewing the agricultural value added estimates of Ecuador for the last two decades, it must be borne in mind that there is a limit to the improvements which can be brought about by various estimating procedures. This limit may still not have been approached in Ecuador with respect to the value added estimates in the agricultural sector, although further improvements depend largely on the availability of basic data. The use of average Latin American nonfactor input ratios for the 1950s and the lower Ecuadorian ratios for the 1960s resulted in an understatement in the level of the agricultural value added for the 1950s, a break in this series, and an overstatement in the rate of growth in 1960. The extent of these inaccuracies is not known because the CBE has never derived the two series so as to overlap in the same year. The accuracy of the Ecuadorian nonfactor input ratios for 1963 and their relevance to the 1950s and the 1970s is also open to question. However, the importance of these considerations is overshadowed by the apparent deficiencies of the basic statistics on output and prices. It is possible that the national accounts estimates could be improved by resorting to the FAO estimates, even though the latter are based on yields and harvested areas quite different from those reported by the Government of Ecuador (see the discussion of basic statistics in Annex B). It would be far better, of course, for the Government of Ecuador to improve its own statistical system which would generate meaningful agricultural data by modern sampling techniques.

Mining GDP. Although expanding petroleum production is expected to make mining one of the most important industries in Ecuador, for the last two decades mining has grown little and its share amounts to only about two percent of the GDP. Mining and quarrying GDP includes the mining of metal and nonmetal minerals as well as petroleum extraction and refining. The CBE has also tried to include a rough estimate of value added for stone, clay, sand and salt, although relatively few data are available for these activities. Petroleum extraction and refining could not have been separated in the 1950s, and to preserve the consistency with the 1950s, both these activities were also included with mining in the 1960s. For a benchmark year, the CBE estimated the value added data from the 1955 industrial census and for the 1950s and the early 1960s, from its own special surveys and inquiries. For more recent years, the General Bureau of Geology and Mining (Ministry of Natural Resources and Tourism) has provided annual data for licensed mining establishments which had reported their data. The CBE has used these data for the national accounts rather than the results of the NIS industrial surveys, especially for the period since 1965.

The basic data on mining and quarrying had deteriorated to such an extent in the mid-sixties that the CBE decided in 1967 to use regressions rather than to continue deriving the mining value added directly from the basic data. After some experimentation with several available production series, the CBE projected the index of

Table A-23: GDP AT CONSTANT 1960 FACTOR COST ORIGINATING IN MINING, ECUADOR, ESTIMATING PROCEDURE FOR 1965 AND 1966

Year	Mining and Quarrying GDP (Millions of Sucres)			Independent Variables			
	at Current Sucres	at Constant 1960 Sucres	Y	X_1	X_2	X_3	X_4
1956	228.0	235.7	..	143.7	15.3	52.0	115.8
1957	232.0	238.2	..	134.0	17.1	61.3	109.7
1958	222.0	226.5	..	130.6	20.0	84.5	120.1
1959	233.0	237.5	..	115.9	18.6	162.6	107.2
1960	311.0	311.0	..	115.8	15.2	126.4	107.9
1961	315.0	300.0	..	122.9	15.2	101.2	111.1
1962	326.0	303.8	..	108.1	20.6	128.1	124.0
1963	369.0	330.1	..	101.4	21.0	121.8	160.8
1964	389.0	324.7	..	117.4	16.9	117.1	137.8
1965	..	379.1	..	119.7	11.5	70.0	113.2
1966	..	398.5	..	108.8	10.9	76.7	68.9

Indexes (1956=100)

1956	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1957	101.8	101.1	100.3	93.2	111.8	117.9	94.7
1958	97.4	96.1	95.4	90.2	130.7	162.5	103.7
1959	102.2	100.8	100.0	80.7	121.6	312.7	92.6
1960	136.4	131.9	130.9	80.6	99.3	243.1	93.2
1961	138.2	127.3	126.3	85.5	99.3	194.6	95.9
1962	143.0	128.9	127.9	75.2	134.6	246.3	107.1
1963	161.8	140.1	139.2	70.6	137.2	234.2	138.9
1964	170.6	137.8	136.7	81.7	110.5	225.2	119.0
1965	..	160.8	..	83.3	75.2	134.6	97.8
1966	..	169.1	..	75.7	71.2	147.5	59.5

Independent Variables:
X_1 = Petroleum products (thousands of gallons).
X_2 = Gold production (thousands of troy ounces).
X_3 = Silver production (thousands of troy ounces),
X_4 = Lead production (thousands of Kilograms).

Estimating equation for GDP at constant 1960 factor cost originating in mining:
$Y = 422.58 - 2.6415X_1 - 0.8088X_2 - 0.1264X_3 + 0.3532X_4$

Sources: CBE, National Income Division.

mining GDP at constant 1960 prices by regressing it on the indexes of petroleum, gold, silver and lead production (see Table A-23).

As the composition of the mining output changed, the CBE has used other independent variables for these regressions. Thus, for 1969 and 1970, the mining employment, petroleum production, production of metals and nonmetals and the imports of mining inputs served as independent variables for estimating the mining GDP (see Table A-24). Although such changes in the independent variables have contributed to certain inconsistencies in the estimates over time, drastic changes in the composition of mining may, nevertheless, have required occasional elimination or substitution of certain variables. Thus, while the total mining output increased, petroleum production has tended to decline in Ecuador in the late 1950s and throughout the 1960s. This negative covariation resulted in a negative coefficient of net regression for petroleum production (see Table A-24). With a substantial increase in petroleum extraction expected to take place in 1972 and thereafter, the estimating linear equation which includes petroleum would project a drastic reduction in the total mining activity--an obviously absurd result. Therefore, the mining GDP cannot be meaningfully estimated in the future by regression on the past declines of petroleum production. The latter variable must now be eliminated from the set of independent variables (see Table A-24).

In addition to the production of crude petroleum, the CBE uses four other independent variables for estimating the GDP in mining and quarrying. The mining employment has the highest coefficient of net regression (see Table A-25). Inasmuch as the mining employment has remained either stable or even declined in the 1960s (see Table A-24), this coefficient is negative; therefore, it is not suitable for making estimates as the expected sharp increase in the production of crude petroleum is not likely to be associated with a pronounced decline in the mining employment. Moreover, the mining employment data which the CBE has used are actually the NEPCB projections of economically active population. These projections include employment as well as unemployment and they are not responsive to annual changes in output. They show upward trends for the 1970s are quite detached from the expected annual changes, and are, therefore, not suitable for making value added estimates.

The production data on metal and nonmetal minerals which the CBE is using as independent variables accounts for a very small share of the total mining (about 3 percent for metals and 0.1 percent for nonmetals). Moreover, both of these series fluctuate quite differently from the mining as a whole. Thus, while the value added of mining showed an increase of about one third in 1960, the metals declined 20 percent

Table A-24: INDEPENDENT VARIABLES USED IN REGRESSIONS FOR ESTIMATING MINING AND QUARRYING GDP, ECUADOR SELECTED YEARS 1957-1970

Variables and Indexes	1957	1960	1965	1969	1970
X_1 = Mining employment (000)	4.4	4.0	4.0	4.3	4.4
Index implicit in data	110.0	100.0	100.0	107.5	110.0
Index used for GDP estimates	110.0	100.0	100.0	107.5	110.0
X_2 = Petroleum production (mil. of US gal.)	134.0	115.8	119.7	65.8	60.7
Index implicit in data	111.9	96.7	100.0	54.9	50.7
Index used for GDP estimates	111.9	96.7	100.0	55.0	50.7
X_3 = Mining of metals (mil. of sucres)	10.4	11.0	13.5	19.5	22.8
Index implicit in data	76.9	81.4	100.0	144.7	170.0
Index used for GDP estimates	92.4	98.0	100.0	144.4	151.7
X_4 = Mining of nonmetals (thous. of sucres)	62.0	54.0	627.0	223.0	16,981.0
Index implicit in data	9.9	8.7	100.0	35.3	2,709.3
Index used for GDP estimates	14.5	12.8	100.0	52.1	54.7
X_5 = Imports of mining inputs (mil. of US $)	12.7	13.6	16.7	28.8	28.0
Index implicit in data	76.0	81.4	100.0	172.4	167.6
Index used for GDP estimates	76.2	81.4	100.0	172.2	167.2

Sources:

X_1 = NEPCB Division of Human Resources (projections of economically active population).

X_2 = Bulletin of the Central Bank of Ecuador, XLV, Nos. 531, 532, and 533 (Oct. - Dec., 1971), 271, and earlier issues.

X_3 = Ministry of Industry and Commerce (after 1970, Ministry of Natural Resources and Tourism), General Bureau of Geology and Mines, Mining Statistics (annual issues for 1932-66, 1967, 1968, 1969 and 1970).

X_4 = Ibid.

X_5 = Bulletin of the Central Bank of Ecuador, XLV, Nos. 531, 532, and 533 (Oct.-Dec., 1971), 209-213, and earlier issues (line 5c--raw materials and intermediate products for manufacturing derived from foreign mineral products).

Table A-25: GDP AT CURRENT FACTOR COST ORIGINATING IN MINING AND QUARRYING, ECUADOR, ESTIMATING PROCEDURE FOR 1969 AND 1970

Year	Mining and Quarrying GDP (Millions of Sucres)			Independent Variables (Indexes, 1965 = 100)				
	at Current Prices	at 1965 Prices	Index 1965=100					
			Y	X_1	X_2	X_3	X_4	X_5
1957	232	285	72.7	110.0	111.9	92.4	14.5	76.2
1958	222	271	69.1	107.5	109.1	110.1	61.6	77.7
1959	233	284	72.5	105.0	96.8	120.4	115.5	63.7
1960	311	372	94.9	100.0	96.7	98.0	12.8	81.4
1961	315	360	91.8	95.0	102.7	94.5	49.4	84.8
1962	326	364	92.9	90.0	90.3	135.4	8.6	76.0
1963	369	396	101.1	92.5	84.7	157.3	102.6	97.4
1964	389	404	103.1	95.0	98.1	140.8	148.2	117.8
1965	392	392	100.0	100.0	100.0	100.0	100.0	100.0
1966	453	431	110.0	102.5	90.9	107.2	91.3	101.4
1967	500	459	117.1	105.0	77.1	109.2	73.0	139.3
1968	552	488	124.5	105.0	61.8	148.4	104.6	176.8
1969	588	495	126.3792	107.5	55.0	144.4	52.1	172.2
1970	604	477	121.7095	110.0	50.7	151.7	54.7	167.2
1971	678	489	124.7757	112.5	45.3	155.0	45.0	180.0
1972	238	156	39.7962	117.5	300.0	160.0	50.0	200.0

Independent Variables:

X_1 = Mining employment
X_2 = Petroleum production
X_3 = Production of metal minerals
X_4 = Production of nonmetal minerals
X_5 = Imports of mining inputs

The above variables produced the following estimating equation for GDP at constant 1965 factor cost originating in mining and quarrying:

$$Y_i = 286.0759 - 1.2531\ X_1 - 0.6425\ X_2 - 0.3567\ X_3 + 0.0504\ X_4 + 0.3434\ X_5$$

This equation produced the following estimates at constant 1965 prices:

$Y_{1969} = 495$
$Y_{1970} = 477$
$Y_{1971} = 489$
$Y_{1972} = 156$

The CBE computed a slightly different estimating equation ($Y_i = 285.2460 - -1.2503\ X_1 - 0.6393\ X_2 - 0.3548\ X_3 + 0.0482\ X_4 + 0.3450\ X_5$)

Source: Central Bank of Ecuador, National Income Division; mission estimates.

and the nonmetals went down 90 percent. The coefficient of net regression for metals is negative and that for nonmetals approaches zero (see Table A-25). Moreover, the CBE purports to use the data reported by the General Bureau of Geology and Mines (GBGM). However, the latter agency publishes data which yield different indexes than those used by the CBE (see Table A-24). The latter show less growth. Although the CBE has not given any explanation for these differences, the data may have been deflated or adjusted to a wider coverage. Thus, while the GBGM reported an increase of 7,600 percent in the gross value of output for nonmetals in 1970 (largely due to the new mining of sulphur), the CBE index for nonmetals increased from 52.1 to 54.7 or only 5 percent (see Table A-24).

The only variable suitable for the estimates would have been the time series on the imports of mining inputs. The CBE has tried to use such a series with virtually no adjustments (see Table A-24). This time series refers, however, not to mining inputs but to raw materials and intermediate products for manufacturing which are derived from imported minerals.[31] These import data are not relevant to mining activity in Ecuador. The data on the imports of mining inputs are not readily available.

An additional distortion is introduced by the regression of the dependent variable (Y) at constant prices on the independent variables which are at current prices (X_3, X_4, and X_5). The price changes of the latter are fed as a part of real growth into the dependent variable. These dependent variable estimates are not deflated. On the contrary, the CBE inflates them to current prices with the adjusted cost of living index (see Table A-25). This repeated inflation results in an upward bias. Where there is no growth, upward price movements in the independent variables generate upward changes which appear as real growth in the dependent variable shown at constant prices.[32] It would have been more meaningful to deflate the independent variables before correlating them with the value added at constant prices (or alternatively, inflating all variables to current prices--an economically less meaningful procedure because e.g., employment at current prices lacks a meaningful interpretation although mathematically the results may not differ significantly).

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31 Cf. Bulletin of the Central Bank of Ecuador, XLV, Nos. 531, 532, and 533 (Oct.-Dec., 1971), 209-213, line 5c.

32 An earlier IBRD report tried to correct for these deficiencies, assuming that the CBE series for manufacturing and construction value added at current prices related in fact to constant prices. Therefore, it inflated the series at current prices, thus superimposing a third inflationary bias on the others which the CBE had built in its original estimates. Cf. Current Economic Position and Prospects of Ecuador, Report No. WH-208a (Washington, D.C.: IBRD, September 22, 1971), Table 2.4.

A further distortion is introduced by expressing all variables as indexes for the purpose of regression. This procedure attempts to get around the problem of having different and arbitrary units of measurement for the various independent variables in a multiple regression, but it introduces a new problem of assigning all variables the same weights. This procedure does not solve the original problem and is almost just as arbitrary. The estimating equation measures the unweighted average relationship.

The use of multiple correlation with five independent variables gives a misleading impression of a sophisticated analysis which supposedly underlies the CBE estimates. The multiple regression technique obscures the various deficiencies. The elaborate mathematical computations of these regressions which the CBE carries out on a desk calculator, contain occasional errors which make the results even less meaningful.

Having computed the index values with the estimating equation and having converted them to value added in constant and current sucres, the CBE reviews the result in terms of level and annual changes. At this final stage, the CBE may adjust the regression results according to alternative data and various judgements, thus in effect ignoring the regression and substituting other estimates which appear to be more plausible. Although the regression based on the CBE data and inflated with the reciprocal of the GDP deflator yielded 588 and 604 million current sucres for 1969 and 1970, respectively, the CBE calculated with its estimating equation 596 and 621 million current sucres for the same years. Having reviewed the latter estimate in the light of partial reports on the increase of mining output in 1970, the CBE raised its estimate to 641 million sucres. It has made such last-minute adjustments also for other years and industries (see Table A-36). In view of these adjustments, the regression appears to play an auxiliary role which yields to estimates based on additional information and on subjective judgements.

Manufacturing GDP. The share of manufacturing in the total GDP increased from about 15 percent in 1960 to about 7 percent in 1970. Manufacturing includes large, medium, and small-scale establishments as well as cottage (household) manufacturing industry. Depending on the definition, the share of the cottage and small-scale industry has been estimated from a high of 61.5 percent in 1960 (for establishments with less than 300,000 sucres annual production)[33] to a low of about one-third of the total value added by manufacturing (for establishments with less

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[33] Central Bank of Ecuador, Sources of Information and Procedures Employed in the Estimation of National Income of Ecuador (Quito: CBE 1964) p. 12.

than five employees and 120,000 sucres annual production). For the 1950s, the CBE estimated that the share of small-scale and household industry increased from 57.7 percent in the middle 1950s to 61.5 percent in 1960,[34] and for subsequent years, the CBE has generally maintained the value added by the small-scale industry at about the same level, allowing its relative importance to decline below 40 percent, as the medium and large-scale industry continued to grow at an apparently accelerating pace in the 1960s. These general working hypotheses underlie the GDP estimates for manufacturing.

Similarly as with the mining estimates, the CBE used the 1955 Industrial Census and its subsequent annual surveys for estimating the value added by large-scale manufacturing, making an adjustment for small-scale and household manufacturing industry. With a gradual deterioration of the basic data and a reduction in the staff of the NID, the CBE decided in 1967 to use regressions of manufacturing value added on readily available indicators. Having experimented with several related indicators, the CBE selected the most suitable and has used them for making the estimates since 1965.

Preparing the GDP estimates of manufacturing for 1969 and 1970 (the latest available), the CBE computed an index of the deflated value added with a 1965 base (Y) and regressed it on four independent variables (see Table A-27). Most of the limitations discussed above with respect to mining apply also to manufacturing. Moreover, the independent variables on which the CBE regresses the manufacturing GDP relate to inputs and not to manufacturing output. Two of these independent variables relate to nonfactor inputs. Nevertheless, the sales of electric energy to industry (X_1) has a fairly meaningful positive coefficient of net regression. Although the electrification of manufacturing is not directly related to the growth in its value added, their co-variation is not necessarily spurious. The greater use of electric power may go hand in hand with a greater capital intensity and higher capital consumption allowances, higher paid labor, multiple shifts, and a general expansion of manufacturing. Imports of industrial raw materials represent another nonfactor input which is, however, less closely associated with the growth in manufacturing factor inputs. According to our calculations based on the CBE data, this independent variable shows a slight negative coefficient of net regression which may be partly explained by the deliberate Ecuadorian policy aimed at import substitution.[35] Although the relationship is

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[34] Ibid., p. 12.

[35] The CBE estimating equation shows a higher and a positive coefficient of net regression for the imports of industrial raw materials. However, the CBE estimating equation for manufacturing appears to suffer from a deficient arithmetic.

Table A-26: INDEPENDENT VARIABLES USED IN REGRESSIONS FOR ESTIMATING MANUFACTURING GDP, ECUADOR, SELECTED YEARS 1957-1970

Variables and Indexes	1957	1960	1965	1969	1970
X_1 = Sales of electric energy to industry (mil. of kwhs.)	..	126.7	188.9	283.5	320.8
Index implicit in data	..	67.1	100.0	150.0	169.8
Index used for GDP estimates	51.7	64.6	100.0	144.5	160.7
X_2 = Imports of industrial raw materials (mil. of US $)	40.03	41.92	57.78	87.06	82.25
Index implicit in data	69.3	72.5	100.0	150.6	142.3
Index used for GDP estimates	69.3	72.6	100.0	150.7	142.3
X_3 = Imports of industrial capital goods (mil. of US $)	13.59	17.43	29.67	44.19	49.03
Index implicit in lagged data	47.8	54.3	100.0	152.8	..
Lagged index used in GDP estimates	44.2	46.4	80.3	142.3	149.0
X_4 = Manufacturing employment (000)					
Employment, large-scale	37.9	43.9	59.9	79.1	81.0
Employment, total	177.3	193.3	227.0	241.8	250.0
Economically active population	185.5	201.8	229.9	253.8	260.1
Indexes implicit in data:					
Employment, large-scale	63.2	73.2	100.0	132.0	135.2
Employment, total	78.1	85.2	100.0	106.5	110.1
Economically active population	80.7	87.8	100.0	110.4	113.1
Index used in GDP estimate	82.8	89.9	100.0	114.1	116.9

Sources:

X_1 = Unpublished data provided by the Statistical Section of the Euadorian Institute of Electrification (INECEL) for 1964-1970. The source of the 1960 data could not be ascertained.

X_2 = Bulletin of the Central Bank of Ecuador, XLV, Nos. 531, 532, and 533 (Oct.-Dec., 1971), 209-213.

X_3 = Ibid., 209-213.

X_4 = National Economic Planning and Coordination Board, Division of Human Resources (unpublished estimates dated September, 1970).

Table A-27: GDP AT CURRENT FACTOR COST ORIGINATING IN MANUFACTURING, ECUADOR, ESTIMATING PROCEDURE FOR 1969-1972

Year	Manufacturing GDP (Millions of Sucres)			Independent Variables (Indexes, 1965=100)				
	at Current Prices	at 1965 Prices	Index 1965=100			X_3		X_4
			Y	X_1	X_2	Lagged Data Index	Lagged Index	
1957	1,625	1,999	60.6	51.7	69.3	47.8	44.2	82.8
1958	1,739	2,126	64.4	54.4	66.8	42.9	45.8	85.1
1959	1,830	2,234	67.7	55.9	63.5	54.5	51.7	87.5
1960	2,011	2,408	73.0	64.6	72.6	54.3	46.4	89.9
1961	2,112	2,411	73.1	74.6	73.9	44.1	58.8	92.4
1962	2,283	2,548	77.2	78.4	74.0	52.9	58.7	96.0
1963	2,523	2,704	82.0	82.3	86.1	74.3	47.6	97.0
1964	3,039	3,152	95.5	91.0	110.0	92.5	57.3	99.0
1965	3,299	3,299	100.0	100.0	100.0	100.0	80.3	100.0
1966	3,501	3,331	101.0	103.8	102.2	118.7	100.0	101.3
1967	3,884	3,567	108.1	113.5	131.0	131.6	108.1	102.6
1968	4,209	3,721	112.8	130.0	143.3	137.8	128.4	111.3
1969	4,917	4,142	125.5531	144.5	150.7	152.8	142.3	114.1
1970	5,565	4,396	133.2608	160.7	142.3	160.0	149.0	116.9
1971	6,450	4,650	140.9516	175.0	149.0	166.4	155.0	122.4
1972	7,579	4,963	150.4451	190.0	158.0	179.3	167.0	128.3

Independent Variables

X_1 = Electric energy consumption by manufacturing in kwhs.

X_2 = Raw material imports for manufacturing.

X_3 = Imports of capital goods for manufacturing.

X_4 = Manufacturing employment.

The use of an index implicit in the lagged data produced the following estimating equation for GDP at constant 1965 factor cost originating in manufacturing:

$$Y_i = 6.6975 + 0.2959\ X_1 - 0.0199\ X_2 + 0.2287\ X_3 + 0.3871\ X_4.$$

This equation produced the following estimates:

$Y_{1969} = 4,142$
$Y_{1970} = 4,396$
$Y_{1971} = 4,650$
$Y_{1972} = 4,963$

The CBE, using lagged index, computed a different estimating equation ($Y_i = 69.6422 + 0.9422\ X_1 + 0.0977\ X_2 + 0.1091\ X_3 - 0.6807\ X_4$) which produced higher estimates.

Sources: Central Bank of Ecuador, National Income Division; mission estimates.

weak statistically, it is quite significant economically inasmuch as the value of imported manufacturing inputs amounts to about 40 percent of the manufacturing value added. Therefore, this independent variable is usually considered to be suitable for estimating the manufacturing GDP.

The value of imported capital goods for manufacturing amounts to about 25 percent of the GDP originating in manufacturing. The coefficient of net regression is positive (see Table A-27). Its absolute value is eleven times higher than that for imported raw materials. Moreover, the imported capital goods contribute directly to factor inputs. Therefore, this series appears to be suitable for the regression.

The use of the value of imported capital goods for the regression requires the lagging of the data by one year because the monthly data show that these inputs are usually more or less evenly distributed throughout the year. Taking the mid-year as the average arrival date for the year and allowing six months for the installation of capital goods, training of manpower, and starting of production at reasonable capacity levels, the data on imported capital goods for any given year tend to be related to the output of the subsequent year. Instead of lagging the absolute data on these imports, the CBE has lagged the index, shifting its base from 1965 to 1966 (see Table A-27). This procedure resulted in a certain inconsistency because the weight of the lagged index became relatively smaller. However, in view of the general arbitrariness introduced by the use of equal weights for all independent variables, the implicit assignment of a smaller weight for X_3 is not necessarily a step in the wrong direction.

Manufacturing employment is most closely related to the total factor inputs in manufacturing. Its coefficient of net regression is positive and higher than that of any other independent variable (see Table A-27).[36] However, the index used in GDP estimates differs significantly from that implicit in the manufacturing employment data which the CBE made available to the Mission (see Table A-26). It appears that the CBE derived its index from the total economically active population in manufacturing, including small-scale and household manufacturing. The latter has grown less rapidly, as indicated by the CBE index.

Having estimated the index of the dependent variable, the CBE derived the manufacturing GDP for 1969 and 1970 at 4,201 and 4,590 million constant 1965 sucres. Multiplying the latter by the general

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36 The CBE equation shows a negative coefficient of net regression for employment. This seems to be the result of a faulty arithmetic because both series show steady growth in all years and there is no apparent reason for a negative covariation.

deflator with a 1965 base, the CBE obtained its first estimates of 5,062 and 5,921 million current sucres for 1969 and 1970, respectively. Before publishing them, however, the CBE revised them downward (see Table A-36). The downward revision appeared to be necessary in view of the lower large-scale manufacturing GDP indicated by the 1969 Survey of Manufacturing (3,034.7 million current sucres in 1969 as compared to 2,659.0 million sucres in 1968). Inasmuch as manufacturing grew (at current prices) only 14.1 percent in 1969 and the CBE has assumed hardly any real growth in handicrafts and small-scale industry, the growth in manufacturing GDP which includes handicraft had to be reduced below 14.1 percent. The CBE reduced it to 13.2 percent in 1969 and made a corresponding downward adjustment for 1970.

Using the same independent variables and indexes as the CBE, the Mission has obtained different regression results by means of an electronic computer. These differences are quite significant, especially for 1970 (see Table A-27), and they may partly explain the need for the CBE revisions of the 1969 and 1970 regression results (see Table A-26). A further revision of manufacturing GDP may be necessary in 1970 to bring its growth rate in line with the results of the 1970 Manufacturing Survey and the assumed zero growth of handicrafts and small-scale industry.

Construction GDP. -- Construction accounts for about 5 percent of total GDP. It includes value added of public construction, heavy private construction, and residential construction in urban and to some extent in rural areas. The CBE Fiscal Studies Division provides most of the needed data for the public sector from the accounts of government agencies and public enterprises. The CBE National Income Division used to collect similar data for the private sector from the private construction companies. In addition, the CBE has used construction permits, municipal cadastral surveys, and other sources for various ad hoc estimates of factor inputs in construction. Having focused its efforts on construction enterprises, the NID appears to have underestimated the construction by nonconstruction enterprises and private residential construction, especially in rural areas. The latter data were quite incomplete and as much as five years out of date even in the 1950 s. There has been apparently no systematic effort to survey construction sites in Ecuador. The NID has also made little use of the 1962 Census of Housing for developing a meaningful frame for its surveys of residential construction activity.

With a general deterioration of basic statistics since 1965, the CBE has replaced the direct estimation of value added with multiple linear regressions of construction GDP on cement production, imports of construction materials, and fixed capital formation in the public sector (see Table A-28). Of these three independent variables, cement showed the highest positive coefficient of net regression. This

Table A-28: INDEPENDENT VARIABLES USED IN REGRESSIONS FOR ESTIMATING CONSTRUCTION GDP, ECUADOR, SELECTED YEARS 1957-1970

Variables and Indexes	1957	1960	1965	1969	1970
X_1 = Cement production (thous. of m. tons)	141	183	297	456	458
Index implicit in data	47.5	61.6	100.0	153.5	154.2
Index used in GDP estimates	52.2	61.6	100.0	153.5	154.2
X_2 = Imports of construction materials (mil. of US $)	5.04	4.80	8.35	14.98	13.70
Index implicit in data	60.4	57.5	100.0	179.4	164.1
Index used in GDP estimates	60.4	57.5	100.0	179.4	164.1
X_3 = Capital formation in buildings, construction, and public works (mil. of sucres)	..	799	698	1,282	..
Index implicit in data	..	114.4	100.0	183.6	..
Index used in GDP estimates	80.4	114.5	100.0	184.5	189.5

Sources:

X_1 = Bulletin of the Central Bank of Ecuador, XLV, Nos. 531, 532, and 533 (Oct.-Dec., 1971), 274.

X_2 = Ibid., 209-213.

X_3 = Central Bank of Ecuador, Fiscal Studies Division.

Table A-29: GDP AT CURRENT FACTOR COST ORIGINATING IN CONSTRUCTION, ECUADOR, ESTIMATING PROCEDURE FOR 1969 AND 1970

Year	Construction GDP (Millions of Sucres)			Independent Variables (Indexes, 1965 = 100)		
	at Current Prices	at 1965 Prices	Index 1965=100			
			Y	X_1	X_2	X_3
1957	380	467	59.3	52.2	60.4	80.4
1958	388	474	60.2	53.9	48.2	69.9
1959	462	564	71.6	52.9	46.2	94.4
1960	499	598	75.9	61.6	57.5	114.5
1961	574	655	83.1	67.0	48.6	119.1
1962	560	625	79.3	65.3	43.8	94.3
1963	593	636	80.7	79.1	47.8	98.6
1964	698	724	91.9	89.2	51.6	104.7
1965	788	788	100.0	100.0	100.0	100.0
1966	845	804	102.0	115.8	148.2	96.6
1967	1,040	955	121.2	131.6	109.8	119.2
1968	1,140	1,008	127.9	146.1	162.2	148.4
1969	1,329	1,120	142.0922	153.5	179.4	184.1
1970	1,446	1,142	144.9370	154.2	164.1	189.5
1971	1,663	1,199	152.1540	163.3	174.0	199.0
1972	1,918	1,256	159.3797	173.4	188.0	207.0

Independent Variables:

X_1 = Cement production
X_2 = Imports of construction materials
X_3 = Fixed capital formation in buildings, construction, and public works

The above variables produced the following estimating equation for GDP at constant 1965 factor cost originating in construction:

$$Y_i = 16.2866 + 0.6587\ X_1 - 0.0807\ X_2 + 0.2127\ X_3$$

This equation produced the following estimates:

Y_{1970} = 1,142
Y_{1971} = 1,199
Y_{1972} = 1,256

The CBE computed the same estimating equation ($Y_i = 16.2865 + 0.6587\ X_1 - - 0.0807\ X_2 + 0.2127\ X_3$).

Sources: Central Bank of Ecuador, National Income Division; mission estimates.

probably reflects the emphasis on heavy and urban construction where cement is more widely used than in rural areas which appear to be largely excluded from the estimates. The small and negative coefficient of net regression for imported construction materials may reflect to some extent the gradual import substitution, although statistically the result is primarily due to the lack of growth in the imported construction materials prior to 1965 and very large increases concentrated in a few subsequent years. For the fixed capital formation of the public sector, the coefficient of net regression is positive but three times lower than that for cement although public construction accounts for a large part of the total (see Table A-29). It is possible that the accuracy of public capital formation estimates leaves much to be desired although statistically inadequate estimates of construction GDP could equally be responsible for the relatively weak covariation of these variables. The inconsistencies between the value added by construction and expenditure on capital formation should be further investigated and explained.

Ecuador lacks construction and fixed capital formation estimates by industrial origin. The latter estimates could be developed first for the public and then for the private sector. Partial data for such estimates could be prepared by the Fiscal Studies Division of the CBE for the public sector and by the NIS for the private sector.

Electricity, water supply, and sanitary services GDP. -- These public utilities account for only about two percent of total GDP. They exclude gas and some private companies whose relative importance cannot be readily ascertained. For the 1950s and the early 1960s, the CBE estimated the value added by surveying municipal services and companies in a few selected cities. The 1962-63 Electrification Census provided additional benchmark data for the electric power estimates.

Since 1965, the CBE has regressed the GDP estimates for these utilities on the production of electric energy in kilowatt-hours and on water charges reported by municipal governments in millions of sucres (see Table A-30). The coefficient of net regression is about 12 times higher for electricity than that for water charges. In fact, the data on water charges given at current prices may contribute little more than some distortion to the estimates. If they were properly deflated, the data on water charges at constant prices would reveal more clearly their lack of relevancy as their coefficient of net regression would probably tend to approach zero (see Table A-31). Therefore, the CBE may consider eliminating the water charges series from the independent variables, basing its regression entirely on the production of electricity and then adjusting the results for the other services.

Table A-30: INDEPENDENT VARIABLES USED IN REGRESSIONS FOR ESTIMATING ELECTRIC ENERGY, WATER SUPPLY, AND SANITARY SERVICES GDP, ECUADOR, SELECTED YEARS 1957-1970

Variables and Indexes	1957	1960	1965	1969	1970
X_1 = Electric energy production (mil. of kilowatt-hours)	298.8	387.0	575.2	843.2	948.8
Index implicit in data	52.0	67.2	100.0	146.5	164.9
Index used in GDP estimates	51.9	67.3	100.0	147.8	164.1
X_2 = Water charges (mil. of sucres)	15.5	28.6	34.8	53.7	..
Index implicit in data	44.5	82.1	100.0	154.3	..
Index used in GDP estimates	44.2	81.5	100.0	153.0	159.0

Sources:

X_1 = Unpublished estimates provided by the Statistical Section of the Ecuadorian Institute of Electrification (INECEL) for 1965-1970. The estimates for 1957 and 1960 were provided by the CBE. The primary source of the latter estimates could not have been ascertained.

X_2 = Unpublished estimates provided by the Fiscal Studies Division of the CBE.

Table A-31: GDP AT CURRENT FACTOR COST ORIGINATING IN ELECTRIC ENERGY WATER SUPPLY AND SANITARY SERVICES, ECUADOR, ESTIMATING PROCEDURE FOR 1969 AND 1970

Year	Electric Energy, Water, and Sanitation GDP (Millions of Sucres)			Independent Variables (Indexes, 1965=100)	
	at Current Prices	at 1965 Prices	Index 1965=100		
			Y	(X_1)	(X_2)
1957	120	148	54.8	51.9	44.2
1958	126	154	57.0	56.3	42.7
1959	138	168	62.2	60.7	69.8
1960	152	182	67.4	67.3	81.5
1961	179	204	75.6	74.7	63.5
1962	197	220	81.5	78.4	78.6
1963	224	240	88.9	82.5	96.0
1964	245	254	94.1	91.0	104.0
1965	270	270	100.0	100.0	100.0
1966	311	296	109.6	105.8	117.7
1967	338	310	114.8	115.2	142.7
1968	393	347	128.5	132.0	141.3
1969	466	393	145.6291	147.8	153.0
1970	548	433	160.2829	164.1	159.0[a]
1971	646	466	172.6343	177.0	175.0
1972	758	497	183.9715	189.0	187.6

[a] Data estimated on the basis of the 1958-69 trend.

Independent Variables:

X_1 = Electric energy production
X_2 = Water charges

The above variables produced the following estimating equation for GDP at 1965 constant factor cost originating in electric energy, water supply, and sanitary services:

$$Y_i = 6.1390 + 0.8743\ X_1 + 0.0671\ X_2$$

This equation produced the following estimates:

$Y_{1969} = 393$
$Y_{1970} = 433$
$Y_{1971} = 466$
$Y_{1972} = 497$

The CBE computed a similar estimating equation: ($Y_i = 6.3892 + 0.8743\ X_1 + 0.0671\ X_2$).

Source: Central Bank of Ecuador, National Income Division.

Transportation, communications, and storage GDP. These activities account for about four percent of the total GDP in Ecuador. They are small as their development has lagged and there are considerable underestimation problems. For the 1950s and the early 1960s, the CBE estimated the transportation value added on an ad hoc basis; it surveyed a few trucking cooperatives and bus companies, and obtained some data from the railroads for 1950-1958, from Panagra and a few domestic airlines for 1950-1959, and from the Great Colombian Merchant Company. For the subsequent years, even the railroads ceased to provide statistical data and the crude estimates for earlier years had to be extrapolated on the basis of trends. River transport has apparently never been included in the estimates; warehousing and storage has been assumed to be negligible in Ecuador and these activities have also been excluded from the estimates. The public communication enterprises provided some data on factor inputs which the CBE included in the national accounts estimates. The value added of radio stations was excluded from the communications and included implicitly as a residual with services.

The above estimates of GDP originating in transportation, storage, and communications have been extrapolated since 1965 by a linear multiple regression on three independent variables: (1) index of registered motor vehicles, (2) consumption index of petroleum production, and (3) index of transportation employment (see Table A-33). The number of registered motor vehicles is rather poorly related to the changes in the value added of this sector: the coefficient of net regression is low and negative. Many of the registered motor vehicles are passenger cars which divert passenger traffic from carriers whose factor inputs are included in the national accounts. Registered motor vehicles include also many trucks whose transportation services are counted as a part of agriculture, construction, manufacturing, trade, and other economic branches. Therefore, it would have been more appropriate to regress the transportation value added on the number of busses and trucks used by the common and private carrier enterprises.

Consumption of petroleum products has a higher and a positive coefficient of net regression and it is somewhat more suitable than the total number of registered motor vehicles for regressing the transportation value added because the common and private carriers consume relatively more gasoline per vehicle than those operated by other sectors or those used for pleasure. Transportation employment has about the same coefficient of net regression as the consumption index of petroleum products. However, the employment index is actually derived from the economically active population which the NEPCB projected from the 1962 Population Census. These population projections show continuous growth which outpaces the value added growth. In fact, the factor and the

Table A-32: INDEPENDENT VARIABLES USED IN REGRESSION FOR ESTIMATING TRANSPORTATION GDP, ECUADOR, SELECTED YEARS 1957-1970

Variables and Indexes	1957	1960	1965	1969	1970
X_1 = Registered motor vehicles (000)	..	28.3	37.9	55.8	..
Index implicit in the data	..	74.7	100.0	147.2	..
Index used in GDP estimates	57.2	74.7	100.0	147.3	165.6
X_2 = Consumption of petroleum products (mil. of US gal.)	86.4	173.6	229.4	322.3	362.1
Index implicit in the data	37.6	75.6	100.0	140.5	157.8
Index used in GDP estimates	54.8	75.0	100.0	150.9	151.6
X_3 = Transportation employment (000)	35.8	40.0	48.0	59.9	62.9
Index implicit in the data	74.5	83.4	100.0	124.8	131.0
Index used in GDP estimates	74.7	83.3	100.0	124.8	131.0

Sources:

X_1 = CBE, National Income Division.

X_2 = Bulletin of the Central Bank of Ecuador, Vol. XLV, Nos. 531, 532 and 533 (Oct.-Dec., 1971), 271.

X_3 = National Economic Planning and Coordination Board, Division of Human Resources (unpublished estimates dated September, 1970).

Table A-33: GDP AT CURRENT FACTOR COST ORIGINATING IN TRANSPORTATION, ECUADOR, ESTIMATING PROCEDURE FOR 1969 AND 1970

Year	Transportation GDP (Millions of Sucres)			Independent Variables (Indexes, 1965=100)		
	at Current Prices	at 1965 Prices	Index 1965=100			
			Y	X_1	X_2	X_3
1957	522	642	88.6	57.2	54.8	74.6
1958	530	648	89.4	61.5	60.9	77.3
1959	546	667	92.0	69.8	65.5	80.4
1060	548	656	90.5	74.7	75.0	83.3
1961	595	679	93.7	81.1	77.6	86.5
1962	600	670	92.4	83.1	77.0	91.0
1963	649	696	96.0	91.9	83.9	93.1
1964	701	727	100.3	96.0	92.4	96.5
1965	725	725	100.0	100.0	100.0	100.0
1966	789	751	103.6	109.3	109.2	104.0
1967	822	755	104.1	127.5	118.8	107.9
1968	902	798	110.1	138.8	136.4	119.0
1969	980	826	113.9410	147.3	150.9	124.8
1970	1,050	829	114.3842	165.6	151.6	131.0
1971	1,193	860	118.7045	178.0	168.3	137.7
1972	1,365	894	123.3040	196.0	187.1	145.0

Note: The 1970 figure is revised to 1,149 because it is considered to be underestimated.

Independent Variables:

X_1 = Registered motor vehicles
X_2 = Consumption of petroleum products
X_3 = Transportation employment

The above variables produced the following estimating equation for GDP at constant 1965 factor cost originating in transportation:

$$Y_i = 63.6904 - 0.0530\ X_1 + 0.2164\ X_2 + 0.2036\ X_3$$

This equation produced the following estimates:

$Y_{1969} = 826$
$Y_{1970} = 829$
$Y_{1971} = 860$
$Y_{1972} = 894$

The CBE computed the same equation.

Source: Central Bank of Ecuador, National Income Division; mission estimates.

nonfactor related inputs show faster growth than the value added of this sector (see Table A-33). The implied decline in the average productivity cannot be readily justified on any ground other than the deficiency of the basic data. An inescapable conclusion emerges that the growth, as well as apparently also the level of this sector, have been greatly understated. It should also be noted that the regression excludes completely communication variables.

Wholesale and retail trade GDP. The wholesale and retail trade accounts for about 11 percent of the total GDP. These are crude estimates based on income tax returns of trade establishments and foreign trade data. Foreign trade establishments account for about 60 to 70 percent of domestic trade and the CBE has assumed the same proportion for the value added, based in part on a study of trade margins carried out in 1950-1954.

Starting in the middle 1960s the CBE began extrapolating the trade GDP estimates with regressions. At first, it based the regression entirely on the combined value of exports and imports. In more recent years, the number of independent variables was increased to four indexes: (1) agriculture GDP, (2) manufacturing GDP, (3) value of exports, and (4) value of imports (see Table A-34). While all three GDP series are at constant 1965 sucres, the index based on the value of export permits indicates faster and that on import permits shows slower growth than the indexes which the CBE has used in trade GDP regressions. It is possible that the latter two indexes were also deflated with different price deflators for exports and imports.

The selection of the independent variables for the regression of trade GDP is more appropriate than for the other regressions: agriculture, manufacturing and foreign trade reflect the commodity flows of the country. Nevertheless, the relationship of exports to domestic trade is very weak--the coefficient of net regression on exports is almost zero. This independent variable may be eliminated from the regression (see Table A-35). Manufacturing shows also a relatively small coefficient of net regression. This is consistent, however, with the relative importance of domestically manufactured products in the total volume of domestic trade. The coefficient of net regression for agriculture is about twice as high as for manufacturing, and that for the imports is the highest. Although the level of trade activity may be underestimated, its projection over time is generally in line with the overall quality of the national accounts.

Finance, insurance, and real estate. -- These activities account for about three percent of the GDP in Ecuador. The CBE estimates

Table A-34: INDEPENDENT VARIABLES USED IN REGRESSION FOR ESTIMATING DOMESTIC TRADE GDP, ECUADOR, SELECTED YEARS 1957-1970

Variables and Indexes	1957	1960	1965	1969	1970
X_1 = Agriculture GDP (mil. of constant 1965 sucres)	4,841	5,672	6,482	7,211	7,655
Index implicit in data	74.7	87.5	100.0	111.2	118.1
Index used in GDP estimates	74.7	87.4	100.0	113.6	115.9
X_2 = Manufacturing GDP (mil. of constant 1965 sucres)	1,999	2,408	3,299	4,142	4,396
Index implicit in data	60.6	73.0	100.0	125.6	133.3
Index used in GDP estimates	60.6	73.0	100.0	127.3	139.1
X_3 = Value of exports (mil. of US $)	98.7	102.6	133.8	151.9	201.5
Index implicit in data	73.7	76.6	100.0	113.5	150.5
Index used in GDP estimates	70.5	82.1	100.0	108.8	129.1
X_4 = Value of imports (mil. of US $)	97.8	115.2	168.9	261.9	247.6
Index implicit in data	57.9	68.1	100.0	155.0	146.5
Index used in GDP estimates	63.5	70.7	100.0	156.4	167.5

Sources:

X_1 = CBE, National Income Division.

X_2 = Ibid.

X_3 = Bulletin of the Central Bank of Ecuador, XLV, Nos. 531-533 (Oct.-Dec, 1971), 209-213, and 237-240.

X_4 = Ibid.

Table A-35: GDP AT CURRENT FACTOR COST ORIGINATING IN DOMESTIC TRADE, ECUADOR, ESTIMATING PROCEDURE FOR 1969 AND 1970

Year	Domestic Trade GDP (Millions of Sucres)			Independent Variables (Indexes, 1965=100)			
	at Current Prices	at 1965 Prices	Index 1965=100				
			Y	X_1	X_2	X_3	X_4
1957	1,306	1,606	77.2	74.7	60.6	70.5	63.5
1958	1,338	1,636	78.7	75.5	64.4	75.9	65.9
1959	1,357	1,657	79.7	80.1	67.7	79.5	61.9
1960	1,482	1,775	85.3	87.4	73.0	82.1	70.7
1961	1,555	1,775	85.3	90.3	73.1	73.2	69.9
1962	1,620	1,808	86.9	98.0	77.2	82.4	72.2
1963	1,772	1,899	91.3	98.6	82.0	83.4	76.5
1964	1,921	1,993	95.8	99.1	95.5	89.5	90.2
1965	2,080	2,080	100.0	100.0	100.0	100.0	100.0
1966	2,185	2,079	100.0	106.1	101.0	103.3	97.5
1967	2,420	2,222	106.8	107.0	108.1	111.5	113.2
1968	2,680	2,370	113.9	106.0	112.8	116.9	135.8
1969	3,039	2,560	123.1	111.2	125.6	108.8	156.4
1970	3,397	2.683	129.0	118.1	133.3	129.1	167.5
1971	4,330	3,122	150.1	120.1	141.0	129.9	231.7
1972	4,987	3,266	157.0	120.6	150.4	182.1	251.2

Independent Variables:

X_1 = Agriculture GDP
X_2 = Manufacturing GDP
X_3 = Value of exports
X_4 = Value of imports

The above variables produced the following estimating equation for GDP at constant 1965 factor cost originating in domestic trade:

$$Y_i = 32.8597 + 0.2413\ X_1 + 0.1315\ X_2 - 0.0082\ X_3 + 0.3057\ X_4$$

This equation produced the following estimates:

$Y_{1969} = 2,560$
$Y_{1970} = 2,683$
$Y_{1971} = 3,122$
$Y_{1972} = 3,266$

The CBE estimating equation has a positive sign for the X_3 coefficient ($Y_i = 32.8592 + 0.24127\ X_1 + 0.13145\ X_2 + 0.0082\ X_3 + 0.3057\ X_4$) which produced slightly higher estimates.

Sources: Central Bank of Ecuador, National Income Division; mission estimates.

the value added of banking and insurance companies by aggregating compensation of employees, rents, interest, depreciation and profits of financial intermediaries. The Superintendent of Banks provides these data from the accounts of financial intermediaries which it supervises. Real estate is considered to be quite unimportant in Ecuador and it is largely excluded from the estimates, although the CBE has made a rough estimate for 8,000 brokers without a permanent business location. The ownership of dwellings is estimated separately (see below).

Prior to 1958, the CBE made no imputation for banking services. In subsequent years, the CBE imputed the banking services as a difference between interest and dividends received less interest paid. There is, however, no indication that the imputed service charge has been properly divided between the business and the household sectors. The Superintendant of Banks may not have the bank deposits properly classified by type of depositor to enable the NID to estimate the enterprise share of the imputed service charge and to deduct it as a business expense from the gross profits.

Ownership of dwellings. -- This sector accounts for about six percent of total GDP. It includes imputed rents of owner-occupied dwellings of the private sector. The imputed rents of public buildings are included in the government sector. For 1950-56, the CBE derived the estimates from the rent registers of Quito, Guayaquil, and from municipal cadastral surveys of a few other cities. For subsequent years, the CBE extrapolated these estimates on the basis of trends.

Services GDP. -- Private services accounted for 9 percent of GDP in the early 1960s. Since 1965, the CBE has estimated them together with public administration and defense as a residual, that is, total GDP less all the separately estimated sectors. The CBE estimates of the 1950's were considerably understated. Services included education, health, religious institutions, welfare and social services, independent professions, entertainment, general services rendered to enterprises, hotels, bars, barber shops, beauty parlors, etc. Many service enterprises could not be properly classified between the private and public sector. The major stumbling block remained the lack of basic statistics on services.

In the middle 1960s, the CBE tried to extrapolate private services by regressing their value added for previous years on five indexes: (1) index of matriculated students, (2) index of incomes by educational level, (3) index of incomes by health level, (4) index of public entertainment, and (5) index of imported books, records, and paper. These extrapolations, however, failed to produce meaningful estimates and the CBE finally decided to combine the services with public administration and defense.

Table A-36: INDUSTRIAL ORIGIN OF GDP AT CURRENT FACTOR COST, ALTERNATIVE ESTIMATES OF THE CBE AND NEPCB, ECUADOR, 1969, 1970 AND 1971
(Millions of Sucres)

Year	CBE Estimates		NEPCB Estimates	CBE in % of NEPCB Estimates	Mission Estimates	
	Regressed	Published			Based on Regression	Final Estimates
			Agriculture			
1969	8,874	8,874	8,716	101.8	8,462	8,462
1970	10,271	10,271	10,008	102.6	9,693	9,693
1971	..	..	11,343	..	10,804	10,804
			Mining and Quarrying			
1969	596	596	585	101.8	588	596
1970	621	641	630	101.7	604	641
1971	..	..	773	..	678	734
			Manufacturing			
1969	5,062	4,764	4,680	101.7	4,917	4,764
1970	5,921	5,657	5,555	101.8	5,565	5,438
1971	..	..	6,735	..	6,450	6,412
			Construction			
1969	1,350	1,350	1,324	101.9	1,329	1,350
1970	1,473	1,803	1,770	101.8	1,446	1,803
1971	..	..	1,982	..	1,663	2,302
			Electricity, Gas, Water Supply and Sanitary Services			
1969	474	474	466	101.7	466	474
1970	559	559	549	101.8	548	559
1971	..	..	655	..	646	671
			Transportation and Communication			
1969	995	995	977	101.8	980	995
1970	1,069	1,149	1,128	101.8	1,050	1,149
1971	..	..	1,262	..	1,193	1,342
			Domestic Trade			
1969	3,106	3,012	2,958	101.8	3,032	3,012
1970	3,528	3,528	3,464	101.8	3,397	3,397
1971	..	..	3,945	..	4,330	4,021
			Total GDP at Current Market Prices			
1969	30,716	30,843	30,338	101.6	30,717	30,429
1970	37,574	35,743	35,159	101.6	37,575	35,130
1971	44,095	..	41,247	..	44,673	41,020

Sources: Central Bank of Ecuador, National Income Division; National Economic Planning and Coordination Board, Division of General Programming.

Public administration and defense. -- Public administration and defense accounted for 7 percent of total GDP in 1964, the last year for which the CBE estimated this sector separately. Since 1965, it estimated the value added of this sector as a residual, together with the private services. Separate defense estimates are available only prior to 1960. Fixed capital consumption allowances could not have been estimated for this sector at any time.

VII. The Deflation Problem

The CBE and the NEPCB derive the national accounts at current prices and then deflate them with a general price index constructed from the consumer and wholesale price indexes. In recent years, as the Central University suspended the preparation of the WPI, the CBE confined its work to national accounts at current prices. The general price index is still computed but in view of its shortcomings, it is not used for deflation purposes.

The CBE constructs the deflator by calculating an unweighted average price index from the WPI and the CPI for Quito, Guayaquil and Cuenca. It averages the annual point changes in these indexes for a given year and adds the result to the deflator of the preceding year.

Being aware of the limitations of this procedure, the CBE prefers to update the deflator with the Quito CPI. The averaging merely obscures the fundamental issue which underlies the general deflation problem in Ecuador. A CPI may be a relevant price index for deflating private consumption expenditure, but it cannot be meaningfully applied across the board to all components of national accounts. Where specific price increases exceed the CPI changes, the remaining price increases are interpreted as real growth and vice versa, where specific price increases are smaller than the CPI changes, the deflation procedure eliminates some of the real growth in addition to price changes.

The use of a general price deflator has a different economic interpretation than that of an implicit deflator. The general price deflator corrects the national accounts for changes in the purchasing power of money for the basket of goods to which the general price index refers. The relative price changes are not affected. This has the advantage of showing the relative importance of components and the disadvantage of measuring the sector growth in terms of the purchasing power of a certain given basket of goods and services. Since the purpose of deflation is usually the measurement of growth based on constant prices of the same sector, the use of the CPI may introduce significant distortions.

The available CPI and WPI components and various production indexes are not sufficiently appropriate for deflating the major components of the national accounts. With the CPI components, the CBE could deflate the consumption expenditure and the ownership of dwellings. For other components, it has to construct sectoral price indexes, using the WPI components and agricultural prices collected by the Ministry of Production. If the CBE or the NIS succeed in developing agricultural or industrial production indexes, the latter could be used for extrapolating the value added at constant prices, provided that the indexes are sufficiently comprehensive.

In the absence of specific price deflators, sectoral growth cannot be meaningfully inferred from the national accounts. The exclusive use of the CPI would probably underestimate the real growth in the GDP because the CPI shows considerably higher price increases than the WPI. Replacing the GDP deflator, which is partly based on the CPI, with the major WPI component for food products, the GDP growth originating in agriculture increases from 2.5 to 3.3 percent per year between 1961 and 1969. A specific deflator based on two-thirds of WPI components and about one-third on CPI groups (the latter had to be used because the relevant WPI groups have not been computed in Ecuador) can be computed with the 1965 Census of Manufacturing weights adjusted for handicrafts at the two-digit industry level. Even such an imperfect specific deflator raises the average annual rate of growth for manufacturing GDP from 6.6 percent to 8.3 percent for the same period. A production index computed with adjusted 1960 weights shows a -3.2 percent decline per year between 1961 and 1969, while the mining GDP grows at 4.3 percent per year during the same period. The net impact of these adjustments on the total GDP growth is, of course, considerably smaller (see Table A-37). The adjusted GDP grows at 5.4 percent instead of at 5.0 percent with base-year weights. With 1969 weights, the differences would, of course, be even smaller.

The use of specific deflators is thus far more important for measuring the growth of GDP components than for determining the changes in the overall economic activity. On the whole, the CPI is more appropriate than the WPI for deflating the total GDP because of the large relative importance of consumption expenditure. Moreover, the limitations of the WPI, especially in Ecuador (see the technical note on basic statistics in Annex B), must also be considered. If the WPI is understated by about 15 percent, as the findings on the basic statistics may indicate, the above deflation bias would be reduced by one-half, or it may be even found to be a bias in the opposite direction.

Table A-37: DEFLATION BIAS IN GDP AND ITS MAJOR COMPONENTS, ECUADOR, 1962-1969

Indicators	1961	1969	1962-1969 Period	
			Growth Ratio	Annual Growth Rate (Percent)
	Adjustment of Agriculture GDP			
GDP price deflator (1965=100)	87.6	118.7	1.355	3.8
WPI for food products (1965=100)	90.9	115.6	1.272	3.0
Deflation bias for agriculture	..	..	1.065	0.8
Agriculture GDP at constant 1970 factor cost (mil. sucres)				
Unadjusted	7,409	9,021	1.217	2.5
Adjusted	7,409	9,602	1.296	3.3
Adjustment	..	581	1.065	0.8
	Adjustment of Manufacturing GDP			
GDP price deflator (1965=100)	87.6	118.7	1.355	3.8
WPI for manufacturing (1965=100)	91.7	109.3	1.192	2.2
Deflation bias for manufacturing	..	..	1.137	1.6
Manufacturing GDP at constant 1970 factor cost (mil. sucres)				
Unadjusted	3,052	5,078	1.664	6.6
Adjusted	3,052	5,774	1.892	8.3
Adjustment	..	696	1.137	1.6
	Adjustment of Mining and Quarrying GDP			
Index of production for mining and quarrying (1965=100)	142.0	109.6	0.771	-3.2
Mining and quarrying GDP at constant 1970 factor cost (mil. sucres)				
Unadjusted	455	635	1.396	4.3
Adjusted	455	351	0.771	-3.2
Adjustment	..	-284	1.811	-7.7
	Adjustment of GDP			
GDP at constant 1970 factor cost (mil. sucres)				
Unadjusted	19,997	29,512	1.475	5.0
Adjusted	19,997	30,505	1.525	5.4
Adjustment	..	993	1.034	0.4

Source: Mission estimates based on official data.

CURRENT ECONOMIC POSITION AND
LONG-TERM PROSPECTS OF ECUADOR

TABLE OF CONTENTS

LIST OF TABLES

I. Introduction

This Annex presents a brief review of readily available basic statistics which are relevant to national accounts. For the most part, the basic statistics are reviewed cursorily, special emphasis being placed on selected major problems. Inadequate and changing coverage of the statistical universe, unreasonable delays in data collection and processing, and conflicting results derived from various sources receive special attention. There is no attempt, however, to review the statistical system as a whole. Such a systematic review must be postponed for some future date. Nevertheless, the mission has made several recommendations on the improvement of the statistical system which should be given an early consideration by the government. The narrow scope of these recommendations reflects the limitations of this review rather than the extent of possible improvements of basic statistics in Ecuador.

II. Summary of Findings and Recommendations

Ecuador has produced a fairly large volume of basic statistics. Within the last two decades, Ecuador conducted a major economic and two population censuses, followed by annual surveys. In addition, several government agencies have maintained regular reporting systems in the areas of their responsibility. Major universities are engaged in collection of price data, while trade associations compile statistics from various independent sources.

Notwithstanding a relatively large flow of economic statistics, the available information is generally outdated and beset with numerous other deficiencies which make the data less than suitable for planning and national accounts purposes. While the need for and uses of economic statistics have increased substantially in recent years, the scope and quality of national accounts and some basic statistics have markedly deteriorated. Thus, the agricultural census covered 9 percent of farms in 1954, but having encountered enormous difficulties, it had to be abandoned in 1962. After this failure, only a 3 percent sample survey was conducted in 1968, and the results turned out to be too poor to be used in national accounts because of the gross inconsistencies with the alternative estimates prepared by the agricultural extension service. However, the latter in turn have often been distorted by subjective judgments of agricultural extension workers. The 1962 Population Census showed a 10 percent lower manufacturing labor force than the 1950 Census because the latter had erroneously classified a large number of farm workers with the active population in manufacturing. The 1962 Population Census understated the total population of Ecuador by about 200,000. Most of the economically active population estimates are projected hypothetically from these deficient benchmark data. The railways discontinued the processing

of their traffic data althogether after 1959. The mining and manufacturing statistics cover only large and medium establishments, with varying coverage from year to year. The public sector statistics suffer from changes in definitions and classifications. The data are even less adequate in other sectors if they are available at all.

In view of the above deficiencies, the statistical system of Ecuador should be reviewed in its entirety and its performance raised to an adequate level. The present system is not meeting the minimum requirements of providing information for making decisions on current economic policy, long-range planning and preparing meaningful national accounts.

The organizational structure and management of the statistical system should be more centralized to make the best possible use of relatively scarce statistical skills, qualified manpower and other resources.

The management of the National Institute of Statistics (NIS) should be strengthened and its work program reviewed with a view towards establishing more effective priorities. At the same time, other agencies and institutions should curtail their data gathering activities, limiting them to areas of their direct responsibility. They should present their requests for general statistics well in advance to the NIS which should have the opportunity to develop the necessary capacity for producing them, obtain the appropriate budget authorizations, and accept sole responsibility for them. In the interim period, which may extend over several years, all agencies responsible for general statistics should consult with the NIS about the statistical standards, methodology, and priorities. The centralization process should be gradual and commensurate with the NIS's absorptive capacity. Every effort should be made to secure overlapping time series for a reasonable length of time to ensure the comparability of series and their linking if necessary.

In order to ensure more effective field operations, the NIS should consider establishing a small field staff in key locations. In addition to its branch office maintained in Guayaquil, the NIS should maintain branch offices or at least have its permanent representative station in several other important provincial capitals such as Cuenca, Loja, Ambato, Manabi and Esmeraldas. These regional offices and representatives should provide local support to the NIS surveys, developing and maintaining survey frames, checking inadequate response and nonresponse, and cooperating with the CBE, Ministry of Production, universities, and othe/ agencies in the field operation of their surveys. The latter cooperation should be pursued with the view to assuming increasing responsibility for all field work concerned with basic statistics.

Strategically located branch offices, reinforced with supervisors and statistical technicians from Quito at the time of major censuses and surveys, would be responsible for securing all data on time from the

respondents and, after a preliminary check for consistency and completeness, for forwarding the data to Quito for final review and processing. In cooperation with the Heaquarters, the branch offices would also serve as centers for training the field staff and staging the field operations of censuses and surveys.

The NIS priorities should be reviewd in the light of modern statistical methods based on estimating the totals and averages from well-designed probability samples. The present censuses and most of the surveys attempt a complete coverage of the whole statistical universe with detailed questionnaries. This procedure is very inefficient. It imposes a heavy burden on the respondents, interviewers, and data processing. More interviewers are used with relatively less training and experience. The results are adversely affected by higher response and processing errors. These errors are usually substantially higher than the sampling errors of a well-designed probability sample based on a reliable frame. Therefore, the NIS should concentrate its efforts on securing complete statistical frames with short questionnaries containing three to five basic items. On the basis of these frames, probability sampling with multiple stages and phases would provide all the necessary details.

The 1973 Population Census should be based on modern probability sampling methods. The complete population canvass should be limited to the usually recommended simple questions on age, sex and perhaps major economic activity. This basic information would serve for developing the frames for various demographic and economic surveys, including the agricultural survey to be carried out in 1974.

The NIS should use a varying sampling fraction, lowering it for large and increasing it for small samples. The proposed constant fraction for the various zones of the 1974 Agricultural Census would impose an unnecessary burden on the large zones and produce excessive sampling errors for the unusually small samples. The samples should be stratified by major characteristics to reduce the sampling fraction to a level at which the sampling errors would roughly be comparable to the response errors.

The NIS should conduct its proposed annual agricultural surveys (to be started in 1975) in cooperation with agricultural extension workers who may be able to contribute their expertise. The survey should be based on the modern crop-cutting techniques rather than on the opinions and subjective information provided by farmers and agricultural extension workers. Once the vast discrepancies between the NIS surveys and the reports of agricultural extension workers compiled by the Ministry of Production have been reduced (or at least explained), the NIS should assume full responsibility for the agricultural statistics--provided that it would be able to furnish them at least as expenditiously as the Ministry of Production.

The NIS should review its annual industrial survey with a view towards introducing probability sampling which would cover medium, small, cottage and handicraft establishments. The complete coverage should be continued with respect to large industrial establishments. However, the present practice of delaying the release and publication of the results until all the establishments have returned the questionnaires should be replaced with a system which would produce tentative estimates for non-reporting establishments on the basis of their previous reports or some other indirect information.

The priorities for other economic and social surveys should be reviewed in the light of the needs for data and available resources. It appears from the review of the national accounts that the present NIS surveys fail to provide the necessary data even for the national accounts. The collected data supply a very inadequate basis for the estimation of trends and levels of economic activity in construction, transportation, trade and services.

The accounting and reporting practices of the public sector should be reviewed and modernized. The basic discrepancies between the CBE and the NEPCB definitions and estimating procedures should be reviewed and the needed data obtained in the most efficient way at the earliest possible date. The present processing of public accounts is entirely too slow and unreliable to be of much use for the national accounts and public finance policies. The Government of Ecuador should establish operational definitions and reporting procedures at the agency and public enterprise levels rather than expect the CBE experts to reclassify ex post the accounts of all government agencies and public enterprises every year. These annual exercises are inefficient and their modus operandi should be thoroughly reviewed at an early date.

The procedures for estimating the balance of payments data should be reviewed to determined the extent to which they reflect the actual flows of payments (cash flows). The export and particularly the import permits are poor indicators of payments for merchandise transactions with respect to trends, levels and timing. Many balance of payments components are crudely estimated by various ratios and other indirect methods. The CBE should make a greater effort in ascertaining the actual flows from more direct information which should be used in estimating the final results.

The Central University of Ecuador should resume its calculation of wholesale price indexes (WPI's). It should replace the 1954 weights with more recent data as soon as possible. The WPI's of the various cities should be combined into national WPI's with proper weights such as the provincial data on agricultural and industrial production. The CPI's should also be weighted for each city with provincial or regional data on consumer spending. The latter may be approximated from the population of economic regions.

Whenever feasible, all important indicators should be derived on semiannual and quarterly basis in order to make it possible to estimate the annual totals on the basis of semiannual and quarterly data. Timely data are essential for many policy decisions, while accurate data are needed for more penetrating analyses, especially for the determination of annual changes and long-term trends.

III. Demographic Statistics

Ecuador conducted its First National Population Census in 1950, the Second in 1962 and the Third Census is planned for 1973. The results of the 1950 and 1962 censuses were published with relatively little delay. The Second Population Census was combined with the First Housing Census in 1962. Moreover, the results of the First Census appeared in five volumes 37/, those of the Second Census included eight volumes 38/. In the preparation for the 1973 Census, a pilot census was conducted in Vilcabamba and its results published in 1971. Surveys of fertility were conducted in Quito and other major cities and selected districts in 1966 - 1968. The intercensal data indicated population growth of slightly over 3.0 percent per year in the 1950's, while the fertility surveys raised this figure to 3.4 percent for the 1960's.

Censuses provide frames for subsequent sample surveys and establish a basis for benchmark estimates. Being aware of these needs, the NIS has tried to maintain data continuity by using similar questionnaires for all population censuses. The basic questionnaires contain fourteen items on housing, and twenty-two items on population characteristics. Many of these thirty-six questions have up to ten multiple choice subitems which include specific questions on employment, occupation, wages and salaries, etc. Instead of shifting the details to a probability sample, the Census attempts to canvass the entire population, imposing an unreasonable and unnecessary burden on the census takers and the respondents. Consequently, the response errors increase, the data processing is delayed, and the cost of the census remains higher than that with a concurrent sample survey of detailed characteristics, the complete coverage being limited to only four or five basic questions related to age and sex characteristics.

37/ Vol. I-(Population by Age and Sex); Vol. II-(Population by Maritual Status); Vol. -III (Urban, Suburban, and Rural Population); Vol. IV -(Population by Languages and Dialects); Vol. V- (Literacy of Population).

38/ In addition to the four basic volumes, it included volumes with preliminary results, provincial data, and two volumes on population projections to 1980.

The processing of a three percent sample of the latest population census taken in 1962 showed relatively minor differences with respect to the final results. In fact, the preliminary results based on a 3 percent sample of Census questionaires were found to be generally more accurate than those based on a 100 percent coverage; the preliminary results tended to be higher than the final Census returns, thus making some allowance for the persons whom the Census takers had missed. When the final Census results had been analyzed and corrected for various deficiencies, the revised NEPCB estimates turned out to be significantly higher--4.7 million instead of 4.5 million recorded by the 1962 Census (See Table B-1).

The distribution of the economically active population recorded by the 1950 Census showed even greater deficiencies. According to the population census, active population in manufacturing declined from 295,000 in 1950 to 210,000 in 1962. Subsequent inquiries established that about one-third of manufacturing labor force in 1950 consisted of farm smallholders who worked sporadically in manufacturing and were thus erroneously classified by the Census takers. 39/ The NEPCB projections of the economically active population in manufacturing lowered the 1950 Census results from 233,000 to 152,000. Similarly, they lowered the economically active population in services from 141,000 to 111,000. The adjustments in other sectors were relatively small (see Table B-1).

A recent NEPCB study has found that the 1962 Census understated the economically active population by about 40,000. 40/ Although it had the total employment of Ecuador grew about 0.4 percentage points slower, on the average, between 1950 and 1962, than the population as a whole. However, this result appears to be consistent with the accelerating population growth inasmuch as more children are added to population than the additions to the labor force and employment. Nevertheless, the estimates of the female labor force in rural areas remain rather shaky and are probably understated. The NEPCB estimates of the economically active population and employment are shown by major sectors in Table B-2.

The Ecuadorian population censuses contain obvious errors and biases which can be attributed to large response errors. the latter could have been reduced by focusing the efforts of better trained interviewers on a smaller number of respondents in a carefully selected probability sample. The importance of this issue is brought to the attention of the Government of Ecuador which is responsible for improving the quality of the proposed 1973 Population Census.

39/ Cf. United Nations, Department of Economic and Social Affairs, Case Studies of Arrangements for Evaluation and Utilization of Population Census Results, Report III, The Republic of Ecuador (New York: United Nations, 1960),p. 13.

40/ National Economic Planning Coordination Board, Section of Human Resources Programming, Correction of Census Figures of Economically Active Population and Its Projection to 1980 (Quito: NEPCB, July 1971), p. 19.

Table B-1: COMPARISON OF POPULATION CENSUS RESULTS AND ALTERNATIVE ESTIMATES, ECUADOR, 1950 AND 1962
(Thousands of Persons)

Major Population Categories	1950			1962		
	Census a/		NEPCB a/	Census a/		NEPCB a/
	Final	Corrected	Estimates	Preliminary	Final	Estimates
Total population	3,202.8	..	3,271.1	4,514.8	4,476.0	4,721.1
Urban	913.9	..	920.6	1,617.2	1,612.3	1,650.9
Rural	2,288.8	..	2,350.5	2,897.6	2,863.6	3,070.2
Population under 12 years	1,137.7	..	..	1,707.2	1,688.2	1,877.5
Population 12 years and over	2,065.1	..	..	2,807.6	2,787.8	2,843.6
Economically inactive b/	1,966.2	..	2,208.4	1,323.9	1,345.2	3,192.6
Economically active c/	1,236.6	1,205.3	1,062.7	1,483.7	1,442.6	1,528.5
Agriculture d/	610.9	640.6	626.1	839.4	801.7	877.5
Mining	5.2	5.0	5.0	3.4	3.5	3.6
Manufacturing d/	294.7	233.3	152.3	209.3	210.4	213.5
Construction	27.3	26.8	26.5	47.5	48.0	48.8
Electric energy	1.3	1.3	1.1	2.7	4.6	4.7
Transportation	27.7	27.4	27.4	42.1	43.0	43.7
Trade	70.1	75.1	67.9	91.7	97.1	98.7
Services	144.7	141.2	110.8	197.0	190.7	193.5
Unclassified	54.7	54.6	45.6	50.7	43.8	44.5
Employed population	..	..	1,021.6	1,437.5	1,380.0	1,411.3
Unemployed population	..	..	41.1	46.2	62.6	117.2

a/ Refers to November 25th.

b/ Economically inactive population included the unemployed in 1950 and excluded them in 1962. It comprised 1,040,600 housewives, 264,100 students, and 40,500 other economically inactive persons in 1962.

c/ In 1950, economically active population referred to persons with remuneration and thus excluded the unemployed. In 1962, it included both the employed and the unemployed.

d/ The 1950 Census results showed irregularities with respect to economically active population in agriculture and manufacturing inasmuch as the enumerators included within the latter small farmers that occasionally worked in manufacturing. A study conducted by the General Bureau of Statistics and Censuses arrived at the conclusion that 124,236 persons could be substracted from manufacturing and added to agriculture. This change resulted in estimated 735,139 persons in agriculture and 170,494 persons in manufacturing. See The Population of Ecuador (Cuenca: NEPCB, 1960), p.90.

Sources: NEPCB, The Population of Ecuador (Cuenca: NEPCB, 1960), Annex Tables 1, 2, 5, and 6.
Ministry of Economy, First Population Census 1950, Summary of Characteristics (Quito: General Bureau of Statistics and Censuses, 1960) Single Volume, Table 38, p. 181.
NEPCB, Second Population Census and First Housing Census 1962 (Quito: Division of Statistics and Censuses, 1964), Tables 27 and 33, pp. 131 and 224.
NEPCB, Correction of Census Figures of the Economically Active Population and Its Projections to 1980 (Quito: NEPCB, July 1971), Tables 1, 6, 7 and 13.

Table B-2: TOTAL, ECONOMICALLY ACTIVE, INACTIVE, EMPLOYED, AND UNEMPLOYED POPULATION, BY MAJOR ECONOMIC BRANCHES, ECUADOR, 1950-1975
(Thousands of Persons)

Major Population Categories	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Total Population	3,230.5	3,328.7	3,429.9	3,534.2	3,641.6	3,752.3	3,866.4	3,983.9	4,105.0	4,229.8
Economically inactive	2,167.8	2,233.9	2,302.0	2,372.1	2,444.1	2,518.2	2,594.4	2,672.7	2,753.3	2,836.2
Economically active	1,062.7	1,094.8	1,127.9	1,162.1	1,197.5	1,234.1	1,272.0	1,311.2	1,351.7	1,393.6
Agriculture	626.1	644.0	662.4	681.2	700.7	720.6	741.2	762.3	784.1	806.5
Mining	5.0	4.9	4.7	4.6	4.5	4.4	4.3	4.1	4.0	3.9
Manufacturing	152.3	156.7	161.1	165.7	170.4	175.3	180.3	185.5	190.8	196.2
Construction	26.5	27.9	29.3	30.9	32.5	34.2	36.0	37.9	39.8	41.9
Electric energy	1.1	1.2	1.4	1.6	1.8	2.0	2.3	2.6	2.9	3.3
Transportation	27.4	28.5	29.6	30.8	32.0	33.3	34.6	36.0	37.4	38.9
Trade	67.9	70.1	72.3	74.5	76.9	79.3	81.8	84.4	87.1	89.8
Services	112.8	116.0	121.6	127.4	133.4	139.8	146.4	153.4	160.7	168.3
Unclassified	45.6	45.5	45.5	45.4	45.3	45.2	45.1	45.0	44.9	44.8
Employed population	1,021.6	1,048.9	1,077.0	1,105.7	1,136.2	1,165.5	1,196.6	1,228.7	1,261.6	1,295.4
Agriculture	604.8	618.2	631.7	645.1	658.4	673.4	687.7	702.3	717.0	732.1
Mining	4.8	4.7	4.6	4.4	4.3	4.2	4.1	4.0	3.9	3.8
Manufacturing	145.5	149.3	153.6	158.1	162.7	167.5	172.3	177.3	182.6	187.8
Construction	25.5	26.9	28.3	30.0	31.4	33.0	34.7	36.5	38.2	40.2
Electric energy	1.1	1.2	1.4	1.6	1.8	2.0	2.3	2.6	2.9	3.3
Transportation	25.8	27.6	28.8	30.0	31.0	32.3	33.5	34.8	36.2	37.6
Trade	65.4	67.4	69.5	71.6	73.8	76.1	78.4	80.8	83.3	85.9
Services	109.8	112.8	118.4	124.0	130.1	136.4	143.0	149.8	157.0	164.2
Unclassified	40.9	40.8	40.7	40.9	40.7	40.6	40.6	40.6	40.5	40.5
Unemployed population	41.1	45.9	50.9	56.4	63.3	68.6	75.4	82.5	90.1	98.2
Agriculture	21.3	25.8	30.7	36.1	42.3	47.2	53.5	60.0	67.1	74.4
Mining	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Manufacturing	6.8	7.4	7.5	7.6	7.7	7.8	8.0	8.2	8.2	8.4
Construction	1.0	1.0	1.0	0.9	1.1	1.2	1.3	1.4	1.6	1.7
Electric energy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Transportation	1.6	0.9	0.8	0.8	1.0	1.0	1.1	1.2	1.2	1.3
Trade	2.5	2.7	2.8	2.9	3.1	3.2	3.4	3.6	3.8	3.9
Services	3.0	3.2	3.2	3.4	3.3	3.4	3.4	3.6	3.7	4.1
Unclassified	4.7	4.7	4.8	4.5	4.6	4.6	4.5	4.4	4.4	4.3

Table B-2 -- Continued

(Thousands of Persons)

Major Population Categories	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Total population	4,358.4	4,501.1	4,655.1	4,814.3	4,978.9	5,150.3	5,325.9	5,507.5	5,695.3	6,089.7
Economically inactive	2,921.3	3,019.1	3,126.6	3,246.3	3,370.2	3,499.7	3,621.3	3,746.9	3,876.6	4,210.9
Economically active	1,437.1	1,482.0	1,528.5	1,568.0	1,608.7	1,650.6	1,704.6	1,760.6	1,818.7	1,878.8
Agriculture	829.5	853.1	877.5	896.7	916.3	936.4	964.5	993.5	1,023.3	1,053.9
Mining	3.8	3.7	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3
Manufacturing	201.8	207.5	213.5	218.8	224.3	229.9	235.6	241.5	247.6	253.8
Construction	44.1	46.4	48.8	51.9	55.2	58.7	62.6	66.7	71.2	75.9
Electric energy	3.7	4.2	4.7	5.0	5.3	5.6	6.0	6.4	6.9	7.4
Transportation	40.4	42.1	43.7	45.5	47.4	49.4	51.9	54.4	57.1	59.9
Trade	92.7	95.6	98.7	102.2	105.8	109.6	114.3	119.3	124.4	129.8
Services	176.4	184.8	193.5	199.9	206.4	213.1	221.8	230.9	240.3	250.2
Unclassified	44.7	44.6	44.5	44.3	44.2	44.0	43.9	43.8	43.7	43.6
Employment	1,330.1	1,369.4	1,410.3	1,451.3	1,493.7	1,533.9	1,580.5	1,606.9	1,636.8	1,699.9
Agriculture	747.1	765.1	785.5	804.4	823.7	844.9	872.6	883.0	893.6	925.2
Mining	3.7	3.6	3.5	3.5	3.6	3.7	3.8	3.9	4.2	4.3
Manufacturing	193.3	199.5	205.6	212.7	219.8	225.2	228.3	230.3	233.7	241.8
Construction	42.2	44.2	46.6	49.0	51.4	53.9	56.4	59.4	62.4	67.0
Electric energy	3.7	4.1	4.5	4.6	4.7	4.9	5.1	5.7	6.5	7.0
Transportation	39.0	40.7	42.1	44.1	46.0	47.6	49.4	51.1	52.9	55.7
Trade	88.5	91.5	94.2	97.9	101.5	105.3	108.9	112.0	117.7	123.1
Services	171.9	180.1	188.5	195.3	201.7	208.4	216.5	222.5	226.6	236.5
Unclassified	40.7	40.6	39.8	39.8	41.2	40.0	39.5	39.0	39.2	39.3
Unemployment	107.0	112.6	118.2	116.7	115.0	116.7	124.1	153.7	181.9	178.9
Agriculture	82.4	88.0	92.0	92.3	91.2	91.5	91.9	110.5	129.7	128.7
Mining	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.0	0.0
Manufacturing	8.5	8.0	7.9	6.1	4.5	4.7	7.3	11.2	13.9	12.0
Construction	1.9	2.2	2.2	2.9	3.8	4.8	6.2	7.3	8.8	8.9
Electric energy	0.0	0.1	0.2	0.4	0.6	0.7	0.9	0.7	0.4	0.4
Transportation	1.4	1.4	1.6	1.4	1.4	1.8	2.5	3.3	4.2	4.2
Trade	4.2	4.1	4.5	4.3	4.3	4.3	5.4	7.3	6.7	6.7
Services	4.5	4.7	5.0	4.6	4.7	4.7	5.3	8.4	13.7	13.7
Unclassified	4.0	4.0	4.7	4.5	4.3	4.0	4.4	4.8	4.5	4.3

Table B-2 -- Continued

Major Population Categories	1970	1971	1972	1973	1974	1975
Total population	6,177.1	6,384.2	6,598.3	6,819.5	7,048.2	7,284.5
Economically inactive	4,236.2	4,377.1	4,522.6	4,672.6	4,827.4	4,986.9
Economically active	1,940.9	2,007.1	2,075.7	2,146.9	2,220.8	2,297.6
Agriculture	1,085.4	1,119.2	1,154.1	1,190.2	1,227.3	1,265.8
Mining	4.4	4.5	4.7	4.8	5.0	5.1
Manufacturing	260.1	266.6	273.3	280.1	287.1	294.3
Construction	81.0	86.3	91.8	97.7	103.9	110.5
Electric energy	7.9	8.3	8.9	9.4	10.0	10.6
Transportation	62.9	66.0	69.2	72.6	76.2	80.0
Trade	135.4	141.5	147.7	154.3	161.2	168.4
Services	260.3	271.3	282.7	294.6	307.0	319.9
Unclassified	43.5	43.4	43.3	43.2	43.1	43.0
Employed Population	1,765.5	1,830.6	1,903.8	1,977.3	2,053.9	2,133.6
Agriculture	958.0	993.0	1,029.3	1,067.0	1,106.1	1,146.6
Mining	4.4	4.5	4.7	4.8	5.0	5.1
Manufacturing	250.0	254.0	263.5	270.4	277.6	285.0
Construction	71.8	76.8	82.1	87.9	94.0	100.5
Electric energy	7.5	8.0	8.5	9.0	9.6	10.2
Transportation	58.7	61.7	65.0	68.5	72.1	75.9
Trade	128.8	135.0	141.4	148.1	155.2	162.5
Services	246.9	258.1	269.7	281.9	294.6	308.0
Unclassified	39.4	39.5	39.6	39.7	39.7	39.8
Unemployed population	175.4	176.5	171.9	169.6	166.9	164.0
Agriculture	127.4	126.2	124.8	123.2	121.2	119.2
Mining	0.0	0.0	0.0	0.0	0.0	0.0
Manufacturing	10.1	12.6	9.8	9.7	9.5	9.3
Construction	9.2	9.5	9.7	9.8	9.9	10.0
Electric energy	0.4	0.3	0.4	0.4	0.4	0.4
Transportation	4.2	4.3	4.2	4.1	4.1	4.1
Trade	6.6	6.5	6.3	6.2	6.0	5.9
Services	13.4	13.2	13.0	12.7	12.4	11.9
Unclassified	4.1	3.9	3.7	3.5	3.4	3.2

Sources: National Economic Planning and Coordination Board, Section of Human Resources Programming, and Mission Estimates.

IV. Agricultural Statistics

Ecuador has two major sources of agricultural statistics: (1) annual reports of agricultural extension workers compiled by the Ministry of Production (MP) and (2) agricultural censuses or surveys conducted by the NIS. Both sources use subjective methods based on the opinions and judgements either of extension workers or farm operators. Crop cutting and similar objective methods are considered to be too expensive in Ecuador and are neither used nor proposed for the 1970s. The quality and quantity of agricultural statistics have significantly deteriorated in the 1960s to a level which hardly meets the minimum data requirements of a rational agricultural policy and the national accounts. The data generated by the two alternative sources show gross inconsistencies in levels and trends. The methodology and major results are briefly discussed below.

Reports of agricultural extension workers. About seventy agricultural extension agents, stationed in most agriculturally important cantons, compile annual (and starting in 1972, also quarterly) reports on the harvested areas, volume of production, and annual average consumer prices for about forty-five agricultural commodities. The agricultural extension workers prepare the estimates on the basis of their knowledge and judgment about the conditions prevailing in their rural areas. In addition, special agricultural programs (such as the program on grains and cereals, cotton, bananas, etc.) also provide information which contributes to the estimates. The agents rely on conversations with farmers and their own visual observations which are often affected by subjective judgments. Crop cutting and other objective methods are not used. The agricultural extension workers make the estimates for their cantons and report the data to the provincial offices. The latter aggregate the data by provinces and report the results to Quito. The general Bureau of Planning, Ministry of Production, submits these data to a special committee for a review before releasing them for general use. These are the only available annual time series on agricultural output of Ecuador. They differ significantly for most of the selected major crops, however, from the alternative estimates for 1968 prepared by the NIS on the basis of its 1968 Agricultural Survey (see Table B-4).

First National Agricultural Census of 1954. Ecuador conducted its first and most successful agricultural census in 1954. The census covered fifteen of the nineteen provinces (three oriental provinces and the Galapagos Islands were excluded because their agricultural activities were negligible) and the sample included 32,146 of the 356,342 operated farms listed in Ecuador, or 9 percent of the total. 41/ The preparatory work on the 1954 Census began in the second half of 1953, an FAO adviser arrived

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41/ The coverage was considerably greater in terms of harvested areas and production because all large farms were included in the sample with a 100 percent certainty.

in January 1954, the Census was taken in 1954 (except in the Loja Province where it was taken in October 1955 with data collected for 1954 and 1955), and the final results were published in July 1956. The Census covered planted (or sown) and harvested areas as well as production of fourteen major and twenty-two minor crops, livestock, and poultry. For cocoa and coffee, instead of areas, the total number of trees planted and the number of trees of productive age were counted. The analytical part of the Census showed ten tables with sampling errors for most of the important data. A national sample survey of fishermen was also carried out in 1954 as a part of the agricultural census. 42/

The Census was conducted in two phases. The first phase provided a list or a directory of operated farms which were registered on cards containing the following basic information:

(1) geographic location;
(2) identification of the producer;
(3) type of operation (crops, livestock, or mixed);
(4) area owned and area worked;
(5) number of livestock heads and three main crops.

In the five coastal provinces, the complete enumeration collected additional information on the number of coffee and cocoa plants and the sown areas to rice and banannas. The second phase consisted of the sample selection, enumeration, and data processing.

The Census used a single-stage stratified probability sample, each of the eighty cantons in fifteen provinces constituting independent sampling universes. Farms with twenty or more hectares were used as sampling units while smaller farms with fifteen to nineteen hectares were combined in two-farm clusters and those with less than fifteen hectares, in clusters of four farms.

The sampling fractions varied with the size of farms. All large farms with 100 or more hectares were included with certainty, i.e., 100 percent coverage. 43/ All smaller farms were divided into two groups: (1) temperate climate and (2) tropical and subtropical. Each of the above climate groups was in turn divided into three subgroups: (1) crops, (2) livestock and (3) mixed. Finally, each of these subgroups was subdivided

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42/ Ministry of Economy, First National Census of Fishermen, 1954 (Quito; General Bureau of Statistics and Censuses. November 1955), 180 pp.

43/ The Census defined "large" farms as those with 100 or more hectares or 100 or more heads of cattle. In certain provinces with many small farms, a "large" farm wasdefined as having 50 or more hectares, while in coastal provinces, large farms included those with 10,000 or more cocoa or coffee plants or 30 or more hectares planted to bananas, or with rice regardless of planted area. More than a quarter of all selected sampling units were large.

into six strata by size: (1) less than 0.5 hectare, (2) 0.5 to 4.9, (3) 5.0 to 9.9, (4) 10 to 19.9, (5) 20 to 49.9, and (6) 50 to 99.9 hectares. If the number of sampling units within each such stratum was so small that at least two units could not have been selected, such small strata were combined. The sampling fractions declined with the size of farms to 2.5 percent for farms with 0.5 to 4.9 hectares. No data were collected at all for farms with less than 0.5 hectare.

The sample selection was based on the systematic random sampling. The reciprocals of probabilities served as blow-up factors in the estimation of totals for each stratum. The latter were aggregated by cantons, provinces, regions, and finally for the nation as a whole. Generally, the sampling errors amounted to less than 4 percent for provinces and to less than 2 percent for the national estimates. These sampling errors were most likely smaller than the response errors. The FAO expert recognized this in his concluding statement--"generally, the net errors are probably lower than those which we would have arrived at if we had carried out a complete enumeration." 44/ The response errors were large because, as the FAO adviser pointed out, the producers did not really have themselves the required data and occasionally they were not inclined to tell the truth. The enumerators and supervisors also failed to adhere strictly to Census instructions, and data processing contributed its share to the overall nonsampling error. Unfortunately, these findings have received little attention in the planning of the subsequent surveys in Ecuador. Following the 1954 Census, the so-called Permanent Office of Agricultural Statistics conducted only two annual surveys, one in 1956 and another in 1957 before discontinuing its activities. A few years later, an attempt to collect detailed data from all farms in Ecuador ended in failure.

Second National Agricultural Census of 1961-1962. Disregarding the above timely advice of the FAO expert, Ecuador embarked in 1961 on an overambitious project of canvassing all the operated farms with detailed Census questionnaries. This Census encountered serious difficulties and delays. It was finally conducted in 1962 with the help of Point IV statistical experts who also acknowledged that Ecuador "did not place sufficient confidence in a statistical system of inquiry based on a sample census" and therefore, "it was decided that the 1962 Census of Agriculture would be carried out by a complete enumeration, that is, of all operated farms units." 45/ The fallacy of this decision was finally somewhat mitigated by allowing to proceed with a 10 percent sample of all medium and small farms

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44/ /Pei-Ching Tang, FAO technical adviser/ First National Agricultural Census, 1954 (Quito: General Bureau of Statistics and Censuses, 1956), p. v.

45/ Jose A. Guarderas L., Synthesis of the Technique Used in the Planning, Enumeration, and Tabulation of the Agricultural Census of Ecuador, 1962 (Quito: Point IV, 1963), p. 4.

Table B-3: MAJOR AGRICULTURAL CROPS, BY SELECTED PROVINCES, ECUADOR, 1954, 1962 AND 1968

	Harvested Areas (Thousands of Hectares)			Yields (100 Kgs. per Hectare)			Production (Thousands of Metric Tons)		
	1954	1962	1968	1954	1962	1968	1954	1962	1968
	Bananas								
Bolivar	2.2	1.0[a]	0.8	159.5	174.0	133.2[b]	35.1	17.4	63.4
Carchi	0.2	..	..	150.0	..	..	3.0	..	..
Canar	1.9	3.2[a]	4.8	50.5	46.3	132.3[b]	9.6	14.8	63.5
Imbabura	0.04	0.4[a]	..	200.0	190.0	..	0.8	7.6	..
Loja	4.4	4.6[a]	1.9	263.8	171.5	131.1[b]	116.1	78.9	24.9
Manabi	19.5	18.0	14.6	209.6	160.7	126.4[b]	408.7	289.3	187.1
Pichincha	7.2	3.8[a]	37.3	139.3	355.5	124.5[b]	100.3	135.1	464.6
	Barley								
Bolivar	10.6	6.6	9.0	5.2	6.1	4.4	5.5	4.0	4.0
Carchi	4.2	3.3	4.3	7.4	7.6	5.8	3.1	2.5	2.5
Canar	4.7	4.7	6.7	5.7	6.2	4.6	2.7	2.9	3.1
Imbabura	8.9	5.6	6.6	4.9	5.2	5.6	4.4	2.9	3.7
Loja	5.5	3.3	6.7	3.6	3.6	3.1	2.0	1.2	2.1
Manabi	..	..	..	..	..	..	..	..	..
Pichincha	11.5	13.2	24.7	5.7	7.3	8.0	6.5	9.6	19.8
	Coffee								
Bolivar	3.5[c]	4.3[c]	7.7	0.3[d]	0.3[d]	3.5	0.9	1.1	2.7
Carchi	..	..	..	..	..	..	..	..	..
Canar	..	0.4[c]	2.3	..	0.2[d]	1.7	..	0.1	0.4
Imbabura	..	..	..	..	..	..	..	..	..
Loja	7.9[c]	11.8[c]	7.4	0.2[d]	0.2[d]	3.4	1.8	2.3	2.5
Manabi	43.1[c]	46.1[c]	91.0	0.6[d]	0.6[d]	3.4	27.0	25.2	30.7
Pichincha	..	0.7[c]	0.9	..	0.2[d]	2.2	..	0.2	0.2

See footnotes at end of table.

Table B-3 -- Continued

	Harvested Areas (Thousands of Hectares)			Yields (100 Kgs. per Hectare)			Production (Thousands of Metric Tons)		
	1954	1962	1968	1954	1962	1968	1954	1962	1968
	Corn								
Bolivar	12.9	12.2	14.0	5.0	4.2	5.1	6.5	5.1	7.2
Carchi	4.7	6.6	10.1	7.0	5.3	8.1	3.3	3.5	8.2
Cañar	9.9	10.5	22.1	6.7	4.4	5.2	6.6	4.6	11.6
Imbabura	19.3	22.3	22.8	6.8	6.1	7.2	13.1	13.5	16.4
Loja	30.2	36.2	39.4	6.1	5.5	2.6	18.3	19.8	10.4
Manabi	10.4	28.6	104.7	11.6	8.4	4.0	12.1	24.0	42.1
Pichincha	24.5	31.6	23.3	6.9	5.5	7.1	17.0	17.4	16.6
	Potatoes								
Bolivar	2.1	1.6	3.2	24.3	18.1	17.2	5.1	2.9	5.5
Carchi	2.7	3.6	8.4	64.4	28.3	71.8	17.4	10.2	60.3
Cañar	1.7	2.4	9.5	17.1	24.2	50.2	2.9	5.8	47.7
Imbabura	1.4	2.5	2.8	39.3	21.6	73.9	5.5	5.4	20.7
Loja	0.4	0.5	1.8	27.5	8.0	32.8	1.1	0.4	5.9
Manabi	..	..	..	..	..	..	..	..	..
Pichincha	6.3	8.1	12.6	43.3	52.8	78.7	27.3	42.8	99.1
	Paddy e/								
Bolivar	0.4	0.1	..	12.5	10.0	..	0.5	0.1	..
Carchi	0.2	..	..	5.0	..	..	0.1	..	..
Cañar	0.2	2.3	9.3	10.0	7.0	2.0	0.2	1.5	1.9
Imbabura	..	0.2	..	..	5.0	..	..	0.1	..
Loja	0.6	1.4	1.6	13.3	5.7	0.6	0.8	0.8	0.1
Manabi	4.8	14.6	34.5	12.5	9.7	2.1	6.0	14.2	7.2
Pichincha	0.5	1.2	1.0	6.0	9.2	6.0	0.3	1.1	0.6

See footnotes at end of table.

Table B-3 -- Continued

	Harvested Areas (Thousands of Hectares)			Yields (100 Kgs. per Hectare)			Production (Thousands of Metric Ton)		
	1954	1962	1968	1954	1962	1968	1954	1962	1968
	Wheat								
Bolivar	5.9	8.2	8.9	4.9	6.1	5.5	2.9	5.0	4.9
Carchi	15.6	12.9	17.1	8.1	6.8	5.6	12.6	8.8	9.6
Canar	0.7	1.8	6.9	7.1	6.7	6.8	0.5	1.2	4.7
Imbabura	4.1	7.9	12.9	6.1	7.8	9.2	2.5	6.2	11.9
Loja	2.6	2.9	7.7	2.7	4.1	4.9	0.7	1.2	3.8
Manabi	..	..	..	..	..	..	..	..	..
Pichincha	12.5	17.4	26.4	6.3	9.4	11.2	7.9	16.3	29.5

a/ Calculated on the basis of 16 sq. m. per tree.
b/ Calculated on the basis of 33 kgs. per bunch as recommended by the FAO, Production Yearbook,1968, Vol. 22 (Rome,1969) p. 760.
c/ Millions of coffee trees.
d/ Kilograms per tree.
e/ The 1968 Survey estimates of yields and production appear to be underestimated.

Sources: CBE, First National Census of Agriculture and Livestock, 1954 (Quito: Ministry of Economy, July 1956).
Ministry of Economy, National Census of Agriculture and Livestock, 1961 (separate publications with preliminary data for the provinces of Bolivar, Carchi, Cañar, Imbabura, Loja, and Pichincha; no facts of publication are available).
NEPCB, National Census of Agriculture and Livestock 1961, Preliminary Data for the Province of Manabi. (No facts of publication are available).
NEPCB, National Survey of Agriculture and Livestock, 1968 (Quito: Division of Statistics and Censuses, November 1969).

which were covered with a long or extended questionnaire (boleta ampliada). this long form covered also all large farms. A short form (boleta reducida) covered completely all the other farms.

The short questionnaire was far from being just a means of securing a statistical frame for a probability sample. it contained six sections with several items each:

(1) identification of the farm and the producer;
(2) land tenancy;
(3) land use in 1961;
(4) crops harvested area or number of plants, and production for 1961 (data on eleven most common crops in mountain, coastal, and oriental provinces);
(5) livestock and poultry;
(6) production of milk, wool, and eggs.

The long form contained a larger number of items in each of the above sections as well as additional sections on the six breeds of cattle, employment, motive power, etc.

The inadequately trained and overburdened enumerators resorted to all kinds of short-cuts and expendiencies, including a partial or complete filling out of questionnaires prior, subsequent to, and sometimes irrespective of interviews. The enumeration extended over an eight-month period and to some extent coincided with the preparation and taking of the Population and Housing Census in November of 1962. The funds available for the Agricultural Census were insufficient to provide for an adequate field supervision and subsequent data processing. The sample was too large to reduce the burdens appreciably to a level where meaningful data would be collected and processed.

The processing of the 1961-62 Agricultural Census remained limited to only a few major characteristics, such as the distribution of farms by size and a few provinces. The NEPCB General Bureau of Statistics and Censuses published the Census results for Manabi 46/ and the Department of National Censuses of the Ministry of Economy published them for at least six other provinces 47/ before further data processing and publication were discontinued. Gross inconsistencies and other deficiences in the data did not warrant a further processing, and the published results could not have been made useable. 48/

46/ National Agricultural Census 1961, Preliminary Data for the Province of Manabi (Quito: GBSC, no data).

47/ It covered the provinces of Bolivar, Canar, Carchi, Imbabura, Loja, and Pichincha. Cf. National Agricultural Census 1961, Preliminary Data for the Province of Bolivar (Quito: Ministry of Economy, Department of National Censuses, no date).

48/ FAO and IASI, Third Session of the Subcommittee on Improvement of National Statistics, Washington, D.C., September 19-24, 1966, Livestock and Livestock Products Statistics in the American Region, Part I, Statistical Organization, Methodology, Concepts, and Definitions Used (Washington, D.C. IASI, 1966), P. 41.

A comparison of preliminary data on selected crops published for seven provinces with the corresponding crops and provinces of the 1954 and the 1968 surveys showed that the 1962 data are generally consistent with the 1954-68 levels and trends, notwithstanding the earlier findings discussed above (see Table B-3). It is possible that the 1962 data withheld from publication would have fit less neatly into the 1954-68 picture. At any rate, the available data support the general conclusion that the 100 percent coverage is not necessarily superior to sampling results.

National Agricultural Survey of 1968. The NEPCB has maintained a statistical frame of large farms since 1954 which was updated in 1961, 1962 and 1964. In January 1968, the NEPCB revived the permanent Committee for the Improvement of Agricultural Statistics. This committee consisted of the NEPCB, CBE, National Development Bank, Ministry of Agriculture and Livestock, and an FAO adviser on agricultural statistics. The Committee recommended and the NEPCB Division of Statistics and Censuses (which preceded the NIS) conducted a 3 percent sample survey of agriculture in 1968 in all twenty provinces, including the Galapagos Islands.

The sample design and the sample selection differeed considerably from those used by the 1954 Census. Generally, the 1968 Survey used a wider definition of "large" farms. It limited the complete coverage to very large farms with 1,000 or more hectares, taking a 20 percent sample of the farms with 500 to 1,000 hectares and a 10 percent sample of those with 100 to 500 hectares. The medium and small farms were covered by a two-stage area sampling based on parachias and the 1962 Population Census blocks of about forty households each. Within each province 20 parochias were first selected by a simple random sampling with replacement to keep the expansion factors constant and the cost of travel low. This procedure yielded 12 to 19 parochias selected in each province or a total of 224 out of 677 parochias in the mountain and coastal provinces. Within each parochia, all areas (or census blocks with forty households) were listed and also selected with equal probabilities (that is, sampling with replacement). A correspondingly larger number of areas were taken from parochias which were selected several times. Thus, the number of selected areas within each province was brought up to twenty. Within the selected areas, all farms were canvassed except those listed separately as "large." The latter were surveyed separately as indicated above. The sample selection in the three oriental provinces was based on probabilities proportional to population, and the Galapagos Islands enjoyed a complete enumeration of all farms.

The estimation of totals was based on the reciprocals of probabilities (adjusted for nonresponse) which served as blow-up factors for large farms. For medium and small farms, the estimation of totals proceeded in five steps on the basis of sampling areas. 49/ A comparison of the results of the 1968

49/ See National Agricultural Survey 1968 (Quito: Division of Statistics and Censsuses, 1969), pp. X-xi.

Survey with those of the 1954 Census and with the estimates of the Ministry of Production based on the reports prepared by the agricultural extension workers suggests that the 1968 Survey may have missed the mark for several crops by a wide margin of error (see Table B-4). Nevertheless, the FAO has given preference to the 1968 Survey over the alternative sources (see Table B-5) for some of its estimates.

For such important crops as bananas, beans and potatos, the Survey showed lower output (mostly due to lower average yields) than the data reported by the Ministry of Production. The diferences in the areas--sown, planted, or harvested--are also startling. The planted area reported by the Survey is twice as large for rice and four times as large for cotton as the corresponding harvested areas estimated for 1968 by the Ministry of Production. On the other hand, the areas for sugar cane are only half as large and those under beans are only one third of those reported by the agricultural extension workers (see Table B-4). The yields of rice are particularly low: the Survey gives a lower yield for paddy than the Ministry of Production reports for hulled rice. In comparison with the 1954 Census, most planted areas reported by the 1968 Survey increased (particularly for bananas, corn, cotton, potatoes, rice and sugar cane), while most average yields declined (except bananas, potatoes and wheat).

According to the agricultural extension workers, the yields have also declined, although less markedly than the Survey data showed. This decline in yields has usually been attributed to a relatively small investment in agriculture. In addition, the expansion of planted areas may have brought less fertile lands under cultivation. From a statistical point of view, however, it must be remembered that no objective methods have ever been used in Ecuador for measuring the agricultural yields. It must be borne in mind that all data, including the census results, are based on the verbal statements of farmers about their past or expected harvests. Whether intentionally or inadvertendly, these subjective judgments are generally quite unreliable, particularly with respect to output and yields. Although area may be more difficult to reveal to some extent an atttempt to understate the volume of production and the average yields.

FAO and USDA series for Ecuador. The FAO agricultural experts have generally used for most of the 1960s the harvested areas and the yields reported by the agricultural extension workers of the Ministry of Production (see Table B-6). Starting in 1968, however, the FAO has generally stopped using the Ministry of Production data, giving some preference to the 1968 Survey (barley, corn, etc.) and coming out with estimates of its own for 1968 and more recent years. These FAO estimates appear to be based on international and intertemporal comparisons. For paddy, the FAO cut the area in half and tripled the average yield which resulted in a significantly higher production than reported by any other source. For banans, the FAO has the smallest area and a yield somewhat higher than that of the 1968 Survey (see Table B-5). To the extent that the FAO had significantly changed its

estimates in 1968, there may be a break in its series which have been generally raised in 1968 and then continued at the higher levels (see for example area for corn in Table B-6). On the whole, the FAO estimates for recent years follow levels and trends which are distinctly different from those of the Ministry of Production (see Table B-6).

The USDA agricultural production data for Ecuador generally differ from all the other sources discussed above. Some of the USDA estimates are very crude and remain at the same level for many years (e.g., "exportabletype" banana production, harvested areas for barley and corn) while others fluctuate erratically (e.g., cotton yields). Generally, the USDA production data tend to show a lower and slower growth than the other sources. The details of the USDA methodology for Ecuador estimates are not readily available.

Proposed National Program for the Improvement of Agricultural Statistics. The need for better agricutlural statistics has been recognized by the Government of Ecuador and the IBRD. 50/ The proposed 1973 Population Census offers an opportunity to compile a statistical frame for an agricultural census and the surveys which are now planned for 1974 and subsequent years. There is, however, no apparent attempt to combine the 1973 Population Census with the proposed 1973 National Register of Farms. Instead of combining the two related field operations, the NIS plans to carry out first the registration of all farms during a six-month period (June - November 1973) immediately preceding the taking of the population census in November of 1973.

The 1973 National Register of Farms. This Register proposes to collect the following information from the estimated 733,000 farms:

(1) Name and location of the farm; names and addresses of producer and owner;
(2) land use: areas cultivated, fallow, pastures, forest, etc.
(3) tenancy conditions: number of parcels, etc;
(4) crops: sown area of four major crops;
(5) livestock: heads of cattle, sheep, pigs, and poultry.

The Register proposed to group all twenty provinces and the Galapagos Islands into nine zones with a rather unequal distribution of farms which ranges from 131,602 farms for zone VIII to only 279 farms for zone IX (see Table B-5). The 310 enumerators covering, on the average, 15 farms per day are expected to register all 733,000 farms within a six-month period. The

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50/ Article 5 of the IBRD loan contract No. 501-EC, signed in June 1967, stipulated that Ecuador would carry out a study of the livestock industry. Ecuador complied in part with this commitment by carrying out the 1968 Survey. Plan for the Establishment of the National System of Agricultural Statistics (Quito: NEPCB, 1971).

Table B-4: SURVEY DATA AND AGRICULTURAL EXTENSION WORKERS' ESTIMATES OF MAJOR AGRICULTURAL CROPS, ECUADOR, 1954 AND 1968

Selected Major Crops	Area (Thousands of Hectares)				Yields (100 Kgs. per Hectare)				Production (Thousands of Metric Tons)		
	NIS			MP	NIS			MP	NIS		MP
	1954		1968	1968	1954		1968	1968	1954	1968	1968
	Planted	Harvested	Planted	Harvested	Planted	Harvested	Planted	Harvested			
Bananas	160	115	208[a]	195	108.7	151.2	128.2	200.9	1,739[b]	2,667[c]	3,920
Plantains	..	39	46[a]	38	..	138.5	94.8	127.0	540[d]	436[d]	484
Barley	124	119	123	135	4.8	4.9	5.0	5.6	59	62	65
Beans	..	22	29	86[e]	..	2.9	2.8	4.1	7	8	35
Cocoa	141[f]	115[g]	252[a]	253	0.2[h]	0.3[h]	1.8	2.0	29	45	50
Coffee	107[f]	83[g]	178[a]	191	0.3[h]	0.4[h]	3.0	3.3	35	53	64
Corn	..	183	383	255	..	6.1	4.6	5.1	111	176	129
Cotton (seed and lint)	..	6	83	20	..	3.3	2.2	6.6	2	18	14
Potatoes	42	37	72	49	34.0	38.6	51.0	104.0	143	367	511
Rice (paddy)	62	51	284	112	13.7	16.7	5.2	5.8[i]	85	148	65[j]
Sugar cane	50	41	86[a]	122	..	..	..	810.0	..	..	10
Wheat	..	57	118	79	..	6.0	8.1	10.4	34	95	83

a/Productive age plantations only.
b/Calculated on the basis of 28 kgs. per bunch, as recommended by the FAO for Ecuador before 1964 in Production Yearbook, 1968, Vol. 22 (1969), p. 760.
c/Calculated on the basis of 33 kgs. per bunch, as recommended by the FAO for Ecuador after 1964 in the source mentioned above.
d/Calculated on the basis of 20 kgs. per bunch, as specified by the Ministry of Production in Harvested Areas and Agricultural Production Estimates, 1969 (Quito: General Bureau of Planning, Dept. of Statistics, no date), p. 9.
e/Green and dry beans. f/Total number of trees (in millions). g/Trees of productive age (in millions).
h/Kilograms per tree. i/Hulled rice.
Sources: CBE, First National Census of Agriculture and Livestock 1954 (Quito: Ministry of Economy, July 1956). NEPCB, National Survey of Agriculture and Livestock 1968 (Quito: Division of Statistics and Censuses, November 1969). Ministry of Production, General Bureau of Planning, Statistics Dept. (unpublished estimates for 1968).

Table B-5: OFFICIAL GOVERNMENT AND FOREIGN EXPERT ESTIMATES OF MAJOR AGRICULTURAL CROPS, ECUADOR, 1968

Alternative Sources	Harvested Area (Thousands of Hectares)	Yields (100 Kgs. per Hectare)	Production (Thousands of Metric Tons)
	Bananas		
MP	195	200.9	3,919
NIS	208[a]	140.0	2,904
FAO	180	150.0	2,693
USDA	n.a.	n.a.	2,500
	Barley		
MP	135	5.6	65
NIS	123[b]	5.0	62
FAO	123	5.0	62
USDA	107	10.3	110
	Coffee		
MP	191	3.3	64
NIS	204[a]	2.6	53
FAO	178	3.0	53
USDA	n.a.	n.a.	60
	Corn		
MP	255	5.1	129
NIS	383[b]	4.6	176
FAO	383	4.6	176
USDA	210	8.6	180
	Cotton (Includes Seed and Lint)		
MP	20	6.6	14
NIS	83[b]	2.2	18
FAO	23	7.4	17
USDA	21	4.5	9
	Rice (Paddy)		
MP	112	5.8[c]	65[c]
NIS	284[b]	5.2[d]	148[d]
FAO	135	16.1[d]	218[d]
USDA	60	21.2[d]	127[d]

a/ Productive age plantations only
b/ Sown area
c/ Hulled rice
d/ Paddy

Sources:
Ministry of Production, General Bureau of Planning, Statistics Department (unpublished estimates for 1968).
FAO, Production Yearbook 1970, Vol. 24. (Rome: 1971).
NEPCB, National Survey of Agriculture and Livestock, 1968 (Quito: Division of Statistics and Censuses, November 1969).
US Department of Agriculture, ERS, Indices of Agricultural Production for the Western Hemisphere, 1962-1971 (Washington, D.C.: USDA, March 1972).

Table B-6: MINISTRY OF PRODUCTION AND FAO ESTIMATES OF MAJOR AGRICULTURAL CROPS, ECUADOR, 1960-1969

Alternative Sources	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
	Harvested Areas (Thousands of Hectares)									
	Bananas									
MP	115	114	111	122	169	210	187	203	195	190
FAO	..	114	111	122	169	210	187	203	180	180
	Barley									
MP	118	93	151	165	164	157	143	144	135	126
FAO	..	93	151	165	164	157	143	144	123	125
USDA	118	83	101	110	105	105	107	107	107	110
	Coffee									
MP	163	165	152	158	164	166	218	208	191	214
FAO	..		158	158	..	166	218	208	178	.
	Corn									
MP	209	228	212	247	300	307	267	364	255	291
FAO	209	228	212	247	300	307	267	364	383	370
USDA	210	210	210	200	210	210	210	212	210	215
	Cotton (Includes Seed and Lint)									
MP	15	20	24	21	23	27	24	24	21	22
FAO	18	20	24	21	23	27	24	24	23	20
USDA	18	20	21	14	22	27	24	18	20	20
	Rice (Paddy)									
MP a/	91	95	112	113	109	103	111	114	112	92
FAO	88	95	112	113	109	103	101	114	135	150
USDA	91	95	110	110	104	90	100	105	60	100

a/ Ministry of Production data compiled from the reports of agriculture extension workers.

Table B-6 -- Continued

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
	Production (Thousands of Metric Tons)									
	Bananas									
MP	2,224	2,204	2,308	2,296	3,037	3,067	2,744	4,355	3,919	3,870
FAO	1,790	2,204	2,109	2,098	3,300	3,304	2,956	3,163	2,693	2,700
USDA	2,075	2,050	2,115	2,200	2,300	2,400	2,500	2,500	2,500	2,500
	Barley									
MP	90	76	105	121	80	92	77	81	76	78
FAO	78	70	106	130	81	93	78	82	62	62
USDA	91	113	83	97	89	96	95	105	110	100
	Coffee									
MP	45	48	53	55	46	65	74	66	64	56
FAO	41	33	54	43	50	66	74	67	53	72
USDA	45	51	48	42	39	62	58	70	60	42
	Corn									
MP	173	157	137	190	127	189	174	228	129	222
FAO	160	153	138	192	129	191	177	231	177	210
USDA	160	153	150	130	160	170	175	185	180	210
	Cotton (Includes Seed and Lint)									
MP	7	11	11	9	14	18	18	16	14	24
FAO	9	10	11	9	14	19	17	16	17	17
USDA	6	8	10	9	14	17	6	6	9	9
	Rice (Paddy)									
MP[a/]	93	112	103	105	91	86	111	111	65	83
FAO	186	163	187	191	167	157	185	173	218	288
USDA	175	203	209	211	164	173	204	182	127	220

a/ Ministry of Production data compiled from the reports of agriculture extension workers.

Sources: Ministry of Production, Harvested Areas and Agricultural Production Estimates, 1969 (Quito: General Planning Bureau, Statistics Department, no date) and unpublished estimates for 1960-68.
FAO, Production Yearbook, Vols. 16, 17, 22, and 24 (Rome, selected years, 1963-1971).
U.S. Department of Agriculture, ERS, Indices of Agricultural Production for the Western Hemisphere, 1962-1971 (Washington, D.C.: USDA, March 1972).

estimated budget for this Register amounts to about 22 million sucres, including about 15 million for the field operations (adjusted 10 percent for unforeseeable expenses and 8 percent for inflation). The Register is scheduled to be published in June 1974.

The 1974 National Agricultural Census. This Census is supposed to canvass 10 percent (or 73,000) of the farms to be listed by the 1973 Register. The enumeration is also supposed to take six months (June - November, 1974) and the publication of results is planned for Arpil - September 1975. The total cost of this 10 percent sample survey is estimated at about 11 million sucres or only half as much as that of the Register. A total of 106 enumerators, fifteen supervisors, and seven zonal chiefs would be required to cover 73,000 farms, that is, about one-third the enumerators needed for the Register.

The sample design and the questionnaire proposed for the 1974 Census follow closely those used by the 1968 Survey except that the 1974 Census will cover 10 percent and the 1968 Survey covered only 3 percent of all farms. Accordingly, the 1974 Census will cover all large farms (about 13,000) and an area sample of medium and small farms. About 12,000 primary sampling units (PSU's) with 40 to 80 farms each are stratified by their greographic location, total areas, type of crops and the number of cattle heads. A total of 1,200 PSU's are to be selected by simple random sampling and all farms are to be canvassed within each selected PSU.

The questionnaire contains fourteen groups of items, including the following:

(1) farm location and number; name and address of producer; name and address of owner; land use; tenancy conditions, etc.;

(2) annual crops: sown area, harvested area, and production obtained;

(3) semipermanent and permanent crops: planted area, area occupied by trees of productive age, nonproductive age, number of dispersed trees and plants, and production obtained;

(4) Cattle: stocks, by sex and age; births by sex; deaths by sex; total number of miling and dry cows; and the production and uses of milk;

(5) sheep (similar items as for cattle except for milk);

(6) pigs (similar items as for sheep);

(7) stocks of agricultural machinery (owned and leased) used in operations;

(8) types of energy used in cultivation and harvesting;

(9) stocks of agricultural machinery (owned and leased) used in operations;

(10) area irrigated and irrigation systems, area fertilized and quantity of fertilizer used, etc;

(11) use of agricultural production, by crops;

(12) agricultural employment by sex, age, and status;

(13) credit and its use;

(14) technical assistance.

The data refer to areas harvested in 1974, including those sown in 1973 and excluding those to be harvested in 1975. The stocks are recorded as of the date preceding the enumeration, and the production relates generally to the year preceding the enumeration day. The employment refers to the week preceding the enumeration.

Annual agricultural surveys. These surveys are scheduled to be conducted every year starting in 1975. The sample design of this survey is largely patterned after the 1968 Survey. it will cover completely all very large farms with 1,000 or more hectares, 5 percent of those with 500 to 999 hectares, and 10 percent of farms with 100 to 499 hectares, that is, a total of 1,800 or about 14 percent of the estimated 13,000 large farms. It will also cover 3 percent or about 21,600 farms of the medium and small farms. The estimated cost of this annual survey is 3.5 million sucres or three times less than the estimated cost of the 10 percent survey in 1974 and six times less than that of the 1973 Register of farms. The estimated 24,000 farms to be included in the sample could be covered by only fifty enumerators within four months. The results would be published in April following the year of enumeration.

The proposed national register of farms, the 1974 Census, and the ensuing annual agricultural surveys go a long way towards remedying an almost intolerable absence of meaningful agricultural statistics in Ecuador. However, the continued reliance on the statements of farmers about their past and expected production introduces a weak link in the chain of improvements. Ecuador needs more objective methods for determining its agricultural production, in particular the yields. Crop cutting and similar objective methods should seriously be considered. The cost of the Register (which is six times higher than that of the 3 percent annual surveys) could be considerably reduced and quality improved if the field work on the Register were combined with the 1973 Population Census. The efficiency of the sample design could also be improved by increasing the sample size in zones VI and IX and by reducing it in other zones as necessary (see Table B-7).

Table B-7: NATIONAL AGRICULTURAL REGISTER, CENSUS, AND ANNUAL SURVEY, ECUADOR, 1973-1975

Zone	Number of Provinces	Number of Farms Covered by			Number of Enumerators[a]		
		1973 Register	1974 Census	1975 Survey	1973 Register	1974 Census	1975 Survey
I	3	99,986	9,958	3,271	49	17	7
II	4	112,429	11,198	3,678	57	17	8
III	3	103,456	10,303	3,385	49	17	8
IV	2	106,076	10,564	3,470	49	17	8
V	2	70,410	7,018	2,306	33	9	6
VI	1	14,147	1,409	463	8	8	1
VII	1	94,555	9,417	3,094	49	17	7
VIII	3	131,602	13,106	4,305	65	25	12
IX	1	279	28	28	2	1	1
Total	20	733,000	73,000	24,000	361	128	58

[a] Includes zonal chiefs and supervisors.

Source: Committee for the Improvement of Agricultural Statistics, Plan for the Establishment of National Agricultural Statistics (Quito: no date), pp. 6, 19, and 29.

V. Selected Nonagricultural Statistics

Mining and quarrying. The NIS collects basic statistics from large and medium mining and quarrying establishments (with 5 or more employees for censuses and with 7 or more employees for the annual surveys). It has conducted two decennial censuses (in 1955 and 1965) which were followed by annual surveys in 1956-59, 1962-64, and in 1966-71. The 1969 Survey covered only seven mining establishments with a total of 886 employees.

The General Bureau of Geology and Mines (GBGM), Ministry of Natural Resources and Tourism, also collects data on the gross value of production for about half a dozen of licensed mining companies which report some production. The value of metal ore mining output shown by the NIS and GBGM is roughly comparable except for a few selected years (see Table B-8). for the other mining industries, comparable data are not readily available. The relative importance of petroleum and other nonmetal mining and quarrying is considerable (see Table B-8). A more complete coverage of small quarrying establishments would most likely increase the share of stone quarrying, clay, and sand pits.

Manufaturing. Ecuador has conducted annual surveys of manufacturing almost every year since 1955, including three so-called censuses in 1955, 1959-60, and 1965. They covered neither the complete universe nor were they based on a probability sample which could have been used for estimating the totals and averages. The 1955 Census covered about 1,000 establishments with two of the following three characteristics:

(a) five or more workers;

(b) 100,000 or more sucres annual production;

(c) 200,000 or more sucres fixed assets;

Establishments with two of the above characteristics were selected from a list of 18,982 establishments. 51/

The NEPCB conducted a census or a survey of handicrafts and small industrial establishments in 1959-60, although the methodology and the results of this survey are not readily available. 52/

The 1965 Census of Manufacturing covered all large (2,961, including 455 which failed to respond) establishments and about 7 percent (1,476 of the 21,371) small establishments listed. The "large" establishments

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51/ First Industrial Census 1955 (Q-ito: June 1957), pp. v-vi.

52/ See Sources of Information and Procedures for Estimating National Income of Ecuador, (Quito: CBE, 1964), p. 5 and p. 12.

Table B-8: MINING AND QUARRYING, GROSS VALUE OF PRODUCTION AND VALUE ADDED, ECUADOR, 1958-1969

Mining Industries and Data Sources	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
	Gross Value of Production (Millions of Sucres)											
Metal Ore Mining:												
GBGM /a	12.2	13.5	10.9	11.6	18.2	21.2	19.1	13.5	14.4	14.4	20.6	19.5
NEPCB	13.6	15.9	15.9	..	18.5	20.7	19.4	20.2	14.5	14.6	..	19.4
	Value Added (Millions of Sucres)											
Total Mining and Quarrying	35.3	41.9	47.5	..	29.5	31.5	32.8	38.4	33.3	34.1	..	60.4
Metal Ore Mining	9.1	11.7	11.7	..	12.3	14.3	12.8	13.5	9.0	9.5	..	12.3
Crude Petroleum and Natural Gas	25.2	28.1	28.5	..	5.8	6.3	6.4	7.6	5.7	3.5	..	14.2
Stone Quarrying, Clay and Sand Pits	1.0	2.1	7.3	..	11.4	10.9	12.3	15.3	18.6	21.1	..	28.1
Other	..	..	..	..	..	..	1.3	2.0	..	..	..	5.8
	Value Added (Percent of Total)											
Total Mining and Quarrying	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Metal Ore Mining	25.8	27.9	24.6	..	41.7	45.4	39.0	35.2	27.0	27.9	..	20.4
Crude Petroleum and Natural Gas	71.4	67.1	60.0	..	19.7	20.0	19.5	19.8	17.1	10.3	..	23.5
Stone, Clay and Sand	2.8	5.0	15.4	..	38.6	34.6	37.5	39.8	55.9	61.9	..	46.5
Other	..	..	..	..	..	..	4.0	5.2	..	..	..	9.6

/a General Bureau of Geology and Mines which was the General Bureau of Mines and Hydrocarbon before 1970.

Sources:

NEPCB, Economic Indicators, Vol. II, No. 4 (July 1970), H-11.

Ministry of Industry and Trade, Mining Statistics, 1932-1966 January-June (Quito: Ministry of Industry and Trade, November 1966) and Mining Statistics for 1967-1969.

NIS, Manufacturing and Mining Survey 1969 (Quito: NIS, 1971), Table 1, p. 1

were defined differently than by the 1955 Census. In 1965, the large establishments referred to either those with 5 or more workers or to those with one to four workers and with a monthly income of 10,000 sucres or more. There is no readily available information to what extent this sample was a probability sample and what methods were in fact used in estimating the totals. It appears that the Census compiled the frame by a direct canvass of provincial and cantonal capitals. The preparation of the frame in rural areas was left to local authorities. An estimate of establishments omitted from the list could not have been made. 53/ Nevertheless, the Census estimated that the 2,961 large establishments accounted for about 12 percent of all establishments and about 90 percent of the total production. 54/

The annual surveys of manufacturing have covered fewer establishments than the censuses. The 1969 survey covered 1,027 of the 1,170 selected from about 1,400 listed establishments with either seven or more workers or 180,000 or more sucres annual production. 55/ The frame for these surveys is largely based on the incomplete membership lists of the provincial chambers of industry. As a result of their more restricted coverage, the annual surveys do not provide information which can be compared with the censuses, and the latter are also inconsistent with each other. Moreover, in times of relative prosperity, the coverage is enlarged to include all the establishments with the temporary workers and additional production, while in lean years, the decline is exaggerated as establishments are deleted from the survey because their production declines. Thus, the survey results fail to measure trends as well as the level of manufacturing activity. The addition of a few workers in each of the small establishments may make them eligible to be covered by the survey. This tends to exaggerate growth.

Administrative sources of statistics on manufacturing. Under a special Development Law, the Ministry of Production promotes about thirty to forty industrial enterprises, half of which withdraw and are replaced with another contingent every year. The employment of these enterprises amounts to about 2,000 workers or about 5 percent of the total covered by the NIS surveys and 1 percent of the total manufacturing. The value added reported by these enterprises to the Ministry of Production amounts to about 200 million sucres or about 5 percent of the total covered by the NIS surveys and about 3 percent of the value added estimated in the manufacturing industry as a whole (see Table B-9). These data are not suitable for estimating the level and trends of economic activity in manufacturing as a whole.

53/ Second Census of Manufacturing and Mining, Vol. I (Quito: NEPCB, January 1969), p. ix.

54/ Ibid., p. x.

55/. Survey of Manufacturing and Mining 1969 (Quito: NIS, 1971), p. iii.

Table B-9: MANUFACTURING EMPLOYMENT AND VALUE ADDED, COMPARISON OF ALTERNATIVE ESTIMATES, ECUADOR, SELECTED YEARS 1962-1969

Sources of Indicators	1962	1965	1966	1969	1962	1965	1966	1969
	Employment							
	Number of Persons Employed				Percent of Total Manufacturing Employment			
Population census projections /a	213,500	230,000	235,600	253,800	100.0	100.0	100.0	100.0
Manufacturing census	..	47,629	..	..	..	20.7	..	..
Manufacturing survey	36,409	..	38,253	45,707	17.0	..	16.2	19.4
Large-scale manufacturing enterprises Registered with the MP:	3,077	4,440	1,976	2,445	1.4	1.9	0.8	1.0
Old registration /b	2,029	2,308	1,244	1,800	0.9	1.0	0.5	0.7
New registration /c	1,048	2,132	732	645	0.5	0.9	0.3	0.3
	Value Added							
	Millions of Current Sucres				Percent of Manufacturing GDP			
Manufacturing GDP	2,276	3,282	3,488	4,680	100.0	100.0	100.0	100.0
Manufacturing census	..	2,059	..	..	..	62.7	..	..
Manufacturing survey	1,225	..	2,069	3,095	53.8	..	59.3	66.1
Large-scale manufacturing enterprises Registered with the MP:	95	244	78	188	4.2	7.4	2.2	4.0
Old registration /b	63	82	28	38	2.8	2.5	0.8	0.8
New registration /c	32	162	50	150	1.4	4.9	1.4	3.2

/a NEPCB projections based on economically active population reported by the 1962 Population Census.
/b Includes enterprises which reported data for the preceding year to the Ministry of Production.
/c Includes enterprises which started reporting data during the specified year to the Ministry of Production.

Sources:
NEPCB, Second Census of Manufacturing and Mining 1965 (Quito: NEPCB, January 1969), p. 11.
NEPCB, Manufacturing Survey 1962 (Quito: NEPCB, August 1964), p. 1.
NEPCB, Manufacturing and Mining Survey 1966 (Quito: NEPCB, no date), p. 2.
NIS, Manufacturing and Mining Survey 1969 (Quito: NIS, 1971), p. 1
Ministry of Production, Bulletin of Statistical Information 1957-1969 (Quito: General Bureau of Manufacturing Enterprises, Statistical Section, no date), Table 18.
NEPCB (unpublished estimates prepared by the Section of Human Resources Programming in September 1970).

The General Bureau for the Promotion of Handicrafts and Small-Scale Industries, Ministry of Production, has some data on a few handicraft and small-scale manufacturing establishments 56/, but these also account for a small share of the total, their universe is changing and they provide no basis for estimating either the totals or meaningful averages for the industry as a whole. Several other agencies collect miscellaneous information from small manufacturing establishments with which they are concerned--i.e., the provincial chambers of handicrafts and their national federation, the Ecuadorian Vocational Training Service (SECAP), the Ecuadorian Trade Organization for Handicrafts Products (OCEPA), the Ecuadorian Social Security Institute, the General Bureau of Cooperatives, the Credit Section for Handicrafts of the National Development Bank and numerous provincial and local agencies. These data cannot be used for estimating the totals of the industry as a whole. the names and addresses of establishments may be useful, however, for checking and updating the statistical frames.

Indexes of industrial production (IIP). The CBE prepared an annual IIP for 1950-60 which included all two-digit manufacturing industries although small-scale manufacturing and handicrafts were excluded. The NEPCB prepared a parallel IIP for 1955-1962 which covered all two-digit manufacturing industries except the primary metals (34), nonelectrical machinery (36), electrical machinery and equipment (37), and transport equipment (38). In 1963, the CBE again assumed the responsibility for preparing an IIP with a mofified coverage: excluding furniture (26), primary metals (34), and nonelectrical machinery (36). The CBE compiled this index for 1963-68--the latest IIP available for Ecuador (see Table B-10).

All three production indexes show different rates of growth because they relate to different industries, size of establishments, and basic sources. The CBE has conducted special surveys to collect data for the IIP's, while the NEPCB has relied primarily on its annual surveys of manufacturing. In both instances, the IIP's relate to large-scale establishments with a coverage significantly different than that for which the value of production is readily available at current prices. Although implicit price deflators cannot be easily derived from IIP's, the production indexes are nevertheless useful in estimating (at constant prices) some of the GDP components for two-digit manufacturing industries.

Indexes of industrial employment and wages. Using the statistical frame of the 1955 Census of Manufacturing and Mining, the NIS has conducted quarterly surveys of the largest 500 establishments; it has collected monthly data on employment and wages since 1956. The 1955 list has not been updated and the data refer to the same group of establishments selected in 1955. Therefore, these indexes may be somewhat more meaningful than the indexes of

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56/ General Bureau for the Promotion of Handicrafts and Small-Scale Industries, Statistical Abstract of Handicrafts and Small-Scale Industries, 1965-1968 (Quito: Ministry of Production, September 1969), 163 pp.

Table B-10: INDEX OF INDUSTRIAL PRODUCTION, COMPARISON OF ALTERNATIVE ESTIMATES, ECUADOR, SELECTED YEARS 1957-1966
(1965=100)

Alternative Sources	1957	1960	1963	1964	1966
Manufacturing GDP	60.6	73.1	81.9	95.6	101.0
CBE index	..	..	74.4	89.7	108.9
NEPCB index	43.5	55.4	72.4	87.2	104.9
Large-scale manufacturing enterprises index	54.5	57.1	80.5	91.2	100.4

Sources:

CBE, Memoria 1969 (Quito: CBE, no date), Statistical Annex, pp. 12 and 121.

NEPCB, Economic Indicators, Vol. II, No. IV (July, 1970), H-11.

NEPCB (unpublished estimates of a deflated value added index for large-scale manufacturing industries, 1963-1970, based on CBE data and the NIS annual industrial surveys).

industrial production which refer to a changing universe of establishments. The monthly employment and wage data could be used for updating the production indexes. Unfortunately, the quarterly survey results become available only after excessive delays. At the beginning of 1972, the latest available data related to 1968. 57/ The 1969 and more recent quarterly surveys have not been published because some establishments have still not submitted the required information, and the NIS is not prepared to make estimates for these delinquents.

Construction statistics. For the public sector, the CBE, NEPCB, and the Department of Public Works compile some expenditure data on public construction. Without reviewing these data in detail, it appears that they may cover different public enterprises, have inappropriate classification of current and capital expenditure, and relate to expenditure rather than to the volume of construction put in place. For the private sector, the 1962 Census of Housing provided some crude benchmark data. The First Census of Construction (conducted in 1966) collected some data from large construction enterprises rather than the volume of surveys (conducted in 1967-71) have collected data on construction permits issued, the declared value of construction, number of rooms, dwelling units, and floor space. These are not comparable to the 1962 and the 1966 censuses and they cannot be used for estimating the totals and averages for the construction industry as a whole. Nevertheless, the statistics of issued urban construction permits are useful for making crude estimates of the volume of construction activity in urban areas. Ecuador has no information about private construction in rural areas.

Transportation statistics. Ecuador has no comprehensive statistics on the volume of frieght and passenger traffic carried by all modes of transport. The Great Colombian Merchant Fleet Company compiled some statistics on maritime traffic for 1950-57, while the State Railways Agency compiled statistics on railroad traffic for 1950-58--although apparently no data could have been obtained from these sources after 1958. River and road traffic statistics have also not been available in the 1950's. 58/

Starting in 1965-66, the Division of Statistics and Censuses of NEPCB initiated an annual publication of secondary transport statistics. 59/ This compendium contains detailed data on registered motor vehicles, the number of highway accidents, railroad freight and passenger traffic, number of domestic passengers originating at river and sea ports, number of international passengers and tons originating and terminating in Ecuadorian ports,

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57/ Statistics of Labor, Indexes of Employment and Wages (Quito: NEPCB Division of Statistics and Censuses, November 1969), 49 pp.

58/ See CBE, Department of Economic Research, Sources of Information and Procedures Employed in the Estimation of National Income of Ecuador (Quito: CBE, 1964), p. 7 and p. 18.

59/ See Yearbook of Transportation Statistics, 1968-1969 (Quito: NEPCB, September 1970), 155 pp.

etc. Ton-kilometers are available only for railroads, and even for them there is no breakdown by major commodity groups. This makes it impossible to construct meaningful indexes of the volume of traffic, especially since the necessary value weights for ton-kilometers are also not available.

Special studies of costs and traffic have been prepared on an ad hoc basis by a few carriers to remedy these serious gaps in transport statistics. The Ministry of Public Works prepared a cost study on road traffic. The Municipal Planning Office of Quito has a study of passenger flows and costs of carrying passengers by city buses. The former National Transit Council made a survey of intercity passenger traffic in 1968. The Bureau of civil Aviation collects administrative statistics compiled by airlines. Although the Mission has not reviewed these sources in detail, their data are likely to fall far short of the minimum requirements for policy making and the national accounts.

Electric Power statistics. The General Bureau of Water Power Resources and Electrification of the Department of National Electric Services of the Ministry of Development conducted a national census of electrification in 1962-63. This census covered all power stations with the installed capacity of thirty or more kilowatts. The first stage of the census collected data from August to December 1962 from the three coastal provinces; the second stage, carried out in May - October 1963, related to the mountain and oriental provinces. Thus, the data on the power generated in 1962 represents in part estimates apparently based on the installed capacity. Moreover, although a total of 1,112 power stations were canvassed, only 14 of them had statistical data on the production, distribution, and consumption of power and basic economic data. 60/ Nevertheless, the census showed several national totals of power generated with detailed breakdowns by cantons and provinces, by ownership, and by type of consumer. In addition, the census provided data on installed capacity, long-distance transmission lines, and the total length of the distribution grid by cantons.

The Ecuadorian Institute of Electrification (INECEL) continued to compile annual data for all power stations with 100 kw or more installed capacity starting in 1964. Although the INECEL data cover a large part of the total electric energy generated in Ecuador, the data are far from complete, the number of power stations to which they relate is not given, and the methods used for obtaining the data are generally not disclosed. The INECEL has published its data in annual bulletins; the latest edition shows data for 1970. 61/

60/ First National Census of Electrification, 1962-1963 (Quito: General Bureau fo Water Power Resources andElectrifiaation, April 7, 1964), p.2.

61/ Ministry of Natural Resources and Tourism, Ecuadorian Institute of Electrification, Bulletin No. 5 (1970), Electricity Statistics and the Operation REports of Major Producing and Distributing Enterprises of Electric Energy of Ecuador (Quito: INECEL, no date), 154 pp.

Domestic trade statistics. The NEPCB conducted the First Census of Domestic Trade in 1965, and this was followed by regular annual surveys starting in 1966. the NIS conducted the latest such survey in 1969, with the results published in 1972. 62/ The use of the self-enumeration method caused most of the delay in the completion of the survey. The frame of the 1965 Census, updated by the membership lists of chambers of commerce, yielded 1974 wholesale and retail trade establishments of which 1,818 responded. In addition, the NIS surveyed 681 members reported by the chambers of commerce of which 117 were found to be sufficiently large to be covered by the survey, that is, they had five or more employees and/or 500,000 or more sucres annual revenues. The latter definition is confusing because the "and" can be interpreted that both conditions must be met (five employees and 500,000 sucres) before an establishment is calssified as eligible for the survey, whereas it is apparently sufficient that either one of the two conditions is fulfilled. A different interpretation placed on this crucial definition may change significantly the coverage of some ISIC groupings. Further, the chambers of commerce membership is on purely voluntary basis. Firms which join the latter are likely to be covered by the NIS survey thus increasing the apparent volume of domestic trade.

The NIS surveys of domestic trade compile data on the number of wholesale and retail establishments with five or more employees or with 500,000 or more sucres annual revenues. For these establishments, the NIS also compiles the data on the number of employees, compensation of employees, cost of merchandise, other expenses, stocks investment expenditure on new fixed assets, total revenues, sales and other revenues. If statistical deficiencies, particularly with respect to covereage, could be reduced to a more reasonable level, these data would be useful for estimating value added, trade margins for the commodity-flow analysis, and perhaps even for estimating the changes in stocks.

Foreign trade statistics. --Ecuador has tow sources of foreign trade statistics: (1) customs documents and (2) import and export permits. The NIS branch office in Guayaquil processed the customs documents and the NEPCB published the results for 1965-1969. 63/ Exessive publication delays and other considerations led to a recent transfer of this function to the Ministry of Finance which is now responsible for the checking, processing and publishing of the export and import trade statistics based on customs documents.

The CBE has been able to obtain dependent estimates of foreign trade statistics, updated almost on a daily basis, by processing export and import permits issued (permisos concedidos). In addition, the CBE has

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62/ See National Institute of Statistics, Annual Survey of Domestic Trade, 1969 (Quito: NIS, 1972), 90 pp.

63/ Yearbook of Foreign Trade Statistics published for 1965, 1966, 1967, 1968 (2 vols.) and 1969. The results have been tabulated and are available since 1957.

processed used import permits (permisos liquidados), although, these data relate to payments which are frequently made considerably after the arrival of imported goods. The issued export permits are also closely related to the shipping dates and the value of exports. Nevertheless, the value and volume of foreign trade based on customs documents appear to be significantly lower than the data based on the permits (see Table B-11). This discrepancy is partly explained by the difference in time periods to which the data refer, partly by technical smuggling (undervaluation and improper classification of goods to avoid the paying of higher import duties), and partly by the fact that some of the issued import permits are never used. A comparison of the data based on issued and used import permits indicates to some extent the importance of the latter although the defaults etc. obscure the comparison (see Table B-11).

Comparing the CBE and NEPCB foreign trade estimates with the customs data, we further note that the latter tend to be considerably lower for exports than either the CBE or the NEPCB estimates. The latter are higher because the CBE and the NEPCB base them on the balance of payments data adjusted for smuggling and the undervaluation of banana and some other exports shown in the export permits (the Customs compile the data as reported in the customs documents at the time shipments cross the international borders--the national accounts concept, while the export and import permits relate to the time period for the movement of goods--a less accurate concept used in the balance of payments). On the other hand, the customs data for imports tend to be higher than the corresponding imports estimates of the CBE and the NEPCB because the customs data include import shipments for which no import permits are required (e.g., donations). Although the balance of payments makes crude global adjustments for imports without permits (e.g., by petroleum companies), imports financed by grants and loans (for which import permits are not required), and estimates that only 85 percent of permits issued would be utilized, these estimates cannot always be sufficiently accurate to avoid a serious underestimation of imports. In addition to merchandise exports and imports, the CBE and the NEPCB national accounts include nonfactor services. The adjustments for conventional and particularly for technical smuggling are made only for a few selected commodities, such as bananas and seafood. Imports appear to be more understated and they are less adequately adjusted than exports.

Financial statistics. the Superintendent of Banks compiles, condenses, and consolidates the accounts of banks, insurance companies, and other financial institutions. His annual reports show, among other things, the operating results (surpluses or deficits) but not wages and salaries, director fees, rents, depreciation allowances, interest paid to households, interest paid to business and other operating expenses. 64/ The Mission could not ascertain to what extent such data could be obtained directly from the Office of the Superintendent.

64/ Cf. Annual Report of the Superintendent of Banks to the National Congress, 1968 (Quito: Publisher not specified, June 30, 1969), 150 pp.

Table B-11: EXPORTS AND IMPORTS OF GOODS AND NONFACTOR SERVICES, COMPARISON OF BALANCE OF PAYMENTS AND ALTERNATIVE NATIONAL ACCOUNTS ESTIMATES, ECUADOR, 1960-71

Alternative Sources	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Exports of Goods and Nonfactor Services												
Balance of Payments in Millions of Current US Dollars												
BPD (CBE): goods	148.1	132.0	148.6	150.4	161.4	180.3	186.2	201.0	210.7	196.1	232.8	232.1
nonfactor services	8.8	9.6	10.8	13.8	17.6	17.4	17.1	17.0	14.4	23.6	23.3	24.8
total	156.9	141.6	159.4	164.2	179.0	197.7	203.3	218.0	225.1	219.7	256.1	256.9
Customs and National Accounts in Millions of Current Sucres												
Customs: goods	1,538	1,570	2,114	2,311	2,347	2,375	2,515	2,845	3,513	2,745	..	..
NID (CBE): goods	2,380	2,331	2,817	2,730	2,907	3,259	3,402	3,665	3,902	3,671	4,899	..
Nonfactor services	150	193	264	294	338	359	324	376	356	512	538	..
Total exports	2,530	2,524	3,081	3,024	3,245	3,618	3,726	4,041	4,258	4,183	5,437	..
Plus: discrepancy	-6	+106	-34	-28	-34	-45	+10	-44	-37	-19	-43	..
NEPCB: total exports	2,524	2,630	3,047	2,996	3,211	3,573	3,736	3,997	4,221	4,164	5,394	6,422
Mission estimates	2,524	2,630	3,047	2,996	3,211	3,573	3,736	3,997	4,227	4,390	5,463	6,422
Average Exchange Rates for Exports												
CBE: official	14.85	17.82	17.82	17.82	17.82	17.82	17.82	17.82	17.82	17.82	..	24.75
NID (CBE): implicit	16.12	17.82	19.33	18.42	18.13	18.30	18.33	18.54	18.92	19.04	21.23	..
NEPCB: implicit	16.09	18.57	19.12	18.25	17.94	18.07	18.38	18.33	18.75	18.95	21.06	..
CBE: weighted	..	..	..	..	..	..	..	..	18.78	19.98	21.33	..
Imports of Goods and Nonfactor Services												
Balance of Payments in Millions of US Current Dollars												
BPD (CBE): goods	109.8	108.5	112.1	118.7	140.0	155.2	151.3	175.7	210.8	242.7	259.9	347.9
Nonfactor services	42.5	38.1	37.9	38.5	49.5	45.8	49.9	58.4	66.9	87.2	101.2	117.8
Total	152.3	146.6	150.0	157.2	189.5	201.0	201.2	234.1	277.7	329.9	361.1	465.7
Customs and National Accounts in Millions of Current Sucres												
Customs: goods	1,728	1,741	1,749	2,304	2,734	2,978	3,134	3,856	4,598	4,373	..	..
NID (CBE): goods	1,766	1,887	2,165	2,194	2,554	2,833	2,773	3,277	4,039	4,611	5,551	..
Nonfactor services	710	694	764	746	780	741	831	932	1,095	1,231	1,492	..
Total imports	2,476	2,581	2,929	2,940	3,334	3,574	3,604	4,209	5,134	5,842	7,043	..
Plus: discrepancy	-21	+167	+9	-10	+130	+104	+127	+172	+214	+486	+552	..
NEPCB: total imports	2,455	2,748	2,938	2,930	3,464	3,678	3,731	4,381	5,348	6,328	7,595	11,642
Mission estimates	2,455	2,748	2,938	2,930	3,464	3,678	3,731	4,381	5,362	6,301	7,760	11,642

Table B-11 -- Continued

Alternative Sources	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
	Imports of Goods and Nonfactor Services											
	Average Exchange Rates for Imports											
CBE: official selling	15.15	18.18	18.18	18.18	18.18	18.18	18.18	18.18	18.18	18.18	..	25.25
NID (CBE): implicit	16.26	17.61	19.53	18.70	17.59	17.78	17.91	17.98	18.49	17.71	19.50	..
NEPCB: implicit	16.12	18.74	19.59	18.64	18.28	18.30	18.54	18.71	19.26	19.18	21.03	..
CBE: weighted	..	..	..	..	..	..	..	..	19.31	19.10	21.49	..

Sources: Central Bank of Ecuador; NEPCB; Foreign Trade Yearbook (for 1957 through 1969); Mission estimates.

Private services statistics. This NIS conducted the First Census of Services in 1965 and an annual survey of large and medium service establishments (five or more employees and/or 100,000 or more sucres annual revenue) since 1966. the 1965 Register of service establishments has been updated by lists compiled by the CETURIS and the Fiscal Lottery Department of the Finance Ministry which provided 227 establishments, including 66 qualifying for the survey. In addition to the 66 establishments mentioned above, the NIS Register contained 682 establishments of which 658 responded. 65/ The total of 724 establishments supplied essentially the same data as the domestic trade establishments discussed above. Their data shortcomings are also similar.

Health Statistics. The General Burasu of Public Assistance has collected and the General Bureau of Statistics and Censuses has coded, processed, and published hospital statistics for 1955 and 1956. 66/ Subsequently, the latter Bureau has conducted annual surveys at all hospitals in Ecuador. The 1957 survey covered only forty-six hospitals, and the response has also not been good in more recent years. The statistics cover the number of discharged patients, by sex and by the degrees of diagnosed imporvement. The data are published with a delay of about five years.

The Medical Department of the Ecuadorian Institute of Social Security has recently published similar but more detailed statistics, including some data for clinics. 67/ The publication of these data started in 1965 and they are expected to be continued every year. The Mission has not reviewed these data in detail. It appears that there may be some overlapping of data and duplication of effort.

Government accounts statistics. The CBE's Fiscal Studies Division (FSD) consolidates the accounts of the Central Government, 20 provincial and 108 municipal governments, and of about 500 autonomous public entities--a total of about 650 agencies. The CBE consolidation excludes 898 local governments (194 urban and 704 rural "parachias"). They are very small and many of them have neither accounts nor budgets because unpaid volunteers serve on their staff.

For the consolidation purposes, the FSD requests the data in greatest available detail directly from the 650 agencies which apparently supply them rather promptly. The CBE examines these accounts, classifies,

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65/ National Institute of Statistics, Annual Survey of Services, 1968 (Quito: NIS, no data), 46 pp.

66/ General Bureau of Statistics and Censuses, Hospital Statistics, 1957 (Quito: GBSC, 1962), 48 pp.

67/ Ecuadorian Institute of Social Security, Medical Department, Yearbook of Hospital and Clinic Statistics, 1967 (Quito: National Service of Biostatistics, April 13, 1971) 245 pp.

and aggregates the various items by hand into about 125 standard items of revenue and 85 items of expenditure. Each of these subtotals is then assigned a six-digit code for a final aprocessing with an IBM computer. The consolidation process takes about six months.

The compensation of employees is classified by three items and the consumption of goods and services is grouped by five standard items. All accounts are processed for each entity at one time, and it is not possible to process some of the items on a priority basis in consideration of the national accounts and other urgent needs. The primary objective of the consolidation is its publication in the annual report of the CBE, which is sometimes delayed for several years. Preliminary data for 1969 were not published even at the beginning of 1972.

The NEPCB makes further ajustments in the CBE consolidations and carries out partial consolidations of its own. The NEPCB applies a different classification to the pul lic sector and uses somewhat different definitions which result in significantly different estimates (see Table B-12). The Mission did not have the opportunity to review the government accounts in detail.

Price statistics. Ecuador has four consumer price indexes (CPI's), a national wholesale price index (WPI), and agricultural consumer prices reported by the Ministry of Production. The CPI's are published monthly with little delay, while the publication of the WPI has been suspended since 1969. The NIS is directly responsible for the Quito CPI, providing some technical assistance and coordination to the universities of Guayaquil and Cuenca which prepare CPI's for their cities. In addition, the Technical University of Manabi started recently a CPI for the city of Portoviejo.

The CPI weights are based on the average expenditure pattern of low and middle income families with an average monthly range from 83 to 830 sucres per capita. The NEPCB conducted a survey of living conditions in Quito in 1964-1965. From a list of 1,500 families, 400 were selected at random and 361 of them provided acceptable data. A similar survey was carried out in Guayaquil in 1965, in Cuenca in 1968, and in Portoviejo in 1969. A comparison of these weights (see Table B-13) shows that the Quito weights are not significantly different from those of Guayaquil and Portoviejo (the Cuenca weights are not readily available). Moreover, the differences in weights tend to be compensated by differential price movements in various cities. Thus, the smaller weight of food in Quito is compensated by a more rapid rise of food prices, while in Guayaquil, the smaller weight of clothing is to some extent offset by faster price increases of these items. The combination of smaller weights with higher prices in some components tends to reduce the differences in the overall price indexes for these cities. The relative size of consumer expenditure components appears to converge to a national pattern, at least for these urban areas. This tendency makes the Quito CPI a more suitable index for the analysis of the national price level, including the deflation of the national accounts.

Consumer prices are collected once a month by two price collectors at four Quito markets. They price about 150 products, pruchasing some of them and using samples for others to make sure that the quality remains the same. The price quotations are averaged for all markets without weights. Cuenca prices are collected by three collectors, while Guayaquil has a high turnover of price collectors. The training and experience of price collectors varies considerably. The NIS has a somewhat better quality control of the CPI in Quito than it is apparently possible in other cities. The Portoviejo CPI is particularly suspect because no technical details on its weights and price collection are available, and although the Technical University is publishing the CPI weights, the index appears to be unweighted, at least the major groups with respect to their subgroups.

The WPI has been prepared by the Institute of Economic and Financial Research (IEFR) of the Central University in Quito for 1954-69. The IEFR started collecting wholesale prices in 1952 in seven cities (Quito, Guayaquil, Loja, Tulcan, Riobamba, Manta and Bahia). It collected a total of 116 prices for five selected commodity groups (food, building materials, metal products, leather and chemicals). Without using any weights either for cities or commodity groups, the IEFR constructed and published a national WPI for 1952-54. In spite of its obvious limitations the NEPCB hailed this index as undoubtedly an important statistical achievement at the national level.

Having obtained the results of the 1954 Agricultural Census, the IEFR proceeded to construct weights for its new WPI. It used 313 specifications of 193 products selected from nine major and twenty seven minor commodity groups (see Table B-14). The weights represented the output in physical units for 320 products rather than the value added of total production accounted for by these groups or by the economy as a whole. Thus, while the weighting constituted an improvement over the completely unweighted index, it nevertheless fell far short of a national WPI. To expand the regional coverage, the IEFR added Ambato and Cuenca to the other seven cities which collected the wholesale prices, although Riobamba stopped sending them in 1963 and Mant dropped out from this effort in 1964.

The IEFR has collected wholesale prices for Quito, the University of Guayaquil collected them for that city, while the CBE branch offices have collected prices in Ambato, Bahia, Cuenca, Loja and Tulcan. The collected price data have generally been of very poor quality. Many prices were missing. Some CBE branch offices quoted prices of preceding months and years. The wholesalers have often been too busy to fill out accurately lengthy questionnaires. In response to further queries, they usually gave quick replies--"no change" or "same prices as las month". Sometimes wholesale prices could not be obtained at all and retail prices had to be substituted. The IEFR has found that as a result of these inaccuracies, the WPI has tended to be understated by about 10 to 15 percent.

In addition to the downward bias due to the shortcomings of the collected prices, the WPI is subject to a wide margin of error in view of its deficient weighting. No meaningful weights exist at the following stages of aggregation:

(a) aggregation of 313 different brands and specifications into 193 products for which weights exist;

(b) aggregation of different price quotes by two or more wholesalers in the same city;

(c) aggregation of prices for seven cities;

(d) aggregation of monthly data into annual averages.

Moreover, the use of inappropriate quantity weights which relate to the gross rather than to the net value of production and to a few more or less arbitrarily selected products rather than to the total volume of domestic production and imports results in a WPI which cannot be interpreted and used with confidence.

When the President of Ecuador closed the Central University in June 1970, the work on the WPI was temporarily suspended although the Central University in Quito and the Guayaquil University continued to collect some wholesale prices in 1970 and in 1971. In 1972, the work on the WPI was resumed. A study is under way to revise the 1954 weights, updating them to 1968 on the basis of the 1968 Agricultural Survey. The inadequacy of the latter, as pointed out above, is likely to make the 1968 weights quite meaningless. The IEFR needs urgently competent technical assistance to raise its work on the WPI to an adequate level. The CBE has subsidized the WPI program of the IEFR at about 300,000 to 400,000 sucres per year, but it is apparently unable to provide the necessary technical assistance. The IEFR Director has requested the Mission to help the Institute in obtaining the required technical assistance at an early date.

The Ministry of Production collects monthly agricultural prices for eighty-one varieties of thirteen major and fifty-nine minor crops in nineteen provincial capitals. Each of these prices is averaged without weights for all markets, cities, and months. The price quotations relate to sales of agricultural products to consumers. The data are available by month and by year for 1960-1970 although some prices are not available for all products, cities, months and years (see Table B-15).

Table B-12: PUBLIC SECTOR CURRENT ACCOUNT, COMPARISON OF ALTERNATIVE ESTIMATES, ECUADOR, CALENDAR YEARS 1964-1971
(Millions of Current Sucres)

Alternative Sources	1964	1965	1966	1967	1968	1969	1970	1971
	A. Surplus on Current Account							
CBE-NID	1,217	825	998	1,503	1,298	1,691	..	..
CBE-FSD	1,069	738	1,126	1,672	1,180	1,588	..	..
NFPCB	513	199	369	460	61	-231	-78	..
Mission	..	363	597	968	613	629	871	1,103
	B. Current Receipts							
CBE-NID	4,612	4,534	5,055	5,775	6,257	7,377	..	..
CBE-FSD	4,476	4,429	4,957	5,704	6,276	7,506	..	..
NEPCB	3,338	3,558	3,670	4,334	4,667	5,135	6,165	..
Mission	..	3,557	3,671	4,335	4,667	5,136	6,176	7,091
	C. Current Expenditure							
CBE-NID	3,395	3,709	4,057	4,272	4,959	5,686	..	..
CBE-FSD	3,407	3,691	3,831	4,032	5,096	5,918	..	..
NEPCB	2,825	3,359	3,301	3,874	4,606	5,159	6,254	..
Mission	..	3,194	3,074	3,367	4,054	4,507	5,305	5,988
	1. Purchases of Goods and Services							
CBE-NID	2,590	2,838	3,219	3,402	4,059	4,560	..	..
CBE-FSD	2,527	2,731	2,904	3,074	4,107	4,656	..	..
NEPCB	2,412	2,628	2,009	3,158	3,756	4,171	5,155	..
Mission	..	2,676	2,483	2,818	3,385	3,695	4,329	4,926
	2. Interest Payments and Other Transfers to Private Sector and Abroad							
CBE-NID	805	871	838	870	900	1,126	..	..
CBE-FSD	880	960	927	958	989	1,262	..	..
NEPCB	413	585	1,292	716	850	988	1,099	..
Mission	..	518	591	549	669	812	976	1,062

Sources: Central Bank of Ecuador, National Income Division and Fiscal Studies Division; National Economic Planning and Coordination Board; Mission estimates.

Table B-13: CONSUMER PRICE INDEXES, WEIGHTS AND TRENDS, ECUADOR
SELECTED YEARS 1965-1971

Major and Minor Groups	No. of Items in Each Group	Weights			Consumer Price Index (1965=100)			
		Quito	Guaya-quil	Porto-viejo	Quito		Guayaquil	
		1965	1965	1969-1970	1970	1971	1970	1971
Total	154	100.0	100.0	100.0	126.0	136.6	123.1	135.2
Food and beverages	54	41.8	49.8	48.1	134.8	143.6	125.9	136.0
Cereals	4	10.2	10.7	7.9	128.7	144.6	..	..
Meat	3	6.8	10.2	8.6	143.0	151.3	..	..
Fish and sea food	2	0.5	1.9	2.2	135.2	170.2	..	..
Edible fats and oils	3	2.9	4.2	3.3	152.4	177.5	..	..
Milk and eggs	3	6.1	5.9	6.2	134.9	142.0	..	..
Fresh vegetables	11	2.3	2.9	2.8	144.3	166.8	..	..
Tubers	2	2.7	1.8	1.0	200.2	149.7	..	..
Leguminous	4	0.3	1.2	1.0	146.8	167.4	..	..
Fresh fruit	7	1.9	2.5	3.7	98.6	110.3	..	..
Sugar, salt, and spices	4	3.2	3.2	2.8	104.0	112.2	..	..
Coffee, tea, and carbonated	4	1.8	2.3	1.7	116.6	121.8	..	..
Miscellaneous foods	3	0.3	0.7	0.9	128.2	146.1	..	..
Beverages at home 1/	1	2.3	1.9	5.3	119.6	133.8	..	..
Food outside of home 2/	1	2.3	1.9	5.3	119.6	133.8	..	..
Housing	38	19.7	22.9	17.5	115.7	127.7	117.1	130.6
Rentals	1	9.0	11.7	3.4	113.3	118.3	..	..
Real estate taxes	1	0.3	0.4	0.4	100.0	100.0	..	..
Fuel	5	4.1	4.5	3.7	101.9	109.6	..	..
Laundry	7	3.5	3.0	5.6	131.9	161.0	..	..
Home fabrics	6	0.8	0.5	0.8	99.1	111.3	..	..
Home furnishings	7	0.7	0.9	1.4	138.5	162.5	..	..
Furniture	7	0.9	1.5	1.6	139.3	165.8	..	..
Appliances	4	0.4	0.4	0.6	121.6	135.5	..	..

1/ Alcoholic beverages consumed at home.
2/ Food and beverages consumed outside of home.

Table B-14: WHOLESALE PRICE INDEX, WEIGHTS AND TRENDS, ECUADOR, SELECTED YEARS 1954-1969

Major and Minor Group	No. of Items in Each Group	1954 Weights (%)	1965=100 a/		
			1954	1960	1969
Total	193	100.0	88.3	86.8	110.9
I. Food	44	57.9	93.2	86.8	115.6
Meat	3	6.0	78.1	83.3	126.4
Milk and eggs	5	10.4	100.3	98.1	110.4
Fish	3	7.3	86.7	103.9	126.9
Cereals	14	16.7	82.5	77.6	108.7
Fruits and vegetables	12	7.4	104.9	85.7	134.4
Sugar	2	3.4	95.4	91.9	100.0
Coffee and cocoa	2	5.0	162.6	81.6	98.5
Miscellaneous foods	3	1.7	98.2	81.8	107.1
II. Beverages and tobacco	10	7.1	95.1	94.5	105.8
Beverages	8	6.0	92.9	92.4	105.0
Tobacco	2	1.1	108.8	107.7	110.4
III. Raw materials	16	2.6	75.0	83.0	112.7
Oil seeds	1	0.4	86.1	74.4	180.6
Lumber and cane	11	1.5	60.1	68.0	102.3
Minerals	4	0.7	155.7	186.3	100.0
IV. Fuel and lubricants	9	8.2	78.1	85.2	105.1
V. Oils and fats	6	1.4	76.0	86.4	104.2
VI. Chemicals	24	3.3	136.8	106.8	102.6
Chemical compounds	10	0.3	94.6	92.8	105.6
Pharmaceuticals	10	2.9	145.3	109.4	102.2
Perfumery and toiletry	4	0.1	82.0	109.8	102.6
VII. Manufactured products	59	10.8	91.7	92.1	105.6
Leather products	8	1.3	99.5	81.2	117.2
Rubber products	4	1.2	92.2	111.0	100.7
Paper	9	0.9	81.0	92.1	106.8
Nonmetal minerals	10	4.5	92.8	86.7	104.9
Ferrous metals	18	2.4	97.7	98.4	103.3
Fabricated metals	10	0.5	66.8	84.0	102.3

Table B-15: ANNUAL AVERAGE CONSUMER PRICES FOR 71 AGRICULTURAL COMMODITIES, 1960-70
(In Current Sucres)

Agricultural Commodities	Unit of Measurement	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1969 Prices Used in National Accounts
		14 Major Crops											
Bananas	a/	..	1,235	985	970	1,030	990	975	1,028	1,100	1,190	1,140	1,300 b/
Barley	q	39	54	62	56	76	66	67	69	76	80	90	91
Beans (kidney)	q	161	193	182	172	241	241	245	242	236	272	301	307
Cocoa	q	..	310	339	381	383	333	381	382	473	461	467	535
Castor beans	q	..	..	..	..	..	..	..	..	..	..	92	80
Coffee	q	379	364	395	395	515	469	385	371	373	420	560	430
Corn	q	90	109	110	108	139	141	132	130	133	131	108	78
Cotton (lint)	q		123	130	150	199	194	..	..	..	177	194	177
Onions	q	..	118	116	93	125	142	107	104	121	131	119	111
Plantains	q	..	1,484	1,333	1,217	1,362	1,328	1,230	1,240	1,300	1,320	1,220	1,300 b/
Potatoes	q	70	73	57	79	79	62	80	74	63	95	86	78
Rice	q	133	145	140	137	141	182	167	172	213	224	183	151
Sugar cane	mt	..	..	..	..	..	..	..	..	..	..	..	88
Wheat	q	86	89	86	92	106	101	107	110	116	118	123	118
		57 Minor Crops											
Abaca	mt	..	..	..	..	..	..	..	..	..	..	..	250
Anise	q	..	..	..	867	676	978	1,070	1,170	..	..	..	900
Annato	mt	..	235	235	257	374	428	424	402	276	340	..	380
Apples	(00)	..	201	214	55	84	105	238	254	..	141	187	281
Apricots	q	..	..	..	..	..	..	..	..	..	..	..	250
Avocados	(00)	..	49	47	50	49	50	52	54	54	65	67	251
Bananas (oritos)	q	..	..	..	..	..	..	..	..	..	..	..	10
Beans (lima)	q	104	118	117	112	150	151	147	148	142	170	177	162
Beets	c/	..	59	68	63	65	62	59	61	61	64	79	86
Cabbage	(00)	..	134	162	200	220	247	189	193	235	216	187	72

See footnotes at end of table.

CURRENT ECONOMIC POSITION AND
LONG-TERM PROSPECTS OF ECUADOR

TABLE OF CONTENTS

VOLUME III

Page No.

THE PETROLEUM SECTOR 68/

Background

The prospects for Ecuador as a petroleum producer were significantly altered with the discovery of commercial quantities of oil in the Oriente Region in March 1967.

In Ecuador, the petroleum industry has evolved through a number of stages. The early stage was characterized by the discovery of oil along the coast, by the enactment of the first hydrocarbons law and by the search for oil, albeit unccessful, in Oriente to the east of the Andes chain. Petroleum was discovered at Ancon on the Santa Elena Peninsula in 1923. Later, as many as ten fields were found in the same general area. Proved reserves were never large as compared to those of neighboring countries. Production from Santa Elena gradually rose to a maximum of 10,140 barrels daily in 1955. Although modest, the level of production, nevertheless enabled Ecuador to become a net exporter of oil. Concurrently with the effort to find oil along the coastal strip, Leonard Exploration was granted a consession to explore Oriente in 1921. The first Ecuadorian oil law was promulgated in 1921 and the second in 1937. This latter law remained in force until very recently. As with much of the legislation at that time, the law allowed long concession periods, large areas and low royalties.

Subsequent to the promulgation of the 1937 law, Shell obtained a concession which covered most of Oriente. Esso joined Shell in 1948. In all, some US$35 million were invested and six wells were completed, none of which proved sufficient oil to warrant further development. The factors contributing to the lack of success of these companies were the difficultuy of the heavily forested terrain, the isolation of the area and its inaccesibility except by river and the state of technology at that time.

As from 1956 production from the existing Santa Elena fields had commenced to decline. By 1958, Ecuador had been converted into a net importer of crude petroleum and refined products. Imports of oil were to become the largest single drain on foreign exchange for the Ecuadorian economy. By 1971, domestic production contributed only 15 percent of local requirements for petroleum products while net imports accounted for a net outlfow of froeign exchange of some US$17 million.

A new phase was ushered in with the third round of concessions in Oriente. Minas y Petroleos obtained a concession in 1961 and the Texas/Gulf partnership some three years later. Petroleum was discovered at Lago Agrio in March 1967 when the first well drilled by the partnership was tested at a daily rate of 2,640 barrels, equivalent to two-thirds of the total output from the Santa Elena fields. Under the conditions for "model" contracts and contracts of association, a number of companies applied for and obtained exploration leases in Oriente during 1968 and 1970. Some of these companies have found petroleum reserves.

68/ This brief appraisal of the petroleum sector in Ecuador reflects the situation as of mid-1972.

The development of an increasing hydrocarbons resource base and the construction of the first major pipeline across the Ecuadorian Andes points to the potential importance of oil for the country in terms of fiscal revenue, foreign exchange earnings and national income. The final testing of the pipeline was successfully completed in early July, and exports began in August 1972.

Concessions. Ecuador possesses two extensive sedimentary areas; one stretches along the coast both onshore and offshore from the Colombian border to the Gulf of Guayaquil and the other covers most of the Oriente. This latter basin is of outstanding geological interest in view of the discovery of petroleum in northern Ecuador, in southern Colombia and in Peru. The basin, which covers an area of some 8.5 million hectares (33,000 square miles) is tilted southwards so that it widens and becomes progressively deeper along an axis running from north to south. Petroleum was found at a depth of 6,500 feet at Orito in the Putumayo (Colombia), at around 9,000 feet in the Texaco-Gulf fields in northern Ecuador and, to the south, Amoco completed two unsuccessful wells at a depth of 15,000 feet. Another characteristic of considerable importance is the gravity and sulfur content of the crude petroleum in place. Texaco-gulf have found a variety of crudes which range from 27° API to 36° API; the export stream, however, will average 28° API with a sulfur content of 0.9 percent. Further to the east of these discoveries, heavier crude reserves have been found. There is some speculation as to the relative amounts of heavy crudes to be found in Ecuador; some geologists believe that in terms of total resources in situ, the proportion of heavy to light and medium oils may be as much as 5:1.

The area under concession in Oriente in mid-1972 covered 6.6 million hectares of which about 1.1 million fell within the Texaco-Gulf concession (see Appendix Table 8.22). Approximately 77 percent of the Oriente basin area was under concession or contract to foreign-owned oil companies. In Ecuador, the petroleum sector comprises a variety of companies from the very small independent to the major international oil companies. The relatively small acreage in the hands of the majors (23.4 percent) reflects the attitude of these companies in relation to supposedly marginal petroleum areas in the late 1960s. Until 1970, only Texaco-Gulf, among the majors, had acquired acreage. The independents which were originally awarded most of the acreage in Ecuador, have been faced with increasing cash difficulties in meeting their commitments; consequently, in the last years the proportion of the medium sized internationals has increased through farm outs and the outright purchases of equity. Amerada Hess bought a controlling equity share (57 percent) of Minas y Petroleos S.A., Sun acquired the Grace Oil concession, Marathon joined Shenadoah and Amoco became the operator for the Curaray concession. The composition of the industry is of significance with respect to possible market outlets and prices; the influx of bigger companies with refineries in the United States and the Caribbean has improved the market prospects for Ecuadorian oil.

Area under Concession (Oriente, 1972)

Company	Hectares (Thousands)	Percent Distribution
Major Internationals	1,546	23.4
Medium Sized Internationals	3,189	48.3
Independents	1,873	28.3
Total	6,608	100.0

Exploration in Ecuador has been both costly and difficult owing to the remoteness and heavily forested nature of the area. The Oriente is separated from the coast by the Ecuadorian Andes chain. The industry, nevertheless, has pursued an intensive program of geological and geophysical investigation, particularly in the Texaco-Gulf and Anglo Consortium areas. Over 56 percent of the Oriente basin has been explored by seismic means and approximately 15,100 kilometers of seismic lines have been shot to date of which Texaco-Gulf-Anglo account for almost 70 percent.

A seismic party in Ecuador requires from 400 to 700 persons and must be assisted by a helicopter, resulting in higher total costs of seismic work than elsewhere with the exception of Alaska. Including helicopter support, the average cost of a seismic party is $150,000 per month in Ecuador compared to $52,000 in Mexico, $60,000 in Argentina and $100,000 in Venezuela.

The estimated investment in seismic studies alone totalled about US$32 million. This amount is far in excess of the sum of the minimum exploration commitments required by the lease agreements. In line with the model contracts, the companies had to invest US$1.2 million for each 400,000 hectare block during the exploratory period with the exception of the Amoco contract of association which stipulated a commitment of $3.72 million in exploration funds including exploratory drilling. These obligations amount to only $18.1 million for the entire Oriente concession area.

In Ecuador, geophysical studies have in general shown structures which are not clearly defined. But in the Texaco-Gulf concession, 13 out of the 16 structures tested by the drill have found oil. This represents a success ratio of about 80 percent. For the country as a whole, almost 70 percent of the exploratory wells have been successful. In Venezuela, one in five exploratory wells discovers oil while in the U.S. only one in 42 wells finds a reservoir containing more than one million barrels of oil.

While much of eastern Ecuador has been explored by geological and geophysical methods, only a very small part of Oriente basin has been proved by drilling. On the basis of past performance, the probability exists that significant additional amounts of oil will be found in the future. In the judgment of the mission a sustained exploration program including exploratory

drilling is essential to ensure the future proved reserves' position of the country. The importance of this cannot be overemphasized. A reduction or an interruption in the exploratory effort will not affect the deliverability of oil in the short run; its impact will be on the larger term productive capacity. In Ecuador it takes about five years from discovery to develop and bring an oil field into production.

Resource Base. The present status of work in the Oriente Region carries with it several important implications with respect to reserves and investment. In the first place, it is difficult to arrive at meaningful figures of recoverable reserves except for those areas which have already been drilled. Second, a very substantial net inflow of capital will be required to develop additional capacity. Under Ecuadorian conditions from $600 to $800 are required to find and develop a barrel/day of initial productive capacity. In addition, between $480 and $600 must be invested in order to move a barrel daily by pipeline from the producing field to the export terminal. Thirdly, the rate of new investment in oil exploration will be determined to a large extent by the economic and plotical constraints affecting the industry.

In Ecuador, proved petroleum reserves are estimated to have reached 0.8-1.2 billion barrels as of December 31, 1971. These figures refer only to the Texaco-Gulf concession. Approximately 25,000 hectares have been proved equivalent to 2.2 percent of the concession area. The first estimate of reserves is based on a 25 percent recovery factor and the second on a 40 percent factor. The 1.2 billion barrels estimate also takes into consideration artificial lift which probably will have to be brought in within a short period after beginning operations owing to the low oil-gas ratio and poor porosity of most of the reservoirs. The basic point to be made, however, is that these reserve estimates were undertaken without the benefit of producing experience and at a time when only two of the thirteen fields discovered had been completed. This would indicate substantially more oil to be recoverable than that reported as proved reserves by Texaco-Gulf. Again from an operational point of view, a venture aimed at sustaining a production level of 250,000 barrels daily would require a back-up of recoverable reserves of approximately 2 billion barrels. If a sustained level of production of 400,000 barrels daily is to be achieved, there must be a reasonable certainty of a total amount of recoverable reserves from known fields in the neighborhood of 3 to 4 billion barrels.

A recent independent study substantiates the above assertion. 69/ The study, using a 40 percent recovery factor and 20 to 26 percent porosity factor and assuming a water drive mechanism, indicates total proved and probable reserves to reach 3.2 billion barrels.

69/ Rudolf Martin & Associates, Calgary, Alberta, Canada, quoted in Oil and Gas Journal, April 17, 1972.

RESERVES IN THE TEXACO/GULF AREA
(billion barrels)

Proved Reserves	
Texaco/Gulf Estimate	827
UN Estimate	1,225
Proved and Probable Reserves	
Rudolf Martin & Associates	3,233
Proved, Probable and Possible Reserves	
Rudolf, Martin & Associates	4,607

The rest of the basin area is more speculative. Texaco-Gulf have some twenty promising structures which have not yet been drilled while most of the other companies are in the initial stages of their exploratory drilling programs. A figure of 1.39 billion barrels of recoverable reserves has been estimated for the Minas y Petroleos discoveries while the Cayman may have found reserves of the order of 0.5 billion barrels if their productive capacity estimates are correct. The sum of the total recoverable reserves mentioned above amounts to 6.5 billion barrels.

Productive Capacity

Production from the existing coastal fields averaged only 3,711 barrels daily in 1971. These fields have reached their peak production and are declining rapidly. Their contribution to the future production potential of the country is unimportant.

In Oriente, production has started from three fields - Lago Agrio, Sacha, Shushufindi - which Texaco has connected to the main pipeline to Esmeraldas, originating at Lago Agrio. Taken together, these three fields have an initial productive capcity of 270,000 barrels daily.

It is too early to be sure about the behavior of these fields. To the north at Orito in the Putumayo (Colombia), the reservoir behavior has been disappointing; the fields have declined at rates faster than indicated by engineering studies. In Ecuador, the reservoirs of the fields in question are undersaturated, that is, there is no gas cap or free gas present. The solution gas-oil ratios are low, in the order of 250-300 cubic feet of gas per barrel of oil. Lago Agrio and Sacha are thought to have decline rates of 12 percent per year while that for Shushufindi may be higher. Workovers will reduce this rate. Nonetheless, Shushufindi will require artificial lift by the end of 1973 to help offset the decline in production. Texaco-Gulf had a 40-well drilling program in 1972 to bring the three fields up to capacity. After 1972, the group will need a continuing drilling program employing up to two rigs to maintain production at the 250,000 barrels daily level. During 1973-74, three additional fields will be connected according

to company plans. These are Aguarica (32° API), Yuca (27.4-29.7° API) and Auca (26.9-31° API). A drilling program of two exploratory wells each during 1973 and 1974 will be implemented.

Field storage at Lago Agrio amounts to 750,000 barrels. As the additional fields are developed, they will be connected into the Lago Agrio-Esmeraldas pipeline system. Storage at the terminal at Esmeraldas totals two million barrels. Loading will be through two six to seven mile long offshore lines with a water depth of 145 feet, enabling the largest tankers afloat to utilize the port of Esmeraldas.

A number of fields have been discovered by other companies. Cayman Corporation, which holds a block to the east of the Texaco-Gulf concession, has completed three successful exploratory wells, one of which was tested at 3,300 barrels daily. Three more exploratory wells are planned for the period 1972-73. The size of the Cayman finds have not been appraised but they appear to have a productive capacity of some 50,000 barrels daily. The Timing for Cayman's development program depends on its ability to get pipeline capacity. The company has various alternatives including the utilization of spare capacity in the Orito-Tumaco line and the construction of a new pipeline jointly with other concession holders such as Sun.

South and east of Texaco, Minas y Petroleos S.A. has completed four successful and two dry wells. The company believes that it has found a structure capable of producing on a sustained basis up to 30,000 barrels daily. This and other widely scattered fields cannot be brought into production until the reserves' position warrants the construction of a pipeline. The concession area of the Anglo Consortium covered 58,600 square kilometers equivalent to twice that of the Texaco-Gulf partnership. The company has undertaken two year's intensive geophysical work and has completed eight wells with disappointing results. Only one of these wells turned out to be economically productive, after which Anglo relinquished over 90 percent of its original concession, retaining about 200,000 hectares in the most promising area. Amoco's first two exploratory wells, which were held as a link to the gological relationships between the north Ecuador fields and the recent discoveries in Peru, have been completed at depths of 10,000 to 15,000 feet, and turned out to be dry. As a result, Amoco suspended operations and decided to relinquish all its concession. In addition OKC and Sun (Grace) have some successful exploratory wells, but the level of petroleum reserves and the economic feasibility of their exploits have not yet been established.

Estimates of production over the next five to ten years which, in view of the stage of development described above, entails the problem of assuming that oil would be produced from as yet undiscovered reserves. In Ecuador, the constraints to increases in production are those related to production capabilities and pipeline transport rather than external markets. The availability of crude east of the Andes chain in itself is not sufficient to create a capacity for exports. This fact acts as an effective restriction

on the size of production increments. reserves must be such as to warrant the construction of pipelines which because of the distance (500 kms.) cannot have a capacity of less than 150,000 barrels daily. The assumptions on which the mission based its estimates of production include short-run industry programs, the rational development of known fields, the further discovery of oil outside the Texaco-Gulf concession, the completion of a second pipeline and mutually acceptable government policies. The timing of the first production increase will depend on (a) completion of the Auca-Yuca drilling program; (b) connection of these and other fields to the pipeline systems; (c) installation of additional pumping capacity on the Lago Agrio-Esmeraldas pipelines and (d) completion of increased storage capacity at the maritime terminal. Within this frame of reference, it is technically feasible for Texaco-Gulf to connect new fields and increase capacity would amount to $93 per barrel day. On the premise that further discovereies are made in other areas, it is assumed that some 200,000 barrels daily would be available for export by mid-1979. A second pipeline, possibly to the Guayaquil area would have to be completed by the above date. (Table 8.27 Statistical Appendix.) In arriving at these figures, the mission has placed particular emphasis on the progressive development of a potential oil area which is huge in size and whose exploratory activity in all its phases is just commencing. It may be worth recalling, however, that the only firm commitment by the industry relates to a level of production of 250,000 barrels daily as from September 1972.

Petroleum Investment. In line with expected petroleum production, the mission has estimated that total investment (exclusive of new refineries) in the period 1973-77 should amount to US$426 million, of which approximately $128 million would go for local currency expenditures. Part of these funds have already been committed. In the previous five-year period direct foreign investment in the petroleum sector reached $363 million. In the event that no further discoveries are made in eastern Ecuador, the rate of new investment will decrease to an estimated $170 million in the next five years. This latter figure presupposes that exploration continues and that all legal commitments to drill are met by the concession holders.

In the past three years, during which most of the investment in Oriente has been disbursed, the local currency component has averaged 23 percent for the entire region and 26 percent for Texaco-Gulf operation. As more national factors are incorporated into the investment works, in particular labor and materials, the proportion of imports will decline. It is expected that during the period through to 1977, the local costs will represent about 30 percent of total investment and average $26 million per year.

Assuming the discovery of new fields in 1973-74, investment will peak in 1977 as a result of the development of those fields and the construction of the second pipeline. The critical date for a number of companies,

as far as investment decisions are concerned, will come in 1973 when they must decide whether to convert to exploitation arrangements, possibly under new rules or to turn back their concession area. The decision must be based on their appraisal of the size of discoveries and the probability that untested structure will yield recoverable oil reserves.

Domestic Consumption. Ecuador has been consuming increasing volumes of imported energy. In 1971, imports of crude petroleum amounted to 23,000 barrels daily. These imports comprise Orito crude (35° API) from Colombia and a reconstitued crude (45° API) from Lake Maracaibo in a proportion of about 65:35. The latter crude is specially blended for the structure of the Ecuadorian market by the addition of middle distillates. The domestic market is notably oriented toward the light and middle distillates which represent over 70 percent of total demand while residual fuel oil consumption amounts to only 25 percent of the total. This product demand pattern is to be expected in a developing country with only a relatively small industrial base and with hydroelectric power as an alternative industrial source of energy in some areas. Lubricating oils and greases and liquified petroleum gases (LPG) are also imported in small quantities. There are periodic shortages in Quito of LPG which is used mainly for cooking purposes. It is estimated that the domestic consumption of refined products will grow from 12.4 million barrels in 1972 to approximately 20.3 million in 1977 in terms of crude inputs into the refineries.

In order to meet its present requirements, Ecuador possesses three refineries with a total throughout capacity of 36,300 barrels daily.

Refineries in Ecuador, 1972

Company	Place	Input Capacity (barrels daily)	Cracking	Catalytic Reforming
Anglo Ecuadorian	La Libertad	28,000	9,000	-
Gulf	La Libertad	7,300	-	1,000
Texaco	Lago Agrio	1,000		-
	Total	36,300	9,000	1,000

The Anglo and Gulf refineries were located at La Libertad on the coast at the time when the Santa Elena fields were the main source of crude inputs. As recently as 1967 both refineries were modified and new atmospheric distillation units were added to process a mixture of Orito and reconstituted lake crudes.

In the period 1969-71, after a decade of decline, there was a strong upsurge in demand for residual fuel oil. Unless this trend continues, the introduction of a heavier crude such as Lago Agrio will probably force the refiners to increase the proportion of reconstituted crudes or further modify the refineries.

Percent Distribution of Domestic Demand

	1961	1966	1971
Light and middle distillates	71.9	76.5	74.1
Residual Fuel Oil	28.1	23.5	25.9
Total	100.0	100.0	100.0

With the start up of production in Oriente Province, local crude petroleum will be substituted for imports on a net basis. Domestic crudes from the Lago Agrio area are heavier and produce a higher yield of residual fuel oil under Ecuadorian refining conditions than is required by domestic demand. Therefore, part of local refinery inputs, in the form of light or reconstituted crudes, will still have to be brought in from abroad, probably on an exchange basis with domestic crudes.

Under the concession agreements and the Law of Hydrocarbons presently in force, producers must deliver sufficient oil to cover local market requirements. The obligation to supply oil at cost to domestic refineries is shared by all producers in relation to their relative participation in total domestic production of crude petroleum. At present, this signifies that Texaco-Gulf must cover almost 100 percent of domestic refinery inputs and, therefore, approximately 13 percent of the initial planned availability of oil from the Texaco-Gulf area will have to be directed to the local market.

The National Planning Board now anticipates domestic requirement to outstrip refining capacity by the middle of the present decade. Ecuador plans to expand refinery capacity by constructing a totally new refinery probably at the deep water port of Esmeraldas. If the final feasibility studies, process engineering, procurement of materials and financing go ahead on schedule, the refinery could go on stream in 1977, with an estimated throughput capacity of 40,000 - 50,000 barrels daily. It will be owned and operated by the Ecuadorian State Oil Company (CEPE). While other sites such as Quito and Guayaquil have been mentioned and have their merits, the location of the refinery at Esmeraldas has certain advantages from the point of view of accessibility to crude supply and export facilities. For domestic consumption, products would presumably have to be shipped by coastal tanker to Guayaquil and transported by pipeline as far as Quito. A six-inch poliduct from Duran to Quito has already been completed. Initially there would be a substantial exportable surplus, the extent of which would depend on the level of operation of the existing refineries. The arrangements for the supply of crude or the disposal of the products have not yet been worked out. It is not known whether the industry will supply crude on a throughput fee basis or on buy back arrangements for certain products.

Tanker Fleet. Ecuador does not possess a tanker fleet. However, the transportation of petroleum by national flag tankers is one of the stated aims of petroleum policy and forms and integral part of current legislation. Recently the government has opened international bids to form a mixed company (TRANSNAVE) which will transport 50 percent of total shipments of crude petroleum. The winning bid was presentd by a Japanese company (Kawasaki Kisen Kaisha) which will be associated with the Ecuadorian Navy and will provide tankers (own or chartered) to be operated under Ecuadorian flag; it will also provide equipment, technical assistance and training to TRANSNAVE personnel. On the basis of the volume of planned net exports, total shipping tonnage to move Ecuadorian crude into the world markets should reach approximately 0.6 million deadweight tons. This would imply twelve to thirteen tankers of 40,000 - 60,000 hundredweight. Ecuador would require, therefore, six to seven tankers to comply with the policy objectives set down in the petroleum legislation. The size of tankers is closely linked to the destinations of the crude; tankers of over 40,000 hundredweight cannot use the Panama Canal. Probably half of the tankers will be required for this route. Tankers for the Pacific routes could be in the 60,000 hundredweight class. A typical oil company fleet includes owned tonnage (40 percent) and tankers which are chartered in for periods extending from one year to the useful life of the ship. It is usual also for a company to charter part of its requirements on the "spot" or single voyage market. With the exception of Pemex (Mexico) and Petrobras (Brazil) no other state entity in developing countries has yet acquired sufficient tankers to transport 50 percent of its requirements or exports. The European state oil entities, for the most part, have followed transport policies very similar to those of the private oil companies.

External Markets Factors

As a preliminary judgment, it is estimated that initially at least 60 percent of Ecuadorian exports of crude petroleum will go to refinery markets east of the Panama canal, the balance being distributed long the Pacific coast of North and South America. Preliminary industry plans show that the oil moving through the Panama canal will be refined principally in Trinidad, Puerto Rico and at Colon in Panama. In the longer run there are good reasons for estimating that an increasing flow of Ecuadorian oil will move into the Caribbena and East Coast markets in the light of crude quality, transport factors, growth in market demand and the integrated structure of some of the companies operating in the country.

Ecuadorian crudes vary in specific weight, but on the basis of discoveries to date, they tend to be concentrated in the medium to heavy gravity ranges. Texaco-Gulf will export only one composit crude stream with an API gravity of 28° and a sulfur content of 0.9 percent. Assay tests show that upon straight run distillation, the yield of fuel oil was 48.5 percent with 1.48 per sulfur by weight. Ecuadorian crudes cannot be considered low sulfur crudes in the same sense as Indonesian (0.1 percent), Libyan (0.25 percent) or Nigerian (0.15 percent) oils but their sulfur content is lower than that of most Venezuelan or Middle East crudes. The single

crude stream gives Ecuador less flexibility than, say, Venezuela with respect to market options. it cannot blend its products to meet specific refinery situations. Nevertheless, Ecuadorian crude is suitable for the Caribbean and U.S. East Coast both in terms of its product yields and because of its relatively low sulfur content. Straight run residual fuel oil produced from Ecuadorian crude cannot be utilized directly in many areas of the U.S. East and West Coasts on account of the air pollution laws and regulations. In these areas, the allowable level of sulfur oxide emissions into the atmosphere impose limits on the sulfur content of fuels which may range from 0.3 to 1.0 percent. there are two alternatives for reducing the sulfur content of Ecuadorian residual fuel oil; it may be blended with natural low sulfur fuels or desulfurized. For blending purposes, Lago Agrio has advantages over Venezuelan residual fuel oil. One barrel of Nigerian fuel oil will produce 2.38 barrels of one percent sulfur fuel when blended with Ecuadorian material as compared with 1.59 barrels when Venezuelan fuel oil is used. Taking into account fuel oil yields as well as sulfur content, Ecuadorian crude can be expected to have a small premium when blended in offshore refineries with lower sulfur fuel oils vis-a-vis Venezuelan or Middle East crudes. The cost of desulfurization of Ecuadorian fuel oil is estimated to be in the range of 25-35 U.S. cents per barrel. These cost ranges are applicable for the reduction of the sulfur level to 0.5 percent. Desulfurization costs may be expected to go down slightly as there have been significant improvements in the operations of desulfurizing units, particularly with respect to the catalysts employed. In addition, the vanadium content of Ecuadorian crudes seems to be lower than that for Venezuelan crudes (vanadium has an adverse effect on costs by reducing the efficiency of the catalyst).

Most recent petroleum demand projections for the U.S. arrive at figures of around 22 million barrels daily in 1980 and 26 million barrels daily in 1985. There are some differences as to how this expected consumption will be met (see Appendix Table 8.34). Nevertheless, when Alaskan oil comes into production, total offshore imports into the West Coast may amount to only half the present levels. Moreover the makret structure in the U.S. West Coast area (gasoline 40 percent, fuel oil 14 percent) does not encourage the utilization of medium or heavy crudes such as are found in Ecuador if alternatives are available. This situation will in the longer run affect adversely the prospects for Ecuadorian crude on the U.S. Pacific Coast. On the other hand, offshore imports into the rest of the United States are estimated to triple by 1980. Fuel oil imports along the Atlantic seaboard alone will reach 2.8 to 3.2 million barrels daily in 1980 with low sulfur fuel oil representing about 75 percent of this total. Concurrently, supplies of crude out of the Caribbean may not increase. Venezuelan heavy and medium crudes are the principal source of residual fuel oil for the electric utility and industrial markets. The anticipated demand for fuel oil in this area is of particular significance to Ecuador in view of the high fuel oil yield of its crude petroleum. The strong upward demand trends predicted for fuel oil (after years of stable consumption) is attributable to electicity consumption, the shortage of gas and the air pollution regulations which have severely cut into coal consumption.

Most of the increments in U.S. East Coast import demand are estimated to be made up by Eastern Hemisphere oil, mostly as crude but also as residual fuel oil after processing in offhsore refineries. The capacity of these refineries, predominantly in the Caribbean area, is being expanded. Longer run plans include the expansion of the Virgin Island refinery to a throughput capacity of 800,000 barrels daily. The extent to which Ecuadorian crudes will participate in this growing market will depend on their availability and average cost including taxes.

The market prospects in the Andean Group are limited by the size of the market and the domestic availability of petroleum and natural gas. Both Chile and Peru are net importers of crude and refined products and both in the next few years can provide a market for Ecuadorian crude. Recently Peru has discovered oil in the same sedimentary basin area that covers most of the Ecuadorian Oriente. As a result of the recently concluded "production-sharing" contracts with numerous oil forms, Peru may become a net exporter of petroleum by the end of the decade. In Chile, the outlook is different. The output of petroleum has stabilized while domestic demand is growing at around 8 percent annually. At this rate, Chilean imports could triple within a ten year period from the present level of 50,000 barrels daily. In Colombia, petroleum production has been declining for some years. If it continues to do so, Colombia may become a market for oil from northern Ecuador.

Ecuadorian crude is ideally suited to the Japanese market. However transport costs to Yokohama are lower from both the Persian Gulf and Indonesia; in the first case, when compared to Ecuador, the freight advantage is 22 U.S. cents per barrel and in the second 49 U.S. cents per barrel. To compete in this market, Ecuador would have to measure the cost of foregoing sales elsewhere. For example, at term freight rates, Ecuadorian crude should be priced at $1.63 to 1.69 f.o.b. to meet today's prices for Iranian light and heavy crudes in the Japanese market. 70/

Some of the oil companies operating in Ecuador have extensive investments in the growing Caribbean and offshore U.S. refinery market. These refineries all optimize fuel oil yields. Texaco and Gulf taken together account for an export refinery capacity in the Caribbean of almost half a million barrels daily. Texaco's refinery in Trinidad with a capacity of 355,000 barrels daily is well located to utilize Lago Agrio crude as part of its refinery outside San Juan, Puerto Rico, in conformity with the air pollution abatement regulations. Other potential producers such as Amerada Hess and Standard Oil (Cadlifornia) have also major fuel oil refineries in the Caribbean (see Appendix Table 8.34).

70/ Iranian Light (34° API), $1.917 per barrel f.o.b. and Iranian Heavy (31° API) $1.855 per barrel f.o.b.

During the period from 1957 to the end of 1969, the price of oil in the international market declined although the rate of decrease had started to slow down by the late 1960s. Events in 1970 and 1971 reversed this downward trend and resulted in increases of both f.o.b. realized prices and posted prices 71/ at the principal export centers. The major contributing factors were the sharper than expected increase in world demand, the constraints place on the availability of oil by the closure of the trans-Arabian pipeline and the cutback in Libyan production, and the shortage of tankers which resulted from the increased reliance on long-haul crudes from the Persian Gulf. In September 1970, Libya negotiated an increase in prices and tax rates. This was followed by a general increase in tax rates in the Middle East and Venezuela and an upward adjustment in the f.o.b. posted price of some crudes. Further negotiations between the major oil exporting countries and the international oil companies took place in 1971 and 1972. A number of agreements were signed incorporating substantial increases in f.o.b. posted or tax reference prices which ranged from 32 percent to 66 percent.

The above increases in posted prices have shifted upward the expectations of Ecuador with respect to government revenues and foreign exchange earnings from oil operations. The price level at which oil from Ecuador enters the world market should be similar to that of competing crudes after taking into account geographical location, markets, crude quality and operating costs.

Petroleum Taxes and Costs

The system of petroleum taxation in Ecuador comprises four essential elements: royalty, export tax, employee participation or profit sharing contribution and income taxes. The first two taxes are calculated as a fixed percentage of a given price and are payable irrespective of the level of profits while the latter two depend on net income. The royalty rates are ifferent according to whether the contracts or the Hydrocarbons Law is applied. In the Texaco-Gulf agreements as revised, the royalty had been set at 11.5 percent of the value of the crude petroleum produced. The Law, however, indicates a sliding scale method with a minimum royalty of 12.5 percent for less than 30,000 barrels per day to a minimum of 16 percent for a rate of production of over 60,000 barrels daily. There are other royalty rates in existence. The "model" concessions pay a flat 10 percent while the contracts of association include a 12.5 percent rate. Moreover, there is one remaining block, belonging to Minas y Petroleos S.A., still assessed at an 8 percent royalty rate. In a recent decree (430 of June 7, 1972) the Government compelled all oil companies to reconvert to the Hydrocarbons Law within a year of the promulgation of the Law (October 1, 1971) under a type of contract that will be similar for everyone. The royalty is valued at the export terminal and, as stipulated in the 1971 Law, reference prices will be used as a basis for computing the royalty, export taxes and income taxes.

71/ In most exporting countries, posted or tax reference prices form the basis for calculating royalties and net income for tax purposes. These prices, which are not identical with realized or market prices, give producing countries a degree of certainty in arriving at unit fiscal revenues and at the same time afford the industry a yardstick for calculating future tax obligations.

Together with the devaluation of the sucre in 1970, an ad valorem export tax was levied on all major exports at various rates ranging from 5 to 15 percent. The Ecuadorian government has officially advised the industry that this general export tax will also be applied to oil exports at the full rate.

In Ecuador all industrial enterprises must distribute among their workers an amount equivalent to 15 percent of net profits before taxes. The contribution is deductible for income tax purposes. The oil industry will be subject to this 15 percent employee participation contribution. For purposes of its fiscal calculation, the mission assumes that one-tenth of the profit sharing will be distributed as bonus payments to employees, the balance going to the public sector. Income tax represents a flat rate of 44.4 percent of net income before taxes (calculated in terms of tax reference prices rather than realized profits before taxes). In addition there are a number of minor taxes and fees which the mission estimates reach $0.09 per barrel including pipeline fee ($0.03), lease rentals ($0.01) and grant to the Educational Credit Institute ($0.01).

The feature of an export tax and an employee participation contribution of 15 percent set the Ecuadorian system apart from the existing systems of taxation in mist petroleum producing countries where there are only two major taxes: royalty and income tax. In the Ecuadorian system the impact of the export tax can be compared to that of an additional royalty. If the profit sharing is not distributed to the employees, it would fall within the realm of government revenue. If all the taxes in the Ecuadorian system are computed on the of a tax reference price similar to the one prevailing in other petroleum producing countries, the resulting costs of production would price Ecuadorian petroleum out of competition in world markets.

Even if reference prices are adjusted to give a reasonable level of total unit revenues for the Government, the solution cannot be considered as anything but a temporary one. Technical operating costs' conditions in one area may be much higher than those in another producing area. The relative weight assigned to the royalty makes the tax structure relatively inflexible to changes in these costs. If costs increase, the tax system may become inoperative. One of the criteria in petroleum taxation is that there should be sufficient flexibility (through reliance on income taxes) for government's share to vary with the cost conditions in the area under exploitation. In Ecuador, the royalty plus export tax represents almost 50 percent of per barrel government revenues while in the Middle East and Venezuela the relative weight is 20 and 32 percent, respectively. Royalty rates in these areas are 12.5 percent (Middle East) and 16.6 percent (Venezuela).

COMPARATIVE TAX SYSTEMS
(percentages based on posted tax reference prices)

	Ecuador	Middle East	Venezuela
Royalty	16.0	12.5	16.6
Export Tax	15.0	-	-
Total Royalty Equivalent	31.0	12.5	16.6
Employee Participation	15.0	-	-
Income Tax	44.4	55.0	60.0
Total Effective Income Tax	52.5	55.0	58.0

Comparing the Ecuadorian tax system with the prevailing Venezuela or Middle East tax structures--using similar sets of assumptions as to costs and tax reference prices--the level of most taxes resulting from the application of the Ecuadorian system is higher than the other two (see Appendix Table 8.43 for details). If we take a tax reference price of $2.70 or $2.80, which would seem reasonable under Ecuadorian conditions, total tax payments and contributions to the Government would reach $1.54-$1.61 per barrel, while in the Middle East and Venezuela they would be $1.39 and $1.50 respectively. If instead we take into account actual operating costs and transport costs to principal markets (landed tax paid cost), we can get a more accurate picture of Ecuador's competitive position vis-à-vis other producing countries.

A. GOVERNMENT REVENUE /a
(US$ per barrel)

Tax System/Reference Price	2.40	2.50	2.60	2.70	2.80
Ecuadorian System					
16% Royalty	1.37	1.43	1.49	1.54	1.61
11.5% Royalty	1.32	1.37	1.43	1.48	1.54
Venezuelan System	1.24	1.31	1.37	1.44	1.50
Nuddle East System	1.15	1.21	1.27	1.34	1.39

B. F.O.B. TAX PAID COSTS
(US$ per barrel)

Ecuadorian System					
16% Royalty	1.92	1.98	2.04	2.09	2.16
11.5% Royalty	1.87	1.92	1.98	2.03	2.09
Venezuelan System	1.79	1.86	1.92	1.99	2.05
Middle East System	1.70	1.76	1.82	1.89	1.94

/a Taxes were computed in relation to the various alternative tax reference prices. Profit sharing was based on the net realized income and is, therefore, responsive to changes in market prices. Costs were assumed to average 55 U.S. cents per barrel including pipeline costs but excluding fee payable to the Government.

Freight rates are an important element to assess the competitive position of a specific crude; for example, they represent almost half of the total landed cost of Persian Gulf crude at U.S. East or West Coast ports. From the peak attained in 1970, tanker freight rates have declined and are expected to continue downwards for the next two or three years, reducing Ecuador's geographical advantage over Middle East crudes in the U.S. East Coast market, but improving its competitive position vis-à-vis Venezuela.

Tax paid costs can be placed on a comparable basis with calculated Lago Agrio costs f.o.b. Esmeeraldas by adding or subtracting the relevant freight differentials. A number of these crudes are considered to be comparable to the segregation of Ecuadorian crudes which will be exported. Minas crude, however, in view of a sulfur content of 0.1 percent commands a premium in markets characterized by clean air regulations.

The f.o.b. export termianl tax paid cost of some typical crudes, without taking into account quality differentials and, utilizing published average operating costs and posted or tax reference prices, is: Venezuelan 26° API, $2.122 per barrel; Arab medium 31° API, $1.493 per barrel and Indonesian 35° API, $1.832 per barrel. Applying worldscale 80 as the freight cost, we obtain a series of values for tax paid costs which go from $1.86 per barrel to $2.02 per barrel (Table 8.40, Statistical Appendix): these values indicate that the tax paid cost of Lago Agrio crude should not move higher than the values suggested above if it is to remain competitive in its potential markets.

With a $2.70 to 2.80 tax reference price, which the mission would consider appropriate for Ecuadorian conditions, the resulting tax paid cost of Ecuadorian crude would be $2.03 to 2.09 per barrel. Such a tax structure would place the cost of Ecuadorian crude above that of alternative sources of supply in most areas and would probably limit exports to markets geographically close to the country. Any attempt to market the crude in a wider area would be with the knowledge of lower per barrel returns (as taxes do not vary with market prices) to the company and at the present stage of oil field development could retard the rate of future investment in exploration and exploitation activities.

In summary the use of an appropriate tax reference price ($2.70 to 2.80/bl) and the present structure of the tax system would place Ecuadorian crude at a disadvantage both when we compare tax arrangements in force in different countries with Ecuadorian conditions and by a comparison of landed tax paid costs. If we use instead a $2.50 to $2.60 tax reference price, the Ecuadorian tax system gives relatively similar government revenues as a $2.70 to $2.80 price under alternative tax systems. However, the disadvantage of using the tax reference price as an adjusting mechanism is that it lends itself to unfavorable and out-of-context comparisons with other oil producing countries and might lead to frequent renegotiations between the government and the oil companies, generating uncertainties which might discourage long-term investment.

It must be stressed that in the above estimates no attempt has been made to adjust the different crudes for quality differentials. The values given here are only indicative and should serve merely as a guide. As soon as some actual production and marketing experience is accumulated, a detailed study of costs, taxes and the competitive position of Ecuador in the leading markets for its oil must be made and, if necessary, corrective action must be taken to insure both that the interest of the country are well protected and at the same time that there is a minimum level of incentives to encourage the long-term development of petroleum resources. Moreover, with a different freight level as the base for these calculations, different results will be obtained.

Petroleum Development Policies. Total foreign exchange gains from oil arise from payments to the government, wages and salaries and the purchase of goods and services in the country not covered by local currency expenditures. Net foreign exchange earnings would increase from US$72 million in 1972 to US$290 million in 1977. By 1976, petroleum activities would furnish more foreign exchange than all other commodities together.

Petroleum activities will generate a significant addition to government revenue. Apart from payments to the government, however, the capital intensive nature of the industry severely limits its contribution to the local productive factors. The direct contribution of the petroleum sector to development is small; its main income-creating effects are indirect through government revenues. Total value added is estimated at US$48 million in 1972, and US$164 million in 1973. Total contribution of petroleum to GDP is expected to increase from 2.6 percent in 1972 to 9 percent by 1977.

IMPACT OF PETROLEUM DEVELOPMENT, 1972-77
(millions of U.S. dollars)

	1972	1973	1974	1975	1976	1977
Foreign Exchange (current prices)						
Investment	108	48	68	52	129	129
less imports	76	34	48	36	90	90
Total	32	14	20	16	39	39
Exports	53	192	193	240	328	322
less remittances	13	45	44	53	71	71
Total	40	147	149	187	257	251
Total foreign exchange earnings	72	161	169	203	296	290
Value Added (constant 1971 prices)						
GDP	1823	2099	2239	2434	2693	2880
Payments to government /a	33	116	115	140	190	187
Wages and salaries	2	5	6	8	10	12
Investment income and depreciation	13	43	42	49	65	63
Total	48	164	163	197	265	262
Total share of petroleum sector in GDP	2.6	7.8	7.3	8.1	9.8	9.1

/a Including 90 percent of profit sharing.

Stated in the most general terms, announced oil policy in Ecuador aims at the rational development of the hydrocarbons resource base and the optimization of returns ot the nation consistent with the maintenance of a sound reserves' position, Implicit in these policy aims, though not clearly defined, are investment, tax and conservation policies.

The strategy employed by the Ecuadorian Government to carry out the basic objective of petroleum policy is based on the petroleum contract and concession agreements and on the Hydrocarbons Law and at a later stage it will involve the state petroleum entity (CEPE). 72/ In addition to the tax matters already mentioned, there are several issues still outstanding which are potential areas of conflict and will require the government's attention in the near future.

The Hydrocarbons Law promulgated in September 1971 reduced exploration and exploitation acreage, reduced the exploitation period after which the concessions revert to the state and increased minimum work obligations in comparison with existing concessions and contracts. With regard to the reduction of acreage, the Law stipulates that the maximum exploitation area that any contractor may hold is 160,000 hectares. The government recently issued a decree (No. 430 of June 6, 1972) complementing the Hydrocarbons Law and regulating the reversion to the State of the excess area. This decree softens up somewhat the dispositions of the Law, establishing that during the period of exploration the companies can hold the totality of area specified in the existing contracts. Once the exploration phase is completed, they can retain up to 40 percent of contracted areas (if higher than the maximum allowed by the Law) for two more years, at the end of which they will be permitted to hold a maximum equal to the average between the amixum permissible by the Law and the 40 percent retained at that moment. Those companies already in the phase of exploitation at the time of the decree will have to return to the state before December 31, 1972, 60 percent of the excess area over the maximum allowed by the Law. These reductions, alghouth not going as far as the Hydrocarbons Law, will still make over 4 million hectares available to the government (CEPE), leaving less than 2 million available for the companies.

Whether or not this size is sufficient to support a successful venture in ecuador will very much depend on the area in question and on the barrels of oil in situ per acre-foot, porosity, recovery factors, location and accessibility to markets. The reduction of the exploitation period from forty to twenty years, in both cases renewable for an additional ten years

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72/ The Law creating the Ecuadorian State Petroleum Corporation (CEPE) was approved by the present government on June 20, 1972. CEPTE will be in charge of managing the country's oil policies and can participate directly or through service or association contracts in the exploration, exploitation, transport, refining, marketing and industrialization of petroleum and derivates.

coincides with most modern petroleum legislation. The reduction in the life of the contract is also perfectly compatible with the smaller acreage allowed the contractor. Work obligations have been increased both as to minimum investment and wells to be completed. The minimum exploration investment of US$8.00 per hectare annually is equivalent to $1.6 million per hectare. This amount would cover the employment of a seismic party for ten and half months. Instead of one exploratory well per 400,000 hectare block, one well each 100,000 hectares of exploration acreage is now required. In comparison with recent contracts in other parts of the world, the obligation does not seem excessive. The minimum investment requirement may be used for drilling purposes. The 1971 Law also contemplates minimum signature bonuses of $2.00 per hectare (US$400,000 per block) in the exploration stage and $6.00 per hectare (US$450,000 per 80,000 hectare block) once conversion to exploitation conditions has taken place. While the concessions and contracts are explicit, in the area of pipelines the Law is quite vague. The Law merely reaffirms the right of the state to construct and operate pipelines but it does not cover the reversion of privately held pipelines. On the other hand, the contracts state in unequivocable terms that once depreciated, pipelines constructed by the concession holders will become the property of the State. The main provision of the Law and existing contracts are summarized and compared in Appendix Table 8.46.

Under the 1971 Law, the traditional concession contract disappears. Foreign investors are permitted to operate as contractors to CEPE, to take up contracts of "association" or to form mixed companies. None of these contractual forms need act as impediment to contractors as long as the basic provisions of each contractual form are set down clearly.

The outstanding issues, covering fiscal and other matters already discussed above are very complex and can only be approached through the negotiation of a global package of taxes and interrelated regulations aiming at a maximum level of income from the point of view of the country without eliminating incentives for the further development of the hydrocarbons resources. Since oil is a worldwide ommodity, the level of unit income can be set only by reference to Ecuador's position in the world oil economy vis-à-vis other producing countries. Negotiations with the oil industry, involving some of the technically most sophisticated companies in the business, are likely to be long and recurrent and would require from the Government a great deal of technical preparations and understanding of the global oil situation. One of the methods employed by other countries or groups of countries (OPEC) when preparing for negotiations of legal or policy issues is to set up a Policy Level Task Force. This policy group would be supported by a working level secretariat and advisers charged with the preparation of position papers and background documents which would serve as the technical basis for polciy decisions.

Longer Run Prospects. The prospects for Ecuadorian oil in the 1980s will be influenced by the success of past exploration, the continued growth in demand for offshore imports into the U.S. market and by the availability and cost of oil and other energy forms from alternative sources.

There are two considerations of potential interest to the future growth of the Ecuadorian oil industry which should be mentioned. There is evidence of the existence in Oriente of very extensive deposits of extra heavy oil, that is of crude with an API gravity of 10° or less. If such reserves were proved, their development economically would depend on the state of technology. These extra heavy crudes are thick and extremely viscous and may have to be produced by combustion in situ or by steam-soak methods. Such techniques have been applied in other oil producing zones. Possibly new or improved refinery processes would have to be introduced to make the material less viscous before moving it to coastal points. An analogous case in point is that of the Orinoco heavy oil belt where there are said to be 700 billion barrels of oil in place of which 10 percent may be recoverable. Research is going ahead in Venezuela on heavy crudes but it is doubful whether commercial production from the oil belt would be feasible on a large scale before 1980. In Ecuador the problems of exploiting extra heavy crudes are much greater due to the long distances to markets. Offshore Ecuador, in the Gulf of Guayaquil, natural gas has been discovered. It would appear that present proved reserves are too small - 1×10^{12} cubic feet - to undertake any major project. Contingent on the discovery of say 5×10^{12} cubic feet a major Liquified Natural Gas (LNG) project for exports to the U.S. would exploring the Gulf of Guayaquil and U.S. natural gas and pipeline companies. In view of the time lags involved, even if more gas were found within the next two or three years, it is doubtful whether an LNG plant could go on stream before 1980.

CURRENT ECONOMIC POSITION AND
LONG-TERM PROSPECTS OF ECUADOR

TABLE OF CONTENTS

VOLUME III

LONG-TERM MACRO-ECONOMIC PROJECTION MODEL

The economy has been divided into two sectors, petroleum sector and nonpetroleum ("other") sector. It has not been possible to divide the "other" sector further into subsectors for example, sgriculture, manufacturing, etc., since data on prices and sectoral investments are not available. The model is essentially a trade gap model, but some of the functions were later inverted so as to carry out a senstivity analysis with respect to public sector current and capital expenditures.

The Petroleum Sector

The development of an increasing hydrocarbons resource base and the construction of the first major pipeline across the Ecuadorian Andes points to the potential importance of oil for the country in terms of fiscal revenue, foreign exchange earnings and national income. Thus, in this model petroleum has been treated as an independent subsector of the economy, to illustrate explicitly the interrelationships among the most important variables within the subsector as well as in relation to the rest of the economy.

Output and Prices. It has been assumed that the petroleum production rate would be of the order of 250,000 barrels daily as from the beginning of September 1972. 73/ The assumptions on which future estimates of production are based include short run industry programs, government policies encouraging the development of new petroleum fields, and direct foreign investment leading to the completion of a second pipeline by 1977. Based on these assumptions production is estimated to reach 400,000 barrels daily in 1976 and 600,000 barrels per day by 1980. Thus, in our model petroleum output (Q) is given exogenously.

$$Q = \bar{Q} \qquad (1)$$

Ecuador has been a net importer of crude petroleum and refined products since 1958. In 1971, domestic production contributed only 15 percent of local requirements. The requirements for domestic consumption have been estimated by the National Planning board 74/ and these are used in the present exercise. Thus, given domestic requirements (Q_1), the volume available for exports (Q_2) is a residual.

73/ Petroleum production and exports started on August 16, 1972, but the 250,000 barrels per day level is expected to be reached only towards the end of 1972.

74/ The elasticity of domestic requirements of petroleum to overall output is well above unity.

$$Q_{1_t} = Q_{1_0} * (1 + g), \text{ where } g \text{ is the rate of growth of domestic consumption} \quad (2)$$

$$Q_2 = Q - Q_1 \quad (3)$$

Three different prices, the export or market price (XP), the tax reference price (RP), and the domestic price (DP) are used for the petroleum sector. In most exporting countries, tax reference prices form the basis for calculating royalties and net income for tax purposes. These prices which are not identical with realized or market prices, give producing countries a degree of certainty in determining fiscal revenues and at the same time provide the industry with a yardstick for calculating future tax obligations. The export price was assumed to be US$2.38 per barrel in 1972, and is expected to increase by 6 cents per barrel per year stabilizing at $2.56 in 2975. The corresponding reference price is assumed to be US$2.50 per barrel in 1972; it increases by 10 cents per barrel per year, stabilizing at $2.80 in 1975. Domestic price is based on operating costs, miscellaneous taxes and royalty. The hydrocarbon's law provides for a 20 prercent profit taxes and royalty. The hydrocarbon's law provides for a 20 percent profit margin above production cost in calculating the domestic price. Therefore,

$$XP = \overline{XP} \quad (4)$$

$$RP = \overline{RP} \quad (5)$$

$$DP = (ROY + OC + MISC\ T) + 0.20\ (ROY + OC + MISC\ T) \quad (6)$$

Thus, the value of output for exports (X_{PET}), tax purpose (O_{PET}) and domestic sales (DS) is

$$X_{PET} = Q_2 * XP \quad (7)$$

$$O_{PET} = Q_2 * RP \quad (8)$$

$$DS = Q_1 * DP \quad (9)$$

Petroleum Investments. In line with the expected petroleum production, the total investment (exclusive of new refineries) is estimated to be US$534 million in the period 1972-77. Out of this, imports (M_{PET}) will represent 70 percent and the other 30 percent will be local currency expenditures (LCE). The investment figure includes an amount of US$225 million to cover the completion of the Texaco-Gulf pipeline in 1972 and its increase in capacity in 1974 as well as the construction of a second pipeline and the related investment in loading and storage facilities at the maritime terminal. The balance of some US$310 million would be directed toward exploration expenditures, the maintenance of production in existing fields and the development of new areas. Assuming the discovery of new fields in 1972-73, investment will peak in 1976 as a result of the development of those fields and the construction of the second pipeline.

$$I_{PET} = I_{PET} \quad (10)$$

$$M_{PET} = 0.70 * I_{PET} \quad (11)$$

$$LCE = 0.30 * I_{PET} \quad (12)$$

Taxes and Costs on Exports: The expenditure (EXP) incurred by the oil companies consists of royalty (ROY), depreciation (DEP), operating cost (OPEC), transportation (TC), export tax (XTAX), and miscellaneous taxes (MISC T). Based on the experience of oil companies elsewhere in the world, costs (depreciation, operating cost, and transportation) are assumed to average 60 cents per barrel. Miscellaneous taxes /transportation fee (TF), rentals (RENTAL), and other minor taxes (OT)/ amount to 9 cents per barrel. Royalty and export taxes are assumed to be 16 percent and 15 percent of the tax value of exportable output. Government revenue (GREV) is composed of royalty, export tax, miscellaneous taxes, profit sharing (π SH) or employee participation and income taxes (ITAX). With the exception of profit sharing 75/ which is based on the net realized income and is responsive to changes in market prices, other taxes are computed on the basis of tax reference price. Income tax is caluclated on the basis of net taxable income.

$$\begin{aligned} OC &= DEP + TC + OPC \\ &= 15¢/b + 30\ ¢/b + 15¢/b \\ &= 60¢/b \end{aligned} \quad (13)$$

$$\begin{aligned} MISC\ T &= TF + RENTAL + OT \\ &= 3¢/b + 2¢/b + 4¢/b \end{aligned} \quad (14)$$

$$XTAX = 0.15 * O_{PET} \quad (15)$$

$$ROY = 0.16 * O_{PET} \quad (16)$$

$$EXP = OC + ROY + MISC\ T + XTAX \quad (17)$$

Thus, the net real income (NRY) and net calculated income (NCY) are

$$NRY = X_{PET} - EXP \quad (18)$$

$$NCY = O_{PET} - EXP \quad (19)$$

Profit sharing is based on net real income.

$$\pi\ SH = 0.15 * NRY \quad (20)$$

Thus, the net real income of the oil companies before income tax will be NRY_1 (= NRY - π SH) and income tax will be computed on the basis of NCY_1 (= NCY - π SH).

$$ITAX = 0.444 * NCY_1 \quad (21)$$

75/ Under Ecuadorian law all industrial enterprises must distribute among their workers an amount equivalent to 15 percent of net profits before taxes. This contribution is deductible for income tax purposes.

Revenues accruing to the government and (investment) income of the oil companies is given by equations number 22 and 23. Depreciation will be a part of the outflow since it is only an accounting item.

$$GREV_{PET} = ROY + MISC\ T + XTAX + 0.9 * \pi\ SH \text{ 76/} + ITAX \quad (22)$$

$$II_{PET} = NRY_1 - ITAX + DEP \quad (23)$$

Taxes and Cost on Domestic Sales. The procedure is similar to the case of exports, except that the domestic price is much lower and there are no export taxes. Royalty and other taxes are still calculated on the basis of the tax reference price.

For purposes of converting the petroleum data into constant sucres (for fiscal and national accounts), we have used the price indices for exports (XPI), imports (MPI), output (RPI - reference price) and domestic sales (DPI). The present exchange rate (ER) equilibrium is assumed to continue in the projected period. Export price, reference price, and domestic price indices have been constructed from the prices discussed earlier, and an inflation rate of 2 percent is used for imports. With the aid of these price indices, we then calculate exports, imports, investment, government revenue and investment income in constant sucres.

$$X_{PET_c} = (X_{PET}/XPI) * ER \quad (24)$$

$$M_{PET_c} = (M_{PET}/MPI) * ER \quad (25)$$

$$I_{PET^c} = (I_{PET}/MPI) * ER \quad (26)$$

$$GREV_c = (GREV/RPI) * ER \quad (27)$$

$$II_{PET_c} = (II_{PET}/XPI) * ER \quad (28)$$

The share of petroleum sector in total gross domestic product is assumed to be equal to the value of exports plus the value of domestic sales.

$$Y_{PET_c} = X_{PET_c} + (DS/DPI) * ER \quad (29)$$

To calculate the real purchasing power of petroleum exports and thus the gross domestic income (GDY) generated by the petroleum sector we define the terms-of-trade effect (Z) as follows:

76/ It is assumed that 10 percent of π SH will be distributed as bonus payments to employees, the balance 90 percent will fall within the realm of government revenue.

$$Z = (XPI/MPI - 1) * X_{PET_c} \quad (30)$$

$$GDY_{PET} = Y_{PET_C} \pm Z \quad (31)$$

Non-Petroleum Sector

Lack of historical investment data for the various productive sectors precludes a sectorial breakdown of the non-petroleum segment of the economy. Taking the nonpetroleum sector as a whole, we can establish a functional relationship between the growth rate of gross domestic product and the coresponding levels of investment in the period 1950-70. This function would permit us to estimate the approximate investment requirements associated with various alternative target growth rates of non-petroleum gross domestic product.

Assuming the growth rate of Y_{OTH} (nonpetroleum gross domestic product) as given we have

$$Y_{OTH_t} = Y_{OTH_{t-1}} * (1 + r) \quad (32)$$

where "r" is the growth rate.

In order to determine the level of investment required to achieve this target growth rate, we tried to fit a few alternative functions relating the incremental capital-output ratio (defined as, $ICOR = I_t/(Y_{t+1} - Y_t)$) to Y_{OTH}, increase in Y_{OTH}, and their reciprocals. However, none of the relationships yielded statistically significant esults. The ICOR series is typically marked by cycles; abonormally high values indicating the creation of unutilized capacity and abnormally low values indicating that capacity is being untilized faster than it is being created. In the past the ICOR has fluctuated between 1.05 in 1951 and 8.74 in 1960. Since the series for fixed investment exhibits cycles, we fitted a nonlinear function relating fixed investment to increase in income, Y_{OTH} $(=Y_{OTH_{t+1}} - Y_{OTH_t})$.

$$GFI_{OTH_t} = 4.579\ (\Delta\ Y_{OTH}) - 0.003\ (\Delta\ Y_{OTH})^2$$

$$n = 20 \qquad t_1 = 7.6 \qquad t_2 = -4.1$$

Both the "t" values are significant at over 99 percent confidence levels. 77/ However, the coefficient of $(\Delta\ Y_{OTH})^2$ turns out to be negative (-0.003) implying a declining investment over longer periods as also with higher growth rates. A simple function relating this year's investment to next year's output also gives a resonable fit

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77/ When the constant term in a regression equation is suppressed, the coefficient of correlation is no longer a relevant test of the fit, since there is no longer a limit to the lower bound.

$$GFI_{OTH_t} = 275.0 + 0.115\ (Y_{OTH_{t+1}})$$

$$\bar{R}^2 = 0.88 \qquad t = 11.3 \qquad DW = 1.64$$

The underlying economic relationship of a function of the above type is that the marginal rate will remain unchanged in the future. This does not appear to be a realistic assumption in the present case, since the petroleum earnings provide the unprecedented opportunity to have an ambitious Development Plan. A more realistic assumption will be to assume that both the average and the marginal rates will vary, but the elasticity will remain unchanged and use a function of the following type.

$$\log\ (GFI_{OTH_t}) = \text{Log}\ \alpha + \beta\ \log\ (Y_{OTH_{t+1}}) \qquad (33)$$

This function, which we have used in projecting investment requirements, gives a value of -3.8 for α and 1.18 for β . (Other statistics: $R^2 = 0.85$ $t_1 = 3.6$ and $t_2 = 10.6$). The value of β greater than unity implies the investment/income ratio to gradually increase over time.

Increase in stocks (Δ STK) is made a function of private consumption, lagged one year ($CPVT_{t-1}$).

$$\Delta\ STK = 0.025\ *\ CPVT_{t-1} \qquad (34)$$

$$t = 12.5$$

Thus, gross domestic investment (GDI) in the "other" sector is

$$GDI_{OTH} = GFI_{OTH} + \Delta\ STK \qquad (35)$$

Exports, Imports and Terms of Trade

On the basis of individual projections for the major commodities and target growth rates for the nontraditional exports, we arrive at the value of total merchandise exports (XG_{OTH}) in current dollars.

$$XG_{OTH} = \overline{XG}_{OTH} \qquad (36)$$

Since in Ecuador there are no foreign trade price indices we have constructed an export price index (XPI_{OTH}) with the information on projected export prices and base year volumes.

$$XPI_{OTH} = \overline{XPI}_{OTH} \qquad (37)$$

Exports of nonfactor services (XNFS) have been projected with an exogenously given growth rate (n)

$$XNFS_t = XNFS_{t-1} * (1 + n) \quad (38)$$

and

$$X_{OTH} = XG_{OTH} + X_{NFS} \quad (39)$$

Exports in current U.S. dolars, when deflated by the export price index will give us the value in constant dollars, and assuming the present exchange rate equilibrium will continue, we have converted the constant dollar exports into constant sucres.

$$X_{OTH_c} = (X_{OTH}/XPI_{OTH}) * ER \quad (40)$$

Where ER is the exchange rate.

U.S., Japan and Europe accounted for approximately 80 percent of Ecuador's imports in 1970. Using their individual relative shares as base year weights, we have constructed a weighted import price index from 1960 to 1970, based on the unit export price indices of these three exporters.

Merchandise imports are classified into consumer, intermediate and capital goods. Capital goods imports (MCAP) were tried as a function of fixed investment yielding the following results.

$$MCAP = -1547.3 + 1.205\ (GFI_{OTH})$$

$$\bar{R}^2 = 0.83 \qquad t = 7.6 \qquad d.w. = 1.4$$

Though the fit is reasonable, this function in the long run will yield a very high elasticity (imports of capital goods will exceed fixed investment by 1980). In order to test the extent of import substitution over the sample period (1956-69) we related the capital imports in year "t" ($MCAP_t = (1 - \alpha)\ MCAP_{t-1} + \beta\ (GFI_{OTH_t} - GFI_{OTH_{t-1}})$

This function yields a value of -0.082 for α and 0.498 for β. ($\bar{R}^2 = 0.91$; $t_1 = 22.5$; $t_2 = 1.5$; d.w. = 2.5). Since the value of α is negative, it would imply a negative import substitution. The function implies, however, that even if fixed investment does not grow, imports of capital goods will increase by 8.2 percent over previous year imports.

Next, we separated the fixed investment into domestic component of fixed investment (FIDC) and nonpetreoleum direct foreign investment (DFI_{OTH}) in order to test the degree of foreign investment induced demand for capital imports. Using multiple regression, we fitted the following capital import function.

$$MCAP = 0.295\ (FI_{DC}) + 1.1\ (DFI_{OTH}) \quad (41)$$

$$t_1 = 20.5 \qquad t_2 = 22.0$$

Both the "t" values are significant at over 99 percent confidence levels. Other statistics are irrelevant, since the constant term has been suppressed. The coefficient of DFI_{OTH} is greater than unity, reflecting the foreign investment induced demand for capital imports. We have used this function in projecting imports of capital goods.

Imports of raw materials and intermediate goods (MINTER) were expressed as functions of gross domestic product at factor cost (GDP_{fc}), manufacturing output (MFR), and gross national product (GNP), with the following results:

$$M_{INTER} = -469.1 + 0.91\ (GDP_{fc})$$
$$\bar{R}^2 = 0.91 \qquad t = 10.9 \qquad d.w. = 1.5$$

$$M_{INTER} = -228.0 + 0.457\ (MFR)$$
$$\bar{R}^2 = 0.92 \qquad t = 11.6 \qquad d.w. \quad 1.1$$

$$M_{INTER} = -479.1 + 0.0855\ (GNP) \qquad (42)$$
$$\bar{R}^2 = 0.93 \qquad t = 12.7 \qquad d.w. = 1.6$$

The results are relatively similar. However, since we are not estimating independetnly future manufacturing output, we have chosen GNP as the explanatory variable for projecting intermediate goods imports (equation 42).

Imports of consumer goods (M_{CONS}) have been made a function of private consumption.

$$M_{CONS} = -1.1 + 0.032\ (C_{PVT}) \qquad (43)$$
$$\bar{R}^2 = 0.82 \qquad t = 7.3 \qquad d.w. \quad = 1.8$$

For the latter part of the projection period the parameters of the equation are modified to reflect some degree of substitution especially in manfuactured imported consumer goods.

Imports of nonfactor services (M_{NFS}) have been projected at the historical rate of growth. Thus, total imports in the "other" sector in constant sucres will be

$$M_{NFS_t} = M_{NFS_{t-1}} * (1 + 1) \text{ where 1 is the rate of growth} \qquad (44)$$

$$M_{OTH} = M_{CAP} + M_{INTER} + M_{CONS} + M_{NFS} \qquad (45)$$

The import prices in the last five years have grown on an average by 2 percent per annum. Our projected import price index (MPI) is built on the assumption that this inflation rate will prevail in the future.

$$MPI = \overline{MPI} \tag{46}$$

The terms of trade for the "other" sector ($\bar{z}'$) are calculated as

$$\bar{z}' = ((XPI_{OTH}/MPI_{OTH}) * X_{OTH_c} \tag{47}$$

The Overall Economy

Combining the two sectors ("petroleum sector" and the "other" sector) we arrive at overall values for the economy, expressed in constant sucres.

$$Y_{TOT} = Y_{PET} + Y_{OTH} \text{ /total gross domestic product/} \tag{48}$$

$$t/t = \bar{z} + \bar{z}' \text{ /terms of trade effect/} \tag{49}$$

$$GDY = Y_{TOT} + t/t \text{ /gross domestic income/} \tag{50}$$

$$I_{TOT} = I_{PET} + GDI_{OTH} \text{ /total gross domestic investment/} \tag{51}$$

$$X_{TOT_c} = X_{PET_c} + XOTH_c + t/t \text{ /exports-capacity to import/} \tag{52}$$

$$M_{TOT_c} = M_{PET_c} + M_{OTH_c} \text{ /imports of goods and NFS/} \tag{53}$$

$$RG = M_{TOT} - (X_{TOT}) \text{ / Resource gap/} \tag{54}$$

$$GDS = I_{TOT} - RG \text{ /gross domestic savings/} \tag{55}$$

$$GNP = Y_{TOT} - FIP \text{ /gross national product/} \tag{56}$$

$$GNY = GNP + t/t \text{ /gross national income/} \tag{57}$$

$$C_{TOT} = GDY - GDS \text{ /total consumption/} \tag{58}$$

$$GNS = GNY - C_{TOT} \text{ /gross national savings/} \tag{59}$$

$$FIP = II_{PET_c} + II_{OTH_c} + INT_c \text{/net factor income payments/} \tag{60}$$

FIP (factor income payment) is composed of II_{PET} (investment income in the "petroleum" sector), II_{OTH} (investment income in the "other" sector) and INT (interest on debt). Interest is determined endogenously in the debt section of the model. II_{OTH} is projected exogenously.

Balance of Payments and Debt Model

The constant sucres imports of the "other" sector have been expressed in current dollars at the prevailing exchange rate inflated by the import price index.

$$M_{OTH\$} = (M_{OTH} * MPI)/ER \quad (61)$$

$$M_{TOT\$} = M_{PET} + M_{OTH\$} \quad (62)$$

$$RG_{\$} = X_{TOT\$} - M_{TOT} \quad (63)$$

$$FIP_{\$} = II_{PET\$} + II_{OTH\$} + II_{OTH\$} + INT_{\$} \quad (64)$$

The deficit on current account would be

$$DOCA = RG + FIP - TR. \quad (65)$$

where TR stands for private net transfers.

Assuming further that direct foreign investment in the other sector is also given exogenously, we have the total foreign investment. The amount of gross public borrowings required to fill the gap would be

$$GPUB = DOCA + AMT - DFI \quad (66)$$

where AMT is the amortization of debt which, like the interest payments, is also calculated endogenously. New borrowing requirements would be the difference between gross public borrowings and the loans already in the pipeline.

$$NPUB = GPUB - PIPE \quad (67)$$

$$DS = AMT + INT \quad (68)$$

$$NETTR = GPUB - DS \quad (69)$$

$$DSR = (DS/X_{TOT}) * 100 \quad (70)$$

DS is the total public debt service, NETTR is the net transfer of external resources and DSR is the debt service ratio. The loans have been split into IBRD, USAID, USEXIM, IDBORD, IDBFSO, OTHBIL, according to the average terms of each institution. Suppliers' credits are determined as a residual. If in any year the requirements for suppliers' credits is negative, the corresponding amount is shown as reserve accumulation.

External Debt

We have used the standard World Bank debt routine to project future debt service burden. Assumptions have been made regarding the commitments by various multilateral and bilateral agencies. Suppliers' credit has been treated as a residual and we have assumed that disbursements equal commitments in each year. The disbursement patterns used for other agencies are as follows:

Percent of Commitment Disbursed in Each Year

Agency \ Year	1	2	3	4	5	6	7	8	9	10
IBRD	3	13	20	20	17	12	6	4	3	2
IDA	2	12	19	16	15	13	10	7	4	2
US EXIM	15	25	20	15	15	10	-	-	-	-
US AID	15	25	20	15	15	10	-	-	-	-
IDB ORD	10	30	20	15	10	10	-	-	-	-
IDB SPL	10	30	20	15	10	10	-	-	-	-
BIL OTH	15	25	20	15	15	10	-	-	-	-
SC I	100	-	-	-	-	-	-	-	-	-
SC II	100	-	-	-	-	-	-	-	-	-

Suppliers' Credit I (SC I) refers to the US$40 million loan from private US. banks contracted in 1972. It has been treated separately due to the difference in terms compared to the standard Suppliers' Credit (SC II).

The terms assumed for each category of loan are given in the terms matrix below.

TERMS MATRIX

Type	Maturity (No. of years)	Grace (No. of years)	Interest rate (Percent)
IBRD	23	3	7.25
IDA	48	8	0.75
US EXIM	13	1	7.50
US AID	38	8	3.00
IDB ORD	23	3	8.00
IDB SPL	28	4	3.00
BIL OTH	24	4	3.00
SC I	3	1	7.50
SC II	8	1	8.00
AVERAGE	20	3	5.83

Current revenues of the public sector (REVPUB) have been split into export taxes (XTAX), import duties (MTAX), income tax (ITAX), consumption tax (CTAX), property tax (PTAX), other taxes (OTAX) and nontax revenues (NTAX). Each component of the current revenues has been projected independently assuming tax elasticities consistent with the present government's likely fiscal policies. Petroleum revenues (PET) are determined in the petroleum section of the model.

Current expenditure (CPUB) is one of the key policy variables of the model, and has been estimated exogenously for the central government (CCG) and for the rest of the public sector (RPS). Capital expenditures of the public sector (IPUB) have been determined exogenously on the basis of the aggregation of the various sectorial fixed and financed investment projects lists. Thus,

$$IPUB = \overline{IPUB} \quad (71)$$

$$REVPUB = XTAX + MTAX + ITAX + CTAX + PTAX + OTAX + NTAX + PET \quad (72)$$

$$CPUB = \overline{CCG} + \overline{CRPS} \quad (73)$$

$CCG_t = CCG_{t-1} * (1 + n)$ where "n" is the rate of growth of central government consumption (74)

$CRPS_t = CRPS_{t-1} * (1 + m)$ where "m" is the rate of growth of the rest of the public sector consumption (75)

$$SPUB = REVPUB - CPUB \quad (76)$$

$$I\text{-}SGAP = IPUB - SPUB \quad (77)$$

Private Sector

Private sector savings (S_{PVT}), investment (I_{OVT}) and consumption (C_{PVT}) are calculated as residual items:

$$I_{PVT} = I_{TOT} - IPUB \quad (78)$$

$$S_{PVT} = GDS - SPUB \quad (79)$$

$$C_{PVT} = C_{TOT} - CPUB \quad (80)$$

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