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Report No. 10605-PE

Report No.: 10605-PE Type: (SFC)  
Title: AGRICULTURAL POLICIES FOR ECONOMIC EFFICIENCY  
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Peru

# Agricultural Policies for Economic Efficiency

September 11, 1992

Environment and Agriculture Division  
Country Department I  
Latin America and the Caribbean Region

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## CURRENCY EQUIVALENTS

Currency Unit prior to 1985	:	Sol (S/.)
1985-1990	:	Inti (I/.) = S/1,000
1991-present	:	New Sol (S/.)=I/1,000,000

### Fiscal Year

January 1 to December 31

### Exchange Rates

US\$1.00 equivalent (period average)

	Official	Parallel Market
1986	I/13.9	I/17.8
1987	I/16.8	I/40.2
1988	I/128.8	I/314.8
1989	I/2,666.2	I/4,394.9
1990	I/187,885.6	I/206,441.1

### 1991\*

Jan-Dec.	S/0.76
October	S/0.92
November	S/1.02
December	S/1.00

### 1992

January	S/0.99
February	S/0.97
March	S/0.96
April	S/1.01
May	S/1.12
June	S/1.17

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\* From August 1990, the exchange rate was unified.

## GLOSSARY OF ACRONYMS

AACH	Autoridad Autónoma de la Cuenca Hidrográfica	Autonomous Hydrographical Basin Authority
ATT		Agricultural Technology Transformation Project
BAP	Banco Agrario del Perú	Agrarian Bank of Peru
BFN	Banco de Fomento Nacional	Bank for National Development
BN	Banco de la Nación	National Bank
BNF	Banco Nacional de Fomento	National Bank for Development
CAPs	Cooperativas Agrarias de Producción	Agricultural Production Cooperatives
CCA	Comisión Consultiva Agraria	Consultative Agricultural Board
CIAT	Centro Internacional de Agricultura Tropical	International Center for Tropical Agriculture
CIID	Centro Internacional de Investigación y Desarrollo	International Development Research Center
CIP	Centro Internacional de la Papa	International Potato Center
COCOA	Comité para la Coordinación de la Agricultura	Agricultural Coordination Committee
COFIDE	Corporación Nacional de Desarrollo	National Development Corporation
CORAH	Proyecto de Reducción y Control de la Coca en el Alto Huallaga	Project for the Reduction and Control of Coca in the Upper Huallaga
CNC	Consejo Nacional de Concuerdos Agrícolas	National Council for Agricultural Agreements
DL	Decreto Legislativo	Legislative Decree
DS	Decreto Supremo	Supreme Decree
ECASA	Empresa Comercializadora de Alimentos Sociedad Anonima	Food Marketing Enterprise
ENCI	Empresa Nacional de Comercialización de Insumos	Inputs Marketing Enterprise
EPSA	Empresa Pública de Servicios Agropecuarios	Public Enterprise for Agricultural Services
FAO/CP		Food and Agriculture Organization/Cooperative Program
FONCODES	Fondo Nacional de Compensación y Desarrollo	National Social Compensation and Development Fund
FONDEAGRO	Fondo para el Desarrollo del Agro	Agricultural Development Fund
FRASA	Fondo de Reactivación Agraria y de Seguridad Alimentaria	Fund for the Reactivation of Agriculture and Food Security
FUNDEAGRO	Fundación para el Desarrollo del Agro	Foundation for Agricultural Development
GAPA	Grupo de Análisis de Política Agraria	Agricultural Policy Analysis Group
GDP		Gross Domestic Product
IDB		Inter-American Development Bank
IDEA	Instituto de Desarrollo Alternativo	Alternative Development Institute
IMF		International Monetary Fund
INADE	Instituto Nacional de Desarrollo	National Institute for Development
INEI	Instituto Nacional de Estadística e Informática	National Institute of Statistics and Information
INIA	Instituto Nacional de Investigación Agraria	National Institute of Agricultural Research
INIAA	Instituto Nacional de Investigación Agrícola y Agroindustrial	National Institute of Agricultural and Agroindustrial Research
INIPA	Instituto Nacional de Investigación y Promoción Agraria	National Institute of Agricultural Research and Promotion
INP	Instituto Nacional de Planificación	National Planning Institute
MRTA	Movimiento Revolucionario Tupac Amaru	Tupac Amaru Revolutionary Movement
NGOs		Non-Government Organizations
ONA	Organización Nacional Agraria	National Agrarian Organization
ONAA	Oficina Nacional de Apoyo Alimentario	National Office for Food Assistance
OPA	Oficina de Planificación Agraria	Agricultural Planning Office
BC	Pasta Básica de Cocaína	Basic Cocaine Paste
PBL	Pasta Básica Lavada	Washed Basic Paste
PEAH	Proyecto Especial Alto Huallaga	Upper Huallaga Special Project
PRONADRET	Programa Nacional de Drenaje y Tierras	National Program for Drainage and Soils
QR		Quantitative Restriction
SAIS	Sociedades Agrícolas de Interés	Social Agricultural Societies of Social Interest
SCIPA	Servicio Cooperativo Interamericano de Producción de Alimentos	Interamerican Cooperative Service for the Production of Food
UMOPAR	Unidad Móvil de Patrullaje Rural	Mobile Unit for Rural Patrolling
USAID		United States Agency for International Development

## **ABSTRACT**

When President Alberto Fujimori was elected in July 1990, Peru was in the throes of hyperinflation and depression, with terrorism and illegal coca production rife. Per capita incomes had fallen by 25 percent since 1987 and poverty was widespread. Recognizing that macroeconomic stability was a prerequisite for stimulating growth, the Government implemented a strong stabilization program and a structural reform program aimed at controlling inflation and improving economic efficiency. The stabilization program succeeded in eliminating hyperinflation and far-reaching reforms in trade, privatization, agriculture, the financial sector, and labor markets have improved economic efficiency and prospects for economic growth.

This report's analytic description of agricultural policies since 1969 suggests that the Fujimori Government's growth-oriented strategy focusing on stabilization and structural reform is generally well-conceived. These reforms now need to be complemented by targeted poverty alleviation programs. In addition, further reforms are needed in some key areas. This report's main objective is to support the Government's adjustment efforts by recommending additional agricultural policies to improve economic efficiency. These recommendations, which are summarized below, are expected to result in broad-based income and employment growth, which is the key to sustainable poverty alleviation.

In agricultural pricing and trade, the analysis suggests that while variable import surcharges are an improvement over price supports, the current system needs to be replaced with a more effective scheme that is better tailored to the Government's objectives. In marketing, the priorities are improving the road network and privatizing ENCI. The significant reforms in the land market need to be extended to traditional communities and restrictions on minimum land holdings eliminated. The new property register merits support and should be extended to allow registry of goods and equipment. In rural finance, although the public Agrarian Bank (BAP) was needed to be shut down, this action has left many rural inhabitants unable to make deposits or obtain loans from the formal sector. Instead of creating another first-tier public institution, private institutions should be encouraged to meet rural banking needs by (a) selling or leasing them branches of BAP, and (b) providing them with temporary transactions cost subsidies as well as technical assistance and training. At the same time, the supervision and regulation of rural financial institutions should be improved and COFIDE and BFN should be merged into a single institution limited to second-tier lending. Marginal farmers should be given assistance through targeted poverty alleviation programs rather than through credit.

In irrigation, the Government should agree to finance the rehabilitation, completion or construction of only those projects where beneficiaries demonstrate willingness and ability to repay incremental costs of the project in addition to all O & M costs. It should also assist water user groups to plan and evaluate projects and consider mechanisms to transfer ownership of irrigation infrastructure to them. Efforts should also be initiated to establish a market for water rights and privatize the large irrigation schemes. To cope with the deteriorated research and extension system, INIAA's staff and research facilities should be transferred to private foundations and to an autonomous agency, which would receive budgetary funds to carry out activities that are socially, but not privately profitable. An agricultural research council should be established within the Government to decide which activities to fund and to participate in the boards of directors of private foundations. To control coca production, which is found to have high economic costs, international interdiction efforts should be enhanced and complemented by measures to increase the profitability of alternate crops. In the medium term, this should be done by international assistance to rehabilitate or construct roads, to implement a land titling program, and to promote institutional development; in the short term, transportation or credit subsidies may need to be provided. Finally, a program to control domestic drug consumption is needed.

# PERU

## AGRICULTURAL POLICIES FOR ECONOMIC EFFICIENCY

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This report was written by Mateen Thobani (Senior Economist) based on the findings of a mission that visited Peru during November 1991. The mission was composed of Mateen Thobani (Mission Leader), David Nielson (Economist), Kenneth Duncan (Consultant) and Roberto Ahusada (Consultant). Mr. Marcelo Mendez (FAO/CP) also contributed to the report. The report was discussed with the Government in June/July 1992.

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## ***EXECUTIVE SUMMARY***

### ***Introduction***

i. When President Alberto Fujimori was elected in July 1990, Peru was in the throes of hyperinflation and depression. Following five years of unorthodox policies, per capita incomes had fallen by 13 percent; inflation during the preceding 12 months was over 3000 percent; two-thirds of Peru's public external debt of US\$22 billion was in arrears; virtually all Government institutions were bankrupt; and public investment and revenues had fallen to 3.3 percent and 6.6 percent of GDP respectively. Furthermore, terrorism and illegal coca production were rife, having taken their toll not only on lives and public and private property, but also having led to costly protection measures and severe damage to the environment.

ii. The new Government's policies were based on the recognition that macroeconomic stability was a pre-requisite for stimulating growth. The Government therefore implemented a strong stabilization program and a structural reform program aimed at controlling inflation and improving economic efficiency. It also reached a debt-workout arrangement with Peru's bilateral and multilateral creditors. The stabilization program succeeded in reducing monthly inflation to an average of 4 percent since October 1991 and in increasing GDP by 2.1 percent in 1991. Far-reaching reforms in trade, privatization, agriculture, the financial sector, and labor markets have improved the efficiency of the economy and the prospects for economic growth. However, poverty remains widespread, with per capita incomes resembling those of the early 1960s, and the private sector remains reluctant to invest in an environment characterized by high real interest rates, a strong sol, and continuing terrorist problems.

iii. This report's main objective is to recommend agricultural policies to improve economic efficiency. These efficiency-enhancing recommendations, including the removal of inefficient agricultural subsidies that tended to go mainly to the rich, are expected to result in broad-based growth in income and employment, which is the key to sustainable poverty alleviation. To address the urgent needs of the poor, these measures need to be complemented by targeted poverty alleviation measures such as social compensation schemes, public employment programs, food assistance, and primary education and health care programs. Such policies are described in a separate Bank report under preparation.<sup>a/</sup> This report outlines the structure and constraints facing Peruvian agriculture and describes agricultural policies and developments since the Agrarian Reform of 1969. It focusses in particular on the present Government's structural reforms. Acknowledging the tremendous improvements in the policy environment, the report then recommends additional policies to improve economic efficiency. The policies analyzed in the report can be grouped into six areas. Recent developments related to policies in these areas and recommendations for further reforms are given below.

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<sup>a/</sup> Peru: Poverty Issues and Social Sector Policies and Programs.

### ***Pricing, Marketing and Trade***

iv. From 1969 to 1990, Peruvian agriculture was characterized by controls on the production, marketing and pricing of all major crops. With the dual objectives of self-sufficiency and cheap urban food prices, the Government set both producer and consumer prices for major crops. Public marketing agencies were given monopolies to purchase domestic foodcrops as well as to import foodcrops and agricultural inputs. To promote industry, high import tariffs and/or quantitative restrictions were imposed on industrial goods while agricultural goods imported by public marketing agencies were given import duty exemptions. There were brief episodes of liberalization between 1978 and 1985; however, they did not go far enough and in most cases were quickly reversed. Under the Garcia administration (1985-1990), the agricultural marketing agencies became heavily overstaffed and received large subsidies. One study estimated that the subsidy to the marketing agencies from a preferential exchange rate and import duty exemptions during 1987 and 1988 were equivalent to 2.7 and 2.0 percent of GDP respectively.

v. The Fujimori Administration moved quickly to liberalize pricing, marketing and trade policies and to reduce the budgetary drain caused by marketing losses. Import duty exemptions and quantitative restrictions were virtually eliminated and import tariffs were lowered to just three rates, 5, 15 and 25 percent, with the bulk of transactions occurring at the 15 percent rate. The Government also eliminated consumer price controls and replaced the costly system of guaranteed prices to producers with a price floor mechanism for important agricultural products. This mechanism is being implemented through the use of either fixed import surcharges (for milk) or variable surcharges based on the difference between the current world price and a 60 month moving average of world prices, adjusted for transportation costs. Of the two marketing agencies, ECASA is being liquidated while ENCI has had its import monopoly removed and is being restructured with a view to making it self-financing.

vi. The variable surcharge scheme is sensitive to changes in world prices, allows prices to vary according to location to reflect the costs of transportation, generates public revenues, and reduces price variability. However, it increases the costs to consumers and generates an efficiency loss by driving a varying wedge between world prices and domestic prices. A study was commissioned by the World Bank to measure both the efficiency losses as well as the gains from reduced fluctuations of domestic prices. This study, which was conducted for sugar, wheat, corn and rice, finds that the variable surcharge scheme has the potential to increase welfare mainly by reducing the price variability for sugar. However, since the scheme as implemented was changed many times, it increased price instability and led to a US\$20 million net loss. It also generated a lot of wasteful rent-seeking activity and failed to increase farmgate prices.

vii. Given the ineffectiveness of the current scheme in raising farmgate prices or reducing price uncertainty, it is recommended that the scheme be phased-out or replaced. If it is necessary to protect small farmers against large downward fluctuations in prices and to protect consumers against large upward movements in prices, the scheme should be restricted to those

commodities which are prominent in the consumption basket of the very poor, those which are the primary sources of income generation for the very poor, and those whose world prices fluctuate widely along a long-term trend. In this case, the scheme should be converted to a true price band with both a price floor and a price ceiling and should incorporate close substitutes of the commodities. If the concern is with protecting farmers from agricultural subsidies in other countries (on milk, for example), first one needs to ask whether such subsidies are likely to stay for the long-term. If so, the best strategy would be to allow Peruvian consumers to take full advantage of these subsidies and not to impose surcharges. If the foreign subsidies are considered temporary, it would be preferable to simply place a modest fixed percentage surcharge (say 10 percent) and simultaneously to take measures to regulate oligopolistic marketing behavior in order to ensure that the increased protection is passed on to farmers. Whichever option is chosen, it is vital that the scheme be mandated by law to make it difficult to introduce changes in the scheme and discourage rent-seeking activity.

viii. If the objective is to provide relief to farmers in certain areas that are affected by a drought, floods, or intense terrorist activities, it would be preferable to provide subsidies more directly targeted to those areas rather than to distort consumer and producer incentives for the whole country. This could occur in the form of expanding FONCODES' employment-generating activities in support of small rural infrastructural activities (maintaining roads and irrigation canals) or implementing larger programs to rehabilitate rural roads and irrigation schemes. The implementation of a flat tariff surcharge or continued implementation of the current scheme only makes sense as a temporary measure until the above sorts of programs can be put in place.

ix. On the marketing front, there is a need to redefine ENCI's role in the new competitive environment. Given the private sector's greater cost-efficiency, there is little justification for the continued existence of ENCI in the public sector over the medium term. Thus Government plans to privatize ENCI should be carried out. In the short term, one option would be to continue to keep ENCI in operation. This would have the advantage of averting a possible tendency for local monopolies to develop until the transportation network is improved. Since an improved transportation network is also an effective vehicle for controlling poverty in the *Sierra* and drug production in the *Selva*, road rehabilitation deserves high priority. However, it is not clear that local monopolies would develop in any case. Even if they were to occur, there may be other ways to control them -- through regulation, for example. If the Government chooses to keep ENCI in operation, it is important to ensure that ENCI be self-financing and not impose a drain on the budget. However, if ENCI is to make purchases in the *Sierra* and *Selva* at higher prices than private traders would be willing to pay, there should be an explicit subsidy from the budget for this purpose.<sup>b/</sup>

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<sup>b/</sup> This may be desirable as part of a Government policy to combat coca production or terrorism, for example. If so, rather than have ENCI purchase just rice and corn, it would be better to design the subsidy as a transportation subsidy for any legal crop. This would have the advantage of not distorting producer incentives among crops.

## ***Land Tenure***

x. The bulk of Peru's privately held agricultural land underwent a major upheaval following the 1969 Agrarian Reform. The large landholdings prevailing prior to the Reform converted to cooperatives in an attempt to maintain technical efficiency and economies of scale while improving income distribution. Membership in the cooperatives was limited to the former permanent workers, whereas landless seasonal workers were excluded. In addition, the Agrarian Reform prohibited the use of land as collateral (except to public development banks), set ceilings on individual land holdings, and confiscated land that was not worked directly by owners. Land transfer and rental were prohibited. Corporations were disallowed from owning rural land, thus limiting vertical integration of agro-industry. These reforms lowered land use efficiency and inhibited investment and production. To overcome these obstacles, a new law to promote and develop agriculture was passed in 1980, permitting the division of cooperative land among its members.

xi. The land market was substantially liberalized under the 1991 Agricultural Investment Promotion Law. With some exceptions, agricultural land can now be freely traded or leased to any individual or legal entity, whether Peruvian or foreign. The two major exceptions to this law include (i) traditional communities whose land tenure and organizational status are protected under the constitution, and (ii) land holdings that violate the maximum and minimum land holding limits. The law permits landowners to mortgage their land holdings in excess of 5 hectares and raises the maximum land holding limits. It also allows the large coastal sugar cooperatives to opt to restructure themselves into any management form. Finally, the law also sets out detailed procedures on land adjudication and on the development of certain lands (*tierras eriazas*). Another law recognized the rural property register set up under the Garcia Administration. The register greatly simplifies the registration of rural properties meeting certain conditions.

xii. The recent reforms have established the basis for a more efficient use of land. However, the depressed economic conditions and continued rural violence have prevented the rapid turnover of properties would be expected following such a major liberalization. In addition, there are areas where the reforms still need strengthening. First, the Government needs to find a way to extend the land market reforms to the traditional communities. This could be done by assisting the communities to determine what land tenure system would be best for them and by helping them to reorganize themselves accordingly. This should be particularly useful for the cooperatives on the Coast. Second, the minimum limits on land holdings should be eliminated; these only lead to pushing more activities into the informal arena. While liberalization calls for removing the limits on maximum size holdings too, the social and political opposition to this, coupled with the fact that the limits are now large enough to achieve optimal scale economies, would suggest that the limits remain. Third, land adjudication procedures could be improved by (a) redefining the *tierras eriazas* to include just the coastal arid lands; (b)

improving the appeals procedures for the identification and adjudication of abandoned lands; (c) slowing down land adjudication in the *Sierra* until the existing land tenure system is rationalized; and (d) relaxing the time schedules for the adjudication of *tierras eriazas*.

xiii. The new property register with its simplified procedures and low cost has great potential to increase the efficiency of the land market by providing security of tenure and a certificate that can be traded or mortgaged in a similar manner to a title. While it will not cover every property in the country as a costly and time-consuming cadastre would, it has the potential to reach the bulk of the population that wishes to obtain a title. The technical and managerial support as well as the publicity and lobbying for the register has come from the ILD, a consulting firm. Given institutional weaknesses within the Government at this point, this is probably necessary. However, there is a need to ensure that the Government fully supports the effort, providing the minimal public funds needed for the register's activities and working jointly with the ILD to address certain problems and to ensure that ILD's technology is fully transferred to the Government registry. A related measure to help farmers obtain formal sector loans is the development of a register for goods and equipment. To ensure its effective operation, the legal framework and procedures for the repossession and sale of movable equipment that is used as collateral needs to be carefully studied. Another related measure to improve the functioning of the rural land market is the dissemination of land price and market information, particularly for small farms. This can be done through the radio, newspapers, and farmers' networks (e.g., grassroots organizations, NGOs and local development agencies).

### ***Rural Finance***

xiv. The government-owned Agrarian Bank's (BAP) share of formal sector agricultural credit has grown from about one-third during the 1960s to 90 percent during the 1980s. Until 1990, BAP's interest rates were subsidized, typically being negative in real terms. The credit subsidies grew rapidly under the Garcia administration as inflation accelerated while interest rates were kept low and BAP's staffing increased by 70 percent. In one economically depressed part of the *Sierra (Trapecio Andino)* interest rates were kept at zero percent, even as inflation was running at 30 percent monthly. However, the bulk of the interest rate subsidies continued to go to larger farmers in the *Costa*. The credit subsidies decapitalized BAP, whose reliance on Central Bank lines of credit increased substantially. Accounting for 40 percent of the monetary emission during 1989, such credit lines were a major cause of Peru's hyperinflation.

xv. Under the current Administration, preferential interest rates were discontinued and BAP's access to Central Bank lines of credit was eliminated. At the same time, real interest shot up as a result of declining inflation and tight monetary policy. Coupled with the elimination of credit subsidies, this caused a sharp increase in BAP's arrears. In February 1992, the Superintendent of Banks declared BAP bankrupt and ordered it to cease operations. By March 1992, BAP's staff had declined to under 1000 from 6000 in 1990. In May 1992, BAP began

liquidation proceedings and is expected to reduce its staff to less than 100 by the end of 1992. The Government also passed a law creating a new second-tier institution, the BFN, to lend to small businessmen and farmers; however, this has not yet become operational.

xvi. The Government has correctly decided not to create another first-tier lending institution in the public sector but to rely on private sector development of rural finance. However, private sector response to opportunities created by the liberalization of the sector and departure of BAP is likely to be slow since private financial institutions have had limited involvement in the sector during the last two decades and the current macroeconomic and financial situation is not conducive for banks to venture into new activities. In the meantime, with continued closure of existing branches of public and private banks, rural inhabitants may be deprived of an opportunity to make deposits or obtain loans for productive activities. To help speed up the development of rural finance, it would thus make sense to offer temporary financial inducements to private commercial banks or other financial institutions (credit unions, *cajas rurales*, etc) to set up operations in rural areas.

xvii. To do so, the first step should be the sale or lease of BAP and BN rural branches to eligible private financial institutions that agree to carry out minimum banking functions in these areas for a specified period. To induce banks to lend to rural inhabitants, it may be necessary for the Government to provide a fixed subsidy per beneficiary (say \$50 per beneficiary). The fixed or "transactions cost" subsidy has the advantage of being able to reach smaller borrowers by covering the higher transaction cost of loan administration relative to their loan size. These funds could help set up group lending programs, whose establishment would lower the risk and administrative costs of lending to small farmers. Both banks and other private financial institutions such as *cajas rurales* should compete for the branches on the same basis and receive the same transactions cost subsidy. However, it should be made clear that the transactions cost subsidies would be phased out over time (say, three years). In addition, there should be no interest rate subsidies from the Government to any private financial institutions and the institutions should be free to charge any interest rate to borrowers. The only additional subsidy that new institutions such as the *cajas rurales* should be given is technical assistance and training. The Government would also need to strengthen the supervision and regulatory framework for these institutions. Finally, this first-tier system could be complemented by a single second-tier institution lending to all sectors exclusively through private financial intermediaries. This could be achieved by merging BFN with COFIDE. The second-tier institution is a particularly useful mechanism for channeling external or public funds and meeting the longer-term credit needs of rural inhabitants.

xviii. The above proposal should address the rural financing needs of viable farm operations. However, it will not address the problems facing the small marginal farmer whose farm income is insufficient to repay loans at even the interest rates charged to prime borrowers. For some of the farmers, schemes such as the Government's revolving credit (in kind) for agricultural inputs may be useful. However, for the bulk of such uncreditworthy farmers, it is

suggested that the Government not use the credit mechanism to help them since this will contribute to credit indiscipline, decapitalize financial institutions, and lead to a continuing budgetary drain. Instead, the Government should address the reasons behind why such farmers are not viable. Thus the Government may consider the desirability of rehabilitating or building a road, of providing education or extension services, etc. In addition, the Government could find ways to increase their non-farm wage incomes and implement other targeted poverty alleviation measures such as social compensation schemes, public employment programs, food assistance, and primary health care programs.

### ***Irrigation***

xix. Between 1970 and 1980, public investment in agriculture mushroomed from 6 to 16 percent of agricultural GDP. Almost all the investments were for large irrigation projects in the *Costa*. These public projects were typically chosen on political grounds and had minimal involvement of beneficiaries in the planning, operation, or maintenance of the schemes. As a result, many of the projects were uneconomic. They suffered from large implementation delays, cost overruns, and poor operation and maintenance. Prices for water were set extremely low. This gave little incentive to conserve water by cultivating less water-intensive crops or to invest in more efficient irrigation systems; it also exacerbated the soil salinity problem. The low water charges also implied a large subsidy to those better-off farmers who had the best chance for obtaining the water.

xx. With the promulgation of the Agricultural Investment Promotion Law (Law 653) in August 1991, the responsibility for the management and administration of irrigation systems was fully transferred to water user groups and the seeds for a coherent demand-driven irrigation strategy were planted. Key elements in the strategy include the setting of water tariffs based on full recovery of O&M costs; the participation of organized water user groups in the management and financing of their irrigation systems; and the creation of an entirely new administrative and operational structure, the Autonomous Hydrographical Basin Authority (AACH), responsible both for irrigation activities in the lower reaches and for conservation projects and forestry programs in the upper headwaters. However, the strategy has not been implemented as envisaged. As of June 1992, only three of the AACH had been created and water tariffs continue to be set by the Government at levels that are typically well below those required for adequate O&M.

xxi. To improve the public irrigation system, there is a need to use more rigorous economic criteria in choosing which irrigation projects to rehabilitate, complete, or construct, and to involve beneficiaries more fully in project preparation as well as in setting user charges. To do so, it is proposed that the Government consider financing, through a loan to water user groups, only those irrigation projects where the user group of beneficiaries can organize themselves and demonstrate that they are able and willing to repay the incremental costs of the project. The user group, in coordination with the relevant government authorities, would be involved in the planning and preparation of the project, and would take complete responsibility

for the operation and maintenance of the project, once the project is completed. For its part, the Government would agree to provide technical assistance to user groups to help them design the project and to evaluate the private and social economic benefits of the project. If the project is determined to have positive net social benefits, the Government would enter into a loan contract with user groups where it would agree to provide funds on time.

xxii. For multipurpose projects, project capital costs need to be allocated among the beneficiaries in proportion to the benefits, including irrigation, water supply, electricity generation, flood control and recreational or environmental benefits, etc. Environmental costs, or the costs of mitigating environmental impact, must be part of the costs to be allocated to the various beneficiaries. Sometimes, as in the case of flood control measures, potential victims of floods may not be organized in a jurisdiction with sufficient tax authority and so that they can be charged and non-beneficiaries excluded. In such cases, it may be better to recover the benefits from general tax resources of the municipality or region. If this is not possible, the central government may need to subsidize this component. Other cases where the Government will need to subsidize the project is in order to deal with the problem of non-traded goods or to meet some other social objectives (deterrent to terrorism, targeted poverty alleviation). In the latter case, there is a need to demonstrate that an irrigation subsidy is the most efficient and cost-effective way of meeting the objective.

xxiii. This demand-driven approach to irrigation development would benefit by other complementary reforms that improve the efficiency of water use and encourage private investment in irrigation. An important reform is to consider the feasibility of establishing a market for water rights such that the rights can be defined and registered in a public registry and be able to be bought or sold with minimal restriction as to their use. If this is politically infeasible, the Government should consider giving a concession for a specified (long) period of time. Similarly, to improve maintenance and reduce the fiscal burden, the Government should consider transferring ownership of irrigation infrastructure to water user groups or providing them with a long-term concession. In addition, the Government needs to reevaluate and clarify the roles of the various public institutions operating in the irrigation sub-sector.

xxiv. Once the legal framework for water rights and transfer of irrigation infrastructure is established and user groups are organized, the Government should consider mechanisms to induce private investors or user groups to purchase or lease its large irrigation schemes. In the meantime, it would be useful to conduct a study to determine which schemes have a high marginal rate of return and which should be abandoned despite their sunk costs. For those that should be completed, it would be useful to determine which expenditures should be undertaken to better prepare the scheme for privatization.

## ***Research and Extension***

xxv. The Agrarian Reform brought about a severe disruption in the public provision of agricultural research and extension (R&E). Extension agents were assigned to manage and organize producer groups in the new agrarian structure rather than to provide traditional forms of technical assistance. The public R&E system also suffered from a lack of financial resources and seven reorganizations between 1969 and 1979. With the expropriation of private agricultural research facilities and fields, private R&E also languished. During the early 1980s, with the support of foreign funding, a relatively effective R&E capability was re-established in INIPA, a quasi-public institution. However, the former administration, viewing the success of rural experiment stations as a threat to its authority, dissolved INIPA in 1987, brought the extension service within its fold, and created a new research institution, INIAA. As a result, extension services became isolated from the research effort. During the late 1980s there was a sharp cut-back in resources for R&E caused by fiscal constraints and a cut-back in foreign-funded programs when Peru discontinued servicing its debt. By 1990, public extension services were practically non-existent and the research system was substantially eroded.

xxvi. The decline in Peru's public R&E system continued during 1991 as the fiscal situation precluded the Government's ability to raise salaries to retain and attract staff. Recognizing the ineffectiveness of agricultural R&E activities, the Government started a program to lay off staff. INIAA's staff fell from roughly 6,000 in July 1990 to under 1,000 by December 1991. Extension staff at the Ministry of Agriculture have experienced an even greater cutback -- at present, there are virtually no public extension agents. Finally, with the intention of having more stable and demand-driven research which would have the ability to attract talented staff, the Government, with INIAA's help, initiated a program to transfer research stations to foundations of user groups. The directors of the foundations are chosen from associations of agricultural producers, experts and extension agents as well as NGOs.

xxvii. The setting up of foundations to carry out R&E has many advantages. Its activities are demand-driven, and since its sources of funding are diversified, they are much less prone to instability. Both research as well as extension are undertaken by the same institution and the foundation is free to decide salary levels. However, its success will depend crucially on the relationship between the foundations and the Government. At a minimum, the Government has to allow the Board of Directors of the foundation the freedom to make decisions on what activities to undertake and on personnel matters. However, via a system of budgetary transfers, it could induce the Board to carry out certain activities that are in the public good (environmental issues, non-traded goods) but are not privately profitable. This can be done via a contract between the foundation and the Government. The Government should also place a representative or representatives on the Board, particularly in foundations where budgetary transfers account for a significant share of the foundation's expenses. The current structure of foundations could be complemented by the creation of another foundation or autonomous agency that handles certain activities such as the conservation of germ plasm or the implementation of R&E activities in

areas where farmer groups cannot organize themselves effectively, such as small potato farmers in the Sierra. The bulk of its funding should come from the Government, NGOs, or external donors. It could be modelled along the lines of FUNDEAGRO. If possible, this foundation should be given an endowment to ensure a certain level of core funding.

xxviii. INIAA would have little role to play in this new R&E system. Thus it may make sense to transform INIAA to an autonomous agency as described above, transferring its regional research facilities to foundations and some of its Lima-based facilities to the University. The bulk of INIAA's staff would be expected to transfer to the new foundations, with only a small group left in the autonomous agency to carry out the functions described in the previous paragraph. In addition, some form of Government involvement is essential in order to decide what R&E activities the public sector should support, the levels of subsidy needed and how funding should be distributed among the foundations. Moreover, the Government could play a useful role by helping foster cooperation between universities and foundations and in channeling international assistance to the foundations. These tasks require high-level direction and a small technical staff.

xxix. One way to do this is by setting up an agricultural research and extension council within the Government. Members of the council would also participate in the Boards of the foundations where the Government is providing subsidies. This council would need a small secretariat of technical and support staff to assist it in its operations. This staff of perhaps 20-30 persons could be drawn from INIAA's present staff, with INIAA's remaining staff being required to resign or find positions in the foundations or autonomous agency. While it may be necessary to subsidize INIAA staff who work in the foundations during the first year, such a subsidy needs to be phased out quickly to discourage overstaffing and to let public subsidies be earmarked to specific activities rather than to staff salaries.

### *Coca*

xxx. Peru is the largest producer of coca, accounting for about two-thirds of world production. About 90 percent of this production is located in two valleys of the *Ceja de Selva*, the Upper Huallaga and Apurimac valleys. Coca cultivation has produced some direct economic benefits by creating employment and incomes for about 120,000 families and providing foreign exchange. However, in recent years, farm incomes from coca activity have fallen substantially as a result of lower prices. At current prices, a typical farm family would earn a net annual income of only about US\$2400. Coca's contribution to GDP has fallen to about US\$550 million, equivalent to about 2 percent of GDP, and its net contribution to the balance of payments is estimated at US\$500 million, about half its level of the mid-1980s.

xxxi. While coca production led to a rapid increase in incomes in the short-term, it has precluded the possibility of more sustainable longer-term growth in legitimate agricultural activities. This is mainly because coca activities have fostered violence and supported and

financed terrorism. *Sendero* often uses force to convince farmers to grow coca. Thus, even where it may still be profitable to carry out legitimate agricultural activities, concern with personal safety and the safety of property has pressured many to either abandon the land or to produce coca. The result is a population that is stranded in an impoverished region with potential agricultural output comparable to that of the *Costa* (over US\$1 billion). In addition, coca cultivation has also created massive environmental damage to forests and water resources. It is also responsible for the high level of corruption in many public institutions. Finally, as in other drug producing countries, coca production has led to a domestic drug consumption problem.

xxxii. The strategy of previous Governments to control coca production has focussed on an eradication program which established a deadline after which the crops were compulsorily confiscated and farmers arrested. Due to insufficient funding and high coca prices, this strategy was ineffective and generated resentment against the Government. The current Government has proposed a new strategy whereby the interdiction efforts are focussed on drug traffickers while coca farmers are assumed to be victims of a system that forces them to cultivate coca. Rather than attempting to resettle farmers, it contemplates participation by coca farmers in the design and implementation of coca substitution programs. It also provides assistance for the granting of secure property rights through a program of land titling and registration. Finally, the strategy addresses issues related to credit assistance, institutional development, environmental preservation, interdiction, and human rights.

xxxiii. Given the current low level of coca prices, this is a good time to wean farmers from coca production by increasing the profitability of alternate crops while lowering the profitability of coca production. In Peru, the main effort will have to continue to focus on international interdiction of drug trafficking so as to lower the demand for coca. These efforts will have to be accompanied by measures to increase the profitability of alternative crops and activities. Over the longer-term, the most effective strategy would be to rehabilitate the transport infrastructure and even possibly build new roads to connect the *Ceja de Selva* with the coast. Until the transport infrastructure is improved it may be necessary to provide efficient marketing, transport or credit subsidies (see paras. viii, ix and xvii). These activities should be complemented by a land registration program, technical assistance for institutional development, and environmental preservation programs, possibly as part of targeted poverty alleviation program. The international community will need to provide greater resources to implement this alternative development strategy. Finally, there is also a need to take measures to control the domestic consumption of coca in its various forms.

### ***Growth Prospects***

xxxiv. The recent reforms and the additional reforms suggested here should improve the overall efficiency of the economy, which should result in higher GDP growth over the medium-term. However, it may not lead to higher growth in the short-term or to higher agricultural

sector growth, *per se*. But given the depressed level of agricultural production compared to its level in the mid-1980s and given that the policy environment has improved substantially since then, it is reasonable to expect agricultural growth to resume soon and for this growth to be broad-based. In any case, agriculture's response to the policy reforms will depend crucially upon the success of the macroeconomic program and the degree of success in controlling terrorist activity. During 1992, agricultural GDP is expected to fall as a result of the strong sol, high real interest rates, high fuel costs and weather problems caused by *El Niño*. However, if the macroeconomic situation improves and terrorist activity abates in the coming years, agriculture could recover rapidly in 1993 and 1994, and then grow at a sustainable long-term growth rate of 3-4 percent as had been obtained during the 1960s.

## SUMMARY OF AGRICULTURAL REFORMS

### Reforms Implemented Since July 90

### Further Reforms Recommended\*

#### *Trade, Pricing and Marketing*

Import duty exemptions and QRs eliminated

Guaranteed producer price mechanism replaced by price floor mechanism implemented through fixed and variable import surcharges

Consumer price controls removed

ECASA under liquidation

ENCI's import monopoly removed

ENCI being restructured to make it self-financing

To assist farmers facing terrorism, floods or drought, provide funds to rehabilitate infrastructure and generate productive employment in poor communities. In the meantime, replace surcharge scheme by one that (a) includes only those commodities and their primary derivatives that are prominent in the consumption or production basket of the very poor, (b) incorporates a true price band, (c) places a flat 10% surcharge on products that are temporarily subsidized by other countries. The scheme should not be subjected to frequent changes.

Remove QR on milk imports for commercial reconstitution

In short term, ENCI should continue without subsidy

In long-term, ENCI should be privatized – to avoid local monopolies from developing, road rehabilitation deserves high priority.

#### *Land Tenure*

With few exceptions, land can now be freely traded or leased to any individual or legal entity, foreign or domestic

Landowners can mortgage lands in excess of 5 hectares

Sugar cooperatives can choose to restructure into any management form – two are already in process of converting to corporations

New procedures for development of *tierras eriazas* issued

Maximum land holding limits raised

Rural property register simplified land registration procedures

Extend land market reforms to traditional communities by assisting communities to reorganize themselves under a different land tenure system

Eliminate minimum limits on land size

Redefine *tierras eriazas* to include only arid coastal lands and relax time schedule for adjudication of such lands

Strengthen appeals procedures for abandoned lands and slow down land adjudication in the *Selva* until existing land tenure system is rationalized

Support implementation of new property register; develop register for goods and equipment; disseminate information on land prices

#### *Rural Finance*

Preferential interest rates to agriculture eliminated and banks free to set interest rates

Banco Agrario's (BAP) access to Central Bank lines of credit discontinued and BAP's staffing cut-back drastically

BAP in process of liquidation

New second-tier institution, the BFN, set-up to lend to small businessmen and farmers.

Encourage private sector to meet rural banking needs by (a) selling or leasing rural branches of BAP and BN to private institutions that agree to carry out minimum banking functions; (b) providing temporary and flat transactions cost subsidies on loans in rural areas; and (c) providing new financial institutions with technical assistance and training

To meet long-term credit demand, merge BFN and COFIDE to form a single second-tier institution to lend to all sectors

Strengthen supervision and regulation of rural financial institutions

Provide marginal farmers assistance through targeted poverty alleviation programs rather than through credit; in some instances, a revolving fund for inputs or the provision of technical assistance may be preferable.

\*Many of these reforms are being considered by the Government for early implementation.

**Reforms Implemented Since July 90**

**Further Reforms Recommended\***

***Irrigation***

Responsibility for management and operation of public irrigation schemes transferred to user groups

Principle of setting water tariffs for full cost recovery of O& M established

Legal basis for AACH established in order to have one authority in charge of entire watershed

Agree to finance rehabilitation, completion or construction of irrigation projects where beneficiaries demonstrate willingness and ability to repay incremental costs of project

Assist water user groups to design and evaluate project -- loan contract with user groups should be signed for full incremental project cost less deductions for non-irrigation benefits and other social objectives

Evaluate feasibility of establishing market for water rights or of providing concessions for water use and transfer ownership (or give concession) to user groups of irrigation infrastructure

Consider mechanisms to induce private investors or user groups to purchase large irrigation schemes.

***Research and Extension***

Public research and extension staff cut drastically

Five research stations converted to private foundations composed of associations of agricultural producers, exporters, extension agents and NGOs

Salaries of public research and extension staff hired by foundations to be funded by Government

Transfer INIAA's research stations and staff to private foundations or to an autonomous agency (see below)

Give freedom to foundations' Boards of Directors to choose activities and staff; provide budgetary subsidies to induce Boards to carry out activities that are socially but not privately profitable

Transform INIAA into an autonomous agency with public or external funds to undertake activities unsuited for regional foundations such as germ plasm storage and where it is difficult to organize user groups

Phase out salary subsidies to foundations and replace with subsidies earmarked for specific activities

Establish Agricultural R&E Council with secretariat to decide which activities to subsidize and to participate in Boards of foundations

***Coca Cultivation***

Past strategy of coca farmer repression replaced by one involving farmers in design and execution of coca substitution programs

Strategy complemented by land registration program, credit assistance, institutional development, environmental preservation, interdiction, and human rights issues

Enhance international interdiction efforts with assistance of foreign donors

Seek out international assistance to rehabilitate or construct new roads to transport legal crops in *Selva* to markets in *Costa*

In short-term, provide transportation or credit subsidies (see above) and implement land registration and institutional development program

Develop program to control domestic drug consumption

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\*Many of these reforms are being considered by the Government for early implementation.

## INTRODUCTION

0.1 By July of 1990, following five years of unorthodox economic policies, Peru was in the throes of hyperinflation and depression. Per capita incomes had fallen by 13 percent during 1985-1990; inflation during the preceding 12 months had averaged over 3000 percent annually; two-thirds of Peru's external debt of US\$22 billion was in arrears; and virtually all Government institutions were bankrupt. Public investment and public revenues were estimated to be only 3.3 percent and 6.6 percent of GDP respectively in 1989, as compared to their 1980-1985 average of 6.2 percent and 14.0 percent respectively. Finally, terrorism and illegal coca cultivation were rife, having taken their toll not only on lives and public and private property, but having also led to costly protection measures and severe environmental damage.

0.2 When President Alberto Fujimori was elected in July 1990, Government policy changed to one recognizing that macroeconomic stability was a pre-requisite for sustainable growth. The Government, therefore, implemented a dramatic stabilization program with the help of the international community. Under the program, public subsidies were virtually eliminated overnight and the exchange rate was unified and allowed to float. In addition, the Government began a program of structural reform aimed at removing regulatory and other obstacles to private investment. At the same time, measures were taken to improve the incentive framework so that prices more closely reflected opportunity costs. Finally, the Government took steps to address the problems caused by terrorism and coca production.

0.3 Less than two years into the program, there have been notable successes. Monthly inflation between September 1991 and June 1992 has averaged 4 percent as compared to 60 percent during 1990. The Government has reached an agreement on a debt-workout arrangement with its bilateral and multilateral creditors and has begun to receive additional monies. Far-reaching reforms in the areas of trade policies, privatization, agricultural policies, the financial sector, and labor markets have improved the efficiency of the economy and the prospects for sustainable economic growth. After falling for two years in a row, GDP rose by 2.1 percent in 1991. However, poverty remains widespread, with per capita incomes resembling those of the early 1960s, while terrorism and coca activities continue unabated. Moreover, fiscal revenues remain under nine percent of GDP and the private sector is still reluctant to invest in an environment characterized by high real interest rates, a strong *sol*, and continuing terrorist problems.

0.4 As in other areas, the policy framework in agriculture has improved substantially. However, there are still policies that need to be implemented or modified, many of which are being considered by the Government for early implementation. With the goal of alleviating poverty, the objective of this report is to recommend agricultural policies to improve economic efficiency in order to set the stage for sustained and broad-based economic growth. This should

be particularly useful to the Government in continuing with its structural reform program. A secondary objective is to describe and analyze the agricultural reforms undertaken by the Fujimori Government. To better understand the recent reforms, the report provides a historical perspective. This should be of particular interest to the international community.

0.5 The report addresses major agricultural policy issues, especially those that affect the Government's stabilization and adjustment program. However, some important issues are beyond the scope of this report. One such set of issues relates to the **environment and sustainable development**, including the sustainable development of Peru's vast forestry resources. While the report discusses environmental issues with respect to coca production, an analysis of natural resource management issues was considered beyond the scope of this report. Another set of issues relate to **targeted poverty alleviation programs**. This report's efficiency-enhancing recommendations, including the removal of inefficient agricultural subsidies that tended to go mainly to the rich, are expected to result in broad-based growth in income and employment, which is the key to sustainable poverty alleviation. However, the process will be too slow to address the urgent needs of the poor. There is thus an immediate need for targeted poverty alleviation measures such as social compensation schemes, public employment programs, food assistance, and primary health care programs, especially for mothers and children. A discussion of the design of these programs in the social sectors and the extent and causes of poverty are given in a forthcoming Bank report.<sup>1/</sup> The Bank is planning to conduct additional analytical work in this area and possibly follow it up with a project. A third set of issues relate to **institutional development**. Recognizing institutional weaknesses in many areas, the recommendations in the report are geared toward making minimum demands on the Government's institutional and administrative capacity. However, in some cases, additional technical assistance will be required to implement the reforms. Such issues are being addressed more comprehensively by the Government with assistance from the Inter-American Development Bank (IDB).

0.6 The organization of the report is as follows: Chapter 1 provides a description of agricultural land use and distribution, agricultural institutions, and the production structure and trends. It also discusses the constraints faced by the agricultural sector because of its natural resource base and problems of terrorism and coca cultivation. Chapter 2 briefly reviews significant agricultural and macroeconomic developments since 1968, providing a historical context for recent policy changes in the agricultural area. Chapter 3 discusses the agricultural reforms carried out by the Fujimori Government in key areas while Chapter 4 proposes a policy agenda for the coming years.

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<sup>1/</sup> Peru: Poverty Issues and Social Sector Policies and Programs.

## I. STRUCTURE AND CONSTRAINTS

### A. Agricultural Resource Base

1.1 Peru's twenty-two million people inhabit an area of 129 million hectares, greater than the combined areas of France, Italy and Germany. About 10 percent of Peru's area is located in a narrow coastal strip between the Pacific ocean and the foothills of the Andes; 30 percent is mountainous (*Sierra*), made up of the valleys and western plateaus of the Andes; and 60 percent is in the Amazon watershed (*Selva*), comprised of the valleys and eastern plateaus of the Andes (*Ceja de Selva*) and the Amazon jungle (*Selva Baja*).

1.2 Peru is not intrinsically an agricultural economy. The *Costa* is largely barren and arid, the *Sierra* has a harsh topography and climate, and the *Selva* suffers from torrential rainfall, fragile ecosystems, acid soils, pest problems, and is isolated from the Pacific and Atlantic Oceans by the Andean mountains and Amazon jungle. As a result, the potentially cultivable area is estimated at only 6 percent of the total area. An additional 14 percent of the area is suitable for pasture and 38 percent for forestry. The remaining 42 percent is either desert, mountains or protected land (Table 1.1).

1.3 Although the *Costa* is largely a desert strip, it holds 53 percent of the population, including that of greater Lima which accounts for about a third of the country's population. It has only 21 percent of the cultivable area, yet accounts for 60 percent of agricultural GDP. The region receives most of its water from 52 rivers that flow from the *Sierra*. In some areas, underground water is also available. Given the lack of rainfall, all cultivated land in the *Costa* is irrigated. The bulk of agricultural public investment has gone to finance large scale irrigation projects in this region. Many of the projects have been unsuccessful. Some were never completed. Others have fallen into disrepair and are no longer functioning. An estimated 200,000 to 300,000 hectares of land have been lost every year during the last two decades due to soil salinity caused by poor drainage.

1.4 With 36 percent of the population, the *Sierra* holds the bulk of the country's potential pastures but only 18 percent of its cultivable area. The rugged terrain and severe weather conditions, coupled with soil erosion resulting from overgrazing and encroachments onto marginal lands, limit the agricultural potential. Consequently, agricultural productivity is very low, although there is potential for improvement through better soil conservation, range management, and additional small scale irrigation.

REGION	TOTAL	%	MAJOR POTENTIAL LAND USE				
			ARABLE		POTENTIAL PASTURES	FOREST LANDS	PROTECTION OR WASTELANDS
			ANNUAL CROPS	PERMANENT CULTIVATION			
<i>Costa</i>	13,637	10.6	1,140	496	1,622	173	10,206
<i>Sierra</i>	39,198	30.5	1,341	20	10,576	2,092	25,168
<i>Selva</i>	75,686	58.9	2,420	2,191	5,717	46,432	18,926
Total	128,521	100.0	4,901	2,707	17,916	48,696	54,300
Percent	100.0	100.0	3.8	2.1	13.9	37.9	42.2

Source: ONERN: *Clasificación de Tierras del Perú* (Lima, 1982), cited in V. Kong: *Peru: Agricultural Sector Assessment, 1990* (USAID, Lima, 1991)

1.5 While the *Selva* occupies about three-fifths of Peru's total land area as well as of its cultivable land area, it accounts for only 11 percent of population. According to official sources, the region has the most potential for long-term development both through forestry and through an expansion of farmland (Table 1.1). However, its rich diversity of flora and fauna and fragile ecosystems as well as its limited infrastructure require that any forestry and farmland expansion needs to be carefully managed to ensure the sustainability of production systems from an economic, technical and environmental standpoint. Already, the *Ceja de Selva*, with its broken topography and high rainfall, has been seriously affected by soil erosion caused by road building, deforestation, and migratory farm practices.

1.6 A natural constraint that limits the prospects for agricultural expansion is the water resource base. Although water resources are abundant in national terms, they are geographically poorly distributed in terms of agricultural needs. The bulk (98 percent) of the country's water supply is located in the Amazon basin where the potential for agricultural expansion is limited while the area of greatest potential expansion, the *Costa*, is entirely dependent on uncertain and highly variable seasonal supplies from rivers originating in the *Sierra* -- about 70 to 85 percent of the water flow is between January and April. Ground water is being exploited in some areas (mainly in the coastal Chira, Rimac and Ica valleys), but falling water tables, coupled with the lack of rural electrification and high costs of pumping, impose limits on the exploitation of this resource.

1.7 Rainfall in the *Sierra* and *Costa* is small and uncertain. Between 1976 and 1990, the Peruvian *Sierra* has been subject to several severe and prolonged droughts. Although Peru is located in the tropics, the weather in the arid *Costa* is mildly temperate due to the cold Humboldt current on its coast. However, in some years, this current has been replaced by the warm *El Niño* current. This causes large changes in weather patterns. For example, the 1983/84 *El Niño* current led to widespread flooding in the *Costa* and severe drought in the *Sierra*. It damaged coastal crops under cultivation as well as road and irrigation infrastructure, and resulted in a 9 percent decline in agricultural GDP and a 13 percent decline in overall GDP.

### **B. Land Use and Distribution**

1.8 Of Peru's land area of 129 million hectares, only 3.7 million hectares (2.9 percent) are actually cultivated (Table 1.2). Thus, despite its vast area, Peru's per capita availability of cultivable land is only 0.13 hectares, lower than that of densely populated Asia (0.18) and less than one-third the average of South America (0.44). Of the 3.7 million hectares under cultivation in Peru, 1.3 million hectares (35 percent) are irrigated.<sup>2/</sup>

1.9 Since the *Costa* receives very little rainfall, all of the land under cultivation is irrigated. This region accounts for about 60 percent of all irrigated land in Peru. Because they depend almost entirely upon irrigation for water, farming enterprises in the *Costa* are all located along the river valleys of the 52 rivers which flow through the region. Given its better access to domestic and international markets as well as its mild weather and fertile soils, the *Costa* accounts for 60 percent of the Peru's agricultural GDP. The *Costa*'s most important agricultural outputs are cotton, rice, sugarcane, yellow corn, beans and poultry. In recent years the *Costa* has also diversified into some high-value export crops such as asparagus. In addition, since the late seventies, a growing number of large industrial poultry enterprises are found in this region.

1.10 Traditionally, farms in the *Costa* were medium and large commercial estates. After an initial attempt at land reform in 1964, a second more significant Agrarian Land Reform was initiated in 1969. The estates were expropriated by the state and were handed over to those who had formerly been workers on the farms. The workers were given collective ownership of the former estates and were to operate them as cooperative enterprises (CAPs). This collectivized form of farm ownership did not prove particularly successful and, over time, many of these farms, with the notable exception of the large sugar cooperatives, have been parcelled out in small plots to their individual members. By 1990, almost 80% of the cultivable land originally

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<sup>2/</sup> This compares with about 4 percent in Brazil, 4.5 percent in Argentina, 22 percent in Mexico and 35 percent in Chile.

REGION	CULTIVATED LAND			PASTURES	FOREST LANDS	PROTECTION AND WASTE-LANDS	TOTAL	%
	TOTAL	IRRIGATED LANDS	RAINFED					
TOTAL	3,700	1,300	2,400	27,600	73,000	24,200	128,500	100
Percentage	2.9	1.0	1.9	21.5	56.8	18.8	100.0	
<i>Costa</i>	800	800	0	500	1,000	11,200	13,500	10.5
<i>Sierra</i>	1,900	400	1,500 <sup>d/</sup>	26,800	200	10,600	39,500	30.7
<i>Selva</i>	1,000	100	900	300	71,800	2,400	75,500	58.8

Source: V. Kong. *Peru: Agricultural Sector Assessment, 1990*, (USAID, Lima, 1991); based on data from A. Thays (CAPA), derived from estimates of the Land Registration Office and Agricultural Sector Statistical Office, 1981 and 1983.

a/ Average based on sample data for the early 1980s and assume a "normal" year (e.g. without major drought).

b/ Regional land use data for the piedmont and jungle areas (*ceja de selva* and *selva*) has still to be disaggregated.

c/ Forest lands include significant areas classed as protection forest in Table 1.1, Potential Land Use Classification.

d/ Includes approximately 700,000 has of long term fallow land (*tierras de descanso*), located primarily in the *Sierra*.

given to CAPs had been parcelled out to individuals. As a consequence, agriculture on the *Costa* today is characterized by many small, individually owned, irrigated commercial farms. By 1984, nearly 93% of all individual landholders in the *Costa*, accounting for two-thirds of the cultivated area, held under 10 hectares of land (Statistical Appendix Table 6.1).

1.11 The majority of the usable land in the *Sierra* is suitable only for grazing. In fact, the land has been overgrazed, exacerbating the natural soil erosion process. Although some irrigated farming occurs, crops on almost 80% of the 1.9 million cultivated hectares are rainfed. Agriculture in this region is less commercially oriented than agriculture in the *Costa*. Many farmers cultivate their plots on the mountainsides of the *Sierra* according to production patterns of what is essentially a subsistence level agriculture. The region accounts for 75 percent of non-poultry livestock production and virtually all the production of camelids (llamas, alpaca and vicuna). The most important crops in the *Sierra* are potatoes, white corn, wheat, barley, and several native crops. The region produces 25 percent of agricultural GDP.

1.12 As in the *Costa*, the reforms initiated in the sixties converted the large pastoral *haciendas* of the *Sierra* into collectively owned ranches called Agricultural Societies of Social Interest (SAIS). While all of the cultivated lands have by now been parceled out to individuals, some of the SAIS continue to function in pasturelands. Farming in the *Sierra* occurs on small terraced plots or terraced strips located in steep regions of the mountains. In many cases,

individual plots are tiny and families farm several plots at different locations and at varying elevations. Over 60% of farmers in the *Sierra* farm three or more plots. Different crops are typically grown at different elevations, resulting in a diversification in the production pattern for each farmer.

1.13 Agriculture in the *Selva* is primarily in areas of the *Ceja de Selva*, which were formerly forested. In many cases, farms here are operated by people who have migrated to the *Ceja de Selva* from the *Sierra*. Farms vary in size in the *Selva* and for the most part are larger than those in either the *Costa* or the *Sierra* (see Statistical Appendix Table 6.1). Individual farm units are an average of 100 hectares, only 17 of which are cultivated. Of the 1 million hectares of cultivated land in the *Selva*, only 10 percent is irrigated and three hundred thousand hectares are utilized as pastureland. The vast majority of the area remains in jungle (72 million hectares). The region produces 15 percent of agricultural output. The *Selva's* main crops are coffee, cocoa, rice, yellow corn and cassava. In recent years, coca leaf production, almost entirely for illegal export, has grown to cover about 200,000 hectares of the *Ceja de Selva*.

### C. Constraints on Agricultural Development

#### Rural Violence

1.14 Agricultural development in Peru is severely constrained by the violent activities of two ultra left-wing terrorist organizations: *Sendero Luminoso* (Shining Path) and the Tupac Amaru Revolutionary Movement (MRTA), and by Government attempts to curb them. Of these, by far the most important is *Sendero*. Since *Sendero* launched its military campaign in May 1980, the resulting conflict has claimed over 24,000 lives, many of them innocent victims caught in the crossfire of what long ago became Latin America's most violent and bloody guerrilla movement. The aims of both *Sendero* and the MRTA, which took up arms a few years later, is to overthrow the Government. *Sendero* would like to replace it with a self-styled "People's Democratic Republic". According to *Sendero*, this first entails destroying all vestiges of the existing society and replacing them with their own political and military organizations.

1.15 Often compared to Pol Pot's Khmer Rouge on account of its savagery and unpredictability, *Sendero* has espoused the classic guerrilla model of "encircling the city from the countryside". Years of experience of prolonged guerrilla warfare under Peruvian conditions have modified *Sendero's* strategy, which now emphasizes political and military work with the urban poor, particularly in Lima. However, the Maoist-style organizational model and the operational policy of functioning within society, have made it extremely hard to penetrate. As a consequence, after 12 years, *Sendero* remains as difficult to penetrate as when it initiated its operations in the Ayacucho area. In spite of heavy losses it appears to still be growing, both in

numbers and in geographical influence. In contrast, the MRTA has been subject to more effective pressure from the police and military, and has recently split into several warring factions.

1.16 With the shift in *Sendero's* emphasis to a more direct attack on the country's principal urban areas, notably Lima, rural strategy also changed in the latter part of the 1980s. Major targets are now the commercial farmers of the central, northern and southern *Sierra*, and strategic areas along the coast; the goal is to reduce the levels of food production, and to directly intercept the main supply routes to the capital. Coastal areas which link strategic regions of the *Sierra* with Lima have become the principal target. Tactics include the destruction of power line pylons, farm infrastructure, selective assassinations, and extortion. *Sendero* also restricts farm production through prohibitions on sowing of crops and restrictions on the movement of goods. While *Sendero* receives financing for its operations mainly from extortion and protecting coca producers and narco-traffickers (para. 1.17), MRTA relies more on kidnapping.

1.17 To date, the direct damage to property from terrorist activities has been estimated at approximately US\$20 billion, equivalent to two-thirds of annual GDP. However, there are much greater losses. At the farm enterprise level, individual farmers have often been forced out of business, or are subject to paying for "war" taxes to *Sendero* and for personal protection, the costs of which can range between 10 to 25 percent of gross income. In addition, increased insecurity and unpredictability within the rural sector is adversely affecting investment decisions: many farmers defer new capital investments and run down their on-farm investments. This is leading to long-term deterioration of the production infrastructure. Community organizations and the workings of local and central governments have been severely affected. *Sendero's* intimidation caused some of the 1989 municipal elections to be postponed until 1991. Furthermore, the election results had to be annulled in 220 out of 498 jurisdictions because either no candidate ran, the winner resigned after being elected, or too few ballots were cast. In most small towns, the position of mayor is left vacant. In increasingly large areas, the central Government is unable to provide basic services of law and order, let alone maintain infrastructure or provide agricultural or social services.

### **Coca Production**

1.18 One of the main constraints to exploiting the significant agricultural potential of the *Ceja de Selva* is the widespread cultivation of coca in the region and the violence and corruption that this has spawned. Peru is the largest producer of coca, accounting for about two-thirds of world production; virtually all coca produced in Peru is destined for illegal export. About 90 percent of this production is located in two valleys of the *Ceja de Selva*, the Upper Huallaga and Apurimac valleys.

1.19 Although a few coca plantations had existed in the 1950s, coca cultivation in the *Ceja de Selva* first became important in the 1960s when migrants from the *Sierra* moved there in response to the Belaunde Government's colonization program near the *Marginal de la Selva* highway. By 1973, there were about 3,000 hectares of coca under cultivation. Following Velasco's 1968 military coup, the Government changed its emphasis from developing the *Ceja de Selva* to establishing cooperatives in the *Sierra* and *Costa*. As a result, most of the Government's regional agricultural development efforts in the *Ceja de Selva* began to disappear. The economic crisis and recession of 1975-79 accelerated the demise of Government-provided agricultural services so that by the end of the decade, the presence of the State in the *Ceja de Selva* became negligible. Recognizing an opportunity, Colombian drug traffickers moved into the area in the late 1970s. Because of high coca prices, falling cocoa and coffee prices, the lack of agricultural services for legal crops, and the high quality of the coca grown in the *Ceja de Selva*, the area under illegal coca cultivation grew rapidly during the 1980s. By 1991, the area under illegal coca cultivation was estimated to be 213,000 hectares.

1.20 Coca cultivation has produced some direct economic benefits by creating employment and incomes for about 120,000 families and by having a positive impact on the balance of payments. During the early and mid-1980s, coca's profitability and its contribution to incomes were estimated to have been high. Consequently, coca activities replaced or supplemented other agricultural activity during the last decade and fueled a regional "coca boom." Throughout prolonged periods during the 1980s, legal agriculture confronted acute shortages of labor since coca production could afford to pay much higher agricultural wages. However, in recent years, farm incomes from coca activity have fallen substantially as a result of lower prices. At March 1992 prices, a typical coca farm of 1.5 hectares would only produce a net annual income of only about US\$2400. Similarly, coca's net contribution to GDP and the balance of payments has fallen to US\$550 million and US\$500 million respectively, equivalent to about 2 percent of GDP (Annex A).

1.21 While coca production led to a rapid increase in incomes in the short-term, it has precluded the possibility of more sustainable longer-term growth in legal agricultural activities. This is mainly because coca production has fostered violence and supported and financed terrorism (Annex A). This, in turn, has weakened or eliminated the Government's presence in the region and has made the conduct of legal agricultural activities virtually impossible in many parts of the region. For example, the bulk of the transportation infrastructure has been damaged by the total lack of maintenance and by terrorist actions. In addition, all public institutions providing technical assistance, agriculture extension, credit, and marketing services have reduced their operations or have ceased to operate. Even where it may still be profitable to carry out legal agricultural activities, Sendero's actions to disrupt production of other crops has convinced

many to either abandon the land or produce coca. The result is a population that is stranded in an impoverished region whose agricultural output potential, with some public investments and a reduction in violence, could be comparable to that of the *Costa* (over US\$1 billion).

1.22 Moreover, coca activities impose other costs that are difficult to quantify. They have created massive environmental damage to forests and water resources (Annex A). Coca is also responsible for some of the corruption present in segments of the military, judiciary and congress. Finally, as in other drug producing countries, coca production has inevitably led to a serious domestic drug consumption problem. An estimated 3 per cent of high school students between the ages of 15 and 18 consume PBC while the use of coca derivatives already constitutes a grave public health problem in Peru.

#### ***D. Production Structure and Trends***

1.23 Despite limitations inherent in the natural resource base and climatic conditions, agriculture plays an important role in the economy. Agricultural activities, excluding coca cultivation, generated about 12 percent of GDP in 1991 (Statistical Appendix Table 2.2B) and employed one-third of the labor force. Agriculture's share of employment has fallen rapidly from 48 percent in 1970 to 34 percent in 1990, reflecting the tremendous migration from rural to urban areas (Statistical Appendix Table 2.4). During the last three decades, the rural population grew by 25 percent while the urban population grew by 230 percent, with Lima now accounting for almost one-third of the country's population (Statistical Appendix Tables 1.1 and 1.3).

1.24 Peru's most important crops, in terms of value of production, are rice, cotton, sugarcane, eggs, milk, poultry, and coffee. Of these coffee, cotton and sugar have traditionally been Peru's most important export crops (Statistical Appendix Table 2.3). Roughly one-fourth of the total value of agricultural production is in the form of poultry and livestock products, another one-third is in the form of fruits, vegetables, and native crops such as quinoa, and the remainder is in the form of the major field crops such as white and yellow corn, rice, potatoes, beans, wheat, cotton, sorghum, sugar, and coffee (Statistical Appendix Table 5.1). In terms of cultivated area, white and yellow corn, potatoes, and rice are the most important crops (Statistical Appendix Table 5.4).

1.25 Peru's livestock sector is now dominated by the poultry industry which accounts for over fifty percent of the total volume of production in the sub-sector. Beef is the second most important meat product with 25% of the volume of meat produced in Peru, followed by pork (18%) and mutton (5%). Poultry production has been the most dynamic activity within the Peruvian agricultural sector over the last twenty years. The volume of poultry production has more than quadrupled since 1970. In contrast, production of beef and pork has grown only

marginally over the same period of time, while mutton production has declined. The poultry industry has expanded rapidly through the adoption of a vertically integrated, commercial-input intensive, production structure located along the *Costa*. The other livestock industries such as camelids production (llama, alpaca, vicuna) remain pasture-oriented and are located primarily in the *Sierra*.

1.26 Peru has the potential to develop an export industry in non-traditional exports such as fruits and vegetables. These crops are grown almost exclusively in the *Costa*. They are well situated for export to Northern Hemisphere markets, both by virtue of being located on the coast where they can be exported easily, and because of the favorable climate and the fact that they can be produced in the "off-season" for Northern markets. Currently, the most important of these specialty crops is high quality fresh, frozen, and canned asparagus which is shipped primarily to Northern European markets. Asparagus accounts for nearly ten percent of the value of legal agricultural exports from Peru and has the potential to grow substantially. Another set of non-traditional products which Peru has successfully exported are several varieties of natural colorants. These include marigold flowers (used to produce an orange-yellow color), cochineal (an insect product used to produce carminic acid) of which Peru produces 85% of the world's supply, and carminic acid (used to produce a red coloring agent) of which Peru accounts for 80% of world exports. Other crops which represent great potential but have yet to be more fully developed include flowers (in the *Costa*), palm oil (in the *Selva*), Brazil Nuts (in the *Selva*), and several varieties of beans. Peru also produces a number of other unique specialty products such as alpaca wool and several crops of the Incas (e.g., quinoa) which are found in the Andean region.

1.27 There have been considerable year-to-year variations in the production of major crops (Statistical Appendix Table 5.2). While the largest fluctuations can be attributed to the weather, at least some of the fluctuations can be explained by frequent and sudden changes in incentives and tenurial arrangements. However, long-term trends in the production of major field crops, for the most part, have been relatively flat. Exceptions to this include rice, yellow corn, and coffee. Since 1964, the production of rice has tripled and the production of yellow corn has doubled. Both of these developments correspond closely to the steady growth in cultivated area for rice and yellow corn in the *Selva*, particularly in the 1980s. Production of coffee has also risen steadily. However, most other major crops have done little better than to hold their own over this same period. This has been particularly true of the principal crops of the *Sierra*: potatoes, wheat, and white corn. Production of sugarcane, primarily grown in several provinces of Peru's northern *Costa*, has fallen from 9.0 million tons in 1975 to 5.9 million tons in 1991.

### *E. Public Agricultural Institutions*

1.28 The Ministry of Agriculture is the most important public institution in agriculture. It has been characterized by instability since its creation in 1943. Since 1968, there have been seven major laws reorganizing the Ministry of Agriculture (including the creation of a second Ministry for Food during 1975-1978). The average tenure of a Minister is one year. The reorganizations and ministerial changes have resulted in numerous policy changes, which have discouraged private investment in the sector and the recruitment and retention of competent career personnel.

1.29 The current structure of the Ministry of Agriculture is determined by legislative decree<sup>3/</sup> enacted in April 1990. According to the law, the Ministry of Agriculture is composed of the Minister, Vice Minister, four advisory bodies, five general directorates, two quasi-independent public institutes, and two marketing enterprises. The four advisory bodies are the Consultative Agricultural Board (CCA), the National Council for Agricultural Agreements (CNC), the Agricultural Coordination Committee (COCOA) and Agricultural Planning Office (OPA). The five general directorates, which are responsible for setting specific policies and regulations relating to resource management and production incentives, include water and soils, forestry and wildlife, crops, livestock, and agroindustry. The two public institutes include the National Institute for Agricultural and Agroindustrial Research (INIAA) and the National Office for Food Assistance (ONAA). The two marketing enterprises are the Inputs Marketing Enterprise (ENCI) and the Food Marketing Enterprise (ECASA), which has since been liquidated.

1.30 Other institutions that have played a significant role in agriculture include the Agrarian Bank (BAP), National Development Institute (INADE) and Regional Development Corporations (CORDES). BAP, until recently the main source of agricultural credit, was declared insolvent by the Superintendent of Banks in February 1992 and is in the process of liquidation. INADE, created within the Ministry of the Presidency, once received the lion's share of public investment funds in order to execute large infrastructural projects (including Bank-financed rural development and irrigation projects). It has now been regionalized and is almost totally without funds. Similarly, CORDES created in the Ministry of Presidency to manage the regional investment projects, has few funds available to execute projects.

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<sup>3/</sup> Until April 6, 1992, only Congress could pass laws. However, under special limited powers given it by Congress, a President could pass a Legislative Decree (*Decreto Legislativo*). Next in importance is the Supreme Decree (*Decreto Supremo*), which is passed by the President. Laws are often followed by Presidential or Ministerial Resolutions which further specify regulations relating to the laws.

## II. ECONOMIC POLICIES AND AGRICULTURAL PERFORMANCE (1968-1990)

### A. Redistribution and State Control (1968-1978)

2.1 During the 1950s and 1960s, agricultural growth averaged a modest rate of 3 percent with little government intervention or involvement in the sector (Statistical Appendix Table 2.2A). As GDP grew at an average rate of 5 percent during this period, agriculture's share of GDP fell from 22 percent in 1950 to 13 percent in 1970 while its share of employment fell from 59 percent to 48 percent (Statistical Appendix Tables 2.2B and 2.4). During this period, there was considerable social unrest caused by growing income disparities between the rich and poor, particularly in rural areas. The large landholdings (*latifundias*) that operated virtually like serfdoms were a target of unrest. Following a series of spontaneous peasant uprisings, the Government of Belaunde was prompted to enact a land reform bill in 1964. However, the land reform was only partially implemented while the social unrest continued. In a military coup in October 1968, General Velasco toppled Belaunde's regime and began to implement a far-reaching land reform program, known as the Agrarian Reform, aimed at redistributing wealth and reducing income inequality.

2.2 Under the Agrarian Reform, 9.5 million hectares of land, previously held by 10,000 owners, were expropriated and transferred to over four hundred thousand families. The confiscated lands included those that exceeded the land limits set by region and land type and those that were not worked directly by their owners. The affected land area included about 85 percent of all privately held agricultural lands. In order to try to maintain technical efficiency and economies of scale, the large landholdings were not broken up into small units but were organized into various types of cooperatives. The large coastal plantations were converted into Agricultural Production Cooperatives (CAPs) while the *Sierra haciendas* associated with surrounding communities were converted into Agricultural Societies of Social Interest (SAIS). In addition, about 40 percent of the expropriated land was given to Peasant Communities (*Comunidades Campesinas*) or Peasant Groups (*Grupos Campesinos*), which date back over centuries and have a special status in the Constitution (Statistical Appendix Table 6.2).

2.3 Membership in each of these cooperatives was limited to the former permanent workers; seasonal workers were excluded. The Agrarian Reform prohibited the use of land as collateral (except to public development banks) and disallowed corporations from owning rural land, thus limiting vertical integration of agro-industry. With the exception of some privately held land, land transfer and rental were prohibited. While rights to remain on the land could be passed from father to son, they could not be given to others. These restrictions severely affected

the efficiency with which land could be used. The land tenure systems also acted as disincentive to innovation and inhibited private investment. Finally, the lack of managerial experience and discipline amongst workers coupled with a scarcity of agricultural services resulted in a decapitalization of cooperatives, especially the CAPs.

2.4 An important objective of Velasco's development strategy was self-sufficiency. In order to ensure that enough food would be produced, the State attempted to control the production, marketing and pricing of major food crops. With the intention of continuing to keep food prices for consumers low, price controls were placed on both wholesale and retail prices for food, while subsidies on imports of agricultural commodities were maintained. In later years, as per capita output of food declined, planting restrictions were implemented requiring that a minimum proportion of the farm area be allocated to the production of food crops. Further, restrictions were instituted which limited the destinations at which agricultural products could be marketed.

2.5 Another feature of Velasco's economic policy which adversely affected agriculture was the continuation of an industrial import substitution strategy. During the 1950s, Peru had one of the lowest import tariff regimes in Latin American country. This began to change in 1959 with the adoption of an Industrial Promotion Law. The result, by the mid-Sixties, was a set of high tariffs which distinctly favored industry at the expense of agriculture in Peru. Strong tariff barriers were put into place for imports competing with industrial products. These measures, in effect, taxed the agricultural export sector. Velasco continued with this policy, while further discriminating against agriculture by subsidizing agricultural imports in an effort to maintain low food prices for consumers. Thus many agricultural crops were exempt from import duties. The appreciation of the sol in real terms (Graph 1 of the Statistical Appendix) further contributed to the discrimination against domestic agricultural production by making the imports of food cheaper. The result of these policies was a general erosion in agriculture's terms of trade with the rest of the economy.

2.6 As part of its industrial promotion strategy, the Velasco Government wanted to ensure the year-round availability of food at "reasonable" prices in urban areas through the creation of state marketing agencies. To satisfy urban food demands, the Public Enterprise for Agricultural Services (EPSA) was created in 1969. A few years later the National Inputs Marketing Agency, ENCI, was created. Both were given monopolies in the import and marketing of what were considered to be strategic commodities. EPSA imported and marketed rice and was involved in other food marketing operations; for example, it ran a chain of supermarkets in Lima. ENCI managed the importation and marketing of fertilizers, machinery, wheat, vegetables, oilseeds, cotton, sugar, certain dairy products, maize, and other farm products. It maintained its own storage and transport facilities, as well as a large network of local offices to participate fully in every aspect of the marketing of each of these commodities.

2.7 The Agrarian Reform brought about a severe disruption in the public provision of agricultural research and extension. Extension agents were assigned to manage and organize producer groups in the new agrarian structure rather than to provide traditional forms of technical assistance. The redeployment of many of the public sector's agriculturalists, political and social upheaval, lack of fiscal resources, and a series of seven reorganizations of the public research agencies between 1969 and 1979 severely disrupted the continuity of the public research and extension system. Many researchers transferred to regional universities or emigrated; as a result, public research programs came to a virtual halt. Private forms of technology generation and transfer also languished. The expropriation of the land did not spare private agricultural research facilities and fields. Producer associations which sponsored these activities before the reforms lost their momentum in the upheaval surrounding the formation of the cooperatives. The notable exceptions to the disruption of the research efforts in Peru during the seventies were some foreign-funded activities such as the rice program at the Vista Florida experiment station, the International Potato Center (CIP), and the introduction of new improved varieties of wheat and the rice by donor organizations. This period also witnessed rapid growth in NGO activities in research and extension.

2.8 The uncertainty and upheaval caused by the Agrarian Reform coupled with a loss of scarce management skills and inadequate agricultural services inhibited private agricultural investment. Recognizing this, the military Government began a massive program of public investment in agriculture, increasing its share of agricultural GDP from 6 to 16 percent over the decade of the 1970s. However, almost all the investments were for large irrigation projects in the *Costa*, some of which were uneconomic. About three-quarters of public investment in agriculture was devoted to four large irrigation projects with very long gestation periods. Even where the schemes were completed, they were typically not maintained and failed to make efficient use of water. As a result of poor management of public irrigation schemes and inadequate water charges, the cropping pattern of farmers was largely determined by the availability of irrigation water and failed to take account of the cost of water. Overuse of water exacerbated the soil salinity problem -- an estimated 10-15,000 hectares were lost to soil salinity every year, a figure that approximated the increase in irrigated lands following massive public investments.

2.9 In conclusion, as a result of (a) macro-economic, pricing and trade policies which discriminated against agriculture, (b) upheavals associated with the land reform, (c) ineffective agricultural services, and (d) unproductive public agricultural investments and reduced private investment, agriculture grew by only 0.5 percent annually during the seventies. During the same period GDP growth by 3.3 percent, leading to a further decline in agriculture's share of GDP from 14.2 percent of GDP in 1970 to under 10 percent of GDP in 1980. The rural poverty situation worsened over this period. While the land reform increased the incomes, at least temporarily, of the cooperative members, the incomes of the landless and individual peasant

producers fell further as the demand for their wage labor decreased. Thus while the land reform succeeded in sharply reducing the incomes of the very richest, the landless poor became worse-off. This led to increased migration from the *Sierra* and contributed to the growth of illegal coca exports. It also contributed to the emergence of the Shining Path (*Sendero Luminoso*) and Tupac Amaru Revolutionary Movement (MRTP) as guerrilla movements.

### **B. Market Liberalization Efforts (1978-1985)**

2.10 When Velasco was ousted by General Morales Bermudez in 1975, the new Government continued with the thrust of Velasco's policies. However, in 1978, following a financial crunch caused by large public sector and balance of payments deficits, the Government devalued the sol sharply and began a stabilization program. The fiscal deficit was cut from 9 percent of GDP in 1977 to 1 percent in 1979. Aided by a jump in metal prices, exports more than doubled and international reserves rose by over US\$2 billion. At the same time, the Government began a program of import liberalization, eliminating many quantitative restrictions and lowering the highest tariffs.

2.11 After a peaceful transition to civilian rule in 1980, President Belaunde deepened the market-oriented reforms begun by Morales Bermudez. The import liberalization program was extended to eliminate virtually all quantitative restrictions and lower tariffs significantly. Recognizing the failure of land reform to stimulate increased production, a new law to promote and develop agriculture was passed in 1980. With the notable exception of sugar cooperatives in the *Costa*, the law permitted the division of cooperative land among its members so that by 1984, almost all the farmland in the *Sierra* and *Selva* was owned by individual units while in the *Costa* the share was 62 percent. Designed to allow prices and marketing channels to develop according to the incentives created by market forces, this new law discontinued market destination restrictions, eliminated cropping pattern requirements, removed many price controls including those on meat and vegetables, and took away some of ENCI's monopoly privileges on domestic purchases. Due to improvements in weather and the incentive framework, agriculture grew by 5.6 percent annually during 1980-82.

2.12 Despite these positive developments, the Government continued to support the monopsony enjoyed by the Rice Marketing Enterprise, ECASA, in the purchase of rice. ECASA's functions included purchasing domestically grown paddy from producers and processing it in its own mills. ECASA operated storage facilities, which it utilized for its own stocks of rice and also rented out on a commercial basis. Utilizing private transportation services, ECASA transported its rice from the point of purchase to wholesaler markets. ECASA also dealt in several categories of further processed rice products. In addition to ECASA's monopsony on rice purchases, ENCI continued to enjoy a monopoly in the import of some key

food crops and inputs. Both ENCI and ECASA continued to provide marketing subsidies, which discouraged the development of private sector participation in these activities.

2.13 The import liberalization program soon ran into difficulties. The world recession during 1981-1983, coupled with the sharp decline in metal prices and increased public spending caused the public sector deficit to increase to 8.6 percent of GDP in 1982. Inflation, which had declined slightly to 61 percent in 1980, rose to 73 percent in 1981. Instead of cutting expenditures, the Government tried to reduce inflation by slowing down the rate of devaluation. This led to a significant real appreciation of the sol while inflation remained at its earlier level. The combination of import liberalization with an appreciating sol and increased public sector deficits caused a large increase in imports, including food imports, depressed industrial production and led to a substantial decline in international reserves. This led the Government to delay payments to foreign banks and to reintroduce import controls. The situation was worsened by a series of droughts over much of the *Sierra* and *Costa*, which culminated in 1983 with prolonged heavy rains in the *Costa* that devastated crops, resulted in heavy damage to infrastructure, and caused agricultural GDP to fall by 9 percent. Inflation increased to 125 percent in 1983, which prompted the Government to reinstitute price controls on a number of food items including dairy products, rice, sugar, and bread.

2.14 Agricultural research and extension services improved considerably during 1979-1985. In 1979, with the support of USAID, an attempt was made to stabilize the public agricultural research and extension system through the creation of the National Institute of Agricultural Research (INIA). Another reorganization in 1980, supported by financial and technical assistance from the IDB, the World Bank, and USAID, transformed INIA into the National Institute of Agricultural Research and Promotion (INIPA) and the stage was set for a stable resumption of research and extension services. Although some previous research programs had to be abandoned, a relatively effective technology generation and transfer capability was re-established. In some areas the system excelled. The research programs for maize, and particularly for rice which had been maintained through the difficult period of the seventies by the Vista Florida experiment station, were considered to be the best in Latin America.

2.15 While there was an improvement in the overall policy regime facing agriculture and in research and extension activities, there were areas where the Government essentially continued with past inefficient practices. One of these areas was agricultural credit. The bulk of formal sector agricultural credit continued to be given by the state agricultural bank, Banco Agrario del Peru (BAP). Past policies with respect to the prohibition of land as collateral to institutions other than BAP continued and the low and negative real interest rates charged by BAP for agricultural credit precluded commercial banks from lending voluntarily to the sector (Statistical Appendix Table 4.1). The beneficiaries of the credit were overwhelmingly the larger farmers, especially those involved in the production of rice and cotton.

2.16 Another area where the Belaunde Government did not change the inefficient practices of the Velasco Government was in the area of irrigation policies and investments. The Government failed to prioritize the large irrigation investments so that uneconomic large projects such as Majes continued to be implemented slowly along with a number of other large long-gestation projects. In addition, the Government did little to improve the management of public irrigation schemes and continued to provide water at a fraction of its true cost. Partly as a result, the problem of salinity in the *Costa* continued to increase, with an estimated 40 percent of the agricultural land in this region being affected by salinity.

2.17 During its last two years in office, the Government improved macroeconomic policies. The public sector deficit was reduced, partly through increases in public sector prices, and a succession of devaluations depreciated the sol considerably. This led to a rapid accumulation of international reserves while inflation continued to increase. Following the 1983 floods and droughts that caused GDP to fall by 13 percent, GDP grew by 4.6 percent in 1984 and an additional 1.7 percent in 1985. However, per capita incomes during the liberalization and stabilization phase fell considerably. Between 1978 and 1985, GDP grew at an annual rate of only 1.0 percent, as compared to an annual population growth rate of 2.4 percent. While agriculture did somewhat better growing at an annual rate of 1.8 percent, this was largely due to growth in subsidized rice and corn production. Yields for most crops continued to stagnate or decline.

2.18 During this period, terrorist activities began to take hold, especially in the *Sierra*, and the Government began to lose control in parts of the country. It was also during the period that illegal coca cultivation became a significant economic activity. Initial Government efforts to control coca cultivation were unsuccessful. In 1981, when the area under coca cultivation was estimated to be 45,000 hectares, the Governments of Peru and the United States agreed to participate in a cooperative project for the repression of the production and distribution of coca. Under the agreement, CORAH (Project for the Reduction of the Coca Crop in the Upper Huallaga) was created as a body responsible for the control and reduction of coca. In turn, CORAH was supported by the UMOPAR (Mobile Unit for Rural Patrolling), a police unit in charge mainly with the protection of CORAH and the repression of traffickers in the region. The strategy consisted of the implementation of a voluntary eradication program which established a deadline after which a compulsory eradication program would follow. CORAH began to operate in the Upper Huallaga in 1983 and by mid-1985 had managed to eradicate almost 10,000 hectares.

2.19 The eradication strategy became the central part of the Upper Huallaga Special Project (PEAH), and under successive agreements with the United States it was explicitly stated that PEAH would be responsible for "diminishing the socio-economic burden on the Upper Huallaga population and their resistance to eradication". Thus, PEAH, initially conceived as one

of the several Special Projects to develop agriculture and livestock activity on the eastern slopes of the Andes, was turned into a tool to mitigate the side effects of the actions of CORAH and UMOPAR. In fact, PEAH had one of the lowest budgets among the Special Projects active in the *Ceja de Selva*. The total annual budget of the project between 1982 and 1988 was about US\$5 million; this was expected to finance nine project components including research and extension, credit, and highway maintenance.

2.20 Not surprisingly, this strategy not only failed but proved counterproductive and generated resentment against the government. In turn, peasants, contrary to the assumptions made in the eradication strategy, did not stay on their plots after the eradication process but rather moved away to more remote areas to continue the cultivation of coca since PEAH had little or nothing to offer them.<sup>4/</sup> By 1985 the total hectareage of coca had increased to 100,000.

### C. State Control and Subsidies (1985-1990)

2.21 Upon being elected president in 1985, Alan Garcia began a heterodox stabilization program. Inheriting a situation of high inflation (an annualized rate of 250 percent during the first seven months of 1985), the Garcia administration, after making some price adjustments, froze all prices, including the exchange rate and interest rates. The Government sought to stimulate growth by increasing domestic demand through substantial nominal wage increases and to contain inflation by stabilizing production costs. The Administration believed that inflation was caused by increases in costs and by inflationary expectations rather than by increases in demand. The solution was to stimulate demand through higher wages while controlling inflation via a fixed exchange rate and subsidies on credit and other inputs. Thus, in addition to the frozen exchange rate, the Government lowered prices on some publicly provided goods and services such as electricity, water, fuel and credit. It also gave out selective tax exemptions and increased directed subsidies for agricultural activities.

2.22 Although inflation fell to an annual rate of 63 percent in 1986, the frozen nominal exchange rate vis-a-vis the dollar from August 1985 to December 1986 resulted in the *inti* (the sol was replaced by the *inti* in 1985) appreciating. This caused a sharp increase in imports, a reduction in exports, and a rundown of reserves. At the same time, a wide dispersion between the official and unofficial exchange rates emerged (Graph 2). However, GDP grew by 10.8 percent in 1986 and a further 9.7 percent in 1987; since imports grew by more than exports, the growth in consumption was even higher. Real wages in Lima increased by 31 percent between 1985 and 1987. The high growth was achieved through expansionary fiscal policies which ran

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<sup>4/</sup> An analitic discussion of the assumptions used in PEAH can be found in ECONSULT (1987). (Annex A).

down international reserves, accumulated large arrears on the external public debt, and ate into the equity of public enterprises. It also required large amounts of central bank financing. During 1987 and 1988, monetary emission by the Central Bank to finance the public sector deficit reached 5 percent of GDP. This caused inflation to accelerate sharply, from 62 percent in 1986 to 1722 percent in 1988 (Statistical Appendix Table 4.2). The continuation of unsound macroeconomic policies led GDP to decline by 7.4 percent in 1988, 12.4 percent in 1989, and 2.4 percent in 1990. Moreover, inflation climbed to 2776 in 1989 and 7650 percent in 1990.

2.23 While the macroeconomic environment discriminated against agriculture, some agricultural activities benefitted substantially from output and input subsidies channeled through the two state marketing agencies. Guaranteed prices were paid to farmers for many crops that were well above world prices at the official exchange rate for a number of important commodities (including among others, rice, maize, wheat, sorghum, and potatoes). At the same time, inputs were sold at large subsidies. Fertilizer prices charged by ENCI covered only five percent of their cost during 1985-1988. The subsidies were financed initially through the Fund for the Reactivation of Agriculture and Food Security (FRASA). Resources for these subsidies were derived from budgetary flows and profits from the sale of foodstuffs imported at the official exchange rate. As production rose, and world prices for many agricultural commodities fell, the Fund became depleted. With continuing pressures to keep urban prices low in the face of increasing world prices, the marketing agencies began to be financed essentially by Central Bank lines of credit. Estimates of the costs of the previous scheme can be seen by looking at the subsidies provided to these marketing agencies from the budget and Central Bank as well as through privileged access to imports by the use of duty-free imports and a preferential exchange rate. The cost of just the exchange rate subsidy to ENCI and ECASA during 1989 was estimated at US\$300 million.<sup>5/</sup>

2.24 Another significant source of subsidy was the provision of credit at subsidized interest rates. Under *sharcia*, the trend towards replacing commercial lending for agriculture with public development banks was accelerated. The role of public credit through BAP was expanded to account for more than 90 percent of lending to agriculture. In 1989 constant dollars, BAP lent US\$550 million annually during 1985-1989. While less than 20 percent of its loans were classified as having problems or in default, this was only because farmers found it profitable to repay in order to continue to receive new loans at subsidized interest rates. In fact, farmers often paid off loans from proceeds of new larger loans. These subsidies decapitalized BAP. Whereas 70 percent of BAP's lending during 1980-1985 was done through funds received from depositors or loan repayments, 80 percent of BAP's sources of credit funds came from the Central Bank or Treasury during 1985-1990 -- only 13 percent came from repayments from past loans. Nominal

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<sup>5/</sup> Jose Eugenio Herrera, "Aspectos Institucionales y Gerenciales para la Reorganización de la Empresa de Comercialización de Insumos -- ENCI," Report to the IDB, 1991.

interest charged on most loans during this period ranged from 0 percent to 25 percent monthly, reaching a high of 36 percent in 1988 (Statistical Appendix 4.1). For loans made to farmers in the economically depressed *Trapezio Andino* (Andean trapezoid), a zero rate of interest was charged, so that monthly real interest rates reached as low as negative 29 percent, implying that only 30 cents would have to be repaid on a US\$100 loan at the end of a year. The Trapezio Andino received 10 percent of all loans made by BAP and accounted for about 16 percent of the agricultural credit subsidy. Thus, even if all of the credit made in the Trapezio Andino went to poor farmers, the main beneficiaries of the credit subsidies continued to be medium and large-scale farmers in the *Costa*.

2.25 The combination of macroeconomic policies that discriminated against agriculture with credit, water and pricing subsidies that favored agriculture resulted in a net subsidy to agriculture estimated to be US\$732 million during 1985-1990.<sup>6/</sup> However, the impact varied considerably by income group, with rich farmers receiving a tremendous subsidy and poorer farmers a net tax. According to the study, it was estimated that during 1985-90, the richest quintile received a net subsidy of US\$854 million whereas the poorest quintile faced a net tax of US\$301 million, largely as a result of exchange rate appreciation, high industrial protection, and lack of access to the credit, water and pricing subsidies.

2.26 Public research and extension activities suffered tremendously under the Garcia administration, partly as a result of a politically-motivated reorganization of the sector. The success of applied research and extension programs conducted at experiment stations throughout rural Peru in the early to mid-eighties decreased the influence of the central public institutions over producers. This was viewed by the Ministry of Agriculture as a threat to its authority. Consequently, the Ministry dissolved INIPA in 1987, brought the extension service within its fold, and created a new research institution called the National Institute for Agricultural and Agroindustrial Research (INIAA). As a result, extension services became isolated from the research effort. Productive coordination between the two became difficult to maintain and the effectiveness of the technology transfer process was severely diminished. Subsequent fiscal constraints led to a cutback of two thirds of the operating budget for the public extension service. By 1990, public extension services were practically non-existent.

2.27 From its creation in 1987, INIAA's research system began to erode. Faced with severe fiscal difficulties, the Peruvian Government cut INIAA's budget drastically. At the same time, debt-service arrears led the World Bank and IDB to suspend disbursement on their projects. USAID, through its Agricultural Technology Transfer project (ATT), increased financing for research so as to cover 90 percent of INIAA's budget and avert a total collapse of INIAA's

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<sup>6/</sup> GRADE, "Gestión Pública y Distribución de Ingresos: Tres Estudios de Caso Para la Economía Peruana," Draft Mimeo, January 1992.

program; in fact, between 1988 and 1990 a serious and successful effort was made to upgrade the level of human resources at INIAA by offering talented researchers attractive salaries. However, this could not prevent a decline in agricultural research. Lacking resources for operating and maintenance costs, research facilities continued to deteriorate, staff and real salary levels shrank, and service levels were reduced.

2.28 In keeping with its decentralization initiative, the Garcia Administration began a program to transfer public experiment stations to regional governments. In the last months of the Garcia government, ownership of 17 of the experiment stations (about half) were transferred to regional governments. The move towards decentralizing the administration of research and extension services has been hampered by the budgetary difficulties of the regional governments during their initial stage of existence. In some cases, INIAA continued to manage the transferred stations.

2.29 Despite the heavy price and credit subsidies, the Garcia years witnessed a decline in agricultural investment, both private and public. Public investment declined from 1 percent of GDP during the 1980-1985 to less than 0.7 percent of GDP during 1986-1990. Following a surge in 1986, private investment also fell during the Garcia years. Public investment in agriculture continued to be oriented toward large uneconomic irrigation schemes. However, the policy framework for irrigation and water pricing policies improved somewhat towards the end of the 1980s. Partly as a result of fiscal constraints and the realization that irrigation schemes could no longer be maintained by public funds, the Government passed two resolutions giving user groups rights and responsibilities with respect to the operation and maintenance of public irrigation schemes. However, in the deteriorated institutional and economic climate, this was of little practical significance.

2.30 Agricultural production rose by 11 percent between 1985 and 1987 in response to the incentives provided to producers by the guaranteed producer prices and input and credit subsidies. These incentives created a dramatic improvement in agriculture's terms of trade with the rest of the economy, which rose by over 75 percent between 1985 and 1987. However, when the macroeconomic situation deteriorated the subsidies could not be sustained: BAP had no more money to lend out; ENCI and ECASA had no funds to subsidize inputs or support prices; public investment in agriculture dropped to almost nothing; and crucial operations and maintenance activities were not carried out. Thus agricultural production fell by 3.6 percent in 1989 and a further 9.8 percent in 1990.

2.31 Another significant development that occurred during the Garcia years was the tremendous growth in coca cultivation and a growing link between the coca and terrorism. Ironically, *Sendero Luminoso's* early forays into the drug business were prompted by its opposition to the drug traffickers and by its view that the peasant farmers needed protection from

the traffickers. Farmers paid *Sendero* a fee for this protection. However, subsequently *Sendero* and the traffickers found they stood to gain by cooperating with each other. It became usual for the traffickers to pay *Sendero* for their protection against police and military interference. This allowed traffickers a free hand in the area. At the same time, *Sendero* found this to be an important source of financing for its activities and a useful way to further disrupt the workings of the Government as well as find new recruits.

2.32 Efforts to control drug trafficking during the Garcia years were unsuccessful. While Garcia's strategy of dealing with the drug problem was basically the same as that of the Belaunde years, there was an increased emphasis on interdiction of drug traffickers rather than farmers. Operations mounted by UMOPAR, the National Police, and the military were aimed at disrupting air strips and coca-processing laboratories. However, no major efforts were made to improve conditions for legitimate agriculture. The severity of the economic crisis beginning in 1988 resulted in the total abandonment of the transport infrastructure and in making ENCI and ECASA unable to carry out their price support functions in the *Ceja de Selva*. The allocation of subsidized foreign exchange for rice imports under the prevailing multiple exchange system exacerbated the situation. During the last years of the Garcia regime, Peru imported rice from the Far East while large quantities of rice rotted in the *Ceja de Selva* and producers went unpaid. The lack of alternative means of livelihood for farmers led to a rapid increase in the coca cultivation. By 1990, despite falling coca prices, the area under coca cultivation had doubled to over 200,000 hectares, the bulk of which was in the *Ceja de Selva*.

### **III. POLICY REFORMS OF THE FUJIMORI GOVERNMENT**

#### **A. Introduction**

3.1 As in other areas, the Fujimori Government took a series of reforms in agriculture with the aim restoring long-term economic growth. The reforms were aimed at (i) improving incentive policies so that prices more closely reflect their opportunity cost, (ii) reducing government subsidies in order to control the budget deficit and inflation, (iii) improving the regulatory environment to promote private investment, and (iv) controlling violence and drug trafficking. In this chapter, the specific policy measures taken by the Government in various areas are described and their effectiveness is evaluated. The broad areas are:

- (a) macroeconomic and trade policy reforms to help stabilize the economy and allow domestic prices to more closely reflect international prices;
- (b) agricultural marketing and pricing reforms aimed at encouraging private sector participation, eliminating budgetary subsidies, and reducing fluctuation in food prices, while continuing to give some protection to farmers;
- (c) land market reforms to allow increased efficiency of land use;
- (d) financial sector reform to allow increased efficiency of credit use and eliminate dependence on Central Bank lines of credit;
- (e) irrigation policies to improve the management and operation of public irrigation schemes while reducing fiscal dependence;
- (f) research and extension measures aimed at making these activities more demand-driven and less vulnerable to political developments; and
- (g) coca and terrorism measures to curb violence and illegal activities.

#### **B. Macroeconomic and Trade Policies**

3.2 The macroeconomic program focussed on stabilization measures aimed at eliminating the main source of hyperinflation -- Central Bank financing of the fiscal deficit. Key aspects of this program were tight controls over the public sector wage and salary bill, a forty-fold increase

in fuel prices, and roughly eleven-fold increases in prices of electricity, water and telephone services. A tight domestic credit policy was implemented while central government finances were maintained on a cash basis (without recourse to Central Bank credit). Sales tax and import duty exemptions were virtually eliminated and many fiscal measures were taken to simplify and broaden the tax base while improving tax administration. The unification of the exchange rate, by eliminating the subsidized official exchange rate, was also expected to contribute to an increase in fiscal revenues. These measures allowed Peru to achieve a debt workout with its creditors and to obtain fresh monies. The Government renegotiated its debt with its bilateral creditors on favorable terms, cleared its arrears with the IDB and received sizeable fresh loans, and agreed with the World Bank and IMF on an economic adjustment program, which forms the basis for additional loans.

3.3 Other significant macroeconomic and cross-sectoral measures aimed at improving economic efficiency were: (i) the *de facto* elimination of ceilings on interest rates; (ii) the establishment of full convertibility of the sol (the inti was replaced by the new sol in 1991) in all current account transactions and almost all capital account transactions; (iii) the implementation of a far-reaching deregulation and privatization program; (iv) the reduction of state monopolies; (v) the decontrol of virtually all prices; (vi) the elimination of the discriminatory obstacles against foreign investment; (vii) the implementation of financial sector reforms to promote a more competitive and sound financial system; (viii) the amending of labor laws to broaden provision for layoffs; and (ix) the implementation of a variety of measures affecting external trade.

3.4 The external trade measures were aimed at increasing efficiency in production and consumption by having domestic prices more closely reflect their opportunity cost. In one of the most dramatic trade liberalization episodes of the post-war era, the Government virtually eliminated all quantitative restrictions and reduced tariffs drastically. With the intention of moving to a 15 percent uniform tariff by 1995, tariff levels were lowered to just three rates by March 1991: 5, 15 and 25 percent, with about 80 percent of import items carrying the 15 percent rate. At the same time, licensing procedures for imports and exports were simplified, and port reforms substantially lowered the costs of loading and unloading goods for export or import. New anti-dumping legislation was introduced and phyto-sanitary measures that had often been used as a mechanism for banning agricultural and food imports were simplified and their control was delegated to Customs.

3.5 With some exceptions, the reforms described above have essentially been implemented as envisaged. The main exceptions relate to the agricultural sector. From the beginning, it was decided that certain agricultural imports would have import surcharges imposed on them, ostensibly to counteract the subsidization of these products by some developed countries and to stabilize prices. A description of the measures taken is given in the following section. In addition, with the deteriorated economic situation of the agricultural sector caused by an

appreciating sol, high real interest rates, and increased costs of fuels, there was tremendous political pressure to provide some additional incentives to farmers. As a result, an Emergency Agricultural law passed by Congress in November 1991 gave credit and fuel subsidies to agriculture as well as imposed additional sales tax surcharges on luxury agricultural products. Although Fujimori vetoed the law, his veto was overridden by a two-thirds majority in Congress.

3.6 Fujimori's stabilization program has been generally successful. Monthly inflation fell sharply to single digits within six months of Fujimori's coming to power and has averaged just over four percent in recent months. After falling by 12.4 percent in 1989 and 2.4 percent in 1990, real GDP increased by 2.1 percent in 1991. However, there are several factors that could thwart the stabilization program and efforts to restore growth. The fiscal situation remains precarious and a continuing dollarization process could push up money velocity and fuel inflation. In addition, the sol has appreciated substantially since the launching of the stabilization program (Graph 2), which could increase pressures to reintroduce capital controls. Moreover, real interest rates continue to be high -- during the last quarter of 1991, real interest rates averaged six percent monthly on loans in soles (100 percent annually in real terms) while nominal interest rates on dollar loans ranged 25-28 percent annually. The appreciated sol and high real interest rates have stifled the agricultural and industrial sectors, exacerbating unemployment and creating social tensions and pressures to reverse more policies. Compounding these problems is continuing terrorist activity which undermines business confidence.

### ***C. Pricing and Marketing Policies***

3.7 President Fujimori inherited a system of price supports to farmers for selected agricultural commodities coupled with regulated consumer food prices. This operation was being carried out mainly by the two marketing agencies, ECASA and ENCI. During 1985-1987, the agencies were able to cross-subsidize their crop purchases from farmers by sales of duty-free imports at a favorable exchange rate. However, as a result of overstaffing and rising international prices, the marketing agencies incurred huge losses.

3.8 The Fujimori Government decided to dismantle the costly system of guaranteed prices to producers and replace it with a price floor mechanism, implemented through the use of agricultural import surcharges, called *sobretasas*. At the same time, in order to promote private sector participation in agricultural marketing, the Government eliminated consumer price controls and took measures to reduce Government intervention in marketing.

### **Price Policy: *Sobretasas***

3.9 Measures to liberalize price policies were complemented by trade policy measures which removed all import duty exemptions and moved towards a flat tariff system. However, the Government was concerned that, having eliminated input subsidies and guaranteed prices for agricultural outputs, a new program was needed to protect producers from the instability of prices in world commodity markets as well as from the "unfair" competition from countries where agricultural production and exports are subsidized. Influenced by this concern and the policy regimes of other members of the Andean Pact, Peru decided to adopt a scheme designed to provide a floor price for imported agricultural commodities through a system of import surcharges linked to historical levels of world prices.

3.10 The system for calculating the agricultural import surcharges or *sobretasas* went through several changes. In March 1991, the Government introduced a system of "compensatory" surcharges, whereby an internal price objective was determined and the *sobretasa* was calculated as the difference between this internal price objective and the prevailing international market price. These surcharges, which were imposed over the basic import tariff of 15 percent, ranged from 4 percent for corn to 48 percent for wheat. While the surcharges provided a constant degree of nominal protection to each commodity, because they were fixed in value they did nothing to minimize price fluctuations. Further, they were not consistent with the tariff schemes being employed by the other countries of the Andean Pact.

3.11 A different protection scheme was adopted in May, 1991. The new scheme, called a price band scheme, was to apply to all of the agricultural commodities for which there exist significant levels of imports into Peru. The commodities were sugar, wheat, rice, wheat flour and pastas, hard yellow corn, sorghum, powdered milk, and anhydrous milkfat. The basic concept behind the scheme was to link the internal price for a commodity to a moving average of its corresponding price on the world markets. This would be accomplished by imposing variable tariffs (or subsidies) on imports whenever the world price falls below (or rises above) a specified range from the moving average. The effect of such a procedure would be to force the internal price for the commodity to remain within a specified "price band" around the moving average (initially established as one standard deviation from a sixty month average). In this way, the internal market would be shielded from relatively quick and extreme movements in the world price, but would also respond, with a lag, to secular trends in world prices.

3.12 The details of the scheme were altered several times over the course of 1991. The idea of using the standard deviation of historical price movements as the appropriate basis for establishing the width of the price bands was controversial and was eventually abandoned. The scheme, as it has been put into practice, does not actually establish a "price band" around the moving average. It has been transformed into a program which, rather than insuring that internal

prices fall within a certain band around the moving average, now ensures that internal prices do not fall below the moving average. The concept of a price ceiling has been dropped altogether. Essentially, then, the adopted policy is to use a variable tariff (or *sobretasa*) to establish a price floor at the level of the moving average described above, where the moving average is adjusted to reflect the cost of transporting the commodity from the source of origin to Peru.

3.13 However, exceptions have been made for several commodities. In the case of dairy products, the price floor is not being calculated using a moving average of past prices. Rather, a fixed price floor has been adopted, US\$496/ton (equivalent to about 31 percent of its cif price) for powdered whole milk and US\$614/ton (roughly 34 percent of its cif price) for anhydrous milk fat. The items subject to the variable surcharge were also changed frequently. In addition, to calculate the *sobretasa* for wheat flour, a controversial multiplicative factor of 1.4 was applied to the dollar surcharge for wheat. No such conversion factors were implemented for secondary products of the other protected primary commodities. In fact other derivative products have not received any surcharge. Another curious trade restriction on milk products was introduced in connection with the fixed *sobretasa* scheme. This restriction forbids the commercial reconstitution of imported powdered milk in Peru, thereby giving additional protection to fresh milk producers and hurting milk consumers. Frequent changes in the formula and commodities in the scheme between March 1991 and March 1992 has led to large changes in nominal and effective protection (Tables 3.1 and 3.2).

Table 3.1 **NOMINAL PROTECTION FOR THE MAIN TARIFF SCHEDULE ITEMS SUBJECT TO THE SURTAX**

	1991					1992				
	DS-EF	DS-AG	DS-AG	DS-AG	DS-AG	DS-EF	DS-AG	DS-EF	DS-EF	D. Ley
	053-91 Mar 21	016-91 May 02	032-91 Jun 30	038-91 Sep 13	039-91 Sep 13	027-92 Feb 12	005-92 Mar 25	062-92 Mar 27	089-92 Mar 27	25528 Jun 5
Hard Wheat, Except that for Sowing	57%	26%	28%		64%		16%	36%	49%	38%
Yellow Hard Corn and Sorghum except that for Sowing	5%	0%	12%		10%		4%	17%	26%	17%
Rice Paddy							5%	10%		13%
Rice - Milled		0%	13%		8%		5%	10%	9%	13%
Rice - Milled and Polished	16%	0%	13%		8%		5%	10%	9%	13%
Rice - Broken		0%	13%		8%		5%	10%	9%	13%
Wheat Flour	38%	20%	22%		45%		16%	36%	49%	30%
Raw Sugar Cane	13%	0%	0%		21%		19%	31%	26%	16%
Other Refined Sugars	13%	0%	0%		21%		19%	31%	26%	16%
Pastas	51%	20%	22%		45%		16%	36%	49%	30%
Nonfat Powdered Milk	28%	0%	38%	37%		34%		34%	34%	34%
Powdered Whole Milk	37%	20%				34%		34%		34%
Dehydrated Milkfat	21%	14%	17%	34%		34%		34%		34%
Number of Tariff Schedule Items Subject to Surtax	19	18	18	2	16	6	32	20	18	20

Source: J. Escobal and A. Briceño. *El Sistema de Sobretasas Agrícolas en el Perú: Evaluación y Recomendaciones*. Aug. 1992.Table 3.2 **EFFECTIVE PROTECTION OF SELECTED PRODUCTS SUBJECT TO THE SURTAX**

	May 1991	June 1991	Sept. 1991	May 1992	June 1992
Wheat	31.1%	34.3%	95.1%	47.2%	49.3%
Wheat Flour	16.3%	19.4%	24.5%	51.0%	17.0%
Rice	15.0%	28.2%	21.2%	25.1%	28.2%
Yellow Corn and Sorghum	-2.8%	17.2%	13.9%	27.2%	27.5%
Sugar Cane	12.2%	12.7%	36.0%	47.0%	30.8%
Powdered Whole Milk	104.0%	-1.2%	-0.7%	73.6%	73.4%

Source: J. Escobal and A. Briceño. *El Sistema de Sobretasas Agrícolas en el Perú: Evaluación y Recomendaciones*. Aug. 1992.

## Marketing Reforms

3.14 The main reforms in the area of marketing dealt with the treatment of the two marketing agencies, ECASA and ENCI. The Government rescinded the monopoly rights of ECASA to market rice, allowing private traders to enter the trade. In the international marketplace, the monopoly rights of ECASA to import rice were also removed. Similarly, ENCI's monopoly privileges over the importation of corn, wheat, sorghum, dairy products, oilseeds, and agricultural inputs were eliminated. The Government also undertook a program to liquidate ECASA and to downsize and restructure ENCI. Specific actions related to these reforms are described below.

3.15 At the outset of the Fujimori Government, the nature of the appropriate role for ECASA and ENCI was reexamined. Both agencies had carved out niches for themselves in the implementation of the Garcia Administration's price policy regime. In the process, both agencies had grown rapidly. ECASA's staff grew from 1655 in 1984 to 4812 in 1989 while ENCI's staff grew from 1100 to 3200 over the same period. Prior to 1990, neither agency was accustomed to operating under the pressures of a competitive economic environment, and consequently, neither ECASA or ENCI operated efficiently. Operations were heavily bureaucratic and the staff of each agency had grown far more rapidly than had the volume of business.<sup>2/</sup>

3.16 With the thrust towards liberalization instituted by the Fujimori Government, ECASA was forced to reorganize itself in November 1990. As a result, it improved its financial position and was able to reduce its arrears to its client producers. Nevertheless, the decision was taken in April 1991 to dissolve ECASA, and a commission was formed to oversee the liquidation of its assets. While there have been delays in the liquidation of ECASA, it is now nearing completion.

3.17 ENCI, although it had lost its monopoly privileges over the internal market ten years earlier, also retained an important role throughout the 1980s in the implementation of the Government's agricultural price policy. It was able to do so because it received import duty exemptions, preferential exchange rate privileges, and transfers from the budget and Central Bank. With the liberalization of the agricultural commodity markets and removal of ENCI's privileged import status, the future role for ENCI became unclear. Many of the activities which previously had been ENCI's primary functions are now performed by the private sector.

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<sup>2/</sup> One observer noted that when visiting ENCI's offices during this period of time, the large number of people sitting in the hallways gave one the impression that business was booming and the place was overflowing with customers. In fact, the explanation for the presence of so many people sitting in the hallways was that the size of the staff was growing so quickly that it was not possible to provide adequate office space for all of the employees.

Furthermore, having grown accustomed to operating under subsidized conditions, and having evolved into a heavily bureaucratic structure, ENCI does not seem to be able to compete effectively with the private sector in the very services which it has dominated for so long.

3.18 Like ECASA, in November 1990 ENCI was ordered to reorganize in order to adapt to the new economic environment. Its access to Central Bank lines of credit or budgetary transfers was to be eliminated. ENCI's management responded with a plan of action according to which ENCI would continue with essentially the same types of operations in which it has always been engaged. However, the plan proposed a major downsizing and restructuring designed to cut costs and to improve efficiency. An important part of this cost cutting plan involved reducing by more than two thirds existing personnel in the short term from a total of 3,200 in 1990 to 1,300 in 1991, with a goal of eventually reaching a level of 900 employees by the end of 1992.

3.19 The plan to decrease the size of ENCI's work force has been slower than planned due to a lack of funds for separation packages (estimated at US\$14 million). Even after this problem has been resolved, it is questionable whether, after restructuring, ENCI will be able to compete with the private sector without subsidies. In the meantime, ENCI is carrying on costly operations in the *Sierra* and *Selva* and received a credit guarantee from the State Bank (*Banco de la Nación*) to import urea. The credit guarantee was subsequently rescinded and ENCI's assets are in the process of being sold to the private sector. According to a new restructuring plan, by the end of 1992 ENCI's staff are expected to be reduced to 10-15 percent of its March 1992 level. More recently, ENCI was incorporated into the list of public enterprises to be privatized; however, as yet no action has been taken on this.

#### ***D. Land Tenure Policies***

##### **The Situation Inherited**

3.20 The 1980 Belaunde land tenure reforms encouraged the dismantling of cooperatives and the distribution of land among former cooperative members. By 1990, about 80 percent of the Agrarian Reform enterprises had been converted into independent smallholder units<sup>8/</sup>. However, the 1980 reforms failed to enact the necessary legislation required to replace the agrarian reform's collectivist tenure systems with more appropriate land tenure arrangements that would allow farmers to use, lease, or sell their land. Moreover, the national cadastre conducted immediately following the Agrarian Reform was not maintained. Consequently, most farmers

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<sup>8/</sup> The most notable -- and problematic -- are the twelve coastal sugar cooperatives, which in order to maintain economies of scale, by law were prohibited from parcelling their lands out among their members, or from changing their production and management systems.

remained without formal title to their land and operated under informal tenurial arrangements, with accompanying inefficiencies. Thus, many of the coastal Agrarian Reform beneficiaries were effectively transferred from the formal to the informal sector of the economy. A similar process was evident in the *Sierra*, where the break-up of the large associated enterprises of the Agrarian Reform created an institutional void, in which systems of land distribution and methods of resource allocation were left to be resolved by informal, and often highly volatile and unpredictable, arrangements at the local level.

3.21 The Agrarian Reform units in the southern *Sierra* were drastically restructured following the massive land invasions during 1985-87 and the threat of large-scale armed conflict posed by *Sendero Luminoso*. The central production units, in the main based on the old hacienda, were greatly reduced in size, and in many cases redistributed; lands from the dismembered SAIS were frequently transferred to surrounding *comunidades campesinas*, that were previously reluctant members of the enterprise. In many cases, these lands were further distributed to individuals; in others, ex-members of the SAIS constituted formally recognized *grupos campesinos* or *comunidades campesinas*. During the early years of the Garcia administration, legislation favored the traditional form of landholding, while openly discriminating against those enterprise or land tenure types that had survived the Agrarian Reform. In this way, the number of *comunidades campesinas*, legally constituted as well as formally recognized, grew rapidly over the last decade.

3.22 However, the process of restructuring was not completed. The increasing fiscal and economic constraints facing the Garcia administration from 1987 onwards, coupled with a significant shift in sector policies and investment priorities, forced official attention away from the issue, before the redistribution of land and the parallel reorganization of tenure and production relations could be adequately carried out and consolidated. In many cases, reorganizational work was made impossible by the presence of Sendero, which effectively destroyed the existing land tenure system and imposed its own (often transitory) systems of land distribution and forms of production organization. Elsewhere in the *Sierra*, and more recently in strategic areas of the coast, Sendero's attacks against the better capitalized, reasonably-well managed and successfully functioning SAIS of the central highlands and sugar-producing cooperatives on the north coast led to a curtailment in investment and an abandonment of lands. Many agricultural lands in the central and southern *Sierra* have been abandoned by their owners.

### Recent Reforms

3.23 Since taking office in July 1990, the Fujimori administration has approved a number of laws relating to the agricultural sector, of which DL 653, promulgated in August 1991, and its subsidiary regulatory legislation DS 0048-91-AG, issued in November 1991, are the most important. Called the Agricultural Investment Promotion Law, DL 653 aims to modernize the

agricultural sector by liberalizing the markets for agricultural inputs and outputs, with particular emphasis on land markets and the creation of modern land tenure systems. Along with other broad economic policy and institutional changes, the law is intended to create a stable long-term policy environment for the sector, in which agriculture as a productive activity will once more be fully integrated into the national economy, and not be ascribed a largely political or redistributive social function. The changes are intended to renew domestic and foreign investment, improve economic efficiency, and sustain agricultural growth. The role of the private sector in its traditional areas of activity (production, marketing, credit) is re-established, and the sector is encouraged to assume greater responsibility in fields such as research and extension and irrigation, where over the last few decades the government has traditionally played a predominant role. In areas where the government is to continue to operate on an active basis, as for example in the allocation and adjudication of lands for agricultural development, the legal and administrative systems have been simplified and modernized.

3.24 With some exceptions, agricultural land can now be freely bought and sold by any individual or legal entity. In addition, it can be rented or used in any other form of tenurial arrangement, such as sharecropping. The main exceptions to this law involve the traditional sectors of the economy such as the *comunidades campesinas* and *comunidades nativas* (indigenous communities in the *Selva*). This is because their land tenure and organizational status are specifically protected by the constitution. The other exception is the prohibition of purchase or sale of land that does not conform to the legal minimum or maximum land holdings. While the Fujimori Administration raised maximum land ownership limits, it did not eliminate them based on widely held beliefs that this could lead to the socially destabilizing land distribution system existing prior to the Agrarian Reform. Coastal limits on land ownership were raised from 150 to 250 hectares of irrigated land or its equivalent in rainfed land, while the corresponding limit in the *Sierra* was raised to 60 hectares. Minimum sizes of landholdings were to be determined at the regional level, according to local ecological and agricultural conditions.

3.25 Under DL 653, land areas larger than 5 hectares can also once more be mortgaged as collateral for agricultural or other credit use. The regulations of DL653 allowed farmers holding less than 5 hectares to mortgage their land, but only for agricultural activities. Perhaps fearing that unscrupulous powerful farmers might succeed in seizing the land of small farmers, the Agrarian Emergency Law subsequently repealed this rule so that farmers with fewer than 5 hectares of land are not able to mortgage their land. For the first time since 1969, private and public companies or corporations are permitted to own and operate land. Foreigners and foreign companies can enter and leave the market on the same terms as national enterprises. The only exception to this is for lands located within 50 kilometers of the national border.

3.26 Producers are now free to enter and leave the sector at will, and to determine for themselves the most appropriate form of management structure under which to operate. These

measures should encourage many inefficient or unproductive small producers to rent or sell their properties. Those remaining Agrarian Reform enterprises which until now have been prohibited from changing their operational or management status, as for example, the large coastal sugar cooperatives, are now free to restructure themselves, and to adopt a different management form, according to the majority decision of their members. Two sugar cooperatives are already in the process of conversion to corporations.

3.27 In an attempt to modernize and speed up sector administration, DL 653 also contains a number of measures designed to cut down on wasteful and time-consuming bureaucratic procedures, and to reduce or remove the opportunities for corruption. Many legal restrictions and regulations which formerly limited access to, or effectively controlled participation in, diverse activities ( e.g., marketing and credit) in the agricultural sector have simply been abolished. The legal requirements for all forms of private land transactions and loan contracts have been reduced and greatly simplified. The adjudication and allocation procedures for unirrigated lands receiving insufficient rainfall, *tierras eriazas*, and for state lands in the *Ceja de Selva* and *Selva* have also been rationalized, and are to be subject to strict controls. Public sector lands are to be sold rather than allocated on a grant basis. With the exception of some small parcels of land, all government-owned lands and *tierras eriazas* are to be adjudicated by the State at market value. However, abandoned lands and undeveloped but legally assigned *tierras eriazas* are subject to expropriation and reallocation, although compensation is to be paid at market prices. Adjudicated lands which are not subsequently developed in accordance with a rigorous time schedule are to revert to the State, and are to return to the market.

3.28 One of the more significant reforms to simplify administrative procedures in recent years has been in the area of land titling and registration. At the urging of the Institute for Liberty and Democracy (ILD), the Garcia Government published DL 495 and 496 setting up the legal basis for a property register, the *Registro Predial*, that allowed persons meeting certain criteria (eg. no land disputes with neighbors) to register their properties at a fraction of the cost and time taken under the previous system. Although it is different from the long-standing *Registro Público de la Propiedad Inmueble* (public register for real estate), it is legally recognized for the sale and purchase of land as well as for mortgage purposes. Originally used to title squatter settlements in urban areas, the new register was extended to rural areas under DS 026-90. The Fujimori Government, by publishing DL 653, inadvertently overrode the earlier law, but rectified its oversight and reaffirmed the importance of the property register by publishing a new law, DL 667, a month later. The property register exists in parallel with the public register, which continues to register expensive urban properties that are able to go through its cumbersome, long and expensive procedures. While the property register has registered about 40,000 titles by May 1992, less than 300 of these are rural properties.

3.29 As yet, these reforms described in this section have not led to the flurry of rural property sales that would be expected following such a major liberalization in the land market. While there is anecdotal evidence to suggest that the number of rental transactions has increased, it is not clear the extent to which this is due to the liberalized rental regulations. With the high cost of credit and depressed economic conditions, the rentals may have occurred informally even in the absence of the new laws. As economic activity resumes, it is expected that land rental and sale transactions will increase substantially, leading to a more efficient use of land.

### *E. Agricultural Credit*

3.30 The Fujimori Administration's main concern was to stop subsidies to the BAP. Preferential interest rate lines were discontinued, BAP's interest rates were raised to levels charged by commercial banks for non-agricultural lending and BAP was informed that it would no longer have access to Central Bank lines of credit and would therefore need to make a profit on its loans. The Government also removed BAP's monopoly on being the only institution that was able to receive land as collateral for its loans.

3.31 With rapidly declining inflation and tight monetary policy, economy-wide domestic interest rates in soles during the last quarter of 1991 shot up to a peak of 6 percent a month in real terms whereas nominal dollar interest rates averaged over 25 percent annually. When BAP eliminated its interest rate subsidy, the high real interest rates coupled and strong sol (that encouraged imports and kept domestic prices of agriculture low) made it difficult for farmers to repay their loans. As a result, BAP collections fell markedly during 1991, and loan recovery during the latter half of 1991 fell to virtually nothing. In the hope of recovering at least some of BAP's loans, the Government then instructed BAP to convert some soles loans to dollar denominated loans in order to let farmers take advantage of the lower dollar interest rates and appreciated sol. The Government was expected to pay BAP the difference between the two repayment mechanisms. When it failed to do so, Government arrears to BAP grew to over US\$150 million by early 1992 as compared to BAP's equity of only US\$65 million.<sup>9/</sup>

3.32 To cope with this new situation, BAP began to reduce staffing and costs. BAP's personnel had grown from 3479 in 1983 to about 5918 in 1990, with over 50 percent in administrative positions, even though the loan area covered remained about the same at 600,000 hectares. Although BAP lent solely for agriculture, 20 percent of its staff was based in Lima. Through a program of voluntary and involuntary retirement, the staff were reduced to 4000 by the end of 1991.

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<sup>9/</sup> About half the Government arrears were due to the non-payment of interest rate subsidies under the last Government.

3.33 Realizing that even after staff reductions, the development banks would have difficulties operating in an unsubsidized environment, the Government issued a decree in November 1991 merging the four development banks into a National Development Bank (BNF). There were to be strict controls on the operations of this new bank. The new bank was to be largely a second-tier institution receiving funds only from budgetary transfers or external loans and grants. It would not be allowed to take deposits or receive Central Bank lines of credit. Its first tier operations were to be restricted to emergency and depressed rural areas in the *Sierra* and *Selva*.

3.34 The Administration's plans, however, could not be carried out as envisaged. Through the Agrarian Emergency Law, Congress annulled the dissolution of development banks and specifically earmarked funds from agricultural import surcharges and additional duties on agricultural imports for funding BAP. However, on the same day, the Emergency Law was published (February 26, 1992), the Administration published another decree whereby BAP was ordered by the Superintendent of Banks to cease operations since its uncollected loans, including those made to the Government, exceeded its equity and reserves. A process of returning deposits to account holders was begun and BAP staff were given severance packages. By March 1992, BAP personnel had shrunk to 1250 and all branches in rented offices were closed. BAP is now under liquidation and is expected to reduce its staff to less than 100 by the end of the 1992.

3.35 The Government has now decided not to carry out any first-tier operations. However, in May 1992, it passed a law creating a new second-tier institution, the Banco de Fomento Nacional (BFN), to lend for development activities of small businessmen and agriculturalists. However, as of August 1992, no significant additional measures have been taken towards making this bank operational. This is partly because the Government is considering merging the new Bank with COFIDE to create a single multisectoral second-tier bank.

3.36 In addition, following the dissolution of Congress and regional governments in April 1992, the Government abrogated the old Agrarian Emergency Law and passed a new Agrarian Emergency Law which declared an agrarian emergency until the end of 1993 and allocated about \$180 million from the budget to help alleviate the emergency. The bulk of the money, which includes the \$50 million for seasonal credit (up to 240 days), is for agricultural credit to be disbursed via regional FONDEAGROs, producer associations and input suppliers. It also issued regulations determining the formation and operation of *Cajas Rurales*, essentially small private banks with many shareholders and a smaller equity requirement than for commercial banks. Equity for the *Cajas* is to be raised by private investors and the institutions are to be supervised by the Superintendency of Banks.

## ***F. Irrigation***

**3.37** Peru's irrigation systems deteriorated considerably during the last years of Garcia. This was caused primarily by the lack of fiscal resources to execute large-scale irrigation projects or to maintain and operate existing public schemes. At the same time, the level and collection of water charges was insufficient for user groups to maintain the schemes. Recognizing its inability to maintain the public schemes, the Garcia Administration passed regulations in 1989 and 1990 giving increased responsibility to user groups for the operation and maintenance of these schemes (para. 2.31). However, it was not until the promulgation of the Agricultural Investment Promotion Law (Law 653) by the Fujimori Government in August 1991 that the responsibility for the management and administration of irrigation systems was fully transferred to user groups and that the conditions for a coherent demand-driven strategy for the development of irrigation were established.

**3.38** The Investment Promotion Law aims to restructure the irrigation sub-sector, with a view to making it more modern and efficient. Over the medium-term, the private sector is expected to spearhead major initiatives in the development of new irrigation schemes, introduce more efficient systems of irrigation, and promote modern systems of operation and management. Key elements in this strategy include the effective implementation of water tariffs, which would, at a minimum, cover full costs of operations and maintenance (O&M); the participation of water user organizations in the management and financing of their own irrigation systems; and the creation of a new administrative and operational structure, the Autonomous Hydrographical Basin Authority (AACH), which will cover the full catchment area of a river basin, including upstream areas. The AACH is to be responsible both for irrigation activities in the lower reaches and for soil and water conservation projects and forestry programs in the upper headwaters.

**3.39** Water charges are to be calculated according to the cost of a technically sound O&M program, and would cover investment costs where appropriate. Other costs, such as the cost of soil conservation and afforestation programs in the upper reaches of the river basin, would also be included in the tariff. User charges would thus be levied on a local and not a national basis. The strategic long term goals of water pricing and management policy would reflect the true value of water, inducing more efficient use. Coupled with the liberalization of the land market and a more flexible water rights policy, it would result in weeding out inefficient producers from the sector and in introducing regional changes in the patterns of land use. The higher water charges are expected to lead to the replacement of traditional, low-value, water-intensive crops in the *Costa* with higher value export crops.

**3.40** The long-term development strategy for the sector is to be revised, and ongoing projects are to be prioritized, and in many cases downsized. Public sector investment is to be reoriented to rehabilitation rather than construction, and new schemes are not to be initiated until

projects currently being executed are finished and fully operational. Future public investment in new irrigation schemes is to be strictly dependent on fiscal capacities, and will be directed to projects with a strong social and employment creation component: such schemes are intended to encourage greater participation by small farmers and individual investors in the sector, and the size of land holdings and development requirements will correspondingly reflect this. Existing irrigation schemes are to be rehabilitated and upgraded by the user groups with assistance from the Government. At the same time, the private sector will be actively encouraged to develop its own irrigation schemes. Development incentives are to be given to the private sector in order to establish projects using advanced irrigation technologies which exploit groundwater on lands which receive too little rainfall for cultivation (*tierras eriazas*); all such development will be dependent on increasing the net volume of irrigation water available in the area of operation.

3.41 Under the new strategy, regional governments are to play an important role in the future development and maintenance of irrigation projects within their area of jurisdiction. Closer coordination is to be maintained between the Ministry of Agriculture and the National Institute for Development (INADE), the relevant AACH, the administrative entity corresponding to the larger irrigation schemes, the National Planning Institute (INP), water users associations, and the respective regional government. The potential conflicts of interest that could exist between each of these bodies, and the allocation of individual responsibilities, have still to be worked out in detail. Existing disputes between regional and central governments for the control and management of some of the larger coastal schemes are an indication of some major policy issues which have still to be resolved.

3.42 While the strategy is generally sound, its implementation has not proceeded as quickly as envisaged. As of July 1992, only three of the AACH had been created, and water tariffs continue to be set by the Government at levels that are far below those required for adequate operation and maintenance, let alone to recover capital costs. In addition, important issues relating to water rights have not yet been addressed. Finally, in April 1992, the regional governments were dissolved, thus requiring new arrangements for the coordination between the various groups involved in irrigation activities. The Government is presently addressing some of these issues with assistance from the World Bank, FAO/CP and IDB.

### ***G. Research and Extension***

3.43 The decline in Peru's public research and extension system continued after the arrival of Fujimori. The macroeconomic fiscal situation precluded raising public sector salaries in real terms. As a result, salary levels for research and extension staff were only 10-20 percent of their 1985 levels, insufficient to attract talented staff. Recognizing the fiscal constraints and the ineffectiveness of on-going agricultural research and extension activities, the Fujimori

Government started a program to lay off staff. INIAA's staff, which had fallen from over 7,000 employees in 1987 to roughly 6,000 in July 1990, fell further to 3,000 in March 1991, and again to under 1,000 in December 1991. Extension staff, which numbered almost 1400 prior in 1986, now number less than 100.

3.44 Research and extension activities of the public universities deteriorated sharply due to severe cutbacks in the university budget. This resulted in low salary levels of only US\$200-300 per month for professors, causing many to leave the universities for alternative employment. Even those that stay on have little time for research because they often need to take on secondary jobs or handle very large teaching loads. University laboratory and other experimental facilities remain severely underutilized. Since basic research and the associated training of researchers and practitioners are complementary to the national agricultural research and extension effort, the erosion of the university's ability to fulfill its role seriously threatens the effectiveness of the entire system.

3.45 With the decline of the national research and extension system, the role of NGOs and externally-funded activities has become increasingly important. The International Potato Center (CIP) is about the only institution in Peru carrying out basic agricultural research. Similarly, NGOs and bilaterally funded research and extension programs account for virtually all the effective applied research and extension activities in Peru. Coordination between these programs and public and private activities has helped to prevent a total collapse of the Peruvian agricultural research and extension system in the face of budgetary problems.

3.46 A project which has well integrated these entities is the USAID-funded ATT project. The project involves participation by INIAA, the National Agrarian Organization (ONA), and the Foundation for Agricultural Development (FUNDEAGRO). Founded in December 1988, FUNDEAGRO is a private not-for-profit organization dedicated to promote the rational use of resources in the development of a sustainable agricultural sector in Peru. Through its participation in the ATT project, FUNDEAGRO seeks to establish private sector provision of technology transfer services, develop improved seed production and certification, improve information networks between members of the agricultural community involved in research and extension, and support post-graduate education in agricultural sciences. It also engages in the administration of projects funded by the International Development Research Center (CIID) and the International Center for Tropical Agriculture (CIAT). In addition, FUNDEAGRO publishes technical manuals which detail agricultural production techniques and also publishes articles and pamphlets providing analyses of Peruvian agricultural issues. However, despite the success of some NGO programs such as those of FUNDEAGRO, many programs are being cut back, mainly as a result of research facilities and extension workers being targeted for terrorist attacks as well as because of difficulties in conducting applied research and extension activities in a recessionary environment.

3.47 Recognizing the deterioration of research and extension activities and appreciating their importance for agricultural development, the government has turned its attention toward alternative methods of providing research and extension services to the agricultural sector. A strong push towards extensive privatization of agricultural research and extension has emerged. One proposal envisages that INIAA could be transformed into a much smaller and strictly administrative and managerial entity. Under this proposal, INIAA's role as a research center would be eliminated. The existing public experiment stations would be transferred to the regional governments, sold to the highest bidder, or transformed into non-profit foundations receiving some budgetary subsidies from the Government. Research would be contracted out to private sector firms or foundations. INIAA would be charged with deciding what research should be publicly supported in this way and would manage and monitor the process.

3.48 With the intention of having more stable and demand-driven research, the Government, with INIAA's help, recently started an effort to transfer research stations to foundations of user groups. Early in 1992, plans were formalized to transfer several of INIAA's experiment stations (including the experiment stations in Chincha, in Tumbes, in Moquegua, and two in Piura) to these foundations. The directors of the foundations are made up of a mixture of participants, including producer associations, NGOs, exporters' associations, organizations of professional extension agents, and even, in one case, a mining company which wants to diversify. The Government intends to pick up the salary costs of any former employees of INIAA that the foundation hires. The extent to which this type of transfer of research-related assets and activities will eventually expand is not yet clear. However, these plans are consistent with the current focus on reducing the involvement of the Government in research and extension.

3.49 Another example of the new role envisaged for INIAA has been demonstrated in a recent joint venture between INIAA and the Peruvian Rice Growers Association. In another similar arrangement, INIAA and a firm which produces rice for seed have entered into a cooperative agreement to contract the services of part of INIAA's staff and part of its research and experiment station facilities to provide research explicitly for the Peruvian rice growers association. These two business ventures and, as described above, the transfer of some of the experiment stations to separate foundations are examples of what many feel will be an increasingly common type of arrangement. Remaining less clear at present is the eventual structure or fate of the public extension services, although it appears that the foundations that will run the research stations will also carry out the technology transfer function.

## ***H. Coca Eradication Efforts***

3.50 Given the huge increase in hectareage under coca during the 1980s, the Fujimori Administration realized that the strategy aimed at repression of coca producers to control coca

production was ineffective. At the same time, this strategy had antagonized coca farmers that had taken to coca cultivation as the only viable economic activity. Thus two months after being inaugurated, the government refused to sign the military accords with the United States designed to support the fight against drugs in the production regions. Instead, it proposed a new strategy centered around the recognition that peasants producing coca should not be treated as criminals. The Government announced that previous strategies for dealing with illegal coca production failed because they erroneously included peasants as a part of the criminal drug organization. Instead, the Government postulated that coca farmers were victims of a system that forced them to cultivate coca, which was the only crop that permitted their survival in the absence of alternative viable economic activities.

3.51 In the first months of 1991, Peru entered into formal discussions with the United States aimed at the signing of a bilateral accord based upon agreement on the new approach to the drug problem introduced by Peru at the Cartagena Summit some months earlier. The Presidents of Peru, Bolivia, Colombia, and the United States had endorsed Peru's proposal at the Summit. A bilateral Accord was finally signed on May 14, 1991. Within the framework of the Accord, two additional agreements were signed: the first for economic cooperation and the other for military assistance. Under the economic agreement, only about US\$60 million were allocated to Peru by the United States. Moreover, the bulk of such assistance (US\$52.5 million) was earmarked as balance of payments support while a minute amount (US\$1.9 million) was assigned to "alternative development".

3.52 The Accord explicitly recognizes the failure of the repressive strategies applied thus far and accepts the need for joint actions in the fight against drugs. It acknowledges that peasants would need to play a central role in any actions to be taken. The Accord contemplates participation by the coca farmers in the design and implementation of coca substitution programs. It also provides assistance for the granting of secure property rights through a program of land titling and registration. Finally, the Accord includes provisions for dealing with credit assistance, institutional development, environmental preservation, interdiction, and human rights. While the items mentioned in the Accord appear appropriate for the fight against drugs in Peru, no quantitative assessment of human and financial resources to carry out such a strategy was made.

3.53 Domestically, the Government's strategy on drug control was formalized in Legislative Decree No.753 published in November 1991. This law creates the legal and institutional framework for all programs to develop alternate economic activities to coca cultivation. It also creates a government agency called IDEA (Alternative Development Institute) under the Presidency of the Council of Ministers. IDEA is responsible for the planning of an integral strategy in the fight against drug production and trafficking.<sup>10/</sup>

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<sup>10/</sup> Ley de Bases de la Estrategia Integral de Desarrollo Alternativo para Erradicar el Tráfico Ilícito de Drogas con la Participación de la Población. *El Peruano*, Nov 12, 1991.

3.54 It is too early to assess whether this new approach will bear fruit, particularly since many of the actions thus far pertain to the legal and regulatory realm. Although as many as 182 coca producers' organizations (Comité de Productores Cocaleros) have been identified and are in the process of registration for formal recognition, it is unlikely that Peru will have access to the massive financial and organizational resources needed for the implementation of the scheme. At the same time, the Accord has generated high expectations in the coca producing regions that are clearly not being met<sup>11/</sup>.

### *I. Conclusion*

3.55 The Fujimori Government's strategy to promote growth is generally well-conceived. The increase in incomes and employment that is expected to result from higher growth is the key to poverty alleviation over the medium and long term.<sup>12/</sup> The Government's strategy correctly views the elimination of hyperinflation and maintenance of a stable macroeconomic framework as necessary conditions for growth. Identifying the budget deficit as being the primary cause of hyperinflation, this strategy focusses on policies to increase government revenues and to reduce government expenditures. An important part of the strategy is a debt-workout agreement with Peru's bilateral and multilateral creditors, paving the way for Peru to receive additional monies and technical assistance for the implementation of its adjustment program.

3.56 In agriculture, as in other sectors, the reduction in public expenditures has been achieved by drastically curtailing the huge subsidies given to public institutions and enterprises and by reducing the size of the bloated public sector. In this process, the role of the public sector has been redefined and regulations have been reformed in order to foster private sector development. These policies include those to enhance the sustainability and rehabilitation of key infrastructure as well as those to improve pricing policies for a more efficient allocation of resources. With small exceptions, the Government's economic policies necessary for its debt workout arrangement with bilateral and multilateral creditors have been on track. However, recent political developments have made the debt-workout less certain.

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<sup>11/</sup> See, for example, "Narcotráfico: A un Año de Cartagena", Declaración de la Conferencia Internacional, Comisión Andina de Juristas, Lima, 4-5 de abril de 1991.

<sup>12/</sup> Given the extreme poverty in Peru, especially in the rural Sierra, there is also a need to implement targeted poverty alleviation programs in conjunction with the growth-oriented strategy.

## **IV. A POLICY AGENDA**

### **A. Introduction**

4.1 Given the political, economic, financial, administrative and social constraints facing the Government, the Government's strategy to promote growth has been implemented remarkably well. However, in some areas, the Government is still in the process of formulating a policy. In other areas, policies could be strengthened or extended. In some instances, although the policy framework is appropriate, the policies have not yet been implemented or are not being enforced. In a few areas in the agricultural sector, specific policies either run counter to the overall strategy or have been reversed. While acknowledging the tremendous improvements in the economic policy environment since the onset of Fujimori's administration, this chapter suggests additional agricultural policy reforms needed to fully implement the strategy.

### **B. Pricing, Marketing and Trade**

4.2 The Fujimori regime has moved the agricultural sector in the direction of improved efficiency and improved allocation of resources through the liberalization of marketing, pricing and trade policies. These reforms have also helped improve the budget balance. The reforms include the liquidation of ECASA, restructuring and removal of monopoly privileges of ENCI, establishment of a variable levy tariff scheme to replace the system of price supporting purchases by ENCI and ECASA, the elimination of import duty exemptions, and a substantial lowering and compression in import tariff levels. These reforms need to be consolidated and pressures to reverse the reforms resisted. As evidenced by Congress' passage of the Emergency Agrarian Law, there is already strong pressure to undo some of the reforms. This law, among other things, placed a selective tariff on the importation of certain luxury food items as well as on other products which compete with domestically produced products. It also exempted agricultural imports from import duties and earmarked the revenues from the import surcharges for agricultural credit.

4.3 There have been pressures to backslide on other reforms. For example, contrary to its agreements with multilateral banks on eliminating ENCI's subsidies, ENCI recently secured a loan guarantee from the State Bank for US\$9 million to support its fertilizer marketing activities. However, the guarantee was later rescinded. In addition, there are allegations that the Government is continuing to use phyto-sanitary standards as a way to ban certain imports. In March 1992, in response to political pressure from processors of agricultural commodities who rightly complain that they are the victims of negative protection under the current *sobretasa*

scheme, the Ministry of Agriculture proposed increasing the number of items to be included in its *sobretasa* scheme to include over 50 derivative products of the originally protected items. Although this was not implemented, wheat millers did succeed in obtaining increased protection. Thus, intense political pressure continues to make it a struggle simply to maintain the policy framework of the original reforms. The following section identifies areas where the reforms need to be consolidated, modified or extended.

### Marketing Reforms

4.4 The main reforms in this area relate to ENCI. ENCI has been reorganized, downsized, and instructed to operate as a competitive firm without special subsidies or privileges. It has recently submitted an action program for further restructuring and defining its areas of operation. In the meantime, it is expected to provide marketing services to some remote areas of the Selva and Sierra. It may be difficult to provide such services without a subsidy. This internal inconsistency may be the reason behind ENCI's recent actions to obtain a subsidy and raises the question of what role, if any, ENCI should play in the liberalized marketing environment.

4.5 If the private sector is able to provide the same services at equivalent or lower cost than ENCI, there may be no remaining need for ENCI. The evidence, while sketchy, gives every indication that the private sector can match or beat ENCI in terms of cost at every activity in which ENCI proposes to continue its operations.<sup>13/</sup> However, in order to decide that no legitimate role remains for ENCI, it is also necessary to show that in ENCI's absence, private sector firms would actually provide their services at prices which match or beat those which ENCI would charge. This would be true if private sector firms are (i) more efficient than ENCI and willing to operate in the difficult areas in which ECASA operates, and (ii) if competitive conditions would prevail in ENCI's absence. If prevailing market conditions make it possible for private sector firms to exert local monopoly power, this would lead to a sub-optimal allocation of resources and allow the firms to overcharge producers and consumers for their services or products and to pay low prices for farmers' outputs.

4.6 There is little danger of non-competitive conditions prevailing in the Costa on the consumption side. The relatively easy access to imports and freedom of entry makes it difficult for a marketing firm to develop a monopolistic position. There is a little more danger on the production side since many of the elements that could lead to local monopolies are present to some degree. These elements include difficulties with communications and transportation networks, access to market information and storage facilities, the legal framework, and terrorism.

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<sup>13/</sup> See Yrarrazaval y Hurtado S.A., "ENCI: Informe Final Consultor en Comercialización," Report prepared for the IDB, August 1991.

Because of a competitive transportation network and good market information, it would be difficult for widespread local monopolies to develop in the Costa. However, given the deteriorated road network in the Sierra and Selva, there is a potential danger of local monopolies developing in these areas. These market imperfections did not emerge as significant problems as long as ENCI was present to make purchases and sales at guaranteed prices. ENCI's mere existence as a trading partner of last resort, even if its participation in the market was small in percentage terms, prevented the emergence of such problems.

4.7 The way to reduce the potential for market failure is to remove the stumbling blocks to competitive markets. An improved transportation network, more accessible information on prices, and a more stable security situation would likely result in a competitive market, even in the absence of ENCI. Thus the rehabilitation of roads connecting the *Sierra* and *Selva* to coastal markets would have the added advantage of promoting competitive markets. They are also effective vehicles for reducing poverty in the *Sierra* and for controlling coca production in the *Selva*. Therefore, the rehabilitation of rural roads is among the highest return public investments in agriculture and deserves the highest priority.

4.8 Given the private sector's greater cost-efficiency, there is little justification for the continued existence of ENCI in the public sector over the medium term. Thus recent Government actions to incorporate ENCI into the list of public enterprises to be privatized are to be welcomed. In the short term, one option would be to continue to keep ENCI in operation. This would have the advantage of averting a possible tendency for local monopolies to develop until the transportation network is improved. However, it is not clear that these monopolies would develop in any case. Even if they were to occur, there may be other ways to control them -- through regulation, for example. Until ENCI is privatized, it is important to ensure that ENCI's operations be self-financing and not impose a drain on the budget. However, if ENCI is to make purchases in the *Sierra* and *Selva* at higher prices than private traders would be willing to pay, there should be an explicit subsidy from the budget for this purpose.<sup>14/</sup>

### Pricing and Trade

4.9 The main recommendations in this area relate to the import surcharge scheme. The objectives of the scheme are three-fold: (1) to reduce the vulnerability of domestic agriculture to the price volatility of the world market over the short term; (2) to provide protection to domestic agriculture in light of subsidies in other countries; and (3) to generate revenue for the Government. The surcharge scheme (in each of its nine versions since March 1991) is superior

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<sup>14/</sup> This may be desirable as part of a Government policy to combat coca production or terrorism, for example. If so, rather than have ENCI purchase just rice and corn, it would be better to design the subsidy as a transportation subsidy for any legal product. This would have the advantage of not distorting producer incentives among crops.

to the alternative of using price supports by ENCI and ECASA. It is more sensitive to changes in world prices, allows prices to vary according to location so that they can fully reflect the costs of transportation, and has the potential to generate revenues. Moreover, for products under the variable surcharge, it has the potential of reducing price variability. However, the scheme has its costs stemming from the creation of a varying wedge between world prices and domestic prices.

4.10 For the purpose of this report an exercise was conducted to measure the static impact of the variable tariff scheme upon aggregate groups such as producers (both farmers and traders), consumers, the government, and the country as a whole. This was done for the surcharges applied to the three major commodities under the variable tariff scheme: corn, rice, and wheat. The results indicate that the country would have lost about US\$32-53 million per year if the surcharge scheme in place at the end of March 1992 had been applied to these three crops during 1975-1990.<sup>15/</sup> While these are not alarmingly large numbers (roughly two percent of agricultural GDP), the transfers from consumers to producers<sup>16/</sup> and to the government which result from the policy are somewhat more sizeable. The exercise revealed that the scheme on average transfers US\$181 million per year away from consumers of the three commodities. Of this, roughly one half is received by producers (between 83 and 93 million dollars per year), roughly one quarter by the government in the form of increased tariff revenues (between 35 and 65 million dollars), and the remainder is a loss to society (the efficiency or "deadweight" loss).

4.11 The above exercise ignores the potential gains from reduced price variability. Another more detailed study was commissioned by the World Bank to measure both the efficiency losses as well as the gains from reduced fluctuations of domestic prices.<sup>17/</sup> This study, which was conducted for sugar, wheat, corn and rice, finds that if the version of the surcharge scheme in place in March 1991 had been in place during the previous seven years, it would have generated an annual gain of roughly \$29 million, mainly through its impact of reduced variability of sugar prices. However, since the scheme as implemented was changed many times, it increased price instability and led to a US\$154 million loss to consumers and a US\$20 million loss to the economy as a whole. It also generated a lot of wasteful rent-seeking

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<sup>15/</sup> Simple static partial equilibrium models were constructed for the relevant markets using data from each of the years between 1975 and 1990. The elasticity estimates for demand were taken from an earlier study (GRADE, "Modelo Econométrico para la Agricultura Peruana", 1991). A range of possible supply elasticities between 0.1 and 1.0 were used. Ignoring cross effects upon related markets, preferences towards risk, and dynamic reaction and adjustment to policy changes, the static partial equilibrium exercise was used to yield estimates (in 1991 dollars) of the welfare effects which would have been caused by the *sobretasa* policy if it had been applied in each of the years between 1975 through 1990 as compared to a policy of no intervention in the market.

<sup>16/</sup> The term producers is assumed to incorporate to whole production process; farmers, traders, mills. etc.

<sup>17/</sup> Javier Escobal and Arturo Briceño, GRADE: *El Sistema de Sobretasas Agrícolas en el Peru: Evaluación y Recomendaciones*, August 1992.

activity. However, it transferred US\$65 million to producers and traders and generated US\$69 million in additional tariff revenues.

**4.12** Perhaps more importantly, the GRADE study finds that with the exception of milk, the surcharge scheme failed to increase farmgate prices even after controlling for the real appreciation of the sol. This is due to two reasons. First, because of oligopolistic competition in domestic and international marketing and processing of these commodities, the gains from increased protection were captured almost entirely by middlemen and millers. Second, for some commodities such as milled rice and some milk products, the presence of close substitutes that did not receive the surcharge (paddy rice and other milk products) simply resulted in increased imports of the substitutes.

**4.13** For milk, farmgate prices did increase but this was due to a declining quota imposed on imports of milk powder and milk fat for commercial reconstitution that was instituted almost simultaneously with the surcharge scheme. This QR has succeeded in raising farmgate prices to levels that are far higher than in neighboring countries; however, it has resulted in higher milk prices. The GRADE study finds that the benefit to farmers from the higher farmgate prices are only US\$0.7 million annually whereas the welfare loss to consumers is US\$14 million annually. If, given monopsonies in the milk market and the perishable nature of milk, it is considered necessary to intervene to provide a level playing field for milk producers, the Government should assist the price arbitration process between the milk producer's association and the milk factory rather than institute an import quota on the factory. The arbitration could suggest or require that the price be determined by the world price plus a mark-up implied by the tariff, transportation and port charges. In principle then, the factory would be indifferent between importing the good or purchasing it domestically. This would ensure that the factory could not use its monopsonistic power to drive down domestic price levels to below its opportunity cost.

**4.14** The new system of variable levies represents an improvement over the costly system of price supports carried out by ECASA and ENCI. For the commodities other than milk, it has the potential to increase welfare by reducing price variability. However, because of frequent changes in the methodology by which the variable surcharge was calculated and in the commodities included in the scheme, there was a net loss of about US\$20 million during 1991. Given the system's failure to reduce price variability or protect farmers and capacity to encourage wasteful rent-seeking activity, the scheme needs to be phased out or replaced.

**4.15** If it is considered necessary to protect small farmers against large downward fluctuations in prices and to protect consumers against large upward movements in prices, the scheme should be restricted to those commodities which are prominent in the consumption basket of the very poor, those which are the primary sources of income generation for the very poor, and those whose world prices fluctuate widely along a long-term trend. In this case, the scheme

should be converted to a true price band with both a price floor and a price ceiling and should incorporate close substitutes of the commodities. If, on the other hand, the concern is with providing protection to farmers in light of agricultural subsidies in other countries (on milk, for example), first one needs to ask whether the foreign subsidies are likely to stay for the long-term. If so, the best strategy would be to allow Peruvian consumers to take full advantage of these subsidies and not to impose surcharges. If the foreign subsidies are considered temporary, it would be preferable to simply place a modest fixed percentage surcharge (say 10 percent) and simultaneously to take measures to regulate oligopolistic marketing behavior in order to ensure that the increased protection is passed on to farmers. Whichever option is chosen, it is vital that the scheme be mandated by law to make it difficult to introduce changes in the scheme and discourage rent-seeking activity.

4.16 If the objective is to provide relief to farmers in certain areas that are affected by a drought, floods, or intense terrorist activities, it would be preferable to provide subsidies more directly targeted to those areas rather than to distort consumer and producer incentives for the whole country. This could occur in the form of expanding FONCODES' employment-generating activities in support of small rural infrastructural activities (maintaining roads and irrigation canals) or implementing larger programs to rehabilitate rural roads and irrigation schemes. Continued implementation of the current scheme or its replacement with a flat tariff scheme for major agricultural commodities (as is being proposed by some) only makes sense as a temporary measure until the above sorts of programs can be put in place.

### C. Land Tenure

4.17 The Agricultural Investment Promotion Law (DL 653), by liberalizing the market for privately held land, established the basis for a more efficient use of land. In addition, efforts to facilitate land titling and registration through the creation of an informal property register (para. 3.29), if successful, would promote security of tenure and lead to increased investment and efficiency. What is needed now is a careful monitoring of the situation and the willingness to take additional complementary measures to accomplish the objectives of increasing efficiency and investment.

4.18 Perhaps the greatest omission in DL 653 is its failure to change the land rental and sale restrictions on the traditional land tenure systems (*comunidades campesinas* and *comunidades nativas*). While these lands tend to be less productive, they occupy almost half the agricultural land area (Statistical Appendix Table 6.2). Because of their special status in the constitution, individuals within traditional communities are unable to mortgage or sell their land and take advantage of the liberalized land market structure for privately held lands. The Government should assist the *comunidades campesinas*, their traditional leaderships, and their members (both

in the rural areas and through their *Clubes de Migrantes*) to determine what is the best land tenure status for each of the communities and then help them to reorganize themselves accordingly. One way to do this would be by reactivating the almost defunct *Oficina de Comunidades Campesinas* as a coordinating body with greater representation from the *comunidades campesinas* themselves. Its first task could be the development of a pilot project to analyze the range of policy options and preferences available to such communities. Another task could be to promote grassroots-based rural development with the assistance of NGOs based on the community and its extended organizational structures as the operational pivot.

4.19 Another area in need of closer scrutiny is the land adjudication process. There is a danger that the revised procedures for land adjudication, while solving some problems of inefficiency, administrative delays, venality and corruption associated with the old system, may introduce some new problems. First, the definition of *tierras eriazas* is vague and impractical and needs to be reviewed. Since it only *de facto* applies on the coast, and to certain limited land tenure conditions, it would make sense to specify it thus. Moreover, if the "denunciation" procedures under which an owner could lose its *tierras eriazas* is applied to the traditional land tenure systems of the *Sierra* or *Selva*, they would likely contravene Articles 161-163 of the Constitution and are likely to be inoperative.

4.20 The Agricultural Investment Promotion Law has simplified the procedures under which abandoned lands can be reclaimed. Largely because of terrorist activity, vast areas of productive lands are increasingly left abandoned. In an effort to make it easier for former owners to return to their lands, the procedures for reclaiming such lands have been simplified and speeded up. However, there is a danger that the system is now open to abuse (collusion, informal arrangement between interested parties, bribes, etc). To correct this, it is suggested that the appeals procedure be strengthened by allowing for an appeal even as the procedures for reclaiming abandoned land are ongoing. Under current rules a person who disputes a claim on abandoned land needs to wait until the reclaimant procedures have been completed before filing an appeal. Another suggestion in this area concerns the land adjudication process in the *Selva*, whereby government lands are given away for development. This process is likely to continue to confront serious problems until the Government is able to restore order and rationalize the existing tenure systems. It therefore may make sense to slow down additional land adjudication until significant advances have been made in restoring order to the present land tenure system. Finally, the time limits for the confiscating of *tierras eriazas* which are not developed within the prescribed limits appear too stringent in some cases. These limits need to be reviewed and relaxed in some cases.

4.21 While the Agricultural Investment Promotion law liberalizes most aspects of the land market, it continues to maintain limits on minimum and maximum land sizes (although some of the maximum size limits were increased). The minimum size limit of 3 hectares is unlikely to

work in practice, and only encourages producers to retreat into the informal sector, with higher costs. This restriction lowers the price of land and thus deprives the poor farmer of being able to derive the full value of his asset. The minimum land size restriction needs to be dropped as soon as possible. Similarly, the measure passed under the Agrarian Emergency Law allowing only farmers with more than 5 hectares of land to be able to mortgage their property needs to be rescinded. Since 70 percent of landholdings are less than 5 hectares (Statistical Appendix Table 6.1), the bulk of farmers would be excluded from easier access to formal credit. Finally, while liberalization calls for removing the limits on the maximum size holdings, the social and political opposition to this, coupled with the fact that the limits are now large enough to achieve optimal scale economies, would suggest that these limits remain.

4.22 By leading to increased registration, the new property register has great potential to increase the efficiency of the land market (para. 3.29). It provides security of tenure and a certificate that can be bought and sold or mortgaged in a similar manner to a title. Even without a full-fledged cadastre, implementation of the property registration is technically feasible and socially and economically justifiable. It has a low cost per registration -- for rural and urban Lima the cost is estimated at about \$8 per registry. By charging user fees and obtaining some external grants, it has the potential to be replicated throughout the country at a cost to the Government of less than \$3 per registry. While it will not cover every property in the country as a cadastre would, it has the potential to reach the bulk of the population that wishes to obtain a title. The alternative of a full-fledged cadastre may not be warranted at this stage in light of severe budgetary and institutional constraints and the time that such an exercise would take. The technical and managerial support as well as the publicity and lobbying for the register has come from the ILD, a consulting firm. Given institutional weaknesses within the Government at this point, this is probably necessary. However, there is a need to ensure that the Government fully supports the effort, providing the minimal public funds needed for the register's activities and working jointly with the ILD to address any problems. Among the issues needing attention are the reasons behind why both budgetary expenditures and user fees for 1992 have been running much lower than expected. In addition, it is important that to improve coordination between the public register and property register to ensure, at a minimum, that a property is not registered in both registers. The Government also needs to ensure that ILD's technology is fully transferred to the *Registro Predial's* office.

4.23 A related measure whose implementation is likely to prove even more beneficial to farmers and others for obtaining formal sector loans is the development of a register for goods and equipment. The absence of such a register increases the borrowing costs and impedes the development of non-bank financial intermediaries such as finance companies and leasing companies that use equipment as collateral. Such a register has been proposed by the ILD and appears promising. To ensure its effective operation, the legal framework and procedures for the repossession and sale of movable equipment that is used as collateral needs to be carefully studied.

4.24 Another related measure worth considering to improve the functioning of the rural land market is the dissemination of land price and market information, particularly for small farms. This can be done through the radio, newspapers, and farmers' networks (e.g., grassroots organizations, NGOs and local development agencies).

#### ***D. Rural Finance***

4.25 By shutting down BAP, the Government has done a commendable job of reducing a large drain on the Treasury and Central Bank, a drain that played a major role in Peru's hyperinflation. BAP's subsidized rates caused a large transfer from the public, especially from the bulk of poor farmers that did not receive BAP's credit, to well-off farmers. As a public institution, BAP was prone to problems of loan recovery and was also prone to political decisions to reduce interest rates and even to forgive debt.

4.26 However, with the void in agricultural lending created by BAP's departure from the agricultural credit scene, there has been virtually no formal credit advanced to the agricultural sector. This is because past restrictive regulations and subsidized competition from BAP and the State Bank, *Banco de la Nación* (BN) had impeded the development of commercial banking. As a result, few commercial bank branches exist in rural areas and the banks lack experience in agricultural lending. For the 1991/92 cropping season, a few of the rich farmers have managed to obtain some commercial bank credit, while others have dipped into their dollar savings in Peru or overseas, contributing further to the strengthening of the sol. However, the only formal credit received by the majority of farmers that had previously relied on BAP, was by their non-payment of past BAP debt. Some farmers have had to resort to alternative tenurial arrangements (e.g., renting out part of their land) or to informal credit.

4.27 The lack of formal credit for agricultural activities has led to pressures on the Government to take measures to make credit available to farmers. Fortunately, the Government has resisted pressures to begin a new first-tier public institution to provide agricultural credit. Like BAP, such an institution would have a tendency to subsidize interest rates, to employ more staff than necessary and to forgive debts, while the funds may not go to those who can most efficiently utilize them. It is also likely to be coerced to make unsound loans to borrowers with high risks to satisfy social or political needs. Finally, it would discourage private sector financial institutions from participating in agricultural finance, running counter to the Government's strategy of promoting private sector participation. The Government did, however, succumb to pressures to provide seasonal credit to agricultural sector through farmer associations, regional FONDEAGROs and suppliers credits. While this cannot be a long-term solution, it is perhaps

the best one can do in the short-term to meet urgent seasonal credit needs of some farmers. As outlined below, an alternative system, based on using private financial institutions for all first-tier lending would be a better way of making both short and long term agricultural credit available to those who can utilize it best.

4.28 With the liberalization of the financial system, the private sector is now free to respond to rural demands for credit. However, private financial institutions have had limited involvement in the sector during the last two decades. In addition, in the present recessionary environment characterized by a strong sol and high real interest rates, private sector response to opportunities created by the liberalization of the sector and departure of BAP is likely to be slow. In fact, commercial banks have shut down several rural branches this year and the authorities have had to intervene and/or liquidate several commercial banks, nine "*mutuales*" (a type of savings and loan institution, and eight financial cooperatives. In light of these actions, rural inhabitants may be deprived of an opportunity to make deposits or obtain loans for productive activities. It would thus make sense to offer temporary financial inducements to private commercial banks or other financial institutions (*cajas municipales, cajas rurales, etc*) to set up operations in rural areas.

4.29 In order to encourage the rapid creation of private sector intermediaries in remote rural areas, the first step should be the transfer of the extensive rural branch networks of BAP and BN to eligible private financial institutions. While the bulk of the intermediaries are expected to be commercial banks, this does not rule out the possibility of using alternate financial institutions such as *cajas rurales*. BAP and BN branches (or block of branches) should be auctioned or leased to eligible private institutions on the condition that they provide minimum banking services for a specified period of time (say, one year, to be renegotiated every year). In most cases the opportunity to capture deposits should be sufficient inducement for the institutions to pay a positive price for the lease. In some instances, the Government may need to provide a lump-sum subsidy on the condition that the private financial institution be kept open to receive deposits for a specified period of time. Both commercial banks and other private financial institutions such as *cajas rurales* should compete for the branches on the same basis.

4.30 While the above scheme should take care of the deposit needs of rural inhabitants, it may be insufficient to induce banks to lend for new and uncertain activities. Thus, it be necessary for the Government to provide a fixed subsidy per beneficiary (say \$50 per beneficiary) in the initial years of operation. The fixed or "transactions cost" subsidy has the advantage of being able to reach smaller borrowers by covering the higher transaction cost of loan administration relative to their loan size. These funds could help set up group lending programs whereby homogeneous borrowing groups become jointly liable and themselves assume some of the managerial and supervisory responsibilities. In several other countries, such schemes have succeeded in eventually lowering transactions costs and risks involved in lending to small farmers.

4.31 Both banks and other private financial institutions such as *cajas rurales* should be eligible for the transactions cost subsidy. However, it should be made clear that the subsidy is to be phased out over time (say, three years) as the institutions build up expertise in rural lending. In addition, there should be no interest rate subsidies from the Government to any private financial institutions and the institutions should be free to charge any interest rate to borrowers. Experience in many countries, including Peru, has shown that interest rate subsidies tend to be regressive and threaten the viability of the financial institution through which the subsidy is channeled. The only additional subsidy that new institutions such as the *cajas rurales* should be given is technical assistance and training in helping set up the institution. Factors attributed to the success of credit cooperatives in other countries include bottom-up institutional development, extensive training at all levels, reliance on mobilized savings and equity contributions rather than external funds, prudent expansion of cooperative activities, strict monitoring and auditing, and adequate incentives to staff and clients.

4.32 This first tier system could be complemented by putting into operation a second-tier institution such as BFN (or by converting COFIDE to perform this role) which would lend to all sectors through private sector intermediaries. The second-tier institution is a particularly useful mechanism for channeling external or public funds. It is important that the second tier institution be prohibited from making any first-tier loans.

4.33 The above proposal, coupled with earlier recommendations on facilitating the use of land and equipment as collateral (paras. 4.21-4.23), is likely to resolve most rural credit and deposit needs that can be satisfied by the formal sector. It will introduce commercial banks to the agricultural sector, eliminate the need to establish a new first-tier public institution, and allow all banking functions to be carried out by the same institution. The budget needed for this program would be small. However, the Government will need to strengthen the supervision and regulation of rural financial institutions.

4.34 The above proposal should address the rural financing needs of viable farm operations that would otherwise have been excluded from the formal credit system. However, it will not address the problems facing the small marginal farmer whose farm income, for a variety of reasons, is insufficient to repay loans at even the interest rates charged to prime borrowers. These reasons include remoteness of location and a lack of managerial or technical skills, in part caused by inadequate extension services and education. For some of the farmers, schemes such as the Government's revolving credit (in kind) for agricultural inputs may be useful. However, for the bulk of such uncreditworthy farmers, it is suggested that the Government not use the credit mechanism to help them since this will contribute to credit indiscipline, decapitalize financial institutions, and lead to a continuing budgetary drain. Instead, the Government should

address the reasons behind why such farmers are not viable. Thus the Government may consider the desirability of rehabilitating or building a road, of providing education or extension services, etc. In addition, the Government could find ways to increase their non-farm wage incomes and implement other targeted poverty alleviation measures such as social compensation schemes, public employment programs, food assistance and primary health care programs.

### ***E. Irrigation***

4.35 Given Peru's natural resource base (paras. 1.1-1.7), the provision of irrigation water is essential for agricultural production in all of the *Costa* and many parts of the *Sierra*. The key economic objectives in the provision of irrigation water are: (1) to construct irrigation infrastructure only where it is economically justifiable; (2) to allocate irrigation water to those that can benefit from it most; and (3) to ensure that the irrigation schemes are effectively operated and maintained.<sup>18/</sup>

4.36 In many cases, the private sector alone, working through the free market, is unlikely to accomplish the three objectives described above. While the private sector is likely to invest in some small irrigation schemes, there are several reasons why it will not make the necessary investments in all components of many of the large irrigation schemes that have a high economic rate of return. One reason is that it is difficult to organize the many farmers, large and small, that would benefit from the scheme. A second reason is that there is no market for water rights in Peru. Water rights cannot be bought and sold, either with the land or separate from the land. This discourages farmers from investing in schemes that they do not own or have the right to sell. More significantly, it prevents a corporation from undertaking the investment and then recovering its investment by charging the beneficiaries for the service, as could be possible with other types of services such as electricity. A third reason is that some of the benefits from the irrigation schemes will not accrue to farmers but rather to consumers. This is because the higher yields and production that will come about as a result of the irrigation scheme will lower prices in nearby markets, passing along some of the benefits from the irrigation scheme to consumers in the form of lower prices. This would be true of crops with a high transportation cost relative to its value such as potatoes, as well as other crops that are being produced in areas where the costs of transportation to the nearest port or major consumption center are large. For other crops that are exported or substitute for imports, the domestic consumer price will not fall as a result of increased domestic production and so the farmers are able to capture the full benefits of their increased production.

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<sup>18/</sup> Throughout this section, the term irrigation is used broadly so as to encompass drainage.

4.37 Another problem with relying on the private sector to undertake the investment is that even when a farmer does undertake an irrigation project, he will do so without consideration for what his use of water will do to his neighbors' use of water or to his quality of soils. For example, some private investments in ground water can lead to falling water tables; other irrigation investments could affect the salinity of neighboring soils.

4.38 The problems described above have led successive Peruvian governments to undertake all large-scale investments themselves. They then ask the beneficiaries to pay for the investments. According to the 1969 General Water Law, beneficiaries are supposed to pay water tariffs that cover both operation and maintenance (O&M) costs and full construction costs. In principle, the scheme is fine. However, in practice, there are serious problems. Decisions on which schemes to build have been made by successive governments on political rather than economic grounds. Many of the large schemes are extremely expensive and have been financed by external debt. Their high cost has led to difficulties in obtaining counterpart government funding and delayed implementation. One of the worst schemes in this regard is *Majes*, which has cost well over US\$20,000 per hectare and has been under construction for over 20 years. Similar quality irrigated land in neighboring areas sells for \$5000-6000 per hectare. Even after deducting the proportion of costs attributable to other activities such as power generation, it is impossible to expect farmers to pay for full costs for such schemes.

4.39 Thus the system of publicly designed and funded irrigation schemes, with minimal involvement of the beneficiaries in the design, implementation, operation, or maintenance of the schemes, has resulted in the construction of uneconomic irrigation schemes, large implementation delays and cost overruns, high public indebtedness, and poor operation and maintenance. In many instances, the availability of water is limited to certain areas or to certain times of the year and the water flow is not measured. The low water charges give little incentive to conserve water by cultivating less water-intensive crops or invest in more efficient irrigation systems. The low charges also imply a large subsidy to those better-off farmers who are most likely to obtain the water.

4.40 To improve public irrigation, there is a need to use more rigorous economic criteria in choosing which irrigation project to rehabilitate, complete, or construct and to involve beneficiaries more fully in the design, implementation, operation and maintenance of the projects as well as in setting user charges. The key issue is how to accomplish this<sup>19/</sup>. It is proposed that the Government set up a program whereby the only irrigation projects (new, existing, or

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<sup>19/</sup> Given the reduced technical capacity in the Ministry of Agriculture, it is unlikely that the Government can carry out a rigorous economic analysis of projects. In fact, the Ministry of Agriculture has recently proposed criteria to evaluate the desirability of irrigation rehabilitation projects that give only a 2.5 percent weight to net incremental benefits. The bulk of the weight is given to such criteria as type of crop, its destination, location of scheme, cost per hectare, number of families that benefit, etc. These are not criteria that will induce beneficiaries to pay the full cost of the scheme.

rehabilitation) that the Government will evaluate and fund are those where the user group of beneficiaries can organize themselves and demonstrate that they are able and willing to repay the incremental costs of the project. The user group, in coordination with the relevant government authorities, would be involved in the planning and implementation of the project, and would take complete responsibility for the operation and maintenance of the project, once the project is completed. For its part, the Government would agree to provide technical assistance to user groups to help them design the project and to evaluate the private and social economic benefits of the project. If the project is determined to have positive net social benefits, the Government would enter into a loan contract with user groups where it agrees to provide the funds on time. The terms of the loan should be no less favorable to the Government than those that the Government obtains from bilateral or multilateral agencies who agree to cofinance the project. Some mechanism to guarantee payment would need to be worked out.

4.41 For multipurpose projects, project capital costs need to be allocated among the beneficiaries in proportion to the benefits, including irrigation, water supply, electricity generation, flood control and recreational or environmental benefits, etc. Environmental costs, or the costs of mitigating environmental impact, must be part of the costs to be allocated to the various beneficiaries. Thus if the only beneficiaries are farmers, they would need to pay for any environmental costs or the costs of mitigating them. Sometimes, as in the case of flood control measures, potential victims of floods may not be organized in a jurisdiction with sufficient tax authority and so that they can be charged and non-beneficiaries excluded. In such cases, it may be better to recover the benefits from general tax resources of the municipality or region. If this is not possible, the central government may need to subsidize this component. Other cases where the Government will need to subsidize the project is in order to deal with the problem of non-traded goods described above (para. 4.33) or to meet some other social objectives (deterrent to terrorism, targeted poverty alleviation). In the latter case, there is a need to demonstrate that an irrigation subsidy is the most efficient and cost-effective way of meeting the objective.

4.42 The recommended strategy for deciding which irrigation projects to fund and the mechanisms for the design, implementation, operation, maintenance, and cost recovery of the projects goes a long way towards meeting the objectives mentioned earlier (para. 4.34). The strategy needs to be accompanied with complementary policy reforms to improve the success of such a process. The Agricultural Investment Promotion Law (DL 653), by liberalizing the market for land and product markets, establishes the basis for such a strategy to work. However, some additional reforms need to be considered.

4.43 An important reform to consider is the feasibility of establishing a market for water rights in a similar manner as the market for land. Water rights would be clearly defined and registered in a public registry and be able to be bought or sold with minimal restrictions as to how the water is used. Such initiatives have recently been taken in Chile and Nepal. In Spain

and the United States, they have been in place for over a century. If this is infeasible in Peru at this time, the Government should consider giving a transferable concession for a specified (long) period of time. A related issue deals with property rights. At present, all public irrigation schemes belong to the Government. It may be desirable to transfer them to user groups, who would have much more vested interest in maintaining the infrastructure. Such an initiative is underway in Nepal. Both these reforms will improve the efficiency of water use and encourage private investment in irrigation schemes. Finally, the Government needs to reevaluate and clarify the roles of the various public institutions operating in the irrigation sub-sector. At present, there is considerable overlap and confusion in many of the functions carried out by the Directorate of Water and Soils, INADE, FONDEAGRO, regional governments, the Autonomous Basin Water Authorities, and national programs such as PRONADRET. Many of these institutions are also badly in need of technical assistance.

4.44 Once the legal framework for water rights and transfer of irrigation infrastructure is established and user groups are organized, the Government could consider mechanisms to privatize its large irrigation schemes. Peru has several large irrigation schemes in the *Costa* on which hundreds of millions of dollars have already been spent but which are as yet incomplete. The incomplete schemes upon which over US\$100 million have already been spent include Majes (which has already spent over US\$1 billion), Chira-Piura (US\$700 million), Chavimochic (US\$400 million), Tinajones (US\$300 million), and Jequetepec-Zana (US\$150 million). The Government is understandably reluctant to spend the additional hundreds of millions of dollars needed to complete these schemes given strong competing demands for government resources and doubtful returns to some of the schemes. This is particularly true because without changes in the institutional and policy framework, it would be difficult to get beneficiaries to pay even the marginal costs of completing the schemes. At the same time, it may not make sense to abandon schemes upon which such large amounts have been spent. The solution therefore lies finding mechanisms to induce private investors or user groups to purchase the schemes. The Government is presently exploring such options. In the meantime, it would be useful to conduct a study to determine which schemes have a high marginal rate of return and which should be abandoned despite their sunk costs. For those that should be completed, it would be useful to determine which expenditures should be undertaken to better prepare the scheme for privatization.

#### ***F. Research and Extension***

4.45 With the virtual collapse of the public agricultural research and extension system in Peru, this is a good time to reflect upon what characteristics would comprise an efficient research and extension (R&E) system in Peru. The directly related question of the role that the public sector should play in R&E needs to be answered simultaneously.

4.46 Since most R&E activities are designed to increase yields which ought to increase a farmer's profitability, a good question to ask is why the government should be involved at all in the subsidization of R&E. Why shouldn't farmers be expected to carry out the optimal level of research and extension if left to the free market? There are several reasons why this may not happen. First, some kinds of basic research and certain kinds of extension cannot be successfully marketed by the innovators because, once they have been discovered, others cannot be prevented from being able to adopt or copy them at little or no cost. Second, whereas farmers as a whole may gain from the increase in yields, an individual farmer with limited production potential may not find it worthwhile to carry out research activities. This calls for organizing farmers in associations which should fund the research that is of use to them. While this may be possible in many instances, in some cases it may not be feasible for a large number of small farmers to organize themselves for this purpose. Third, the increase in yields may not result in increased farm profits; if the consumer demand for the product is not totally elastic, the increased output would lower prices, transferring the gains from higher yields to consumers. These factors above call for a public subsidy for most basic research and for applied R&E on crops such as potatoes, which face a fairly inelastic demand curve and whose farmers tend to be small and dispersed, but call for private funding for applied R&E activities for traded crops such as rice and wheat where the demand curve is extremely elastic and where farmers can organize themselves relatively easily.

4.47 Although it is possible to come up with a number of other factors (information costs, credit market imperfections, etc) which would lead to a sub-optimal allocation of R&E if left to the free market alone, it is necessary to mention one other important area of particular concern in the Peruvian situation. This deals with research aimed at reducing environmental degradation. Given the problems in Peru with soil erosion, salinity, toxic chemical runoffs into streams, R&E activities addressing these problems will need to be subsidized.

4.48 Having understood the reasons which call for government involvement in R&E activities in certain instances, it is now useful to consider what are the desirable features for a R&E system in Peru and to evaluate to what extent the current system meets the requirements. One characteristic which is important in ensuring an effective public agricultural research system is a strong link between the agricultural research system and the research programs at the universities. At least in principle, a relationship between these institutions does exist in Peru. INIAA's relatively recent relocation from downtown Lima to La Molina, adjacent to the campus of the Universidad Agraria de La Molina, and also adjacent to the International Potato Institute (CIP), is advantageous in this regard. INIAA also has cooperative research programs with several universities: La Molina for potatoes and forestry, Chiclayo for rice and beans, Iquitos for native fruits, and Cajamarca for research on maize.

4.49 A second desirable feature for any R&E system is stability, both in the philosophy and content of the program as well as in its actual financing and operations. In most cases, this may call for government implementation of R&E. However, Peru's record with publicly provided R&E has on this count been abysmal. Changes in political leadership have led to drastic changes in programs, many reorganizations, large changes in funding levels, and many work stoppages caused by striking public sector unions. A third desirable feature is that the level of compensation for R&E staff be adequate to attract and retain high quality staff. Here again, Peru's public R&E system has fallen short. The changes in real government salaries in Peru over the last two or three decades has been dramatic. Real salaries in today's public R&E system are only about one-fifth what they were only seven years ago.

4.50 A fourth desirable feature for a R&E system is that there be good communication between researchers and farmers. This two-way communication channel has the best chance of functioning effectively if extension services and agricultural research activities, especially the more applied ones, are housed within the same institution. This is also desirable for the sake of efficiency in that it helps to reduce redundancy and allows for increased levels of specialization within each endeavor. A system whereby farmers or agroindustrialists participate in the design of R&E activities also has a good chance of promoting effective two-way communication and of ensuring that R&E activities are well-tailored to the local conditions. Peru's present system of separate institutions for research and for extension and with R&E activities being driven by the Government rather than its beneficiaries also falls short on this criterion.

4.51 The above discussion suggests that a good R&E system for Peru would be one where most basic research activities and any R&E extension activities involving goods with high transport costs relative to its value or goods where it is difficult to organize farmers, would be funded, at least partially, by the government. However, it need not necessarily be provided by the Government. In addition, research on reducing environmental degradation may need to be publicly funded. As a corollary, the analysis also suggests that applied research done on tradable crops should, for the most part, be carried out by the private sector.

4.52 In many countries, the most effective way for the governments to fund R&E may be to carry out the activities itself. However, given Peru's erratic experience with publicly provided R&E, this would not be the best alternative for Peru. While there is a need for the Government to fund many types of R&E activities, there is not a case for the Government to provide the services directly. With the exception of some research being carried out at public universities, R&E activities should be contracted out to the private sector or non-governmental agencies. In addition, Peru's experience has shown that it would be preferable for research and extension coordination activities to be housed in the same institution and for R&E to be more demand-driven than in the past.

**4.53** The Government's recent efforts to transfer several research stations to private foundations formed by different groups of beneficiaries many of the desirable characteristics described above. While the foundation receives partial funding from the Government, its Board of Directors are drawn from those who benefit from the R&E services, with only minimal public involvement. Both research as well as extension are undertaken by the same institution and the foundation is free to employ anyone it wishes and to decide salary levels. Its activities are demand-driven, and since its sources of funding are diversified, overall funding levels are much less prone to instability. In addition, it is less likely to suffer from labor union strikes than if it were part of the Government.

**4.54** While the creation of foundations is a move in the right direction, its success will depend crucially on the way in which the relationship between the foundations and the Government is set up. At a minimum, the Government should allow the Board of Directors of the foundation the freedom to make its own decisions on what activities to undertake and on personnel matters. However, via a system of budgetary transfers, it can induce the Board to carry out certain activities (environmental issues, non-tradables) that are in the public good but not privately profitable. This can be done in the form of a contract between the foundation and the Government. In some cases the Government may find it wise to place a representative or representatives on the Board, particularly in foundations where the Government, for the reasons mentioned above, pays a significant share of the foundation's expenses. The Government can also encourage NGO's to obtain seats on the Board if they are willing to contribute substantially to the operations of the foundation.

**4.55** While the present structure of regional foundations would work well in many areas, it may not be suitable for R&E activities in areas where farmer groups cannot organize themselves effectively, such as small potato farmers in the Sierra. Similarly, there may be certain activities such as the conservation of germ plasm that may need to be centralized. For such purposes it is suggested that the another type of foundation or autonomous agency, with the bulk of its funding coming from the Government, NGOs, or external donors, be set up. It could be modelled along the lines of FUNDEAGRO (para. 3.46). If possible, this autonomous agency should be given an endowment to ensure a certain level of core funding.

**4.56** The above analysis suggests that an institution such as INIAA has a limited, if any, role to play in the new R&E system envisaged. Thus it may make sense to transform INIAA to an autonomous agency as discussed above, transferring its regional research facilities to foundations and some of its Lima-based facilities to the University. The bulk of INIAA's staff would be expected to transfer to the new foundations, with only a small group left in the autonomous agency to carryout the functions described in the previous paragraph. In addition, some form of Government involvement is essential in order to decide what R&E activities the public sector should support, the levels of subsidy needed and how funding should be distributed

among the foundations. Moreover, the Government could play a useful role by helping foster cooperation between universities and foundations and in channeling international assistance to the foundations. These tasks require high-level direction and a small technical staff.

4.57 One mechanism by which this could be achieved is by setting up an agricultural research and extension council controlled by the Government but with representation from farmer associations, foundations, public universities and the autonomous agency described above. Beyond merely developing cooperation between the various participants in the research and extension activities, this council should also provide strategic guidance for the public funding of research and extension. This would include establishing programs within the universities to ensure that basic research needs are met. Members of the council should also participate in the Boards of the foundations where the Government provides funding. This council would need a small secretariat of technical and support staff to assist it in its operations. This staff of perhaps 20-30 persons could be drawn from INIAA's present staff, with INIAA's remaining staff being required to resign or find positions in the foundations or autonomous agency. There is a government proposal to subsidize the salaries of INIAA staff in order to encourage the foundations to hire them. While it is probably desirable to do so for the first year, such a subsidy needs to be phased out over the next two to three years so as to discourage overstaffing and to let public subsidies be earmarked to specific activities rather than to staff salaries.

### ***G. Coca Production***

4.58 The Fujimori administration's approach to controlling coca demonstrates a heightened awareness of the problem. While continuing a policy of interdicting coca traffickers (with US assistance), the Government has also focussed on acknowledging the right of small farmers to grow coca while attempting to incorporate farmers in crop substitution programs. However, mainly due to a shortage of resources, the crop substitution programs have not been implemented to any significant extent as yet. The numbers of families dependent on coca farming in Peru and the link between coca production and terrorism necessitates much stronger intervention of the State and the use of far greater resources than the country can afford. It calls for a global effort. Peru's role in the international effort against coca production and consumption should center on clearly communicating its view on how to control the supply-side of the problem and offering its full participation and cooperation in what has to necessarily be a larger effort made by drug producing and drug consuming nations alike.<sup>20/</sup> At the same time, the supply-side measures are unlikely to be very successful unless developed countries take strong

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<sup>20/</sup> The growing awareness of the need for the international cooperation in drug policy is well reflected in the efforts of the Project on Hemispheric Cooperation for the Prevention of Drug Abuse and Traffic. See Seizing Opportunities: Report of the Inter-American Dialogue on Drug Policy, Institute of the Americas, 1991.

measures in their own countries to curb demand for illegal drugs as well as provide the resources needed to address the issue of alternative income opportunities for poor farmers in producer countries.

4.59 Efforts to control coca production through much of the 1980s have failed partly because of the much higher profitability of coca relative to other crops. Repression of farmers was politically unpopular and the Government could only go so far with interdicting traffickers or farmers before political considerations would induce it to ease the effort. The current low level of producer prices for coca and the prevailing state of poverty and hardship in the coca-producing regions presents Peru with an opportunity to wean farmers away from coca production. This can be done by increasing the profitability of alternate crops and other rural activities by subsidizing the transport of other crops in parts of the *Ceja de Selva* and *Sierra* and providing subsidies to financial institutions to locate and lend in these areas (See Sections IV.B and IV.D on marketing and rural finance). In the short-term, the possibility of using supplier's groups to provide credit or assist in marketing could also be explored.

4.60 To avoid simply a shift in coca cultivation from one area to another, efforts to increase the profitability of other crops and rural activities should also consider income generating activities outside the region. In fact, perhaps the best way to initiate this crop substitution effort is to target areas in *Ceja de Selva* other than the Upper Huallaga and the Apurimac valleys. This could be accompanied by similar programs and other targeted poverty alleviation programs in the *Sierra*. This would help to stop the spread of coca into the rest of the *Ceja de Selva*. Also, although these programs may need military protection, they would be more likely to succeed in areas where Sendero is not as firmly established as in the Upper Huallaga valley. Once the program is established and has the support of local communities, the Government should consider expanding it to the Upper Huallaga and Apurimac valleys.<sup>21/</sup>

4.61 Measures to increase the profitability of alternate crops have to be accompanied by enhanced efforts to interdict the transportation of drugs out of the country. In the absence of strong interdiction, the above measures to increase the profitability of alternate activities would not be successful as traffickers would simply raise prices to higher levels.

4.62 To increase the profitability of alternative crops over the longer-term, the most effective strategy would be to rehabilitate the transport infrastructure and even possibly build new roads to connect the *Ceja de Selva* with the coast. This would increase the profitability of traditional crops such as coffee, cocoa and palm oil currently grown in the area and may lead to

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<sup>21/</sup> Cash payments to farmers to leave their coca plots unused would be imprudent since this could easily lead to an expansion as farmers would be encouraged to retain some area under cultivation or plant more coca in neighboring land to guarantee their continued participation in the program.

the development of other products with potentially higher profits, such as macadamia nuts, palm hearts, or the silk worm. In addition, it would allow a more efficient production structure by encouraging the cultivation of water-intensive crops like rice and sugar on the eastern side of the Andes, leaving the water-scarce coastal lands available for higher value export products that could be cultivated taking advantage of the good coastal climatic conditions.<sup>22/</sup> While the road improvement may cause some environmental damage alongside the road, it is likely to be far less than that caused by coca cultivation (See Annex A). These activities should be complemented by a land registration program, technical assistance for institutional development, and environmental preservation programs, possibly as part of targeted poverty alleviation program.

4.63 Finally, given the growing drug consumption problem in Peru there is a need to take measures to control the domestic consumption of coca in its various forms. While at present the problem is not at the crisis stage, experience in other countries that began by only exporting drugs (eg. Pakistan with heroin) has shown that eventually domestic consumption and addiction grow to crisis proportions. A campaign to limit its use during its early stages would be far more effective than when the addiction has become deeply rooted.

### **H. Growth Prospects**

4.64 The reforms undertaken by Fujimori and the additional reforms suggested here are aimed at improving the overall efficiency of the economy. Improved efficiency is expected to result in higher economy-wide growth over the medium-term. It is not necessarily expected to lead to higher growth in the short-term or to higher agricultural sector growth, *per se*. However, given the depressed level of agricultural production as compared to its levels in the mid-1980s and given that the policy environment has improved substantially since then, it is reasonable to expect agricultural output to grow over the medium-term. Moreover, the growth is likely to be more broad-based. In the mid-1980s, the agricultural subsidies, especially those for irrigation and credit, went to a select few, generally large farmers. With a more neutral incentive regime, the poorer segment of the population faces a better set of incentives.

4.65 Agriculture's response to the policy reforms will depend crucially upon the success of the macroeconomic program. At present, while hyperinflation has been eliminated, the macroeconomic situation is precarious. The sol continues to remain strong, adversely affecting agricultural profitability. Similarly, while real interest rates for both dollar and sol loans have been falling in recent months, they remain high, discouraging investment and the use of costlier modern techniques of production. The poor state of fiscal finances requires the Government to

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<sup>22/</sup> See Roberto Arousada, 1990.

resort to taxes that discriminate against the productive sectors and makes it unable to maintain basic infrastructure. While farmers have to pay very high energy costs for transportation and for pumping water, they are expected to export without any duty-drawback mechanisms. The road network and public irrigation system have deteriorated to where many roads are impassible and water is unavailable during critical times.

**4.66** The degree of success in controlling terrorist activity is another factor that is critical to influencing agriculture's response to the policy reforms. Without a significant curtailment in terrorist activity, the abandoning of lands by farmers will continue, private investment in agriculture will not be forthcoming, and the high costs of protecting against terrorist activity will discourage production and raise transportation costs.

**4.67** During 1992, agricultural production is likely to remain below its depressed level of 1991. This is due to a combination of reasons. Because of the credit squeeze, the strong sol, and continued deterioration in infrastructure and rural violence, it would be no surprise to see agricultural output stagnate or fall slightly. However, the presence of the warm water current, *El Niño*, which has led to droughts in the *Sierra* and flooding in the *Costa*, has made a fall virtually a certainty. Nonetheless, the fall in agricultural output is not likely to be substantial nor permanent, provided the reform process continues. Moreover, if the macroeconomic situation improves and terrorist activity abates in the coming years, it is reasonable to expect agriculture to recover rapidly in 1993 and 1994, and then grow at a sustainable long-term growth rate of 3-4 percent as had been obtained during the 1960s.

## **ANNEX A: CONSEQUENCES OF COCA PRODUCTION**

### *I. Introduction*

1. Peru is the largest producer of coca in the world, accounting for about two-thirds of world production. The bulk of production is destined for illegal export to developed countries, especially to the United States, to be consumed in the form of cocaine or crack. In addition, there is substantial domestic consumption, mainly in the traditional form, which includes masticating the coca leaf to form a spittle that is held between the cheek and gums. An alkaline substance such as lime is then added, thus generating a small and constant flow of the alkaloid cocaine into the user's system.<sup>1/</sup> In recent years, poorer Peruvians have taken to smoking coca in its impure paste form, which causes severe health problems and is highly addictive. Among the younger generation of rich urban Peruvians, cocaine consumption is a growing problem.

2. There is considerable debate about the relative importance and impact of coca production in Peru on its economy and society. There are those that believe that coca exports supply the country with huge foreign exchange earnings without which the economy would collapse. They believe that these foreign exchange inflows are responsible for the recent appreciation of the the sol. While few are in favor of drug trafficking, many accept coca activities as a necessary way to generate income for tens of thousands of Peruvian farmers who have little prospect of alternate farming activities. They see coca as a problem for the rich countries and would like them to take stronger measures to curb demand rather than pressure the producer nations to destroy one of the few profitable activities of poor farmers. However, others view those involved in the production of coca as criminals participating in a highly profitable business. These people point to the negative effects of coca production on rural violence, corruption, public institutions and social structures. Some regard the environmental consequences as very serious while others dismiss such claims. Yet others view the drug production issue as a weapon to be wielded against rich consumer countries in order to exact from them funds that can be used to fight against poverty or in the purchase of military equipment.

3. This annex addresses some of the questions related to whether the existence of the coca industry is beneficial or detrimental to Peru. The study will show that the benefits to Peru from coca production and export are no longer as high as previously thought whereas the economic and social costs from the cultivation, processing and domestic consumption of coca are huge, thwarting economic activity, damaging fundamental institutions, causing serious environmental degradation and health problems, spreading corruption and violence, and jeopardizing future growth and development.

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<sup>1/</sup> See Roberto Lerner "Drugs in Peru, Reality an Representation" Doctoral Dissertation, Nijmegen Catholic University, Holland, 1991.

## II. Causes and Extent of Cultivation

4. Aerial and ground surveys suggest that approximately 230,000 hectares of land in Peru are under coca cultivation. Of this, about 17,000 hectares, mainly in the Department of Cuzco, are under legal cultivation with output being purchased by a public coca marketing agency. About 90 percent of illegal coca cultivation is conducted along two valleys of the *Ceja de Selva* at altitudes ranging from 500 to 2000 meters. The most important valley, accounting for about 67 percent of total area under cultivation, is the Upper Huallaga valley, which is located along the river Huallaga, between Puente Cayumba to the south in the Department of Huánuco and Campanilla to the north in the Department of San Martín. The second valley, accounting for about 23 percent of the area under cultivation, is located along the Apurimac River valley, in the Departments of Ayacucho and Cuzco. The remaining 10 percent of hectareage is scattered in the Departments of Amazonas, Loreto, Madre de Dios, Pasco, Puno, and Ucayali (see maps).

5. In order to understand how the *Ceja de Selva* came to take on this important role in the cultivation of coca it is necessary to trace through the development of the region. The *Selva* first took on economic importance during the rubber boom at the turn of the century. However, the region was not linked with the rest of Peru since rubber trade was conducted along the Amazon River into Brazil and the Atlantic. Public investment in the *Ceja de Selva* started in the 1940s with the construction of the Huánuco-Pucallpa road. Aimed at integrating rich new land into the Peruvian economy, the project attracted substantial migration from the impoverished *Sierra*. Complementary investments included the establishment of an experimental agricultural station in Tingo María along with health and educational services. It was in this period that agriculture and livestock development began with the cultivation of maize, bananas, coffee, tea, and cocoa (no relation to the coca plant). At the same time, the first coca plantations were established in mid-size estates, mainly to supply the leaf for chewing in the Andean region.

6. The second major investment in the *Ceja de Selva* was the *Marginal de la Selva* highway. In September of 1966, the Peruvian Government signed an IDB loan contract to finance a stretch of the *Marginal de la Selva* highway, which had been started in the 1960s by President Belaunde's government. The project comprised the segment between Tingo María and Campanilla in addition to some secondary roads (see maps). It included the parceling and allocation of approximately 80,000 hectares for 5,000 settler families. The goal of the project was to open up for agriculture and livestock over 100,000 hectares of rich lands adjacent to the highway in order to redirect migration away from the *Costa* into the *Ceja de Selva*. In 1973, there were fewer than 3,000 hectares of coca under cultivation in the *Ceja de Selva*.

7. The Government program to develop the *Ceja de Selva* continued with great impetus until Belaunde was ousted by Velasco's military coup in October of 1968. Velasco's agricultural policies were centered around the far-reaching agrarian reform. Thus the colonization model emphasizing the *Ceja de Selva* at the center of Belaunde's program was replaced by a collectivist model stressing the establishment of cooperatives in the *Sierra* and *Costa*. As a result, most of the regional agricultural development efforts performed by the State gradually began to disappear in the 1970s. The economic crisis and recession of the 1975-79 accelerated the demise of State institutions created by Velasco's Government to perform agricultural marketing and credit. By the end of the decade, the presence of the State in the *Ceja de Selva* became negligible.

8. The outset of the 1975-79 economic crisis also brought with it the demise of the sugar industry in the Coast, bringing about additional migration from the Coast. About 40 per cent of the migrants to the *Selva* during this period had migrated previously to other areas, particularly the Coast. Most of the migrants were young males with some degree of education and previous agricultural experience.<sup>2</sup> Recognizing an opportunity for profit, Colombian drug traffickers' organizations moved into the area in the late 1970s. The Colombians brought with them the same type of marketing and trafficking techniques used in their country for the marijuana crop. Thus, the *Ceja de Selva* witnessed rapid growth in the cultivation of coca. The growth was fueled by increased demand and the decline of agriculture and livestock activity in the area caused by the diminishing presence of the State. Thus, the Upper Huallaga valley became the main center for the illegal production of coca.

9. When Belaunde was reelected in 1980 his government again took the same regional development strategy centered around the expansion of the *Marginal de la Selva* highway. Thus, a second large wave of migration occurred between 1980 and 1985, principally from the north of the country both from the *Sierra* and the *Costa*. According to estimates from officials of the Ministry of Agriculture, five families per day migrated to the area during this period. This further contributed to the expansion of the coca, which was by far the most profitable crop. The area under coca increased steadily during the 1980s reaching 60,000 hectares in 1985. With the arrival of *Sendero* in the mid-1980s, ostensibly to protect farmers from both drug traffickers and police (see Section III), the area under cultivation continued to grow rapidly. Current estimates just for the Upper Huallaga region place the total number of hectares around 140,000 hectares.

10. The growth rates of the area under coca cultivation have been rapid, averaging 23 percent per annum between 1980 and 1987 (Table A.1). In addition, the location of the crop has changed greatly. In the mid-1960s, of the 16,000 hectares under coca cultivation, three-fourths

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<sup>2</sup> See Carlos Aramburu, "La Economía Parcelaria y el Cultivo de la Coca: El Caso del Alto Huallaga" in Pasta Básica de Cocaína: Un estudio multidisciplinario, Ed., Federico León y Ramiro Castro de la Mata, CEDRO, Lima, Peru, 1989.

were located in Cuzco, 20 percent in Huanuco, and small amounts in the Departments of La Libertad and Ayacucho<sup>3/</sup>. However, in the early 1980s, it was discovered that the soils of the Department of Huanuco produced a better quality coca leaf with a higher alkaloid content<sup>4/</sup>. Today the Departments of Huanuco and San Martín are the principal producing areas, followed by the Departments of Ayacucho and Cuzco.

11. In addition to the location, the type of production unit has also changed. Up to the early 1980s, coca was typically cultivated in plots of 6-8 hectares on relatively flat land. The larger plots disappeared in the mid-1980s as they became vulnerable to police operations. Producers tended to under-utilize their plots in the flat lands and intensified the production of coca leaves in remote and steep areas in the hillsides. The steep hillsides were particularly conducive for the cultivation of coca, with many of the steepest slopes being unable to sustain legal crops<sup>5/</sup>. Today, typical production units devoted to coca in the Upper Huallaga region have an area of 1.5 hectares.

Table A.1: Area Under Coca Cultivation

<u>YEAR</u>	<u>HECTARAGE</u>
1980	35,000
1981	45,000
1982	50,000
1983	60,000
1984	80,000
1985	100,000
1986	130,000
1987	150,000
1991	213,000

SOURCE: Briceño and Martínez, CEDRO (1989) and ILD

<sup>3/</sup> CONESTCAR (1965). Perú 1964 Estadística Agraria. Convenio de Cooperación Técnica Estadística y Cartografía. Lima: Universidad Agraria/Ministerio de Agricultura.

<sup>4/</sup> See Dourojeanni, Marc, "Impactos Ambientales del Cultivo de la Coca y la Producción de Cocaína en la Amazonía Peruana", in Federico León y Ramiro Castro de la Mata (ed.), op.cit. Perú, 1989.

<sup>5/</sup> ECONSULT S.A. (1987) Final Report on the Evaluation of AID Project No.527-0244 Development of the Alto Huallaga Area, Lima, Peru.

### III. The Economics of Coca Production

12. The coca plant is a shrub which grows to a height of over two meters. It produces its first harvest during the second year after planting. The plant is harvested by completely removing all of its leaves, which typically occurs three to six times a year. Although some parts of the Department of San Martín have reported yields of up to four metric tons per hectare, the average yield in the upper Huallaga valley is probably closer to 1.3 mt/ha.<sup>9</sup> Yields in other areas probably average about 0.9 mt/ha. Since the Upper Huallaga valley accounts for about three-quarters of total production, the average national yield of coca today is about 1.2 mt/ha.

13. While most farmers sold the dry coca leaves to traffickers up to the mid-1980s, more than two-thirds of them now carry out the first stage of processing themselves -- the production of basic coca paste (PBC). This change is due to better information regarding processing techniques, which are relatively simple, and improved availability of inputs. Higher transportation costs as farmers have moved cultivation to more remote areas of the jungle also contributed as did the tremendous subsidy to kerosene during the Garcia years. The production of PBC involves crushing the leaves by foot (wearing rubber boots) in a large vat containing a solution of kerosene, sulfuric acid, lime, sodium carbonate, and water. PBC is generally produced in batches of 3 kilograms. One hundred kilos of dry leaves are required to produce one kilo of PBC. The next stage of processing is the "washed coca paste" (PBL), which is generally done in laboratories within Peru. One kilo of PBC converts to 0.45 kg of PBL. Although some cocaine is produced domestically, the bulk is carried out in Colombian laboratories. The 0.45 kg of PBL translates into 0.33 kg of cocaine (Table A.2).

<u>REQUIREMENTS</u>	<u>OUTPUTS</u>	<u>RATIO</u>
100 Kg. coca leaves	1 Kg. of PBC	0.01
1 kg of PBC	0.45 Kg. of PBL	0.45
0.45 kg of PBL	0.33 Kg. of cocaine (*)	0.73

SOURCE: Juan Briceño and Javier Martínez, CEDRO (1989).

(\*) The Drug Enforcement Administration (DEA) assumes an adulteration ratio of a 100 percent before the drug reaches the retail stage in the US.

<sup>9</sup> The average yield figure used by ECONSULTS.A. (Consulting firm which made the 1987 USAID's Development Project for the Upper Huallaga) was 1.5 metric tons per hectare. However, the Upper Huallaga has the highest yields. Recent reports confirm lower yields because of lower use of fertilizer and pesticides and the recent appearance of a fungus that attacks the coca plant in the Upper Huallaga. In 1988, the BINM (Bureau of International Narcotic Matters) estimated the average yield at 1.0 m.t. per hectare. Other sources cite higher yields.

14. The price of the dry leaf grew steadily from US\$0.30 at the end of the 1970s to US\$1 in the mid-1970s and to between US\$2 and US\$3 in the mid-1980s (Table A.3). Since the mid-1980s, there have been large price fluctuations along a declining trend. The declining trend may be explained by the huge increase in hectareage even as cocaine use in the United States was stabilizing. The price fluctuations are related to the severity of interdiction efforts in traffic activities both in Peru and Colombia. During 1989, the drug cartel wars and interdiction actions in Colombia produced a glut in Peru as few traffickers came to pick up the coca. This reduced the price of the dry leaf to less than US\$0.90 per kilo and caused PBC to sell at only US\$160/kg, roughly one-tenth its price five years earlier and one-thirtieth its price at the beginning of the decade. An even sharper price reduction occurred in Bolivia, where the price of dry coca fell to US\$0.25/kg, reflecting the greater difficulties of transportation at the height of the Colombian interdiction efforts.

**Table A.3: Coca Prices at Source, 1980-1991**  
(US dollars per kilogram)

<u>YEAR</u>	<u>LEAF</u>	<u>PBC</u>	<u>PBL</u>	<u>COCAINE</u>
1980-82	3.00	4500	6900	16800
1983-84	2.00	--	2950	8400
1985	2.00	1500	5000	9500
1986	2.00	800	3400	7000
1987	3.50	500	2000	4000
1988	1.21	320	1200	3500
1989-I	1.21	320	1200	3500
1989-II	1.07	215	900	2500
1990	0.90	160	650	2000
1991	1.40	220	615	--
1992 (March)	1.70	250	650	--

Source: Núñez-Melgar and Reátegui (1990) and mission estimates.

15. While the price for coca leaf and PBC recovered slightly in 1991, it is still very low by historical standards. The price of the kilogram of dry leaf paid by the traffickers to the peasants is currently around US\$1.70 whereas the price for PBC recovered to US\$250, still well below its level in the early to mid-1980s. Surprisingly, prices for washed coca paste (PBL) have not recovered from their trough of 1990. While the wholesale price of cocaine in Peru is about US\$2500, the price in the US is estimated at US\$30,000/kg.

### Contribution to Net Farm Incomes

16. It is interesting to calculate the net farm income generated by coca cultivation at March 1992 prices. On a per hectare basis, a yield of 1.2 tons produces a gross value of US\$2040 at current prices. Assuming that all the labor involved is family labor, that 10 percent of the gross value (US\$204) is paid for protection fees to *Sendero* or the police, and subtracting the cost of fertilizer, transport, herbicides and pesticides, the net income per hectare generated by cultivating the coca leaf works out to about US\$1600 (Table A.4). Since a typical family has a 1.5 hectare plot for coca cultivation, the total annual net family income from producing the coca leaf is only US\$2400 at current prices, which is well below the national average. While a family will typically supplement its income by growing additional food crops, this does show that at these prices and yields, coca cultivation is not a particularly lucrative activity.

17. The farmers that have the technical skills and availability of inputs to produce PBC can do only slightly better. The average proportion of farmers producing PBC is now about two-thirds, with the proportion being higher in the Upper Huallaga valley. PBC is generally produced in batches of 3 kilos for which the following inputs are needed: 20 gallons of kerosene, 15 kilos of sulfuric acid, 24 kilos of quick lime, 3 kilos of sodium carbonate, and 3,900 liters of water.<sup>2/</sup> The value of these inputs needed in the producing areas is estimated at US\$240 or US\$80/kg. Using current prices of US\$250/kg, farmers can earn revenues of US\$3000 per hectare (Table A.4) assuming a yield of 1.2 tons and a technical coefficient of 1:100. Making an allowance for protection costs, fertilizer, herbicides, pesticides, and transportation costs (these will be much lower than for the leaf), the net income generated by a farm of 1.5 hectares that converts all of its leaf into PBC is about US\$2550, only slightly higher than the US\$2400 that can be earned from producing the leaf. Of course, given the wide variability in prices for both outputs and inputs as well as yields, the figure is likely to vary considerably across regions and time.

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<sup>2/</sup> Edmundo Morales, *Cocaine: White Gold Rush in Peru*, University of Arizona Press, Tucson, 1989.

<b>Table A.4. Coca Budget per Hectare</b>	
(mid-March 1992)	
<b><u>Leaf Production</u></b>	
<b>Revenues:</b>	
Yield	1200 kg
Price	US\$1.7/kg
<b>Gross Revenue</b>	<b>US\$2040</b>
<b>Costs:</b>	
Protection Fees	US\$204
Fertilizer, Pesticides & Herbicides	\$100
Transport	\$125
<b>Total Costs</b>	<b>\$429</b>
<b>Net Income/ha</b>	<b><u>US\$1611</u></b>
<b><u>Basic Paste Production</u></b>	
<b>Revenues:</b>	
Yields	12 kg
Price	US\$250/kg
<b>Gross Revenue</b>	<b>US\$3000</b>
<b>Costs:</b>	
Processing Materials (chemicals)	US\$960
Protection Fees	\$204
Fertilizers, Pesticides & Herbicides	\$100
Transport	\$ 25
<b>Total Costs</b>	<b>\$1289</b>
<b>Net Income/ha</b>	<b><u>US\$1711</u></b>

### Contribution to GNP and Balance of Payments

18. In addition to calculating the impact of coca production on farm incomes, it is interesting to attempt to measure the net contribution of illegal coca activities to GNP and the balance of payments. This is a more difficult exercise because of the uncertainty regarding the extent to which coca processing is done in Peru, the proportion to which it is carried out by Peruvian residents, and the extent to which coca earnings remain within Peru. In addition, it is difficult to measure the extent to which these activities use imported inputs. This latter information is required both to calculate the net impact on the balance of payments and to allow

one to subtract the value of imported inputs from gross incomes in order to calculate coca's contribution to GNP.

19. During the mid-1980s, the bulk of coca production in Peru was in the form of either PBC or leaf, and only small amounts of PBL and cocaine were produced. As recently as 1987, it was estimated that less than 5 tons of cocaine were produced in Peru. However, the processing of PBC into PBL has been steadily increasing. Moreover, it is believed that in the last two years higher amounts of cocaine are being produced within the country. Rather than attempting to verify the amount of coca being exported in the PBC, PBL and cocaine, it will be assumed for the purpose of this exercise that all coca exports are done in the form of PBL and that all the processing up to the PBL stage is controlled by Peruvian residents who keep their earnings in Peru. Since some exports are still conducted in the form of PBC and since some of the income from cocaine production accrues to foreign residents or is kept overseas, this simplifying assumption is a fair measure of coca's net impact on GNP and the balance of payments, even while recognizing that cocaine exports are becoming increasingly important.

20. Using the figures for hectarage, yields, technical coefficients, and prices given earlier and making the simplifying assumption that all coca is processed to the PBL stage in Peru, the gross value of coca production is estimated to be roughly US\$750 million ( $213,000 \times 1200 \times 0.01 \times 0.45 \times 650$ ) at March 1992 prices. However, since its production uses inputs that are imported (at the margin) such as fuel, chemicals, fertilizer, pesticides and herbicides, these need to be subtracted from this figure in order to calculate coca's contribution to GNP. A conservative value of the direct and indirect inputs at world prices would be about US\$200 million. Thus an upper bound of coca's contribution to GNP at these prices would be US\$550 million, about 2 percent of GNP. At the same time, its net foreign exchange revenues from exports would be somewhat less since some the production is consumed domestically. Thus a realistic figure for the coca's net foreign exchange earnings is estimated to be US\$500 million.

21. The above analysis dispels the widespread notion that dollar inflows to Peru from coca activity help explain the recent appreciation of the sol. First, although coca revenues were up slightly from their depressed levels in 1990, they were substantially lower than their levels in 1988 and 1989, when the sol was far weaker. Foreign exchange inflows of 500 million dollars (with much smaller year-to-year fluctuations) are insufficient to produce such a real depreciation of the sol in an economy of the size and degree of openness as that of Peru. It is far more likely that the currently low equilibrium level of the exchange rate is explained by phenomena dealing with the stabilization effort after the prolonged hyperinflation period and the ensuing recession, high interest rates, and reverse capital flight. During 1991, there was substantial distress reverse capital flight, as businessmen brought back their personal funds held abroad to meet the cash needs of their firms in financial difficulties caused by the recession and high real interest rates.

#### IV. Links with Violence

22. There are several sources of violence in the coca producing regions. Initially, farmers began arming themselves in order to protect themselves and their crops from both the police and drug traffickers. In the early days, traffickers often used bullying tactics to extract lower prices and other favors from farmers. In fact, *Sendero Luminoso's* early forays into the drug business were ostensibly prompted by its view that the peasant farmers needed protection from the traffickers. Farmers paid *Sendero* a fee for this protection, estimated at about 10 percent of the gross value of the coca cultivated. However, subsequently *Sendero* and the traffickers found they stood to gain by cooperating with each other. It is now usual for the traffickers to pay cash quotas to *Sendero* for their protection against police and military interference. This allows traffickers a free hand in the area. At the same time, *Sendero* finds this to be an important source of financing for its activities and a useful way to further obtain arms, disrupt workings of the Government and find new recruits.

23. Another source of violence stems from the action of drug traffickers who compete violently among each other for the control of drug production and distribution. Gang warfare is common. Further, gangs sometimes try to impose production quotas on farmers by force. They also encourage confrontations between farmers and officials of eradication programs such as CORAH (Agreement for the Control and Reduction of Coca in the Huallaga) in order to try and maintain production levels.

24. Yet another source of violence is, of course, *Sendero Luminoso* itself. Taking advantage of the weakness of the State in the region, *Sendero* seeks to eliminate the presence of all State institutions to declare the area a "freed" zone. It does this by taking advantage of the fact that the police and the military receive low salaries, are badly armed, and are the object of the population's animosity because of the eradication programs. At the same time, the relationship with peasants allow them to enroll, and many times kidnap, new members into their ranks.

25. The Revolutionary Movement Tupac Amaru (MRTA) is also active in the coca producing region to the north of the city of Juanjui in the Department of San Martín. The MRTA is a declared enemy of *Sendero*, which in turn has tried to march north into the areas dominated by MRTA. In doing so, the two terrorist groups have sustained fierce confrontations. In most respects, the MRTA operates in a different manner than that of *Sendero*. Ideologically opposed to the production of drugs, the MRTA, however, coexists with the coca industry insofar as it provides the region with economic stability while allowing themselves to exact payments from farmers and businesses. MRTA has voiced opposition against drug consumption and often

punishes those who smoke coca paste. The population of the Central Huallaga and lower Huallaga valleys to its north are generally opposed to the MRTA and have established "*rondas campesinas*" (vigilante groups) to protect themselves against violence.

26. Finally, the Government itself has contributed to violence with its strategy in the fight against drugs. The coercive methods used by CORAH with the support of UMOPAR (Rural Mobile Patrol Unit) have generated resentment and resistance among peasants. This is the partly the consequence of a government strategy that has refused to deal with the drug production problem in an integral and coordinated fashion. While in some areas the government stresses the fight against drug traffic through police actions without repressing terrorism, in others, it is the army that fights terrorism without regard for the increasing drug trafficking problem. This situation has been worsened because of the existing rivalry between the police and the army and their reluctance to collaborate with each other.

#### V. *Environmental Impact*

27. Dramatic environmental damage is being produced by coca cultivation and by its processing.<sup>8/</sup> The techniques used in the cultivation and processing of coca are ideal for wreaking havoc on the environment. The areas of Peru that produce the highest returns for coca production are also the most environmentally fragile. At the same time, the cheapest techniques of production are environmentally very destructive. Most coca is grown in the *Ceja de Selva* at an altitude ranging from 500 to 2,000 meters above sea level. This region receives high rainfall, averaging 200 centimeters annually, with some areas receiving 600 centimeters. Coca is best grown on hillsides (sometimes on slopes steeper than 45 degrees) which makes it very vulnerable to soil erosion. Since the area is heavily forested, the farmer needs to destroy the trees in order to clear the land for planting. The most economical way to do so is by slash and burn techniques. Even the type of soil that is best-suited to coca production (clayey-sandy) is one that is extremely susceptible to rapid erosion.

28. The deforestation and soil erosion described above is exacerbated by the cultivation techniques. Several times per year, the soil needs to be weeded and the softened, thus enhancing soil erosion. The harvesting itself, which consists of defoliation three to six times a year, further contributes to expose the soil to rain and wind erosion. It is common to see hillsides planted with coca badly eroded with longitudinal ditches, one half meter deep, forming on the sides of the plant rows. This is because coca is not planted according to the contours of the land, but rather in vertical rows along the hillside. The resulting erosion not only destroys the tropical

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<sup>8/</sup> An excellent summary of the bibliography relevant to the coca crop and the production of drugs is presented in Marc Dourojeanni, op. cit.

forest but increases sedimentation and diminishes the retention capacity of river beds, leading to flooding and producing grave damage to hydro-biological resources of the area.<sup>2/</sup> Finally, in the years of high profits in the cultivation of coca, it was common for the peasants to overuse pesticides, herbicides, and fertilizers, thereby polluting rivers.

29. Peasants cultivating coca normally abandon lands when the soil becomes depleted and move to deforest new areas. In addition, peasants have been forced by eradication efforts as well as the existing violence to move towards progressively more remote areas invading, in many cases, forest reserves and national parks.<sup>10/</sup> Finally, there is additional deforestation caused by peasants having to cultivate their own food in remote areas. Overall, it is estimated that total deforestation due to the coca crop in the *Ceja de Selva* hovers around 700,000 hectares or about 10 percent of the deforestation that has occurred in the Peruvian Amazon jungle in the twentieth century.

30. However, probably the most damaging source of ecological damage is the production of coca paste. The processing of the coca into PBC and PBL results in the discharge of chemical waste directly into streams and rivers of the Amazon basin. It has been calculated that the cultivation of coca from 140,000 hectares in the Upper Huallaga valley results in the discharge into rivers of 50 million liters of kerosene, 28 million liters of sulfuric acid, 14,000 metric tons of quick lime, 2800 metric tons of carbide, 14,000 tons of toilet paper and 5.6 million liters of acetone.<sup>11/</sup>

## VI. Social Costs and Benefits

31. This section identifies the costs and benefits to coca production, attempting to measure them where feasible. The two areas in which the coca industry is viewed as by some as beneficial to the economy are the income and employment generated by coca production and in its positive effect on the balance of payments. However, as has been seen in Section III, the net contribution of coca to the balance of payments at March 1992 prices is in the order of US\$500 million, a much lower figure than that usually reported.<sup>12/</sup> Also, while it is true that coca

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<sup>2/</sup> Alejandro Camino, "Coca: del uso tradicional al narcotráfico", in *Coca, cocaína y narcotráfico*, Diego García Sayan, ed., Comisión Andina de Juristas, Lima, 1989.

<sup>10/</sup> It has been reported that 10 national parks or conservation units run the risk of being totally or partially invaded by coca growers. These areas cover as much as 8 million hectares. See Marc Dourojeanni, op. cit.

<sup>11/</sup> T. Marcelo, "Ríos de la Selva: Más víctimas del Narcotráfico", Universidad Nacional Agraria, Lima (unpublished), quoted by Marc Dourojeanni, op. cit.

<sup>12/</sup> See, for example, Macroconsult, "Impacto Económico del Narcotráfico en el Perú" (mimeo), 1990.

generates output and employment, it is seldom realized that coca activities and the violence accompanying them have rendered useless huge public investment projects that were designed to develop agricultural activities in vast territories of the *Ceja de Selva*.<sup>13/</sup> In the absence of coca activities and violence, the potential for legal activities and employment is large, almost certainly exceeding incomes from coca activities at current prices.

32. It is relatively easy to identify the direct benefits from coca production. As many as 120,000 workers are directly involved in its cultivation many more derive their livelihoods from its processing and distribution. As seen in Section III, the contribution to GNP from coca cultivation and processing is estimated to have been US\$550 million in 1991, equivalent to about 2 percent of GNP. During the early and mid-1980s, coca's profitability and its contribution was estimated to have been much higher. Consequently, coca activities replaced or supplemented other agricultural activity during the last decade and fueled a "coca boom" in areas where production is concentrated, notably the Departments of Huánuco and San Martín.

33. A by-product of this regional growth was the explosive expansion of small cities and towns. For example, Tingo María in the early 1970s consisted of 24 square blocks of largely unpaved streets. Since then, it has grown five-fold and another community of the same size has been built nearby. Aucayacu, which is a town in the Huallaga River had at the same time 6 square blocks with a few hundred inhabitants. Now Aucayacu has 20,000 inhabitants.<sup>14/</sup> Various other indicators also point to the high growth that the Upper Huallaga region witnessed particularly between 1980 and 1987. Approximately 60 percent of all pick-up trucks sold in the country were sold by distributors in Tingo María which also became a preferred market for cars stolen in Lima and other large cities in the coast.<sup>15/</sup> Similarly, many services experienced high growth rates, particularly grocery stores, restaurants and bars.<sup>16/</sup> However the "coca boom" ended in 1987-88 to gradually give way to a recession as prices for coca products fell dramatically.

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<sup>13/</sup> Analogous arguments are presented for the case of Colombia by Miguel Urrutia in "Análisis Costo-Beneficio del Tráfico de Drogas para la Economía Colombiana" *Coyuntura Económica* 1990.

<sup>14/</sup> Some of the economic activity in the Upper Huallaga is described by Roberto Abusada in "US Sugar Policy, Alternative Economic Development in Peru, and the Fight Against Drugs", unpublished report prepared for Patton, Boggs & Blow, Washington, D.C., 1990.

<sup>15/</sup> See Núñez and Reátegui, "La Economía Cocalera en el Alto Huallaga: Impacto Económico", Tesis de Bachiller, Universidad del Pacífico, Lima, 1990.

<sup>16/</sup> See, for example, Núñez and Reátegui (1990).

34. On the other hand, coca activities have clearly precluded incorporating the vast *Ceja de Selva* region into the national economy and undermined public investments in Peru's most promising agricultural frontier. The major public investment in the *Ceja de Selva* have been in roads, mainly the Huánuco-Pucallpa and *Marginal de la Selva*. However, there have been several other complementary projects (Table A.5). In the first half of the 1980s, six Special Projects (including the Upper Huallaga Special Project, PEAH) totaling US\$506 million were conducted along the *Marginal de la Selva* highway. Together, these projects covered an area of 8.7 million hectares and were intended to accommodate 125,000 families in agricultural and livestock activities. While the roads were useful in expanding coca production, they have severely hampered the development of legal activities. Throughout prolonged periods during the 1980s, legal agriculture confronted acute shortages of labor since coca production could afford to pay much high agricultural wages. Consequently, total legal agricultural activities in the *Ceja de Selva* region in 1985 were estimated to total only US\$20 million<sup>17/</sup>.

Table A.5. Public Investment Projects in the  
Ceja de Selva, 1979-1985  
(millions of US\$)

		<u>FINANCIAL</u> <u>INSTITUTION</u>	<u>EXECUTION</u> <u>PERIOD</u>
1.	Central Huallaga and Lower Mayo		
	- GERA project	46.5	AID
		34.7	Spain
2.	Upper Mayo	80.6	World Bank
3.	Upper Huallaga	34.3	AID
4.	Central Upper Jungle		
	- Pichis	86.7	IDB
	- Paucazu	30.0	AID
	- Satipo-Chanchamayo	67.5	World Bank
	- Oxapampa	13.7	KFW
	- Pachitea-Von Humboldt	1.5	Belgium-Swiss
5.	Jaen-San Ignacio-Bagua	95.0	IDB
6.	Ucayali-Chontayacu-Purus	16.0	IDB
	<b>TOTAL</b>	<b>506.6</b>	

<sup>17/</sup> See ECONSULT (1986).

35. While coca production led to a rapid increase in incomes in the short-term, it has precluded the possibility of more sustainable longer-term growth in legal agricultural activities. This is mainly because coca production has fostered violence and supported and financed terrorism. This, in turn, has weakened or eliminated the State's presence in the region and has made the conduct of legal agricultural activities virtually impossible in many parts of the region. For example, the bulk of the transportation infrastructure has been damaged by the total lack of maintenance and terrorist actions. In addition, all public institutions providing technical assistance, agriculture extension, credit, and marketing services have reduced their operations to a minimum or have ceased to operate. Even where it may still be profitable to carry out legal agricultural activities, concern with personal safety and the safety of property by terrorist groups has pressured many to either abandon the land or produce coca. The result is a population that is stranded in an impoverished region that, with some additional public investment, has potential to produce agricultural output comparable to that of the *Costa* (over US\$1 billion).

36. Moreover, there are other costs imposed by the coca industry that are difficult to measure. Coca cultivation has created massive environmental damage to forests and water resources. To a large extent, coca is responsible for the high level of corruption present in segments of the military, police and law enforcement institutions. There have been several corruption cases involving politicians, including congressmen, as well as members of the judiciary. Finally, as in other drug producing countries, coca production has inevitably led to a serious domestic drug consumption problem. An estimated 3 per cent of high school students between the ages of 15 and 18 consume PBC while the use of PBC and other coca derivatives already constitutes a grave public health problem in Peru.<sup>18/</sup>

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<sup>18/</sup> See Federico Leon and Ramiro Castro de la Mata (ed.) op. cit.

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## **ANNEX B: STATISTICAL APPENDIX**

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**Table 1.2: POPULATION BY DEPARTMENT, 1940-91**  
(Thousands)

REGION	CENSUS				1991* (to July 1991)
	1940	1961	1972	1981	
<b>TOTAL</b>	7,023	10,420	14,122	17,762	21,998
<b>Loreto</b>	321	411	541	475	668
<b>Huanuco</b>	277	355	432	506	629
<b>Junin</b>	500	547	721	897	1,107
<b>Pasco</b>	--	151	185	231	299
<b>Arequipa</b>	271	407	561	738	940
<b>Ancash</b>	465	606	755	854	1,006
<b>Piura</b>	432	692	888	1,155	1,414
<b>Tumbes</b>	27	57	79	108	144
<b>Apurimac</b>	280	304	321	343	376
<b>Cusco</b>	565	648	752	875	1,057
<b>Madre de Dios</b>	25	25	25	36	51
<b>Ayacucho</b>	414	430	479	524	587
<b>Huancavelica</b>	266	316	347	362	380
<b>Ica</b>	145	261	373	447	527
<b>Moquegua</b>	36	53	78	103	132
<b>Puno</b>	645	727	813	910	1,032
<b>Tacna</b>	38	68	100	148	209
<b>Amazonas</b>	90	129	213	268	352
<b>Cajamarca</b>	568	787	957	1,083	1,250
<b>Lambayeque</b>	200	354	533	709	903
<b>San Martin</b>	121	170	234	332	482
<b>La Libertad</b>	404	609	808	992	1,212
<b>Ucayali</b>	--	--	--	219	237
<b>Lima</b>	849	2,094	3,595	4,993	6,432
<b>Callao</b>	84	219	332	454	572

\* Informacion Preliminar, INEI, 1992.

Fuente: Instituto Nacional de Estadística e Informática (INEI).

**PERU**

**Table 2.1: GDP BY EXPENDITURE, 1950-1991**  
(Millions of Intis in constant 1986 prices)

	1950	1960	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>GDP</b>	82,890	142,518	242,804	319,503	346,871	365,273	365,561	317,252	331,819	337,420	373,976	412,991	379,542	329,735	314,785	321,293
<b>Private Consumption</b>	59,801	92,870	175,596	218,324	221,087	232,674	234,925	214,013	218,488	219,092	254,987	290,958	275,910	227,806	222,378	245,765
<b>Public Consumption</b>	6,010	13,415	25,278	35,964	41,698	41,041	46,499	42,420	40,481	41,910	43,336	45,893	38,627	33,058	28,168	20,492
<b>Gross Fixed Investments</b>	15,932	28,726	42,955	87,373	89,738	104,690	101,226	74,669	73,879	67,928	80,535	95,547	81,943	66,346	69,559	70,891
<b>Change in Stocks</b>	23	2,749	271	312	8,125	11,908	8,165	227	(1,268)	2,407	3,232	(a)	(a)	(a)	(a)	(a)
<b>Exports</b>	11,132	24,613	36,583	36,910	48,978	47,703	50,222	44,521	48,629	50,557	45,420	42,104	39,060	46,682	44,327	44,985
<b>Imports</b>	10,008	19,855	37,879	59,380	62,755	72,743	75,476	58,598	48,390	44,475	53,534	61,511	55,998	44,157	49,638	60,840
<b>Memo Item: GDP per Capita</b>	10,859	14,351	18,404	21,074	20,056	20,615	20,149	17,087	17,472	17,377	18,847	20,375	18,339	15,610	14,607	14,600

Source: INEI (prepared by Cuanto, S.A.).

(a) Subsumed within the category of Private Consumption.

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**PERU**

**Table 2.1A: GROWTH RATES OF GDP BY EXPENDITURE, 1950-1991**  
(Percent)

	1950-1960*	1960-1970*	1970-1980*	1980-1990*	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>GDP</b>	5.6	5.5	3.6	-1.0	5.3	0.1	-13.2	4.6	1.7	10.8	9.7	-7.4	-12.4	-2.4	2.1
<b>Private Consumption</b>	4.5	6.6	2.3	0.1	5.2	1.0	-8.9	2.1	0.3	16.4	13.1	-7.2	-14.0	4.4	10.5
<b>Public Consumption</b>	8.4	6.5	5.1	-3.8	-1.6	13.3	-8.8	-4.6	3.5	3.4	5.9	-1.5	-21.5	-18.8	-27.3
<b>Gross Fixed Investments</b>	6.1	4.1	7.6	-2.5	16.7	-3.3	-26.2	-1.1	-8.1	18.6	18.6	-11.1	-20.8	8.0	1.9
<b>Change in Stocks</b>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<b>Exports</b>	8.3	4.0	3.0	-1.0	-2.6	5.3	-11.4	9.2	4.0	-10.2	-7.3	-6.0	19.1	-15.7	1.5
<b>Imports</b>	7.1	6.7	5.2	-2.3	15.9	3.8	-22.4	-17.4	-8.1	20.4	14.9	-14.3	-17.6	23.0	22.6

Source: Table 2.1.

\* Yearly average growth rates.

Filename: c:\elec\021a (from: c:\data\peru\021a.wk1)

**PERU**

**Table 2.2: GDP BY SECTOR, 1950-1991**  
(Millions of Intis in constant 1986 prices)

	1950	1960	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>GDP</b>	82,890	142,518	242,804	319,503	346,871	365,273	365,561	317,252	331,819	337,420	373,976	412,991	379,542	329,735	314,785	321,293
<b>Agriculture</b>	18,421	23,048	32,093	33,253	32,499	35,437	36,221	32,732	36,081	37,133	38,742	41,299	44,222	41,697	37,944	38,152
<b>Fishing</b>	174	1,186	3,918	1,290	1,566	1,708	2,005	1,410	2,061	2,413	3,188	2,815	3,609	3,781	3,615	3,357
<b>Mining</b>	1,810	4,290	6,346	6,401	12,941	12,543	12,697	11,451	11,998	12,574	11,953	11,425	9,785	9,101	8,804	8,423
<b>Manufacturing</b>	16,570	35,787	63,041	80,991	87,183	87,771	86,740	71,001	75,070	78,446	90,680	105,162	93,375	77,497	73,041	76,704
<b>Construction</b>	7,226	11,610	18,879	30,712	28,706	31,927	32,567	25,782	25,990	23,266	28,244	33,252	31,004	26,451	27,323	26,851
<b>Services</b>	38,689	66,597	118,527	166,856	183,976	195,887	195,331	174,876	180,619	183,588	201,168	219,038	197,547	171,208	164,058	167,806

Source: Instituto Nacional de Estadística e Informática (prepared by Cuanto, S.A.).

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**PERU**

**Table 2.2A: GROWTH RATE OF GDP BY SECTOR, 1950-1991**  
(Percent)

	1950-1960*	1960-1970*	1970-1980*	1980-1990*	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>GDP</b>	5.6	5.5	3.6	-1.0	5.3	0.1	-13.2	4.6	1.7	10.8	9.7	-7.4	-12.4	-2.4	2.1
<b>Agriculture</b>	2.3	3.4	0.1	1.6	9.0	2.2	-9.6	10.2	2.9	4.3	6.6	6.9	-3.6	-9.8	0.5
<b>Fishing</b>	21.2	12.7	-8.8	8.7	9.1	17.4	-29.7	46.2	17.1	32.1	-11.9	21.7	5.2	-3.8	-7.1
<b>Mining</b>	9.0	4.0	7.4	-3.8	-3.1	1.2	-9.8	4.8	4.8	-4.9	-3.0	-17.2	1.7	-2.7	-4.3
<b>Manufacturing</b>	8.0	5.8	3.3	-1.8	0.7	-1.2	-18.1	5.7	4.5	15.6	12.8	-10.4	-17.8	-2.1	5.0
<b>Construction</b>	4.9	5.0	4.3	-0.5	11.2	2.0	-20.8	0.8	-10.5	21.4	17.7	-5.5	-15.9	3.3	-1.7
<b>Services</b>	5.6	5.9	4.5	-1.1	6.5	-0.3	-10.5	3.3	1.6	9.6	8.9	-8.8	-12.2	-1.5	2.3

Source: Table 2.2.

\* Yearly average growth rate.

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**PERU**

**Table 2.2B: SECTORAL SHARES OF GDP IN CONSTANT PRICES, 1950-1991**

(Percent)

	1950	1960	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>GDP</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>Agriculture</b>	22.2	16.2	13.2	10.4	9.4	9.7	9.9	10.3	10.9	11.0	10.4	10.1	11.6	12.8	11.8	11.9
<b>Fishing</b>	0.2	0.8	1.6	0.4	0.5	0.5	0.5	0.4	0.6	0.7	0.9	0.7	0.9	1.1	1.1	1.0
<b>Mining</b>	2.2	3.0	2.6	2.0	3.7	3.4	3.5	3.6	3.6	3.7	3.2	2.8	2.5	2.9	2.9	2.6
<b>Manufacturing</b>	20.0	25.1	26.0	25.3	25.1	24.0	23.7	22.4	22.6	23.2	24.2	24.9	24.1	22.6	22.7	23.9
<b>Construction</b>	8.7	8.1	7.8	9.6	8.3	8.7	8.9	8.1	7.8	6.9	7.6	8.1	8.3	7.9	8.4	8.4
<b>Services</b>	46.7	46.7	48.8	52.2	53.0	53.6	53.4	55.1	54.4	54.4	53.8	53.4	52.6	52.7	53.2	52.2

Source: Table 2.2

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**PERU**

**Table 2.3: GDP BY SECTOR, 1950-1991**

	1950	1960	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
	(Thousands of Intis at Current Prices)				(Millions of Intis at Current Prices)											
<b>GDP</b>	18,278	67,519	279,969	665,389	5,968	10,658	17,909	32,448	72,410	197,903	373,977	739,439	4,942,317	115,340,193	7,672,971,577	37,544,329,000
<b>Agriculture</b>	5,210	14,258	46,692	103,685	581	1,042	1,622	3,277	7,583	17,434	38,742	71,652	353,045	8,250,588	459,907,556	2,084,242,701
<b>Fishing</b>	35	577	5,222	5,256	29	57	88	150	399	1,199	3,188	4,474	56,407	1,029,780	48,187,231	278,522,191
<b>Mining</b>	728	3,425	13,716	22,255	904	1,257	1,873	3,589	7,702	19,513	11,953	15,758	110,284	2,517,625	167,575,880	502,083,524
<b>Manufacturing</b>	2,842	12,632	55,359	133,252	1,206	1,956	3,275	5,949	14,424	48,066	90,681	172,795	1,474,931	31,091,890	2,038,571,737	8,470,358,710
<b>Construction</b>	864	3,252	17,345	50,798	342	737	1,589	2,172	4,744	14,087	28,244	58,329	446,250	9,020,760	537,655,576	2,433,183,810
<b>Services</b>	8,599	33,375	141,273	350,143	2,905	5,611	9,462	17,311	37,558	97,604	201,168	416,431	2,501,400	63,429,550	4,421,073,597	23,775,938,064

Source: INEI (prepared by Cuanto, S.A.).

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**PERU**

**Table 2.3A: SECTORAL SHARES OF GDP IN CURRENT PRICES, 1950-1991**  
(Percent)

	1950	1960	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>GDP</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.6	100.0	100.0	100.0
<b>Agriculture</b>	28.5	21.1	16.7	15.6	9.7	9.8	9.1	10.1	10.5	8.8	10.4	9.7	7.8	7.2	4.4	5.6
<b>Fishing</b>	0.2	0.9	2.0	0.8	0.5	0.5	0.5	0.5	0.6	0.6	0.9	0.6	0.0	0.4	0.2	0.7
<b>Mining</b>	4.0	5.1	4.9	3.3	15.1	11.8	10.5	11.1	10.6	9.9	3.2	2.1	1.9	2.2	1.7	1.3
<b>Manufacturing</b>	15.5	18.7	19.8	20.0	20.2	18.4	18.3	18.3	19.9	24.3	24.2	23.4	32.0	20.9	16.6	22.6
<b>Construction</b>	4.7	4.8	6.2	7.6	5.7	6.9	8.9	6.7	6.6	7.1	7.6	7.9	7.8	6.8	7.3	6.5
<b>Services</b>	47.0	49.4	50.5	52.6	48.7	52.6	52.8	53.3	51.9	49.3	53.8	56.3	50.4	62.5	69.8	63.3

Source: Table 2.3

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**PERU**

**Table 2.4: LABOR FORCE STRUCTURE BY SECTOR, 1970, 1980, 1990 AND 1991**

ECONOMIC SECTOR	1970		1980		1990		1991	
	(1,000)	(%)	(1,000)	(%)	(1,000)	(%)	(1,000)	(%)
<b>TOTAL</b>	4,191	100.0	5,587	100.0	7,344	100.0	7,435	100.0
<b>Agriculture</b>	2,016	48.1	2,223	39.8	2,497	34.0	2,528	34.0
<b>Mining</b>	59	1.4	112	2.0	176	2.4	178	2.4
<b>Industry</b>	528	12.6	648	11.6	771	10.5	781	10.5
<b>Electricity</b>	8	0.2	17	0.3	22	0.3	22	0.3
<b>Construction</b>	176	4.2	218	3.9	272	3.7	275	3.7
<b>Commerce</b>	478	11.4	732	13.1	1,146	15.6	1,160	15.6
<b>Transport</b>	172	4.1	246	4.4	323	4.4	327	4.4
<b>Financial Institution</b>	59	1.4	140	2.5	176	2.4	179	2.4
<b>Services</b>	695	16.6	1,251	22.4	1,961	26.7	1,985	26.7

Source: INEI. " Peru: Compendio Estadístico, 1990-91, Tomo I". Lima, Mayo 1991.

Nota: 1991 is assumed to have the same percentage distribution as 1990.

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**PERU**

**Table 3.1: BALANCE OF PAYMENTS SUMMARY**  
(Millions of US\$)

	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>I. CURRENT ACCOUNT</b>	184.4	-1535	-102	-1,729	-1,534	-780	-144	153	-1,113	-1,625	-1,245	60	-1,275	-1977
Commercial Balance	334.7	-1,097	826	-553	-429	293	1,007	1,172	-65	-521	-99	1,197	340	-165
Export of Goods	1,034.3	1,330	3,916	3,249	3,293	3,015	3,147	2,978	2,531	2,661	2,691	3,488	3,231	3,329
Import of Goods	-699.6	-2,427	-3,090	-3,802	-3,722	-2,722	-2,140	-1,806	-2,596	-3,182	-2,790	-2,291	2,891	-3,494
Financial Services														
Total	-149.0	-284	-909	-1,019	-958	-1,039	-1,088	-983	-855	-862	-981	-924	-1,014	-1,011
Public	-34.0	-177	-437	-456	-548	-636	-818	-752	-700	-697	-810	-770	-883	-888
Private	-115.0	-107	-472	-563	-410	-403	-270	-231	-155	-165	-171	-154	-131	-123
Non-Financial Services	-82.9	-231	-166	-318	-314	-253	-221	-170	-343	-422	-376	-448	-848	-1,117
Transfers	81.6	77	147	161	167	219	158	134	150	180	211	235	247	316
<b>II. LONG TERM CAPITAL</b>	24.2	1,135	463	565	1,221	1,372	1,139	721	691	882	959	913	783	705
Public Sector	101.0	793	371	305	989	1,431	1,404	859	701	838	934	856	796	824
Disbursements	190.0	1,077	1,208	1,620	1,934	1,530	1,026	693	495	585	350	380	245	872
Refinancing	0.0	0	372	80	109	1,024	499	201	0	0	0	699	-	6,125
Amortization	-121.0	-284	-1,203	-1,394	-1,054	-1,145	-1,441	-1,329	-1,453	1,591	-1,492	-1,251	-1,143	-1,021
Other Capital	32.0	0	-6	-1	0	22	1,320	1,249	1,659	1,844	2,076	-1,028	-1,694	-5,152
Private Sector	-76.8	342	92	260	232	-59	-265	-138	-10	44	25	57	-13	-119
<b>III. BASIC BALANCE</b>	208.6	-400	361	-1,164	-313	592	995	874	-422	-743	-286	973	-497	-1,272
<b>IV. SHORT TERM CAPITAL</b>	34.0	-177	338	639	437	-632	-748	-594	-95	-42	-112	-110	628	2,532
<b>V. CHANGE IN RESERVES</b>	257.4	-577	722	-504	124	-40	247	280	-517	-785	-398	863	136	1,260
<b>Memo Items:</b>														
Gross International Reserves	496	468	2,553	1,823	2,029	2,076	2,288	2,474	2,108	1,470	1,477	2,047	2,273	3,593
Net International Reserves	423	116	1,276	772	896	856	1,103	1,383	866	81	-318	546	682	1,942

Source: Nota Semanal No. 21 - 8 de Junio 1992, BCR.

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**PERU**

**Table 3.2: VALUE OF PRINCIPAL AGRICULTURAL EXPORTS, 1970-1990**  
(Millions of US\$ FOB)

PRODUCT	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>TRADITIONAL AGRICULTURAL EXPORTS</b>	161.5	392.7	260.6	198.3	244.1	213.2	228.1	251.6	354.9	198.8	190.7	265.3	194.3	N.A.
Cotton	52.1	57.1	71.5	63.6	85.3	37.7	23.5	51.5	38.5	18.9	32.3	79.9	48.3	50.9
Coffee	45.3	51.9	142.2	105.7	112.9	114.0	133.7	149.0	274.8	143.1	122.9	154.1	98.0	81.5
Sugar	60.7	269.1	13.1	0.0	19.6	34.9	48.6	23.2	21.0	13.1	16.8	19.4	35.0	36.9
Wool	3.3	11.4	33.6	31.5	22.3	25.2	22.2	28.2	20.6	23.6	18.6	14.1	13.0	0.0
<b>NON-TRADITIONAL</b>	5.5	10.4	20.8	15.7	13.7	16.1	16.4	18.7	27.3	33.8	35.4	37.7	35.5	N.A.
Cocoa	0.2	0.1	2.1	1.2	0.7	1.4	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Peppers	0.9	0.7	0.9	0.9	2.1	1.0	0.2	0.1	1.2	1.9	0.3	1.2	0.4	0.0
Asparagus	0.6	0.6	3.3	4.4	4.6	6.2	8.5	5.9	8.6	13.9	19.0	20.7	23.1	42.4
White Corn	0.1	1.5	2.1	1.4	1.3	1.1	0.3	0.7	0.8	1.3	1.8	1.9	2.2	2.1
Brazil Nuts	0.4	0.9	2.7	1.2	3.0	4.2	3.0	3.1	3.9	3.4	2.2	4.8	3.9	3.0
Conchínilla, Otros	1.3	2.2	2.6	2.1	1.9	3.5	7.0	7.1	6.3	6.9	6.2	4.6	3.8	2.0
<b>TOTAL AGRICULTURAL EXPORTS</b>	166.9	403.1	281.4	213.9	257.7	229.3	244.5	270.4	382.2	232.6	226.1	309.5	229.8	N.A.
<b>TOTAL EXPORTS</b>	1,034.0	1,330.0	3,916.0	3,249.0	3,293.0	3,015.0	3,147.0	2,978.0	2,531.0	2,661.0	2,691.0	3,488.0	3,276.0	3,329.0
<b>TRADITIONAL AS SHARE OF TOTAL AGRICULTURAL EXPORTS*</b>	96.7%	97.4%	92.6%	92.7%	94.7%	93.0%	93.3%	93.1%	92.9%	85.5%	84.4%	85.7%	84.5%	N.A.
<b>AGRICULTURE'S SHARE OF TOTAL EXPORTS</b>	16.1%	30.3%	7.2%	6.6%	7.8%	7.6%	7.8%	9.1%	15.1%	8.7%	8.4%	8.9%	7.0%	N.A.

Source: - Empresa Nacional de Comercialización de Insumos (ENCI)  
 - Centro de Cooperativas Agrarias de Producción de Azúcar (CECOAAP)  
 - Banco Central de Reserva (BCR)  
 - Ministerio de Economía, Finanzas y Comercio  
 - Dirección General de Aduanas  
 - Junta Nacional de Algodón  
 - Junta Nacional del Café

\* Excluding illegal coca.

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**PERU**

**Table 3.3: VALUE OF PRINCIPAL AGRICULTURAL IMPORTS, 1970-1991**  
(Millions of US\$ FOB)

	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>RICE</b>	1.8	33.4	85.4	65.3	17.0	32.9	17.7	0.0	32.3	35.5	5.0	70.1	87.1	81.0
<b>WHEAT</b>	32.0	137.2	141.1	167.4	152.9	151.3	141.3	99.4	113.3	96.2	111.2	125.1	84.0	57.4
<b>SUGAR</b>	0.0	0.0	31.8	105.9	0.0	74.8	29.2	0.0	31.9	38.8	56.0	44.9	53.7	60.0
<b>DAIRY PRODUCTS</b>	4.7	39.4	45.3	57.6	61.8	38.8	29.2	21.2	48.5	58.3	54.0	35.9	42.0	35.0
Powdered Whole Milk (L.E.P)	0.0	0.0	5.8	2.9	2.4	3.4	4.2	5.6	23.5	26.5	26.6	27.9	16.2	18.7
Powdered Skim Milk (L.P.D)	2.9	25.0	23.3	27.1	31.9	17.8	14.0	8.8	16.6	22.5	19.6	5.0	18.4	13.5
Milk Fat (G.A.L.)	1.7	14.4	16.2	27.6	27.5	17.6	11.0	6.8	8.4	9.3	7.8	3.0	7.4	2.8
<b>SOYBEANS</b>	0.6	7.4	0.0	2.7	0.2	3.0	0.0	2.5	3.1	4.0	4.7	0.0	0.0	0.0
<b>SOYBEAN OIL</b>	4.9	39.5	23.5	29.7	27.3	45.7	33.7	19.2	17.2	22.4	33.3	21.3	23.6	26.5
<b>BARLEY</b>	0.8	6.0	7.1	10.0	8.4	4.5	7.6	8.9	6.4	5.5	6.8	4.4	9.6	9.8
<b>MALT</b>	0.4	12.3	11.1	14.3	8.1	9.8	9.1	9.0	7.8	14.5	12.2	6.4	11.6	8.6
<b>LAMB</b>	2.7	1.2	1.7	2.0	0.8	2.7	1.4	2.9	13.1	26.1	15.7	0.0	3.4	0.5
<b>BEEF</b>	22.0	5.0	5.6	21.2	33.2	16.4	14.1	6.4	35.9	38.8	7.1	5.6	6.7	9.8
<b>TRIPE</b>	0.7	1.2	2.2	4.1	4.9	2.7	3.0	1.8	4.8	4.4	6.5	3.3	4.1	4.5
<b>CORN</b>	0.2	52.4	67.3	49.0	55.8	58.1	17.4	28.1	32.6	36.4	54.7	24.4	62.9	50.9
<b>SORGHUM</b>	0.0	4.8	0.3	0.4	0.2	0.2	0.3	0.1	0.3	0.2	0.6	0.1	0.2	0.1
<b>TORTA DE SOYA</b>	0.0	0.0	12.2	11.4	10.5	6.0	6.3	10.8	19.8	27.4	54.0	10.4	28.8	22.1
<b>POTATOES</b>	0.0	0.0	0.3	0.0	0.0	2.1	0.0	0.0	1.5	0.0	0.0	0.1	0.0	0.0

	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>CHEMICAL INPUTS FOR AGRICULTURE</b>	7.3	28.0	28.3	26.0	16.6	18.9	24.2	14.6	34.2	54.8	49.0	48.4	23.8	15.6
Urea	4.1	5.8	0.1	0.0	1.5	6.7	6.3	0.0	9.0	12.8	10.1	19.7	12.1	3.1
Ammonia Nitrate	0.1	4.9	3.5	4.2	1.7	0.8	0.0	0.0	3.1	2.9	4.2	3.7	1.0	0.7
Ammonia Sulfate	0.7	2.2	2.0	1.7	0.6	0.6	1.4	1.5	1.3	1.1	1.6	1.3	0.0	0.0
Calcium Phosphate	0.0	3.5	2.8	2.4	1.8	1.6	1.3	1.9	4.0	6.5	5.4	4.3	1.7	1.1
Potassium Chloride	0.2	1.1	2.2	1.9	0.9	0.7	1.8	1.2	1.5	2.4	3.7	2.1	0.2	1.2
Potassium Sulfate	0.2	0.0	0.9	1.2	1.2	0.0	1.1	0.6	1.0	0.9	1.5	2.9	0.0	0.4
Magnesium Sulfate	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.3	0.6	0.0	0.0
Herbicides	0.4	6.3	2.9	2.6	2.0	2.0	2.3	1.1	2.3	3.5	2.9	2.5	1.8	2.2
Natural Rubber (Ind. Latex)	1.7	4.2	9.2	8.1	4.1	4.3	6.7	5.0	5.9	8.5	11.1	6.2	4.2	4.0
Ammonia Phosphate	0.0	0.0	4.6	3.8	2.7	2.2	3.2	3.2	5.9	5.5	8.2	5.1	2.8	2.9
<b>TOTAL AGRICULTURAL IMPORTS</b>	82.6	370.2	479.2	582.8	441.4	481.3	346.9	236.5	427.7	467.5	480.7	391.3	421.3	n.a.
<b>TOTAL IMPORTS</b>	699.6	2,427.0	3,090.0	3,802.0	3,722.0	2,722.0	2,140.0	1,806.0	2,596.0	3,182.0	2,790.0	2,291.0	2,885.0	3,494.0
<b>AGRICULTURE'S SHARE OF TOTAL IMPORTS</b>	11.8%	15.3%	15.5%	15.3%	11.9%	17.7%	16.2%	13.1%	16.5%	14.7%	17.2%	17.1%	14.6%	n.a.

Source:

- Empresa Nacional Comercialización de Insumos (ENCI)
- Central de Cooperativas Agrarias de Producción Azucarera (CECOAAP)
- Banco Central de Reserva (BCR) - Sección Balanza de Pagos
- Ministerio de Economía, Finanzas y Comercio
- Anuarios de Comercio Exterior
- Dirección General de Aduanas

Elaboración: en colaboración con el Banco Central de Reserva del Perú (BCRP)

**PERU**

**Table 4.1: BANCO AGRARIO'S QUARTERLY AVERAGE RATES OF INTEREST : 1985-1990<sup>1/</sup>**

	Loans for Recurrent Costs		Loans for Capital Investment		Loans in the Trapecio Andino	
	Nominal	Real	Nominal	Real	Nominal	Real
<b>1985<sup>1/</sup></b>						
III	85.0	-35.6	91.7	-33.2	0.0	0.0
IV	36.1	-49.5	30.5	-51.6	9.8	-59.2
<b>1986</b>						
I	28.7	-43.7	28.8	-43.6	3.3	-54.8
II	25.0	-34.3	28.0	-32.7	0.0	-47.4
III	25.0	-22.1	28.0	-20.3	0.0	-37.7
IV	25.0	-22.2	28.0	-20.3	0.0	-37.7
<b>1987</b>						
I	25.0	-25.0	28.0	-23.2	0.0	-40.0
II	25.0	-28.5	32.5	-22.5	0.0	-42.8
III	25.0	-33.5	28.0	-31.9	0.0	-46.8
IV	25.0	-39.2	28.0	-37.7	0.0	-51.4
<b>1988</b>						
I	25.0	-49.4	32.7	-46.6	0.0	-59.5
II	46.7	-54.2	63.7	48.8	0.0	-68.6
III	123.3	-59.8	240.0	-55.3	26.7	-77.9
IV	190.0	-78.3	369.6	-74.5	80.0	-86.5
<b>1989<sup>2/</sup></b>						
I	9.3	-24.0	18.0	-18.0	5.0	-27.0
II	9.3	-17.5	18.0	-11.0	5.0	-20.8
III	9.3	-12.9	18.0	-6.0	5.0	-16.4
IV	15.1	-9.8	22.0	-4.3	9.1	-14.5
<b>1990</b>						
I	18.0	-9.9	24.0	-5.3	-	-
II	18.0	-14.2	36.0	-1.0	-	-
III	18.8	-32.8	33.7	-25.3	-	-
IV	14.0	1.3	16.0	3.1	-	-

<sup>1/</sup> Data report for 1985-1988 are annual rates of interest. Data for 1989-90 are monthly rates of interest.

<sup>2/</sup> Interest rates quoted are monthly rates beginning with December 1988.

Source: Banco Agrario and INEI.

PERU

**Table 4.2: MONTHLY AND ANNUAL INFLATION RATES BASED ON % CHANGES IN THE CPI**

Year	Annual	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960	2.4	0.7	0.0	0.0	-0.7	0.2	0.0	0.9	1.3	0.9	1.1	-1.0	0.8
1961	8.7	1.7	0.4	1.5	1.2	1.2	-1.8	0.6	0.8	0.8	-0.6	1.0	1.6
1962	4.7	1.2	0.8	0.6	0.4	0.0	0.6	0.2	-0.8	-0.2	1.0	0.4	0.6
1963	8.8	1.7	0.0	1.8	0.0	-0.2	-0.7	1.1	0.5	0.5	1.4	1.4	0.9
1964	11.4	1.5	0.3	0.7	0.8	1.0	0.2	0.7	1.8	0.2	0.2	-0.2	3.7
1965	14.8	2.6	1.8	2.2	3.2	0.8	-0.3	0.4	0.1	-0.1	1.2	1.1	0.8
1966	7.7	0.7	1.2	0.4	0.7	0.1	0.3	1.4	1.3	-0.1	0.9	-0.1	0.8
1967	18.9	0.1	0.0	0.9	0.5	1.6	0.5	0.5	0.4	6.3	2.6	1.0	3.3
1968	9.8	1.6	0.6	1.0	0.8	0.7	2.6	1.3	0.6	-0.4	0.2	0.0	0.4
1969	5.7	0.4	0.5	1.4	1.6	0.1	-0.3	-0.1	-0.4	-0.4	0.6	0.7	1.5
1970	5.6	0.6	-0.4	0.5	0.4	-0.2	1.1	0.2	0.4	0.9	0.8	0.4	0.7
1971	7.6	0.4	0.5	0.9	0.0	0.4	0.5	1.6	0.7	-0.6	0.8	0.9	1.2
1972	4.3	0.6	0.8	4.2	-2.8	-0.9	1.3	-0.6	0.3	1.1	0.6	-0.7	0.3
1973	13.8	0.9	1.1	1.9	1.0	2.1	1.4	1.0	0.8	1.5	0.4	0.8	0.1
1974	19.2	1.8	2.3	1.5	1.5	2.5	2.3	0.8	0.4	1.2	0.1	1.9	1.4
1975	24.0	2.8	3.6	1.4	2.0	1.5	1.7	4.9	1.4	1.0	1.0	0.4	0.2
1976	44.7	7.0	2.0	1.6	0.7	0.6	0.6	13.7	3.9	3.4	2.3	0.9	1.5
1977	32.4	3.5	1.5	2.1	1.6	1.8	7.3	2.9	2.8	1.5	1.1	1.5	1.1
1978	73.7	7.5	5.0	2.5	2.4	13.3	4.6	3.9	4.4	5.1	4.0	2.3	2.1
1979	66.7	5.7	5.2	5.0	4.9	3.6	3.0	7.6	3.0	4.4	4.0	3.9	2.0
1980	60.8	6.0	3.9	3.4	2.6	2.4	3.2	4.1	4.4	7.8	3.8	4.2	2.8
1981	72.7	11.7	4.7	6.4	3.9	4.4	3.1	3.7	3.6	3.0	4.3	3.8	3.3
1982	72.9	4.5	3.8	6.4	4.3	3.1	4.5	4.2	4.4	4.7	6.9	4.5	4.5
1983	125.1	7.6	7.8	9.9	7.8	5.3	7.8	8.2	8.8	6.8	4.9	4.6	4.5
1984	111.5	7.3	8.3	6.9	5.6	6.1	6.0	4.6	7.7	4.8	5.6	7.0	7.4
1985	158.3	13.9	9.5	8.1	12.2	10.9	11.8	10.3	10.8	3.5	3.0	2.7	2.8
1986	62.9	5.2	4.2	5.3	4.1	3.3	3.6	4.6	4.0	3.6	4.0	3.6	4.6
1987	114.5	6.6	5.6	5.3	6.6	5.9	4.7	7.3	7.4	6.5	6.4	7.1	9.6
1988	1722.3	12.8	11.8	22.6	17.9	8.5	8.8	30.9	21.7	114.1	40.6	24.4	41.9
1989	2775.3	47.3	42.5	42.0	48.6	28.6	23.1	24.6	25.1	26.9	23.3	25.8	33.8
1990	7649.7	29.8	30.5	32.6	37.3	32.8	42.6	63.2	397.0	13.8	9.6	5.9	23.7
1991	139.2	17.8	9.4	7.7	5.8	7.6	9.3	9.1	7.2	5.5	4.0	4.0	3.7
1992*		3.5	4.7	7.4	3.2	3.4	3.6	3.5					

Source: Instituto Nacional de Estadística, "Peru: Compendio Estadística 1990-91. Tomo II", Mayo 1991.  
 \* Información preliminar obtenida del INCI.

**PERU**

**Table 5.1: VALUE OF PRODUCTION OF MAJOR AGRICULTURAL COMMODITIES**  
(Thousands of Intis at 1979 Prices)

	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988*	1989*	1990	1991
PADDY RICE	29,264.0	26,775.0	22,006.6	37,918.0	41,185.1	39,853.3	56,862.1	43,808.7	36,207.2	58,288.6	56,323.4	54,437.9	48,188.1	40,611.5
WHITE CORN	12,146.4	10,465.8	8,618.6	9,799.4	11,235.0	9,358.4	10,367.8	10,402.1	11,352.6	10,313.9	12,900.9	11,004.7	7,398.5	11,068.4
BEANS	4,566.7	4,206.2	4,094.6	4,369.3	4,343.6	3,545.2	4,077.4	4,051.7	4,626.8	4,815.7	4,515.2	4,781.3	3,957.8	4,034.5
POTATOES	50,570.3	42,972.3	39,625.4	48,035.9	45,113.6	34,522.5	38,060.7	40,802.2	43,441.4	44,741.4	55,251.2	44,306.3	30,245.2	38,013.5
WHEAT	5,953.0	5,995.7	3,660.1	5,540.0	4,875.4	3,973.4	4,149.1	4,376.9	5,744.1	6,195.1	7,249.0	7,562.3	4,718.7	6,057.4
QUINOA	375.3	416.4	719.7	560.3	760.8	344.4	616.9	262.2	365.0	370.1	688.8	673.4	179.9	745.4
BARLEY	6,338.3	5,551.1	3,652.3	4,271.5	4,111.1	2,275.5	3,835.1	4,629.7	4,402.1	4,111.1	4,797.6	4,685.6	2,671.1	4,297.6
COTTON	32,368.5	29,562.3	34,535.1	37,367.3	33,269.0	13,795.8	26,195.0	37,954.6	39,638.3	26,364.6	36,858.3	41,961.5	31,193.8	23,023.4
YELLOW CORN	12,941.0	14,830.6	11,181.0	13,766.7	15,123.0	15,309.7	19,868.0	17,264.8	22,707.3	24,629.2	22,724.9	27,663.8	16,937.1	15,616.1
SUGAR CANE	24,087.2	28,424.4	17,762.8	16,264.2	20,651.8	20,242.2	22,174.2	23,255.9	19,914.7	19,272.5	18,874.3	20,093.3	18,805.7	19,008.5
SOYBEANS	28.4	106.5	759.4	1,036.1	574.8	170.3	127.7	149.0	276.8	447.1	425.8	198.7	177.4	49.7
SORGHUM	358.7	864.9	1,056.1	1,412.0	1,138.4	373.6	1,288.5	679.5	1,114.9	700.1	935.5	1,082.5	382.4	923.7
COFFEE	30,334.5	30,334.5	39,982.2	36,828.2	36,828.2	39,703.9	38,683.5	42,023.1	44,481.4	45,641.0	46,858.4	48,980.6	37,570.3	38,266.1
POULTRY MEAT	12,520.5	28,187.4	31,138.5	39,622.9	44,440.2	44,765.7	39,405.9	43,615.6	49,843.3	60,975.0	64,381.8	44,570.4	53,163.3	63,318.6
LAMB	4,029.0	3,621.0	3,519.0	3,196.0	3,468.0	3,587.0	3,213.0	2,924.0	2,873.0	3,162.0	3,264.0	3,400.0	4,046.0	3,196.0
PORK	8,835.0	10,374.0	10,450.0	11,248.0	11,153.0	10,944.0	10,355.0	10,165.0	11,248.0	12,350.0	13,965.0	13,946.0	12,635.0	13,053.0
BEEF	13,216.6	13,403.4	13,045.4	14,026.1	14,212.9	17,233.0	16,049.9	15,785.2	14,057.3	16,703.7	18,135.9	17,404.2	18,229.3	17,030.6
EGGS	6,789.8	12,255.4	14,707.1	15,638.5	15,834.6	16,668.0	15,957.2	19,094.7	23,310.7	23,825.5	28,972.9	23,482.3	24,168.6	28,678.8
FRESH MILK	36,297.2	35,764.8	34,321.6	34,537.2	35,421.6	33,098.3	34,339.2	35,588.8	36,050.8	36,521.7	37,375.3	35,302.8	34,185.2	34,581.2

Source: Oficina de Estadística Agropecuaria (OEA), Ministerio de Agricultura.

Nota: Los precios utilizados para obtener USP del presente cuadro; no han sido precios constantes para todos los años ejemplo: maíz amiláceo los precios entre los años 70-81 varían de 49 a 56. Los precios que se rectifican se han obtenida con precio constante base 1979.

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**PERU**

**Table 5.1A: PRODUCTION SHARE OF MAJOR AGRICULTURAL COMMODITIES**  
(percent)

	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988*	1989*	1990	1991
<b>PADDY RICE</b>	8.3	7.3	5.9	9.1	9.7	11.0	14.5	10.7	8.2	12.8	10.3	10.4	11.5	7.2
<b>WHITE CORN</b>	3.4	3.0	2.5	2.8	2.8	2.6	2.6	2.5	2.6	2.2	2.5	2.2	1.7	2.0
<b>BEANS</b>	1.3	1.1	0.9	0.9	0.9	0.8	1.0	1.0	1.1	1.1	0.7	0.7	0.9	0.7
<b>POTATOES</b>	18.3	15.0	12.9	14.4	15.1	11.1	12.3	12.7	13.0	12.6	12.2	10.3	9.2	6.7
<b>WHEAT</b>	1.7	1.6	1.0	1.4	1.2	1.0	1.0	1.1	1.3	1.4	1.2	1.1	1.1	1.1
<b>QUINOA</b>	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1
<b>BARLEY</b>	1.8	1.5	1.2	1.2	1.2	0.9	1.0	1.0	1.0	0.9	1.0	1.0	0.0	0.8
<b>COTTON</b>	6.9	6.1	7.1	7.2	6.3	2.9	5.0	7.0	7.0	4.4	4.3	5.6	5.6	4.1
<b>YELLOW CORN</b>	3.6	3.8	3.2	3.5	3.7	4.1	4.9	4.2	5.3	5.4	3.3	4.0	4.0	2.8
<b>SUGAR CANE</b>	10.4	11.8	7.6	6.5	7.9	8.6	8.5	8.7	7.1	6.5	3.8	4.1	6.9	3.4
<b>SOYBEANS</b>	0.0	0.0	0.2	0.3	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
<b>SORGHUM</b>	0.1	0.2	0.3	0.3	0.3	0.1	0.3	0.2	0.3	0.2	0.1	0.1	0.1	0.2
<b>COFFEE</b>	5.8	5.6	8.4	7.7	7.1	8.0	7.2	7.0	7.1	6.8	6.2	7.6	6.1	6.8
<b>POULTRY MEAT</b>	3.6	7.8	8.8	10.3	11.3	12.6	10.1	10.8	11.9	13.6	9.2	6.0	12.9	11.2
<b>LAMB</b>	1.3	1.1	1.1	0.9	1.0	1.2	0.9	0.8	0.8	0.8	0.5	0.6	1.1	0.6
<b>PORK</b>	3.1	3.5	3.7	3.6	3.5	3.8	3.3	3.1	3.3	3.4	2.3	2.5	1.4	2.3
<b>BEEF</b>	5.6	5.5	5.5	5.4	5.4	7.2	6.1	5.8	5.0	5.5	3.9	3.9	6.6	3.0
<b>EGGS</b>	1.8	3.1	3.8	3.7	3.7	4.3	3.8	4.4	5.1	4.9	3.8	3.1	5.4	5.1
<b>FRESH MILK</b>	9.4	9.0	8.8	8.1	8.1	8.4	7.9	8.0	7.8	7.4	4.7	4.9	7.5	6.1
<b>OTHER</b>	13.5	12.6	16.9	12.3	10.4	11.2	9.4	10.9	12.0	9.9	30.0	31.7	17.8	36.1

Source: Table 5.1 en base a Información de la Oficina de Estadística Agropecuaria (OEA), Ministerio de Agricultura.

**PERU**

**Table 5.2: PRODUCTION OF MAJOR AGRICULTURAL COMMODITIES**  
(Thousands of Metric Tons)

	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
RICE	586.7	536.8	441.2	760.2	825.7	799.0	1,140.0	878.3	725.9	1,168.6	1,129.2	1,091.4	966.1	814.2
WHITE CORN	247.9	213.6	175.9	200.0	229.3	191.0	211.6	212.3	231.7	210.5	263.3	224.6	151.0	225.9
BEANS	53.2	49.0	47.7	50.9	50.6	41.3	47.5	47.2	53.9	56.1	52.6	55.7	46.1	47.0
POTATOES	1,929.5	1,639.6	1,511.9	1,832.8	1,721.3	1,317.2	1,452.2	1,556.8	1,657.5	1,707.1	2,108.1	1,690.5	1,154.0	1,450.4
WHEAT	125.4	126.3	77.1	116.7	102.7	83.7	87.4	92.2	121.0	130.5	152.7	159.3	99.4	127.6
COTTON	248.0	226.5	264.6	286.3	254.9	105.7	200.7	290.8	303.7	202.0	282.4	321.5	239.0	176.4
QUINOA	7.3	8.1	14.0	10.9	14.8	6.7	12.0	5.1	7.1	7.2	13.4	13.1	3.5	14.5
BARLEY	169.9	148.8	97.9	114.5	110.2	87.8	102.8	124.1	118.0	110.2	128.6	125.6	71.6	115.2
YELLOW CORN	388.0	421.0	317.4	390.9	429.3	434.6	564.0	490.1	644.6	698.9	645.1	785.3	480.8	443.3
SUGAR CANE	7,591.3	8,958.2	5,598.1	5,125.8	6,508.6	6,379.5	6,988.4	7,329.3	6,276.3	6,073.9	5,948.4	6,332.6	5,926.8	5,990.7
SOYBEANS	0.4	1.5	10.7	14.6	8.1	2.4	1.8	2.1	3.9	6.3	6.0	2.8	2.5	0.7
SORGHUM	12.2	29.4	35.9	48.0	38.7	12.7	43.8	23.1	37.9	23.8	31.8	36.8	13.0	31.4
COFFEE	65.4	65.4	86.2	79.4	79.4	85.6	83.4	90.6	95.9	98.4	99.3	105.6	81.0	82.5
CHICKEN	57.7	129.9	143.5	182.6	204.8	206.3	181.6	201.0	229.7	281.0	296.7	205.4	245.0	291.8
LAMB	23.7	21.3	20.7	18.8	20.4	21.1	18.9	17.2	16.9	18.6	19.2	20.0	23.8	18.8
PORK	46.5	54.6	55.0	59.2	58.7	57.6	54.5	53.5	59.2	65.0	73.5	73.4	66.5	68.7
BEEF	84.9	86.1	83.8	90.1	91.3	110.7	103.1	101.4	90.3	107.3	116.5	111.8	117.1	109.4
EGGS	27.7	50.0	60.0	63.8	64.6	68.0	65.1	77.9	95.1	97.2	118.2	95.8	98.6	117.0
MILK	824.9	812.8	780.0	784.9	805.0	752.2	780.4	808.8	819.3	830.0	849.4	802.3	776.9	785.9

Source: Compendio Estadística del Sector Agrario, 1950-1991. Oficina de Estadística Agropecuaria (OEA), Ministerio de Agricultura.

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**PERU**

**Table 5.2A: GROWTH RATES OF PRODUCTION OF MAJOR AGRICULTURAL COMMODITIES  
(Percent)**

	1970-80*	1980-90*	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
RICE	-2.8	8.2	72.3	8.6	-3.2	42.7	-23.0	-17.4	61.0	-3.4	-3.3	-11.5	-16.6
WHITE CORN	-3.4	-1.5	13.7	14.7	-16.7	10.8	0.3	9.2	-9.2	25.1	-14.7	-32.8	52.5
BEANS	-1.1	-0.3	6.7	-0.6	-18.4	15.0	-0.6	14.2	4.1	-6.2	5.9	-17.2	0.0
POTATOES	-2.4	-2.7	21.2	-6.1	-23.5	10.2	7.2	6.5	3.0	23.5	-19.8	-31.7	27.6
WHEAT	-4.7	2.6	51.4	-12.0	-18.5	4.4	5.5	31.2	7.9	17.0	4.3	-37.6	29.2
COTTON	0.7	-1.0	8.2	-11.0	-58.5	89.9	44.9	4.4	-33.5	39.8	13.8	-25.7	-22.2
QUINOA	6.7	-12.9	-22.1	35.8	-54.7	79.1	-19.2	8.2	2.9	-100.0	-2.2	-73.3	314.3
BARLEY	-3.8	-3.1	9.5	0.2	-31.0	23.7	0.6	7.2	-2.4	16.7	-5.6	-43.0	60.9
YELLOW CORN	-2.0	4.2	23.2	9.8	1.2	29.8	-13.1	31.5	8.4	-7.7	21.7	-38.8	-5.9
SUGAR CANE	-3.0	0.6	-8.4	27.0	-2.0	9.5	4.9	-14.4	-3.2	-2.1	6.5	-6.4	-0.5
SOYBEANS	38.9	-13.5	36.4	-44.4	-70.4	-26.3	18.6	85.7	61.5	-4.8	-53.3	-10.7	-40.0
SORGHUM	11.4	-9.7	33.7	-19.4	-67.2	244.9	-47.3	64.1	-37.2	33.6	15.7	-64.7	139.2
COFFEE	2.8	-0.6	-7.9	0.0	7.8	-2.6	8.6	5.8	2.6	0.9	6.3	-23.3	3.2
CHICKEN	9.5	5.5	27.2	12.2	0.7	-12.0	10.7	14.3	22.3	5.6	-30.8	19.3	14.4
LAMB	-1.3	1.4	-9.2	8.5	3.4	-10.4	-9.0	-1.7	10.1	-30.1	53.8	19.0	-20.6
PORK	1.7	1.9	7.6	-0.8	-1.9	-5.4	-1.8	10.7	9.8	13.1	-0.1	-9.4	3.0
BEEF	-0.1	3.4	7.5	1.3	21.2	-6.9	-1.6	-10.9	18.8	8.6	-4.0	4.7	-6.5
EGGS	8.0	5.1	6.3	1.3	5.3	-4.3	19.7	22.1	2.2	21.6	-19.0	2.9	18.7
MILK	-0.6	-0.1	0.6	2.6	-6.6	3.7	3.6	1.3	1.3	2.3	-5.5	-3.3	0.5

Source: Table 5.2.

\* Yearly average growth rates. n.a. - not available.

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**PERU**

**Table 5.3: YIELDS OF MAJOR CROPS**  
(Metric Tons/Ha.)

	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>RICE</b>	4.2	4.4	4.3	4.7	4.6	4.2	4.8	4.6	4.5	5.1	5.2	5.1	5.2	5.1
<b>WHITE CORN</b>	1.1	1.0	1.0	1.0	1.1	1.0	1.1	1.1	1.1	1.0	1.2	1.1	1.0	1.2
<b>BEANS</b>	0.8	0.8	0.8	0.9	0.9	0.8	0.9	0.8	0.8	0.7	0.8	0.8	0.8	0.9
<b>POTATOES</b>	6.1	6.5	7.2	8.2	7.8	7.6	8.3	8.4	8.6	8.0	8.9	8.8	7.9	7.9
<b>WHEAT</b>	0.9	0.9	0.9	1.0	1.1	0.9	1.0	1.1	1.2	1.3	1.3	1.4	1.2	1.2
<b>COTTON</b>	1.7	1.7	1.8	1.8	1.9	1.2	2.1	1.8	1.8	1.7	2.1	1.9	1.7	1.5
<b>QUINOA</b>	0.4	0.6	0.8	0.6	0.7	0.5	0.7	0.4	0.5	0.5	0.7	0.9	0.4	0.7
<b>BARLEY</b>	0.9	0.9	0.9	1.0	1.0	0.8	0.9	1.1	1.1	1.0	1.0	1.0	1.0	1.0
<b>YELLOW CORN</b>	2.5	2.9	2.4	2.6	2.6	2.4	2.9	2.8	2.9	2.8	2.7	2.8	2.8	2.8
<b>SUGAR CANE</b>	156.8	162.0	113.8	133.1	140.6	140.5	131.6	138.0	124.8	128.4	130.7	136.5	122.5	112.0
<b>SORGHUM</b>	3.4	3.0	3.0	3.5	3.3	2.9	3.2	3.2	3.6	3.2	3.5	3.5	2.7	3.0
<b>SOYBEANS</b>	1.0	1.4	1.7	1.7	1.8	1.5	1.6	1.8	1.9	1.9	1.7	2.0	2.1	1.8
<b>COFFEE</b>	0.6	0.5	0.6	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.6	0.5	0.5

Source: Tables 5.2 and 5.4.

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**PERU**

**Table 5.3A: GROWTH RATES OF YIELDS OF MAJOR CROPS**  
(Percent)

	1970-80	1980-90	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>RICE</b>	0.3	2.0	9.8	-3.4	-8.1	15.5	-5.9	-1.2	13.1	1.2	-0.7	2.2	-1.6
<b>WHITE CORN</b>	-1.0	0.3	7.1	2.0	-6.5	8.4	0.2	4.7	-9.2	11.8	-6.5	-6.6	14.9
<b>BEANS</b>	0.2	0.1	10.7	-0.9	-14.7	12.7	-5.8	-3.2	-9.3	7.0	3.0	5.1	10.1
<b>POTATOES</b>	1.6	0.9	13.7	-4.9	-2.2	9.0	1.2	2.8	-6.8	11.0	-1.5	-10.3	0.6
<b>WHEAT</b>	0.2	2.6	8.9	3.6	-10.7	8.7	10.6	8.5	3.2	3.7	2.5	-10.1	2.3
<b>COTTON</b>	0.4	-0.3	2.1	5.9	-35.6	69.0	-12.3	-0.7	-7.8	25.2	-11.0	-8.2	-13.3
<b>QUINOA</b>	5.4	-5.4	-21.3	15.1	-31.8	40.9	-34.6	22.7	4.5	31.8	19.0	-49.9	67.0
<b>BARLEY</b>	-0.2	0.7	8.8	-1.0	-13.5	14.0	12.1	6.5	-11.8	4.3	0.5	-8.8	7.8
<b>YELLOW CORN</b>	-0.5	1.4	8.1	1.0	-6.6	16.9	-2.3	2.1	-2.1	-1.8	3.6	-2.7	2.9
<b>SUGAR CANE</b>	-3.2	0.7	17.0	5.6	0.0	-6.3	4.9	-9.6	2.9	1.8	4.4	-10.3	-8.6
<b>SORGHUM</b>	-1.3	-0.9	16.4	-5.8	-11.2	10.0	-0.3	15.2	-11.7	9.9	0.1	-23.5	12.6
<b>SOYBEANS</b>	5.3	2.2	4.0	1.6	-15.0	7.3	8.8	6.1	-0.2	-7.5	16.7	4.2	-16.0
<b>COFFEE</b>	-0.2	-1.2	-8.0	-1.2	5.5	-2.4	6.5	4.6	-1.8	-7.0	3.5	-10.2	0.9

Source: Tables 5.3.  
n.a. - not available.

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**PERU**

**Table 5.4: AREA HARVESTED BY CROP**  
(Thousands of ha.)

	1970	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>PADDY RICE</b>	140.4	102.5	160.9	180.9	190.5	235.4	192.7	161.2	229.5	219.2	213.3	184.8	158.3
<b>WHITE CORN</b>	228.0	179.7	190.8	214.4	191.1	195.3	195.6	203.8	203.9	228.2	208.2	149.8	195.0
<b>BEANS</b>	65.8	58.1	56.1	56.3	53.9	55.0	58.0	68.4	78.5	68.8	70.7	55.7	51.6
<b>POTATOES</b>	315.0	210.1	224.1	221.3	173.2	175.2	185.6	192.2	212.4	236.2	192.3	146.4	182.9
<b>WHEAT</b>	136.2	82.1	114.1	96.9	88.4	84.9	81.0	98.0	102.4	115.5	117.6	81.6	102.4
<b>COTTON</b>	143.8	148.0	156.9	131.9	84.9	95.4	157.6	165.7	119.6	133.5	170.7	138.3	117.7
<b>QUINOA</b>	16.4	18.6	18.4	21.7	14.4	18.3	11.9	13.5	13.1	18.5	15.2	8.1	20.1
<b>BARLEY</b>	186.3	109.9	118.1	114.8	105.8	108.7	117.1	104.5	110.6	123.7	120.2	75.1	112.1
<b>YELLOW CORN</b>	154.0	132.1	150.5	163.7	177.4	196.9	175.2	225.6	249.8	234.9	276.1	173.7	155.7
<b>SOYBEANS</b>	0.4	6.4	8.4	4.6	1.6	1.1	1.2	2.1	3.4	3.5	1.4	1.2	0.4
<b>SORGHUM</b>	3.6	12.1	13.9	11.9	4.4	13.8	7.3	10.4	7.4	9.0	10.4	4.8	10.3
<b>SUGAR CANE</b>	48.4	49.2	38.5	46.3	45.4	53.1	53.1	50.3	47.3	45.5	46.4	48.4	53.5
<b>COFFEE</b>	113.4	152.7	152.9	154.7	158.1	157.9	161.1	163.1	170.5	185.1	190.2	162.4	164.0

Source: Oficina de Estadística Agropecuaria (OEA), Ministerio de Agricultura. Compendio Estadística del Sector Agraria, 1950-1991.

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**PERU**

**Table 5.4A: GROWTH RATE OF AREA HARVESTED BY CROP**  
(Percent)

	1970-1980*	1980-90	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>PADDY RICE</b>	-3.1	6.1	57.0	12.4	5.3	23.6	-18.1	-16.3	42.4	-4.5	-2.7	-13.4	-14.3
<b>WHITE CORN</b>	-2.4	-1.8	6.2	12.4	-10.9	2.2	0.2	4.2	0.0	11.9	-8.8	-28.0	30.2
<b>BEANS</b>	-1.2	-0.4	-3.4	0.4	-4.3	2.0	5.5	17.9	14.8	-12.4	2.8	-21.2	-7.4
<b>POTATOES</b>	-4.0	-3.5	6.7	-1.2	-21.7	1.2	5.9	3.6	10.5	11.2	-18.6	-23.9	24.9
<b>WHEAT</b>	-4.9	-0.1	39.0	-15.1	-8.8	-4.0	-4.6	21.0	4.5	12.8	1.8	-30.6	25.5
<b>COTTON</b>	0.3	-0.7	6.0	-15.9	-35.6	12.4	65.2	5.1	-27.8	11.6	27.9	-19.0	-14.9
<b>QUINOA</b>	1.3	-8.0	-1.1	17.9	-33.6	27.1	-35.0	13.4	-3.0	41.2	-17.8	-46.7	143.1
<b>BARLEY</b>	-5.1	-3.7	7.5	-2.8	-7.8	2.7	7.7	-10.8	5.8	11.8	-2.8	-37.5	49.3
<b>YELLOW CORN</b>	-1.5	2.8	13.9	8.8	8.4	11.0	-11.0	28.8	10.7	-6.0	17.5	-37.1	-10.4
<b>SOYBEANS</b>	32.0	-15.4	31.3	-45.2	-65.2	-31.3	9.1	75.0	61.9	2.9	-60.0	-14.3	-66.7
<b>SORGHUM</b>	12.9	-8.8	14.9	-14.4	-63.0	213.6	-47.1	42.5	-28.8	21.6	15.6	-53.8	114.6
<b>SUGAR CANE</b>	0.2	-0.2	-21.7	20.3	-1.9	17.0	0.0	-5.3	-6.0	-3.8	2.0	4.3	10.5
<b>COFFEE</b>	3.0	0.6	0.1	1.2	2.2	-0.1	2.0	1.2	4.5	8.6	2.8	-14.6	1.0

Source: Table 5.4

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**PERU**

**Table 6.1: FARM SIZE AND LAND USE BY REGIONS, 1984<sup>1/</sup>**

FARM SIZE (ha.)	NO. OF INDIVIDUAL LANDHOLDERS		TOTAL LAND		LAND USE (thousands of ha.)		
	(thousands)	%	(thousands)	%	CROPS & PLANTATIONS	PASTURES	HILLS, WOODS & OTHERS
<b>TOTAL</b>	<b>1,540</b>	<b>100.0</b>	<b>14,893</b>	<b>100.0</b>	<b>4,899</b>	<b>7,073</b>	<b>3,782</b>
Less than 1	346	22.5	170	1.1	156	7	6
1 to 1.99	356	23.1	459	3.1	412	33	14
2 to 4.99	394	25.6	1,150	7.7	881	175	94
5 to 9.99	208	13.5	1,360	9.1	825	275	260
10 to 19.99	105	6.8	1,394	9.4	655	329	410
20 to 49.99	86	5.6	2,337	15.7	692	549	1,096
50 or more	45	2.9	8,024	53.9	417	5,705	1,902
<b>COAST</b>	<b>164</b>	<b>10.7</b>	<b>572</b>	<b>3.8</b>	<b>497</b>	<b>7</b>	<b>68</b>
Less than 1	55	3.6	23	0.2	21	0	1
1 to 1.99	28	1.8	36	0.2	34	0	1
2 to 4.99	45	3.0	146	1.0	137	2	8
5 to 9.99	25	1.6	161	1.1	143	1	17
10 to 19.99	9	0.6	112	0.8	87	4	21
20 to 49.99	2	0.1	77	0.5	61	0	16
50 or more	0	0.0	17	0.1	13	0	4
<b>SIERRA</b>	<b>1,058</b>	<b>68.6</b>	<b>9,748</b>	<b>65.5</b>	<b>1,973</b>	<b>6,901</b>	<b>874</b>
Less than 1	284	18.4	143	1.0	131	7	5
1 to 1.99	290	18.8	373	2.5	330	32	10
2 to 4.99	267	17.3	773	5.2	557	171	45
5 to 9.99	116	7.5	770	5.2	438	263	69
10 to 19.99	44	2.8	594	4.0	216	305	73
20 to 49.99	27	2.0	814	5.5	200	456	157
50 or more	30	1.8	6,281	42.2	100	5,665	515
<b>SELVA</b>	<b>320</b>	<b>20.7</b>	<b>4,573</b>	<b>30.7</b>	<b>1,573</b>	<b>164</b>	<b>2,836</b>
Less than 1	8	0.5	4	0.0	3	0	0
1 to 1.99	39	2.5	50	0.3	48	0	1
2 to 4.99	82	5.3	231	1.5	186	2	42
5 to 9.99	67	4.4	429	2.9	244	11	173
10 to 19.99	53	3.4	688	4.6	353	19	316
20 to 49.99	54	3.5	1,446	9.7	431	91	924
50 or more	17	1.1	1,726	11.6	307	40	1,379

<sup>1/</sup> Individual landholders only.  
Collective landholdings and peasant communities, not included.  
Source: ENAHR, "Resultados Definitivos", 1986.

**PERU**

**Table 6.2: LAND TENURE STRUCTURE IN PERU: 1990**

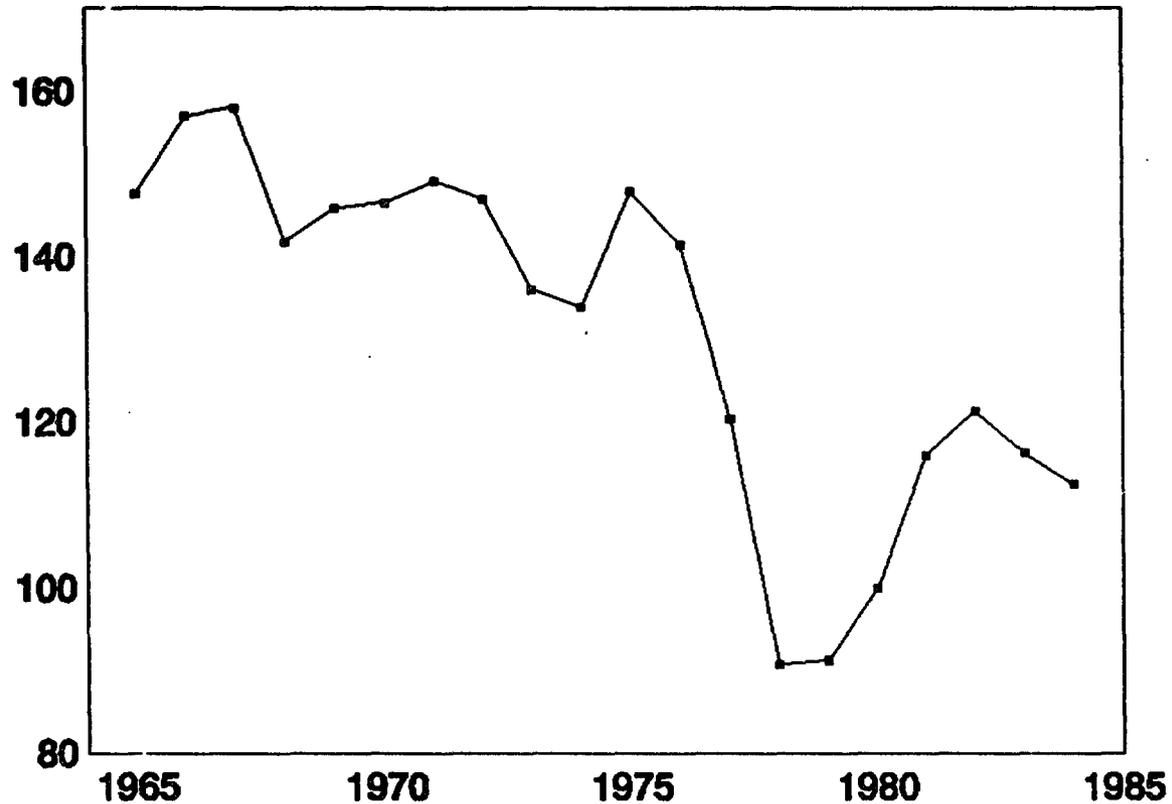
FORM OF ORGANIZATION	NUMBER		AREA ('000 ha)
	UNIT	QUANTITY	
<b>I. THE NON-REFORMED AGRICULTURAL SECTOR</b>			
1.1 <i>Minifundistas</i>	Parcel	3,332,756	
Sierra	Operator	696,512	1,272.2
Coast	Operators	98,988	95.7
1.2 Small and Medium Farmers not Affected by Agrarian Reform	Agricultural Unit	306,800	1,732.6
1.3 <i>Comunidades Campesinas</i> not Affected by the Agrarian Reform	Peasant Community	3,117	12,468.0
<b>II. THE REFORMED AGRICULTURAL SECTOR</b>			
2.1 Individual Beneficiaries	Agric. Unit.	87,886	1,415.7
2.2 Agricultural Production Cooperatives			
Crop and Livestock Cooperatives	CAP or CAT	106	513.1
Agroindustrial Sugar Complexes	CAA	12	128.5
2.3 Agricultural Service Cooperatives	CAS	15	17.0
2.4 Beneficiary <i>Comunidades Campesinas</i>	Community	1,466	3,243.6
2.5 <i>Sociedades Agrícolas de Interés Social</i>	SAIS	49	1,982.6
2.6 Peasant Groups	Group	741	1,094.1
2.7 Rural Social Property Enterprises	ERPS	12	156.7
<b>III. THE POST REFORM AGRICULTURAL SECTOR</b>			
3.1 Small <i>Parcelero</i> Farmers	Parcel	43,819	1,082.3
3.2 Agricultural Users Cooperatives	CAU	300	-
3.3 Agricultural Corporations (ex SAIS)	S.A.	2	1.5
3.4 <i>Grupos Campesinos</i> that have been converted into <i>Comunidades Campesinas</i>	Community	307	785.5
3.5 <i>Grupos Campesinos</i> which have been converted into Agricultural Cooperatives	CAT	23	96.9
3.6 Community Enterprises	Enterprise	1,568	
3.7 Recently Titled <i>Comunidades Campesinas</i>	Community	973	4,166.4
3.8 Restructured Peasant Enterprises	Enterprise	93	2,320.5

FORM OF ORGANIZATION	NUMBER		AREA ( <sup>'000</sup> ha)
	UNIT	QUANTITY	
<b>3.9 State Irrigation Projects</b>	Project	34	
Area Incorporated			304.9
Area Improved			477.0
<b>3.10 Private Irrigation Projects</b>			
Area Reserved			321.3
Area Conceded for Development Studies	Promoter	137	153.8
Area Authorized for Instructural Investment	Promoter	63	67.3
Area Incorporated into Agricultural Production			1.3
<b>3.11 Special Land Adjudications in the Selva</b>	Enterprise	4	33.7
<b>3.12 Frontier Rural Settlements (Military Rural Settlement Units)</b>	UMAR	7	
Area Conceded			6,700.0
Area Colonized			100.0
<b>3.13 Titled Native Communities</b>	Community	597	1,913.7
<b>3.14 Regulated Land Tenure in the Selva and Ceja de Selva</b>			
Valid Titles	Title	20,557	2,430.5
Lapsed Titles	Title	9,569	4,567.5

Source: GAPA, Ministry of Agriculture

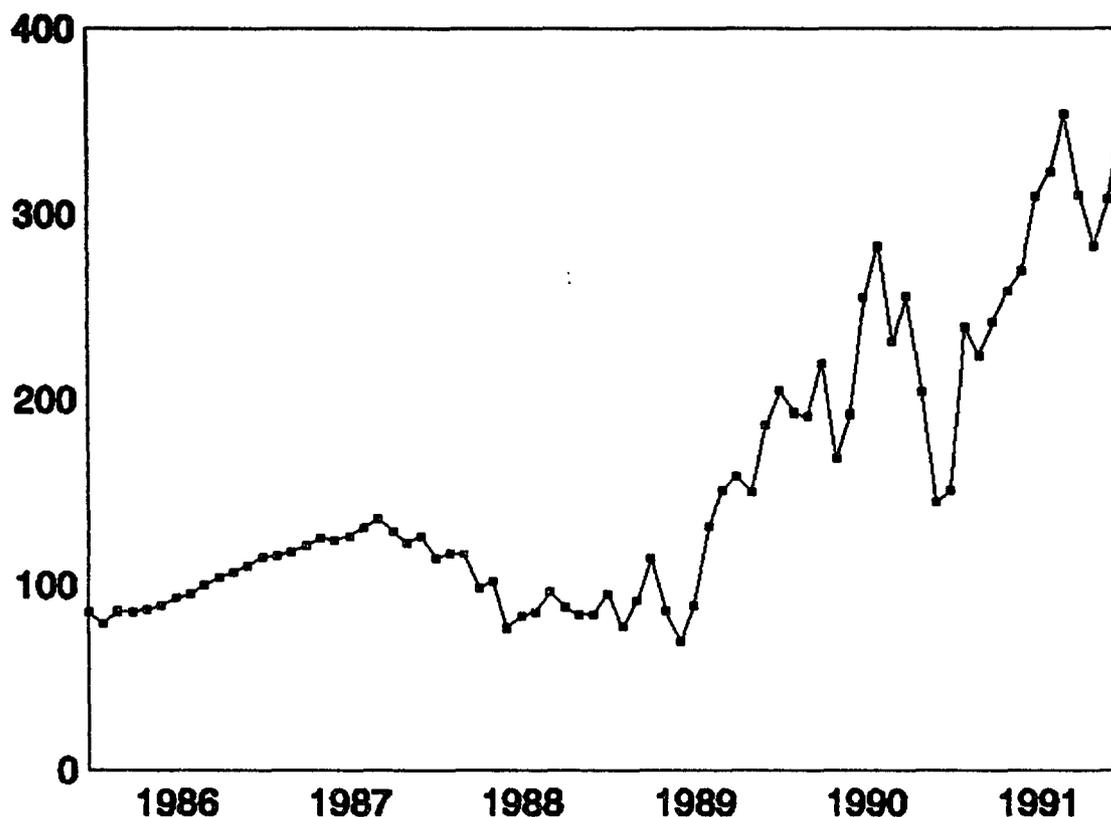
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**Graph I: REAL EXCHANGE RATE INDEX: 1965-1984**  
Inti/Sol vs. Basket of 20 Currencies (1980=100)

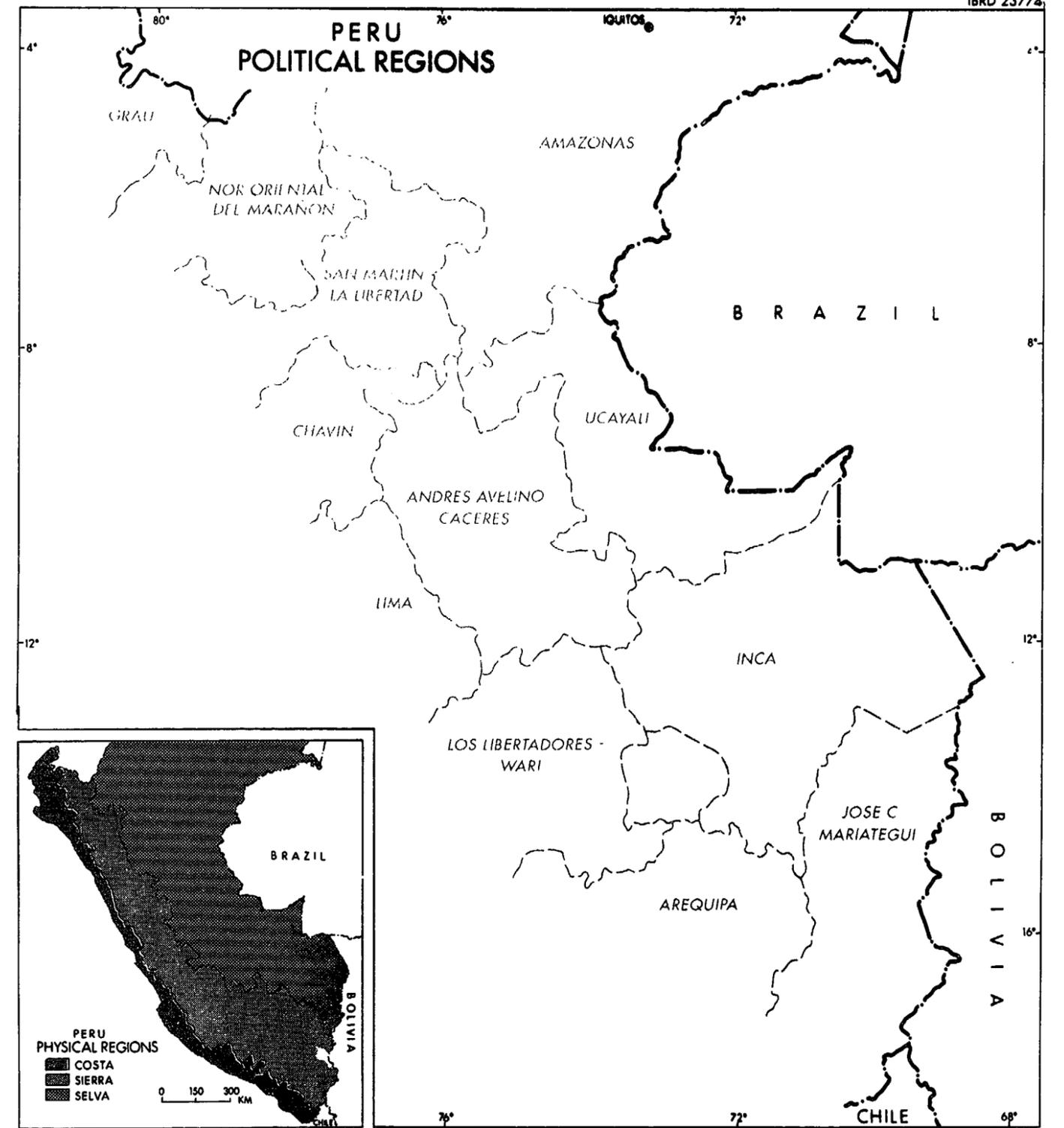


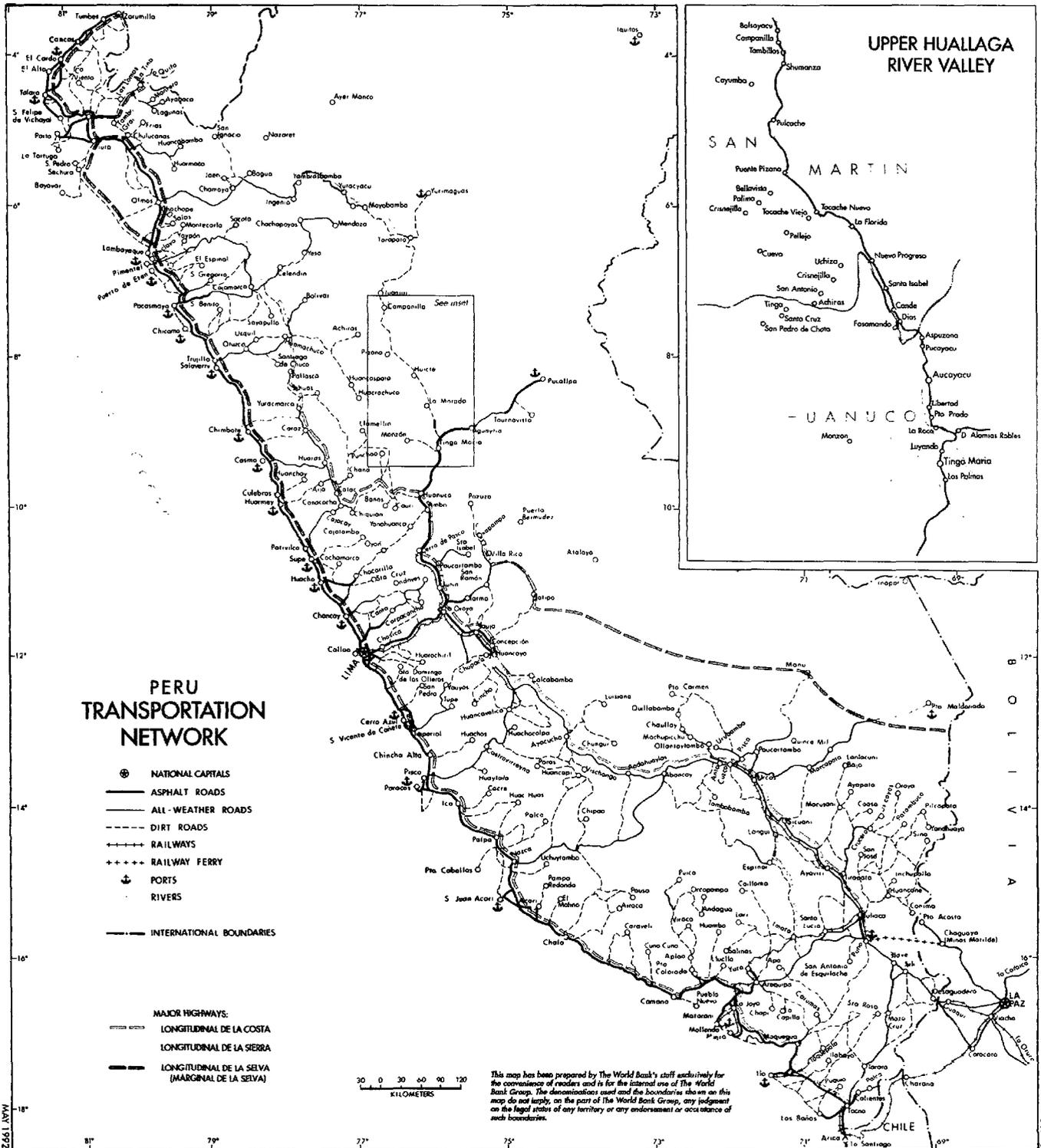
- Notes: (a) The real exchange rate is calculated as the trade weighted geometric average of the bilateral exchange rates (with Peru's 20 most important trading partners, weighted according to 1980 trade levels) adjusted by the ratio of domestic CPI to the corresponding trade partner's WPI.
- (b) An increase in the index indicates real appreciation of the Peruvian currency.

**Graph II: REAL EXCHANGE RATE INDEX: July 1985-July 1991**  
Int'l vs. Basket of 20 Currencies (1980=100)



- Notes: (a) The real exchange rate is calculated as the trade weighted geometric average of the bilateral exchange rates (with Peru's 20 most important trading partners, weighted according to 1980 trade levels) adjusted by the ratio of domestic CPI to the corresponding trade partner's WPI.
- (b) An increase in the index indicates real appreciation of the Peruvian currency.
- (c) Between 1985 and August 1990, the bilateral exchange rates were based on a weighted average of the official exchange rate and the exchange rate prevailing in the parallel market.

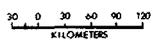




**PERU  
TRANSPORTATION  
NETWORK**

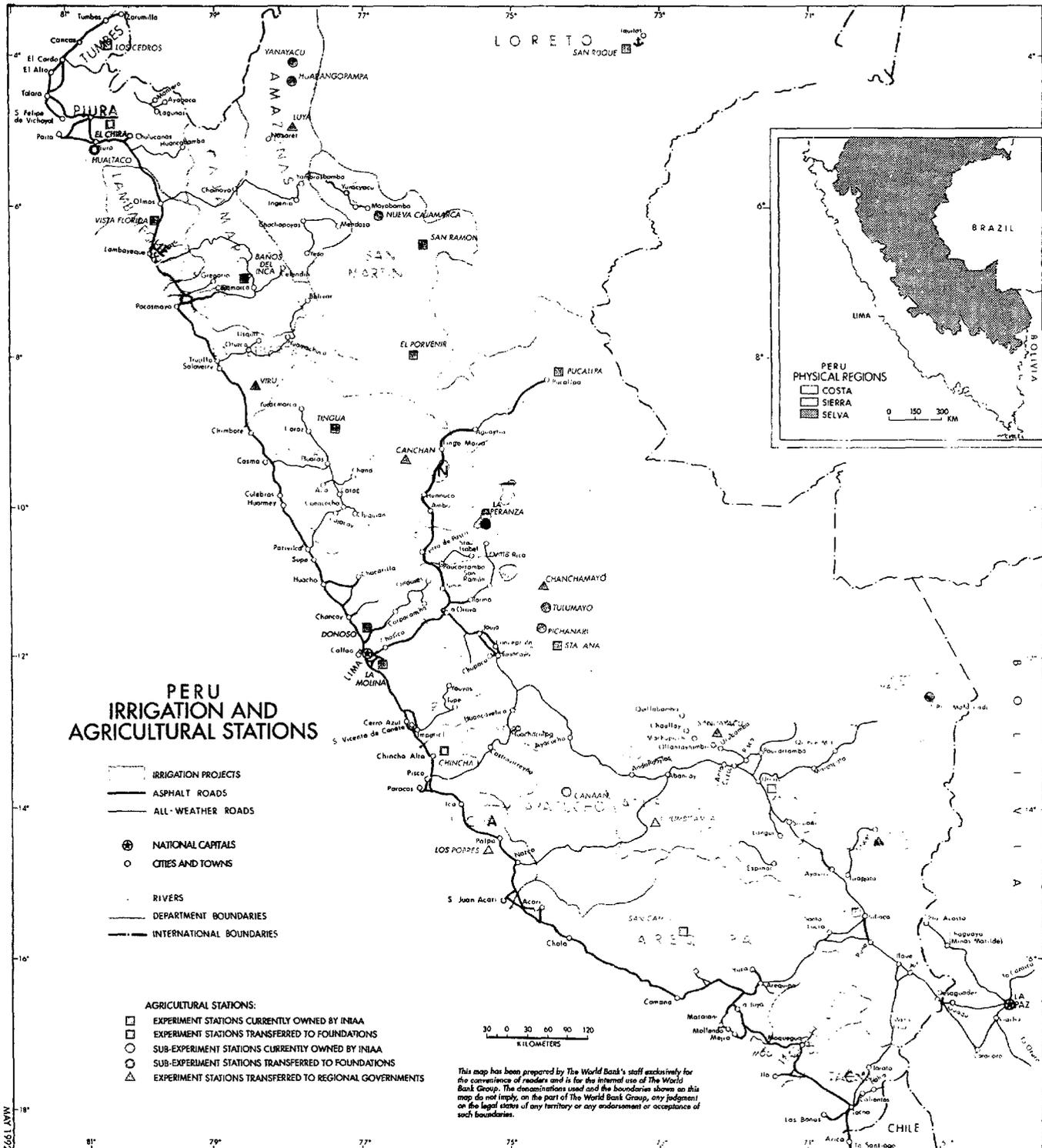
- ⊙ NATIONAL CAPITALS
- ASPHALT ROADS
- ALL-WEATHER ROADS
- - - DIRT ROADS
- RAILWAYS
- RAILWAY FERRY
- ⚓ PORTS
- RIVERS
- INTERNATIONAL BOUNDARIES

- MAJOR HIGHWAYS:**
- LONGITUDINAL DE LA COSTA
  - LONGITUDINAL DE LA SIERRA
  - LONGITUDINAL DE LA SELVA (MARGINAL DE LA SELVA)



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# PERU IRRIGATION AND AGRICULTURAL STATIONS

- IRRIGATION PROJECTS
- ASPHALT ROADS
- ALL-WEATHER ROADS
- NATIONAL CAPITALS
- CITIES AND TOWNS
- RIVERS
- DEPARTMENT BOUNDARIES
- INTERNATIONAL BOUNDARIES

- AGRICULTURAL STATIONS:**
- EXPERIMENT STATIONS CURRENTLY OWNED BY INIAA
  - EXPERIMENT STATIONS TRANSFERRED TO FOUNDATIONS
  - SUB-EXPERIMENT STATIONS CURRENTLY OWNED BY INIAA
  - SUB-EXPERIMENT STATIONS TRANSFERRED TO FOUNDATIONS
  - EXPERIMENT STATIONS TRANSFERRED TO REGIONAL GOVERNMENTS

0 30 60 90 120  
KILOMETERS

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