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A W O R L D B A N K C O U N T R Y S T U D Y

*Review of Colombia's
Agriculture and Rural
Development Strategy*

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Washington, D.C.

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PREFACE

This agricultural strategy review is the result of a collaborative effort between the government of Colombia and the World Bank and is principally based on a series of background studies that were jointly commissioned. The following Bank staff participated in sector strategy missions to Colombia in 1993-94 and provided written inputs: Hans Binswanger (AGRDR); Ariel Dinar (AGRAP); John Heath (LA3NR); Nicholas Krafft (LA3NR); Patrick Low (IECT); Ernesto May (LA3C1); and Alberto Valdés (LATAD). Support was also received from FAO/CP missions, led by Mr. Simon Hocombe. Mr. Felipe Jaramillo (Consultant) acted as local coordinator. John Heath was responsible for overall coordination of the review and for writing the report. Report processing was handled by Ms. Alma Domenech.

Background Studies

Eduardo Lora & Ana María Herrera, *Los ingresos rurales en el mediano plazo.**

Álvaro Reyes Posada & Carmen Cecilia Ramírez, *Funcionamiento de las franjas de precios para productos básicos en Colombia.**

Carlos F. Espinal G., *Comercio agropecuario bilateral y con el pacto Andino.**

Claudia Uribe & Florencia Leal del Castillo, *Antidumping, salvaguardia, derechos compensatorios y reforma aduanera.**

Alvaro Silva-Carreño, *Desarrollo de los mercados agrícolas en Colombia.**

Larry Shonkwiler, *Desarrollo de mercados agrícolas.**

Raquel Bustamante de Henao, *Insumos y maquinaria Agrícola.**

Guillermo Hurtado, *Temas sobre el mercado de tierras en Colombia.*

Alvaro Reyes Posada & Jaime Martínez, *Funcionamiento de los mercados de trabajo rurales en Colombia.**

FAO/CP & Alvaro Ramírez, *Estudio sobre adecuación de tierras.**

Ariel Dinar & Andrew Keck, *Determinants of Private Irrigation Investment in Colombia.***

Ariel Dinar, *Water Resources Legislation, Institutions and Administration: Lessons for Colombia from Other Countries.*

Alfonso Corredor Ríos, *Movilización de los productos agrícolas: Costos y gestión estatal.**

Alan Harding, *Puertos, aeropuertos y carreteras.**

Rafael Posada, *Factores determinantes de competitividad a nivel de finca.**

- * **Published in Departamento Nacional de Planeación (Coordinadores: Clara González & Carlos Felipe Jaramillo), *Competitividad sin pobreza: Estudios para el desarrollo del campo en Colombia*, Bogotá: Tercer Mundo, 1994.**
- ** **To be published (in Spanish) in *Planeación y Desarrollo* (DNP, Bogotá).**

EXECUTIVE SUMMARY

In 1993-94, the government of Colombia and the World Bank collaborated on a review of medium term strategy for agricultural and rural development. The primary purpose of this exercise was to identify the most effective way of linking measures to boost the competitiveness of the agricultural sector with measures to reduce rural poverty.

Colombian agriculture has an impressive long run growth record, with an average annual rate of three percent over the past forty years or so. However, agricultural growth has entailed more intensive use of land and capital than it has of labor: Colombia has shed labor from agriculture much faster than other countries in the same per capita income range. This is the result of a series of policy biases that have constrained job creation in the farm sector--biases implicit to the pattern of public investment in agriculture, the orientation of the trade regime and the allocation of subsidies.

In the immediate post-war period, the expulsion of labor from agriculture led to high rates of outmigration which--coupled with rural fertility decline--led to some tightening of the rural labor market, helping to push up wage rates. But this proved to be a very limited strategy for eliminating rural poverty. Between 1978 and 1992, the proportion of the rural population in extreme poverty declined fairly slowly (from 38 percent to 31 percent). The incidence of rural poverty exceeds the incidence of urban poverty by a factor of 3.6, much higher than for most other countries in the region.

The challenge therefore is to tackle rural poverty through a growth strategy based on substantial job creation in the rural sector. This will entail measures to make land and labor markets operate more effectively; and a reappraisal of public investment priorities. It will also require fine-tuning of the trade regime to reinforce the *apertura*: a more liberal trade regime will help to ensure that the pattern of agricultural growth is consistent with the most efficient use of resources. The impending oil bonanza makes adoption of this strategy all the more imperative: however well it is managed, the surge in oil revenues will lead to some real exchange rate appreciation and expenditure switching, making it harder for agriculture to compete. The overall aim should be to facilitate an orderly and efficient adjustment to this harsher environment, based on removal of policy biases that artificially induce labor shedding, and development of a range of policy instruments appropriate for managing crises in the subsectors and regions worst hit by declining profitability and job losses.

Three primary recommendations are made. First, impediments to the effective operation of labor and land markets must be removed. To help smooth farm incomes during periods of agricultural crisis when the demand

for labor slackens, the government needs to devise and implement temporary public works programs more expeditiously than it has in the past. Also, there may be some scope for improving the financial environment in which rural microenterprise operates, particularly with a view to easing female unemployment. But the biggest challenge is to ensure that the new market-based land reform initiative achieves as much as it can in terms of greater efficiency and equity. The recent initiative is a highly-positive step, correctly identifying the need to provide the rural poor with grants toward the purchase of land; but it needs to pay greater attention to those supply-side factors which reduce the propensity for large landowners to sell or lease to the poor.

Second, public investment priorities for rural economic infrastructure need to be overhauled, placing greater emphasis on economic rate of return and poverty alleviation criteria. With respect to transport infrastructure, the priority is to improve installations and procedures for container handling; and to strengthen the capacity of departmental and municipal governments to plan for road maintenance. In the case of irrigation and drainage, public investments should be kept tightly in line with the incremental benefits that these projects may be expected to generate, with greater emphasis paid to cost recovery and the transfer of works to users.

Third, trade liberalization must be consolidated in order to increase the efficiency of the agricultural sector and contribute to growth. In general, trade interventions are not effective policy instruments for dealing with short run farm crises; mainly because they are hard to target at the poor. The current system of price bands and procurement agreements entails efficiency losses and should be replaced; alternatives are considered. For example, safeguards are an effective instrument for coping with temporary import surges. Removal of legal and institutional impediments to the efficient operation of domestic markets in grains and oilseeds will also help.

A number of supporting measures are required. Steps to strengthen research, extension and input provision, and to improve the quality of rural health and education services, are essential for raising agricultural productivity. More efficient rural financial markets will help to create an enabling environment for rural enterprise, farm and non-farm. Institutional reforms--including measures to strengthen the Ministry of Agriculture--are needed to increase the government's capacity for managing crises; and to allow for better articulation of the needs of the rural poor. Finally, ways of strengthening the coffee sector are explored, examining how to make the most of the opportunity posed by the growing market for specialty coffees.

CURRENCY EQUIVALENTS

Currency Unit - Colombian Peso (\$)

EXCHANGE RATE

US\$1.00 = \$ 1,018
Col \$ 1.00 = US\$0.10

FISCAL YEAR

January 1 - December 31

WEIGHTS AND MEASURES

The metric system has been used throughout this report.

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

CASEN	Household Survey
CEGA	Corporación de Estudios Ganaderos y Agrícolas
DANE	Departamento Administrativo Nacional de Estadística
DNP	Departamento Nacional de Planeación
DRI	Desarrollo Rural Integrado
FEDESARROLLO	Fundación para la Educación Superior y el Desarrollo
FIS	Fondo de Cofinanciación para la Inversión Social
FNCV	Fondo Nacional de Caminos Vecinales
GATT	General Agreement on Tariffs and Trade
HIMAT	Instituto de Hidrología, Meteorología y Adecuación de Tierras, now INAT
ICA	Instituto Colombiano Agropecuario
IDEMA	Instituto de Mercadeo Agropecuario
IICA	Instituto Interamericano de Cooperación para la Agricultura
INAT	Instituto Nacional de Adecuación de Tierras
INCORA	Instituto Colombiano para la Reforma Agraria
PNR	Plan Nacional de Rehabilitación

Review of Agricultural and Rural Development Strategy

Purpose

This report is the result of a collaborative effort between the government of Colombia and the World Bank.¹ Its purpose is to make recommendations to the new administration concerning the ingredients of a medium term strategy consistent with the dual objective of increasing the competitiveness of the agricultural sector and combating rural poverty. The report seeks to lay the foundations for a close and sustained dialogue out of which may flow more specific proposals for policy reform and for investment projects.

The Challenge

The time has come for a major course correction in Colombian agricultural strategy. In the past, government spending strategies and the design of the trade regime have tended to benefit industry rather than agriculture, and to protect producers of Livestock, grains and crops serving as industrial inputs. This has led to significant efficiency losses. Also, the agricultural development model (which has favored high rates of rural outmigration) has failed to remove the problem of rural poverty. The challenge is to design a strategy that makes more allowance for the needs of small farmers and links agricultural growth to rural poverty alleviation.

Efficient growth presupposes a firm commitment to trade liberalization. Although important steps have been taken since 1990 to liberalize the trade regime, agricultural policy making is still characterized by substantial equivocation on the trade and pricing issue: trade interventions continue to retard the competitive realignment of Colombian agriculture, fail to target the rural poor and result in losses to consumers.

This challenge calls for a strategy with the following components, each of which is examined at length in this report:

- * removal of obstacles impeding the effective operation of land and labor markets, in order to raise productivity and combat rural poverty;

1. The government sponsored a number of background studies by Colombian consultants. These were published as a book in July 1994: Clara Gonzalez & Carlos Felipe Jaramillo (coordinators), *Competitividad sin pobreza: Estudios para el desarrollo del campo en Colombia*, Bogotá: Departamento Nacional de Planeación/Tercer Mundo Editores, 1994. A list of the background studies is given in the Preface to this report.

- * reappraisal of **infrastructure investment priorities** in the rural sector, based on selection of projects with the highest economic rates of return and genuine "ownership" of projects by beneficiaries; and
- * the combination of further steps to **liberalize the agricultural trade regime** with the development of other (non-trade) policy instruments that tackle rural poverty directly, and provide timely relief to farmers in subsectors hit by short run downturns.

There are a number of complementary measures of equal importance that are not examined in depth in this report: measures to improve agricultural research and extension, to upgrade rural education and health facilities, to strengthen rural financial markets, to promote institutional reform and to develop an effective strategy for coffee, which is likely to remain the principal export crop. Also, there is an urgent need for a comprehensive review of public spending on agriculture: this was beyond the scope of the present report.

Rationale for the Proposed Strategy

Agriculture continues to play a vital role in the economy, generating 21 percent of national income, 20 percent of employment and no less than 36 percent of merchandise export revenues. Although there has been some diversification over the past thirty years or so, the fortunes of coffee and livestock continue to determine the overall growth performance of the sector. The largest subsectors are beef (23 percent of 1993 farm output value), coffee (12 percent), poultry (12 percent), sugarcane (8 percent) and flowers (5 percent).

Colombian agriculture has a solid growth record, averaging 3.5 percent per year between 1950 and 1987, and 2.9 percent between 1988 and 1993.² Excluding 1992 (when the sector contracted by 1.9 percent), the average for the second period is 3.9 percent. Thus, contrary to some of the reports generated in the heat of the 1992 "crisis", there is no evidence of a departure from the long run growth trend.

The problem lies not with a lack of agricultural growth but rather the overall pattern of Colombia's economic growth: over the long run there has arguably been less employment creation in agriculture than there might have been, resulting in substantial efficiency and equity losses. Agriculture's share of GDP has fallen at a faster rate than was the case for other countries

2. "Agricultural" growth refers almost exclusively to crops and livestock: forestry, fishing and hunting accounted for only four percent of sectoral GDP in 1993.

in the same per capita income range. Also, the agricultural growth path has been extremely capital and land intensive: between 1950 and 1987, capital grew by 2.8 percent, land area by 1.4 percent and employment by only 0.6 percent.

The bias against farm employment creation is the result of several factors. Past attempts at agrarian reform have failed to redistribute land to smaller farmers. Public investment patterns and the orientation of the trade regime have combined to favor livestock and grain crops, neither of which are intensive in the use of labor.³ Between 1980 and 1992, beef and milk absorbed 82 percent of the price plus non-price support that the government conferred on a group of nine leading farm commodities. The absence of rigorous cost recovery in public irrigation schemes helps explain why most of the land is under low-margin grain crops and pasture. Deficiencies in transport infrastructure have further reduced the scope for job creation by elevating costs, thus making exports less competitive and implicitly protecting import substitutes; importable grains and oilseeds tend to be less labor intensive than exportables such as fruits, vegetables and flowers. Finally, rural violence skews the pattern of agricultural investment toward activities that are relatively nonintensive in the use of labor: the supervision costs and incentive losses that are typically associated with hired labor are even greater in an environment where hired workers may initiate, or collude in, violent reprisals against employers.

This long run propensity for low employment creation in agriculture has been aggravated by job losses resulting from the profit squeeze that hit certain subsectors in the early 1990s. The squeeze was primarily attributable to a temporary downturn in world commodity prices, aggravated by the severe drought of 1991-92; the post-1990 shift to a more open trade regime was not the main source of the problem.

Between 1992 and 1993, the contraction of the coffee subsector increased dramatically, growth dropping from -0.4 to -15.3 percent. Producers of barley, sesame, cotton, rice, soybeans, cocoa, tobacco, oil palm and *caña panelera* were also badly hit: in 1992-93, the index of farm profits for these crops was well below where it stood in 1985-90.

The recent increase in world commodity prices will alleviate some of the pressure on these subsectors. Coffee's fortunes are now reviving, the world price having more than doubled in the first six months of 1994. Also, the growth rates for the non-coffee crop sector stood at a healthy 3.6 percent in 1993, compared to -3.2 percent in 1992. In the same period, livestock growth rose sharply from 0.3 percent to 8.0 percent. Therefore, short term growth prospects seem good.

3. However, the low propensity to generate employment is not necessarily a function of enterprise size. Certain crops where large-scale producers predominate—sugarcane, oil palm, flowers, bananas—are characterized by intensive use of labor, permanent employment and salaries that are high in relation to the average for the farm sector.

However, in aggregate, the growth of farm exports has been less dynamic than the growth of the farm sector as a whole: this suggests that particular attention must be given to removing elements of anti-export bias in the policy framework.

Whatever the short term prospects, the farm sector's share of the economy will likely continue to decline--true of almost all economies as per capita income rises. The objective should not be to reserve a predetermined share of the economy for farming. The aim should be, first, to remove policies that artificially induce labor shedding--eradicating the various subsidies and shelters that privilege larger farmers and induce a bias toward non-labor intensive activities--and, second, to facilitate an orderly adjustment to the inevitable decline in farming's relative importance--managing the transition in a way that reduces hardship to the rural population without compromising efficiency.

Shrinkage of the sector could accelerate unduly over the next five years or so if the impending oil bonanza is not carefully managed. To the extent that oil revenues are absorbed in the domestic economy the real exchange rate will appreciate and relative prices will tend to move in favor of non-tradables. Most of the income gains from the boom--projected as equivalent to an annual GDP increment of 0.9 percent--will be captured by the urban sector. This is partly because the price of farm tradables will fall relative to urban goods and services; and partly because (oil-based) funding of the new social security reform will benefit urban rather than rural areas.

Sound macroeconomic management, including an oil stabilization fund, will limit the extent of real exchange rate appreciation. However, by themselves these measures will not be sufficient to significantly enhance agricultural competitiveness or reduce rural poverty. Additional steps must be taken to make land and labor markets more efficient and equitable, to raise farm productivity and to lower transport costs. To ensure neutrality between sectors, public investment in agriculture should involve selecting projects that offer returns competitive with those obtainable elsewhere in the economy.

Measures are also needed to forestall the fall in rural incomes and employment that may potentially result from the oil bonanza. The best approach is to combine measures to boost productivity with safety nets in the form of public employment programs. It has been estimated that a one percent increase in the productivity of traded agricultural goods will lead to an incremental increase in rural incomes of 0.2 percent per year. Owing to differences in demand elasticity, a comparable productivity increase in primary food production (mainly non-traded) will lead to an income gain of only 0.06 percent annually. A rural employment program may potentially have an even bigger income effect: if resources equivalent to 0.15 percent of GDP were transferred to such a program, the incremental increase in rural incomes would be 0.5 percent per year.

These findings provide a rationale for increasing trade liberalization--consolidating the achievements made since 1990. A more liberal trade regime will encourage the switch from non-tradables to tradables, with the attendant gains in rural income and employment. But liberalization is not enough: other policy instruments are also needed to help farmers smooth incomes during crises. Employment programs and temporary import surcharges (safeguards) are arguably the best bet, since they target the poor more effectively and occasion fewer efficiency losses than would result from quantitative restrictions, procurement agreements and other trade interventions.

A key objective is to forge new links between agricultural growth and rural poverty reduction. The tightening of the rural labor market that has resulted from the combined impact of demographic transition and outmigration has not been sufficient to eliminate rural poverty. There is more poverty in rural areas than would be expected in a country of Colombia's level of economic development. The incidence of rural poverty exceeds the incidence of urban poverty by a factor of 3.6, much higher than for most other countries in Latin America and the Caribbean. In 1992, 31 percent of the rural population were found to be "extremely poor" (compared to 38 percent in 1978); and 70 percent of the extremely poor were located in rural areas.

Making Land and Labor Markets More Effective

Making these factor markets more "effective" entails removal of the policy biases which artificially reduce the scope for job creation in the rural sector and constrain the capacity for handling shocks that result in the loss of farm income and employment (Annex A).

Labor markets appear to be relatively efficient; but there are pockets of rural unemployment that could be eradicated. On the one hand, intertemporal and interregional wage differentials are not pronounced; and the urban-rural wage differential is low--wages in construction are only about 10 percent higher than those in agriculture. However, although outmigration will provide part of the answer to rural unemployment, it is not a sufficient response and is probably not the best way of accommodating temporary downturns in agriculture. Also, female unemployment is unacceptably high: 12 percent of economically active women in rural areas are unable to find work, compared to only two percent of men. This is partly because women with dependent children are less mobile and therefore less able to participate in the seasonal interregional migrations that are an important feature of Colombian agriculture.

This has two implications for policy. First, attention must be given to devising efficient ways of responding to the sharp downturns in agricultural labor demand arising from import surges and price slumps. One way of

dealing with this is to fund public works programs. Second, attempts can be made to enhance the environment for rural non-farm enterprise; particularly with a view to easing female unemployment.

Box 1. Where are the rural poor?

There are two sources for estimating the extent and distribution of rural poverty. In 1992, DANE conducted a sample survey of household expenditures. These data are statistically representative at the regional level. In three of the four regions the proportion of the rural population in extreme poverty is higher than the national incidence rate for rural areas: Rural Oriental (36 percent); Rural Pacific (36 percent); and Rural Atlantic (33 percent). The incidence of extreme poverty is substantially lower in the fourth region, Rural Central (23 percent), an area that produces the bulk of Colombia's coffee and sugarcane and contains several other key cash crops.

The only nationwide data disaggregable at the departmental level derive from the 1985 Population Census and refer to basic needs, not household expenditures. In terms of a composite index—based on housing quality, access to public utilities, occupants per room, school attendance and dependency ratios—Atlantic is the region whose rural population has the highest incidence of unsatisfied basic needs. In six of Colombia's thirty-one departments, 85 percent or more of the rural population are poor. These departments are: in the Atlantic Region, Córdoba (90 percent), Bolivar (91 percent) and Sucre (92 percent); in the Pacific region, Chocó (86 percent); and in the eastern lowlands, Casanare (85 percent) and Guaviare (86 percent). However, this basic needs index is less discriminating than the household expenditure measure, probably failing to target the poorest: nationwide, it suggests that 44 percent of the rural population were poor in 1985, compared to the 31 percent estimated from the 1992 expenditure data.

Source: *Colombia. Poverty Assessment Report* (No. 12673-CO), The World Bank, Washington, D.C., August 1994.

Emergency rural works programs should be an essential part of the government's repertoire for crisis management. They need to disburse at a faster rate, and in a more targeted manner, than the programs launched in response to the 1992 crisis. Wages should be set at less than the official minimum, thus ensuring that only the poor are recruited; and providing an incentive for participants to leave the program as soon as possible. Typical projects will involve road maintenance and building of water, sanitation and communal facilities. Projects need to be labor intensive, confined to the hardest hit areas and provide opportunities for women. They should be implemented by community groups with funding provided by municipal government and cofinancing agencies.

Within the rural sector there appears to be significant mobility between farm and non-farm enterprise. Between 1990 and 1993, the number employed in agriculture fell by 54,000; but this was more than offset by the creation of 163,000 rural non-farm jobs. This seems to be because over the last twenty years or so rural settlement patterns have become less dispersed,

more nucleated: there has been a striking growth of smaller towns--between 1985 and 1993, towns other than departmental capitals grew at the staggering rate of 5.4 percent annually. The nucleation of the rural population is particularly marked in Atlantic, which is the poorest region in terms of unsatisfied basic needs, and has high rates of rural violence. Nucleation is a logical response to rural people's demand for utilities, health and education services and greater security.

Given that investment and transaction costs are lower in areas where the population is less dispersed, this trend has important implications for the feasibility of providing better services and financial intermediation. Although a significant proportion of the small town labor force will continue to depend on earnings as casual wage laborers in agriculture, nucleation is also conducive to the growth of microenterprise and raises particularly interesting possibilities for alleviating female unemployment. In Colombia, the dynamics of non-farm rural enterprise are poorly understood and warrant closer investigation. Rather than selecting particular types of enterprise for promotion, policy interventions should aim to create an enabling environment for small businesses by seeking ways to make rural financial markets operate more efficiently and equitably.

Land markets are highly segmented: there is a very high frequency of transactions within small and large farmer groups, but little transfer of land from large farmers to small farmers. This results in efficiency losses because small farmers--with the possible exception of *microfundistas*--achieve higher total factor productivity than large farmers; and economies of scale are less evident in farming than in other sectors. The evidence for small farmer yield response is compelling. Following adoption of scale-neutral inputs such as agrochemicals, small farm yields increased by 82 percent in 1976-88, compared to an increase of only two percent for farmers with holdings above thirty hectares.

Segmentation also exacerbates rural poverty and causes environmental damage by forcing the poor onto steep hillsides where annual cropping contributes to erosion and is not sustainable. Contrary to the expectations of some policymakers, outmigration has only partially alleviated these problems. There is therefore an urgent need to improve the poor's access to land. Improved access will help to remove one of the sources of rural violence, creating an environment more conducive to agricultural investment--particularly in more labor-intensive activities.

Law 160 (1994) is a sound attempt to introduce market-based land reform. Administrative redistribution of land has a sixty-year record of failure in Colombia. The challenge is to find effective ways of removing both demand and supply-side constraints to the transfer of land from large to small farmers.

On the demand side, the new law is substantially on track: providing a grant to poor persons equal to 70 percent of the cost of purchasing a family-size farm. This substantial grant element is needed to compensate for the factors tending to drive the market price of land above the capitalized value of farm profits--making it impossible to amortize loans for land purchase solely from returns to farming.

However, it is important to apply the 70 percent subsidy to the cost of the "farm project" rather than simply to the purchase of a particular tract of land: this would give the beneficiary the option of buying (cheap) land that is less well served by infrastructure--secure in the knowledge that part of the subsidy could be applied to financing subsequent on-farm works. In principle, Law 160 allows for this eventuality; but it needs to be more clearly spelled out in the regulations derived from the law. Failure to make this clarification would run counter to the principle of using land reform as a means of bringing undeveloped land of arable potential into production.

Also, although the law is built around the concept of the "family farm"--defined as an area of land large enough to generate income equivalent to three minimum salaries--there is no reason why the poor should be denied the option of buying a "sub-family farm" and supplementing farm revenue with income from off-farm sources. No attempt should be made to predetermine what constitutes an efficient or equitable farm size. The important thing is that the market be allowed to operate in a non-segmented fashion: allowing less efficient holdings--whether large or small--to be transferred to more efficient operators. Over time this should lead both to the consolidation of microproperties and the subdivision of large properties.

Demand side measures are not enough; the new initiative needs to pay more attention to easing supply-side constraints. This boils down to reducing the wedge between the market price of land and the capitalized value of farm profits. A large wedge means that there are substantial inducements to hold large areas of land and to refrain from selling or leasing to smaller operators. The size of the wedge may be reduced in four ways. First, macroeconomic stabilization measures will reduce the incentive to hold land as a hedge against inflation. Second, better collection of agricultural income taxes and capital gains taxes on farm land will reduce the attractiveness of land as a tax shelter. Third, elimination of price supports and input and credit subsidies will help to lower the price of farm land; these trade and market interventions benefit larger rather than smaller farmers. Finally, because land purchase may be used as a means of laundering illicit funds, it may be advisable to place the onus on would-be buyers of large tracts to demonstrate that their cash was obtained by licit means.

How these four factors apply in the Colombian case, and their relative weight, is an issue that merits systematic investigation. Particular attention needs to be given to the impact of investment subsidies: the extent to which subsidies for irrigation (Law 41) and subsidies for machinery and on-farm investment (Law 101) may be biased in favor of large farmers. The tax code

needs to be carefully reviewed to see if there are ways in which land serves as a shelter. The extent to which land purchase by drug traffickers pushes up land prices in certain areas should be carefully evaluated. Account should be taken of the negative impact of schemes that provide for blanket rescheduling of unrecovered farm loans: in the past these schemes have primarily helped to resuscitate inefficient large farms--when, instead, "exit incentives" could have been provided to accelerate their liquidation. Finally, there may be a case for obliging the users of untitled frontier land to purchase their farms: these are often very substantial tracts and their survival is a further source of large farmer bias.

The state's position in the new land reform process needs to be carefully considered. Clearly, the state land reform agency, INCORA, has a role to play in establishing eligibility criteria for the grants; and in screening applicants. It should also retain its powers of compulsory purchase in order to dissuade powerful farmers from banding together to block the supply of land to the market. However, the compulsory purchase option should be treated strictly as a last resort: only to be used when there are no alternative tracts of land available in a given locality. It is less clear that INCORA has a role to play in organizing would-be buyers into cooperatives: at most, it should probably restrict itself to drawing up indicative guidelines for buyers to organize themselves, along lines successfully used in other countries.

Reappraising Priorities for Economic Infrastructure

Public investment in transport infrastructure and irrigation and drainage is critical for lowering costs, increasing agricultural competitiveness and easing rural poverty (Annex B). This report makes no attempt to assess the size of the "investment gap": this cannot be known until the public investment portfolio has been systematically reviewed. This should be an economy-wide review in which the government would rank all prospective projects by economic rate of return, irrespective of the sector in which they are located. Public investment should be limited strictly to areas where private investment is deterred by the existence of significant externalities. A key government role is to reform those parts of the legal and regulatory framework which discourage private investment. Steps to promote ownership of infrastructure by local users need to be backed up with measures to reinforce the capacity of municipal and departmental governments to carry out infrastructure planning and to use cofinancing mechanisms to reward communities whose projects are most in line with the key criteria of efficiency, equity and sustainability.

There is considerable scope for improving transport infrastructure. Transport and handling costs incurred between Colombian ports and overseas countries have fallen significantly in recent years and are generally competitive (owing largely to a successful program of port privatization). However, inland transport costs are a much greater cause for concern: road costs are much higher in Colombia than in Peru and Chile--even when

differences in the difficulty of the terrain are controlled for. Also, by comparison with these countries, Colombia is handicapped by the much larger distance separating ports from agricultural production zones and major retail markets.

One option is to induce the shift of production to sites closer to ports by providing infrastructure--providing of course that such a shift may be seen to generate net benefits and is environmentally sustainable. The region closest to the Caribbean ports ("Atlantic") appears to have good arable potential but is poorly served by feeder roads. Better road access may encourage more intensive use of this land--with appropriate irrigation and drainage some of the lands may be used for export crops; feasibility studies are needed to assess the extent of this potential.

Transport costs will remain high as long as producers are poorly organized: lack of cooperation on marketing leads to limited opportunities for "bulking up", explaining why such a large proportion of internal freight traffic is not containerized. If producers were better informed and organized they would be better placed to exploit spare capacity in the system of freight transport: currently there is a very high propensity for vehicles and containers to be empty on the return journey--a particular problem on the Bogotá-Caribbean route. Other savings can be made by standardizing vehicle and container dimensions between Andean Pact countries; and modifying mandatory freight insurance obligations. This will require quantification of the extent of current losses from higher transport costs, followed by an education campaign centered on producer associations. The potential for expanding overland trade to serve a more integrated Andean market should provide producers with more incentive to look carefully at ways of lowering transport costs.

A major weakness in Colombia is the absence of specific provision for containers: this refers to the lack of physical installations at ports and inland distribution centers, and the absence of an appropriate regulatory framework for intermodal and multimodal operations.⁴ Owing to these constraints, container movements are very slow by comparison with other countries--a particular problem in the case of perishables. Significant cost reductions would accrue to the establishment of inland container ports (facilitating bulking up of shipments) and a regulatory and enforcement regime allowing containers to travel back and forth between ports and distribution centers under customs seal, reducing the loading and unloading costs associated with multiple inspections. This challenge should be treated as an integral part of the broader initiative to reform Customs. Some element of infant industry grant funding may be an appropriate way of encouraging investors to build container handling facilities. Also, the Ministries of Agriculture, Transport and Foreign Trade could jointly sponsor

4. "Intermodal operations" refer to container movements involving more than one medium of transport (sea, road, rail, river). "Multimodal operations" are those where all stages of container movement are covered by a single, uniform document (bill of lading, insurance contract, etc.).

a study designed to examine to what extent infrastructural and organizational deficiencies in the transport sector reduce the competitiveness of farm exports, with particular reference to how to make better use of containers.

A number of specific recommendations may be made concerning ports and feeder roads. Port efficiency has increased significantly since 1990 but remains constrained by problems of physical access. Better arrangements are needed to ensure regular dredging of sea channels and harbors, and to reduce the congestion of land access routes. This will entail a clearer division of responsibilities between state and private sector, and between central and local government. Given that ports generate a number of positive externalities that are not fully captured by the local community, it is legitimate that central government contribute to the cost of improving access routes. Government also has a role to play in providing better physical planning for port expansion. Finally, careful consideration must be given to the likely impact of transshipment developments centering on the expansion of the deep-draft port at Colón (Panama): to an increasing extent, larger vessels will dock at Colón, requiring that they be fed by smaller ships from Colón. This is both a potential constraint (possibly implying longer shipping times) and an opportunity (offering access to markets served by ships that would not otherwise handle Colombian cargo).

Construction and maintenance of feeder roads has a vital role to play in increasing agricultural competitiveness and improving access of the rural population to services. A major challenge is to ensure that the decentralized institutional framework is conducive to regular maintenance of the existing network. Responsibility for the 7,000 km of feeder roads that were built and maintained by the federal agency, FNCV, is now being transferred to departmental governments. The rest of the feeder road network (30,000 kms) will remain in the hands of municipal governments. The logic of this separation is not entirely clear. The funding and management capacity of the departments is already overstretched; asking them to manage feeder roads--as well as taking on secondary roads--is to impose a burden that seems hard to justify. Municipal governments should be responsible for all feeder roads; and they should also bear part of the cost of maintaining secondary (i.e. intermunicipal roads) from which they derive significant positive externalities. Although municipal governments already receive significant revenue from central government transfers, an adequate feeder road program will require additional funds, with some of these specifically earmarked for maintenance. Cofinancing arrangements should be used to favor local government in poorer areas; particularly those with a good record of road maintenance.

New priorities for public investment in irrigation and drainage are implicit in Law 41 of 1993; it now remains to ensure that the spirit of the law--involving closer adherence to efficiency and equity criteria--is reflected in the project portfolio. Public irrigation projects have a history of low rates of economic return and limited success in targeting smaller farmers. A fundamental problem is that, in most districts, rainfall is high enough to

permit significant output without irrigation. Incremental benefits from irrigation are therefore small. But public works have been very expensive--roughly twice as expensive as private schemes--limiting the scope for cost recovery.

Returns to public irrigation have also been low because users were not consulted on design (which tended to be technically rigid) and the choice of project sites was not guided sufficiently by the scope for agricultural intensification. Dissatisfaction with the performance of existing systems deters users from shouldering the full burden of operations and maintenance costs, helping to explain delays in transferring public districts to water user associations (only 7 of the 22 districts have so far been transferred). Because cost recovery is so low works have been inadequately maintained. Also, the subsidy to users reduces the incentive to plant higher-margin crops--helping to explain why most of the 287,000 hectares in the districts is devoted to grains and pasture. Returns to this pattern of land use are insufficient to amortize the US\$3,000-US\$4,000 per hectare that is the typical cost of a public irrigation project.

Law 41 aims to make public investments in irrigation more demand driven. Allocation of investments will be contingent upon a careful assessment of the beneficiaries willingness to pay for 100 percent of operations and maintenance, plus some proportion of initial capital costs. Recovery of capital costs is intended to be progressive, with a larger element of subsidy for small farmers. Project beneficiaries will be required to form a user association to take over public schemes once they are completed.

Although Law 41 provides an excellent framework for a new approach to public investment, there are some questions about the details of its implementation. The cost recovery schedule that is now proposed seems significantly less equitable than what was provided for by the law. Also, the equity impact may be further undermined by Law 101 of 1993 which provides credit and investment subsidies of 30 percent to all private investments in irrigation and drainage, whether by fully private irrigators or by beneficiaries committing their own resources on public schemes. Because only those eligible for investment credit--mostly large farmers--would be able to capture these benefits, Law 101 would seem to discriminate against small farmers.⁵

A number of recommendations suggest themselves. First, it is important to accelerate transfer of districts to user groups. Transfer has been held up partly because funding agencies have insisted that works must be fully rehabilitated before they can be handed over to users; at which point 100 percent recovery of operations and maintenance is mandatory. It may be

5. In response to this point, the government argues that mechanisms have been created to improve small farmers' access to investment loans, thus enabling them to benefit from the capital investment subsidy provided by Law 101. The government notes that, between 1994 and 1995, FINAGRO investment loans to small producers rose by 63 percent, compared to an increase of 56 percent for medium and large producers.

better to adopt a more incremental approach: transferring imperfect systems and then progressively upgrading them subject to a process of negotiation between users and the public irrigation authority, designed to reach mutual agreement about the level of rehabilitation and the corresponding increase in users' contribution to cost recovery. Second, the focus on irrigation needs to be broadened to include greater attention to drainage--which typically costs only about US\$500 per hectare. Third, the scope for using better techniques of moisture retention, and introducing integrated watershed management would repay closer study. Fourth, government should do more to create an enabling environment for private investment in irrigation: by providing complementary infrastructure (roads, electrification etc).

Consolidating Trade Liberalization

Further liberalization of the agricultural trade regime is essential if the competitiveness of the sector is to be increased (Annex C). Since 1990 there has been a significant, economy-wide opening of the trade regime, entailing removal of quantitative restrictions and a reduction in the range of tariffs from 0-50 percent to 0-20 percent. The state monopoly over grain imports has been eliminated and domestic procurement by the government agency, IDEMA, has been scaled back and is now limited to poor, isolated areas. Between 1991 and 1992, the average tariff for farm goods fell from 31 percent to 15 percent; and the tariffs applied to agricultural inputs fell from 15 percent to two percent. The various income transfers to producers of importables (price plus non-price interventions) have declined substantially since the 1980s. But transfers in favor of beef, coffee and rice--which between them account for 40 percent of farm output--are still substantial. In short, there is still much scope for increasing the neutrality of the trade regime.

The main argument for liberalization is that the more transparent and neutral the process of resource allocation, the greater the scope for realizing efficiency gains: over the long run, this will significantly enhance growth. There is now a substantial body of evidence demonstrating that open trade regimes lead to higher growth rates. The impact of trade regimes on poverty is less clear cut. In the short term, liberalization may result in lower incomes for producers of importables; but the impact on poor rural producers is generally small (because they market small volumes and therefore reap few of the benefits from protection) and will be offset by the positive impact on consumer real incomes (including those of the rural poor--who tend to be net buyers of food commodities). In the long term, the incremental growth attributable to liberalization will help to create employment which in turn will contribute to poverty reduction.

In general, however, trade policy is not an effective instrument for alleviating poverty. Casual empiricism suggests that if the nominal rate of protection of foodstuffs is reduced to zero, the increase in the real incomes of poor urban consumers will not exceed five percent: this estimate (for the bottom three expenditure categories in Bogotá) approximates findings for

cities in other countries. The real income gains for better off urban consumers--who represent a majority in the Bogotá case--will be lower still. Findings of this nature help to explain why it is easier to mobilize producers against liberalization than it is to rally consumers to support it: revenues from protected farm products represent a much larger share of farmer incomes than the share that expenditures on the same products represent of total consumer spending.

In Colombia, the better organized farmers--those enrolled in *gremios*--have successfully campaigned against liberalization; and there has been no countervailing lobby of equivalent strength to present opposing arguments. The *gremios* assert that the opening was the prime cause of the collapse of incomes faced by certain farm subsectors in 1992. A careful review of the evidence demonstrates that the root of the problem was not liberalization in itself but the decline in world prices (aggravated by a severe drought in 1991-92). To the extent that the fall in world prices is a short run phenomenon, some income smoothing measures are called for. However, if the downturn is of an enduring nature, measures to insulate farmers from this environment will result in significant efficiency losses as resource allocation is pushed out of line with the country's evolving pattern of comparative advantage.

A key consideration is that, over the longer-term, there is no reason to expect world prices for farm commodities to increase substantially over their present level. This suggests that increasing the protection of importables will merely postpone the inevitable adjustment, leading to unjustified efficiency losses and having no significant positive impact on the incomes of the rural poor. The best approach therefore is to combine an open trade regime with a full battery of policy instruments for combating temporary income and employment losses.

Thusfar, there has been a tendency to rely heavily on trade interventions as a means of responding to short term crises in the farm sector. Two such interventions are price bands and procurement agreements. This report argues that these are extremely blunt instruments--ineffective because poorly targeted--and should therefore be removed. An alternative strategy would combine use of temporary import surcharges (safeguards) with measures to improve the efficiency of domestic commodity markets. In addition, emergency public employment programs could be more expeditiously implemented in rural areas worst hit by income shocks.

The price bands system is intended to stabilize producer incomes; but implicitly it serves as a protective device. The bands were only introduced in 1991. But their impact was simulated, assuming that they had operated continuously from 1976 to 1993. Overall, the world price of the products covered declined over this period. Therefore, given the system's long memory (five years), at any one time, the spot price tended to be lower than the floor price--and almost never above the ceiling price. Thus, the net effect of the bands was to protect (rather than stabilize the price of) the

products covered--arguably, merely serving to postpone the adjustment that sector must eventually make to the world price environment. Also, the price bands are difficult to administer because they cover 112 products (eight base products plus their substitutes and derivatives); and are not neutral, offering less effective protection to processed than to primary products.

The base products in the system may each be assessed in relation to the logical criteria that might be used to justify their inclusion: chronic import dependence; world price volatility; existence of a central world market referent; limited number of substitutes and derivatives; and a preponderant small farmer share of output. None of the eight satisfy all these criteria. A number of alternatives suggest themselves. Sugar producers could set up a private stabilization scheme. In the case of wheat--very much a small farmer product, but one whose world price is relatively stable--flat-rate direct income transfers (not proportional to the past level of production) might be appropriate. Minimum import prices could be used for rice and milk. In short, strategies need to be tailored to reflect the specific characteristics of each product.

In their present shape, procurement agreements are less distortionary than price bands because they cover a smaller spectrum. The agreements apply to wheat, barley, sorghum and oil palm, products which between them account for nine percent of crop output value. These *convenios de absorción* require that farmers, agroindustries and government jointly agree on the volume of domestic output that will be absorbed by agroindustry, and the price to be paid to the farmer. Even if the efficiency losses resulting from this arrangement are likely to be small (given their small share of available supply), most of the total income transfer to producers will be garnered by larger farmers: because the benefit received is proportional to the volume of output marketed; and because larger farmers will tend to have more leverage than small farmers in negotiating the procurement price to be paid by agroindustry. The agreements are very unevenly targeted: although small farmers produce the bulk of wheat and barley output (71 percent and 53 percent respectively), they produce only five percent of sorghum output and three percent of oil output. Since neither sorghum nor oil palm are particularly labor intensive crops rural wage workers are likely to derive relatively little benefit from protective measures.

To smooth farm incomes during crises, rather than relying on price bands and procurement agreements, it would make more sense to fully exploit the potential of safeguards and "market development" measures. A safeguard is a temporary import surcharge applied to an existing tariff; and it is fully consistent with GATT rules. Decree 809 of 1994 enables producers to request special, temporary protection against imports on the grounds that an import surge is causing, or threatening to cause, injury to the domestic industry; or because the border price of an importable has sharply declined. There are several reasons why safeguard measures are generally preferable to antidumping actions or countervailing duties. First, a government does not have to wait several months while the case for

intervening is investigated; having decided that a particular subsector should be awarded import relief, the government can respond rapidly. Second, safeguard actions are explicitly temporary: therefore they will not hinder competitive adjustment of the farm sector over the longer term. Third, they are transparent, and nakedly political devices: they do not have to be justified in terms of the "national interest" or the existence of "foreign predators"--expedients that usually involve some degree of obfuscation.

There is some scope for market development. The efficiency of spot and forward markets for grains and oilseeds could be enhanced. Development of private markets for these products is consistent with the overall thrust of eliminating state-mediated procurement arrangements. A first requirement is that there be no backtracking on the earlier decision to limit IDEMA procurement to small farmers in the poorest regions; otherwise, the incentive for private intermediation will be undermined. To avoid undercutting private traders, the prices paid by IDEMA should not be fixed panterritorially. Outside these target regions, IDEMA's storage facilities should be sold off.

The government also has an important role to play in setting grades and standards, disseminating information about the (new, improved) procedures for resolving contract disputes, setting up a more effective system for collecting market and production data. An issue worthy of closer examination is the limited nature of private warehouse space: there may be legal and regulatory barriers to entry, and restrictions on the use of grain as collateral, that reduce the supply of, and demand for, storage.

However, it is important not to exaggerate the efficiency gains from private market development. Intertemporal and interregional price variations are already fairly small in Colombia: this is not so much because regions are well served by transport links, rather that agricultural potential is fairly evenly spread in Colombia, while the significant level of diversification of the rural economy permits intertemporal smoothing of farmer incomes. These factors reduce the demand by farmers to initiate marketing cooperatives, to organize bulk delivery of commodities or to invest in storage facilities. Also, owing to the major economies of scale in food and feed manufacture, it may not be economically feasible to break up end user concentration, meaning that agroindustry will continue to exercise disproportionate market power in relation to producers.

Finally, to help consolidate trade liberalization, steps should be taken to further regional trade integration and to complete the reform of customs. **Regional integration** holds out the prospect of considerable gains for Colombia, because it probably enjoys greater comparative advantage in agriculture than any other country in the Andean Pact. Colombia accounts for 60 percent of the farm output produced by Pact member countries. Exports of sugar and potatoes have grown particularly strongly.

Except for the bilateral agreement with Venezuela, progress with regional trade agreements has been relatively slow. The government would do well to ensure that involvement in regional integration initiatives does not unduly compromise the speed and consistency of its own reform efforts. It may make sense to focus integration efforts on a subset of countries within the Andean Pact. To the extent that further integration is feasible, the following matters merit special attention. First, further work might be undertaken on the common external tariff, with a view to full harmonization on the basis of the lowest tariff rates prevailing within the region. Second, the common agricultural policy needs to be reviewed, in order to determine where exactly policy coordination should focus. The temptation to be overambitious should be avoided, with discussions limited to a small number of policy areas (for example, elimination of export-related subsidies). Third, steps could be taken to reach closer agreement on rules of origin. Fourth, it would be useful if partners could coordinate their position during negotiations with third partners, particularly those bearing on GATT. Fifth, better rules for antidumping, countervailing duties and safeguards could be drawn up. Finally, steps should be taken to strengthen the mechanisms for resolving disputes between Andean Pact partners.

The customs reform that has been underway since 1990 is an essential component of increased competitiveness. The aim is to simplify the regulatory framework and bring it line with international standards. Progress has been made but a number of problems remain. Fraudulent invoicing is fairly common, and the system of import and export monitoring is still weak. Colombian producers continue to complain about the difficulty of competing with goods that are smuggled, under-invoiced or simply assigned to the wrong tariff category. The effect of all this is to reduce support for trade liberalization, strengthening lobbies in favor of import restrictions. A sustained and vigorous commitment to customs reform is therefore required. Particular emphasis must be given to improving information systems, computerization, staff training and equipment upgrading. Progress needs to be measured against clearly-defined benchmarks. If targets are not met within a reasonable period, the government may have to consider using private preshipment inspection services.

Supporting Measures

The remainder of this report provides an overview of the other areas where action is needed. Steps to strengthen research, extension and input provision, and to improve the quality of human capital formation in rural areas, are essential for raising agricultural productivity: in these areas, measures to decentralize the provision of public services may be expected to have a positive impact--although it is still too early to evaluate. More efficient rural financial markets will help to create an enabling environment for rural enterprise, farm and non-farm. Institutional reforms--including measures to strengthen the Ministry of Agriculture--are needed to increase the government's capacity for managing crises; and to allow for better articulation of the needs of the rural poor. Finally, because cultivation of

coffee is regionally diffuse and small farmer centered, and because it generates no less than one fifth of crop output value, any strategy must necessarily include steps to strengthen this subsector.

(a) Research And Extension

Agricultural research and extension has long been divided between public entities (headed by ICA), which are geared mainly to staples, and a series of private sector initiatives, centered mainly on twelve producer associations (*gremios*), each of which focuses on a particular commercial crop and finances itself from a levy on members' revenues.

ICA's share of total public spending on agriculture increased from around 15 percent in the early 1980s to 20 percent in 1990. During this decade, about 60 percent of the funding for research came from ICA and the remaining 40 percent was generated by private and semipublic entities. Public sector funding for research was equal to about 0.3 percent agricultural sector GDP, somewhat less than the average for countries of Colombia's size and income. Public spending on research fell by 51 percent in real terms between 1988 and 1994.

Since 1992, there has been a major restructuring of public sector research and extension. ICA was split into two bodies--ICA and CORPOICA. ICA's staff has been cut from 6,700 to 1,600 and is now responsible for coordinating and cofinancing--but not undertaking--basic and applied agricultural research, and for administering special programs. ICA is funded from the central budget. CORPOICA is a joint public-private sector corporation with a staff of about 3,500. Its mandate is to carry out agricultural research under contract from public and private sources. Although it is expected to be financially selfsufficient over the long term, during the transition period it will be funded from the national budget.

Responsibility for public agricultural extension has been taken from ICA and decentralized, each of the municipal governments being expected to develop its own extension unit, financed partly out of the revenues from value-added tax that the central government transfers to the municipalities; and partly out of matching grant funds from the integrated rural development program (DRI). So far, 550 of these municipal extension units have been established.

It is too early to evaluate the impact of this restructuring. Early evidence suggests that the frequency of contacts with farmers has increased since extension was decentralized. However, the key issue is whether farmers are helping to shape the research and extension agenda; and whether the specific needs of the poorest farmers are being addressed. Another vital issue is the quality of coordination between the research and extension services. Negotiations were recently completed on a World Bank-financed Technology Development project which will seek to improve the quality and the relevance of the research on which extension messages are based,

increasing the responsiveness to small farmer requirements. Building on the sound results of an earlier research and extension project (1984-90), the new project will support a demand driven, competitive selection process for research projects, with cofinancing for universities and public and private sector research entities.

In the past, the research and extension system has promoted inefficient and expensive input packages (heavily geared to chemical inputs), which have made commercial agriculture less competitive, have polluted groundwater and have not addressed the key issue of increasing the sustainability of small farm agriculture located on the Andean slopes. Irrigation technology has contributed to major inefficiencies in water use, leading to inadequate crop combinations and helping to perpetuate planting of low-value crops.

Although the new emphasis on increasing mobilization of private funds for research is a welcome development, financing from this source will not be adequate to address small farmer needs; the recent fall in public spending on research is not justified and needs to be reversed. It is to be hoped that the new system will make research and extension much more flexible than it has traditionally been: better adapted to regional variations in the natural resource base and to relative factor endowments. Increasing the menu of low-cost technologies will be an important objective. At this stage, priority areas would seem to be:

- * zero tillage
- * moisture conservation
- * drainage
- * integrated watershed management
- * integrated pest management
- * post-harvest technology
- * farming systems research

(b) Farm Inputs

Solid foundations have been laid for a transparent and competitive input market. Under the auspices of *apertura*, import licenses, surcharges, and price controls on tradable inputs (fertilizer, agrochemicals, machinery, implements, seeds) were all removed. A patent law was enacted for seeds. The state bank, Caja Agraria, has withdrawn from input distribution--a step to which farmers have not objected. Each of these measures is likely to increase the competitiveness of Colombian agriculture. In terms of the impact on farm incomes, the 1992 crisis was less severe than that in 1982, precisely because input costs were falling not rising.

Three main challenges lie ahead. First, the legal and administrative regime for agrochemical imports needs to be modernized. Agrochemical imports need careful surveillance, on health and safety grounds. This requires good coordination between public research and extension (ICA) and the Ministries of Health and Agriculture. Some progress has been made in

this respect but the administrative regime for agrochemical imports is still too complex and burdensome. Import procedures and the legal framework--as they bear on quality control and trade registration--would benefit from simplification.

Second, there is a good case to be made for strengthening the system for producing and distributing certified seed--particularly for small farmer crops. There has been a fall in the output of certified seed for the crops grown mainly by small farmers (wheat, barley, beans and sesame). Private suppliers potentially have a bigger role to play; but the small volumes involved and the high distribution costs are a disincentive to fuller participation. Given the social justification for supplying small farmers' seed requirements, a case could be made for providing temporary subsidies to private suppliers operating in this field.

(c) Education and Health

The *Escuela Nueva* principle of primary rural education has a track record extending back to 1961 and has brought about significant improvements in rural educational standards. The flexible scheduling of teaching and advancement through the grades is well adapted to rural requirements, allowing pupils to drop out and re-enter without undue disruption. More pupils are staying the course: over the past three years, primary school retention rates in rural areas have increased from 25 percent to 35 percent of pupils. Spending on public education is relatively progressive but higher and better targeted expenditures are needed. The goal must be to increase coverage in poorly-served areas (particularly in the Caribbean region) and to improve the quality of education. At present, rural teachers are poorly prepared--38 percent have no training whatsoever--and promotion policies rarely reward performance. Also, there is insufficient scope for community involvement in schools and school management.

Decentralization will reduce inequities in spending levels between rural and urban areas. This process is beginning to give departments more control over teachers and financial resources, which will affect the pattern of intermunicipal allocation. Most municipalities will receive a net increase in resources for primary--and secondary--education. Response is likely to be uneven and should be carefully monitored: some measure of central coordination will be required to ensure that the most disadvantaged municipalities do not continue to be marginalized. The national government can provide incentives through technical assistance and cofinancing to assist those departments and municipalities having difficulty extending and upgrading educational coverage in rural areas. Most of the cost burden will have to be met from the increased resources local governments will receive through transfers; cofinancing from FIS constitutes only 7 percent of intergovernmental transfers and should be limited to projects strictly designed to reduce poverty.

Compared to education, the progress to be made in upgrading rural health services is much more substantial. Colombia is a long way from providing universal care to its rural population; the challenge is particularly great in tropical lowland areas where infant mortality rates and deaths from intestinal infection are well above the national average. As with education, the spending powers of the municipalities are being enhanced by central government transfers. These should be used to provide a basic package of preventive, clinical and emergency services.

The central government has a key role to play in setting quality and efficiency standards, and monitoring progress toward them. So far, no system of sustained monitoring and evaluation has been introduced--anywhere. Clearly, the regular updating of the relevant databases will pose a particular challenge in the countryside. In addition, much of the responsibility for planning and implementing campaigns of expanded immunization, health education and control of endemic diseases must necessarily remain with the Ministry of Health.

The clinic-based care system is poorly suited to the rural population. A model involving outreach services should be considered. Also, an attractive career package needs to be developed for personnel offering public health services in rural areas.

(d) Rural Financial Systems

Between 1990 and 1994, the government implemented a number of measures aimed at making credit more available to agriculture and encouraging private financial institutions to lend to the sector. Interest rates to farmers were increased in real terms and the yield was augmented on the bonds that banks are obliged to subscribe to in order that farm credit may be financed. Private banks were also given the option of waiving purchase of these bonds if they agreed to lend directly to agriculture. The recapitalization and restructuring of the government bank, Caja Agraria, helped to reestablish the flow of public sector credit to the sector.

Despite the advances made, political pressures stemming from the agricultural crisis led the government to adopt measures with negative distributive consequences, measures that further dissuaded private banks from lending to agriculture. Further, little progress was made in making formal agricultural credit more available to low income farmers.

The agricultural crisis of 1992 created political pressure in favor of a major refinancing. Law 34 of 1993 extended refinancing facilities to all farmers affected by the crisis. However, in practice, these measures were loosely applied, mainly benefiting farmers owing money to formal credit institutions. Refinancing was undoubtedly appropriate in certain cases, particularly for farmers affected by the drought of 1992, or those cultivating crops for which prices were expected to recover. However, in other

respects, refinancing was poorly targeted and may have helped to postpone adjustment in the sector, setting a precedent which might discourage farmers from repaying loans, and perhaps deterring private banks from entering the sector.

Law 101 of 1993 (*Ley Agraria*)--also a reflection of political pressures generated by the crisis--brought in interest rate restrictions. Provisions in the law extended interest rate caps for two years longer than originally agreed. The law also offers a mandate for indefinite continuation of credit subsidies to small farmers, and lower interest rates for agriculture. Apart from warding off private banks, these measures make it more likely that those already enjoying access to official credit--principally, large farmers--will continue to reap most of the benefit from government lending initiatives. These measures fail to address the needs of the large numbers of small farmers who do not qualify for credit. Law 101 also created a system of capital subsidies to cover up to 40 percent of the total cost of investments in agriculture. This is a regressive measure because these subsidies will be tied to long term loans from official credit sources, which are mainly captured by large farmers.

Most small farmers are still left out of the formal credit system: only about one third have access. The majority of these are served by *Caja Agraria*, which has frequently been forced to shut down because of insolvency, leading to some disruption of farm production. Private banks are rarely interested in lending to small farmers (who often do not hold land titles or other acceptable collateral), and because, in general, farming is perceived as too risky to be a bankable proposition.

The government must lend more to agriculture, but its loans need to be targeted at small farmers. Sector-wide interest rate and capital subsidies should be eliminated. Capping of interest rates needs to be stopped. The capital subsidies program could fruitfully be refocused, favoring poor farmers wanting to buy land, or being used to finance small scale infrastructure, on and off-farm. The removal of interest rate and other distortions will create a better climate for private sector lending; but lending from these sources will never be sufficient to remove the need for substantial government spending.

Rather than subsidizing interest rates it makes more sense to subsidize the transaction costs that financial institutions must incur when they lend to small farmers. To attract new intermediaries into the rural financial system, it will be important to make transaction cost subsidies available to a broad range of lenders.

General schemes of refinancing are wasteful and regressive. It makes better sense to limit refinancing to poor farmers; and to larger farmers who show good prospects of being able to compete under liberalized market conditions, providing they restructure. There are no grounds for continuing to use credit policy as a palliative, intended to soften the blow of reduced protection: such an approach would not be sustainable.

Finally, the government could usefully study new ways of lending to farmers who are presently outside the formal credit system. One possibility is to encourage banks to accept a broader definition of collateral--including mobile assets (cattle, tractors) and negotiable warehouse receipts. It also makes sense to consider how best to involve NGOs and small scale financial intermediaries in lending targeted at the rural poor.

(e) Institutional Reform

The Gaviria administration sought to redefine the role of the Ministry of Agriculture and the other central agencies dealing with the sector. Reform of the Ministry itself has not yet been attempted; but the issue will probably be taken up shortly. All other agencies underwent some degree of restructuring, based on a series of 1992 decrees that were mandated by the 1991 Constitution. Much more remains to be done.

The sectoral agencies face two big challenges. First, public institutions will have to adapt their functions and operations to the increasing decentralization of government responsibilities. The institutional reform program that was launched in 1992 must be consolidated. Many of the functions remaining in the hands of central government now need to be transferred to local governments. The overriding objective should be to increase the participation of communities in the selection and execution of projects. There will be a transition phase during which central government will provide technical assistance to local governments. But, to ensure that equity and environmental considerations are not neglected, central government must retain some leverage at the local level: this may be achieved by designing appropriate cofinancing mechanisms--matching grants that reward good performance by local government. DRI stands as an excellent model, demonstrating the key elements of a sound strategy of cofinancing and decentralized project selection.

Second, to be consistent with the shift toward a market-oriented development strategy, public agencies will need to develop a new relationship with the private sector: rather than intervening directly in markets, government must focus on those services which will enhance the competitiveness of private firms, increasing their capacity to operate effectively in liberalized markets. Producer associations must rely less on lobbying government for special favors, and should be prepared to move into areas previously occupied by the state. Private firms can play a bigger role in trade and storage of primary commodities, working together with farmer associations. There is also much scope for greater private sector investment in irrigation, drainage, applied research and extension, and transport infrastructures. Government's role will be to ensure that an appropriate legal and policy framework is set in place, to provide cofinancing and to offer technical assistance where it is called for. It should also work to improve the flow of information between private agencies and government.

The Ministry of Agriculture needs to participate more actively in those broader policy fora where decisions impinging on agriculture are taken: this refers to discussions on macroeconomic, trade, fiscal, environmental and rural development policy. The Ministry has had little input into the broader decision-making process, partly owing to its lack of technical capacity. It is not the case that the Ministry has been deliberately marginalized; rather, it has not made the most of opportunities for dialogue. The Ministry participates in almost all the high-level cabinet councils, including specific councils for economic, social, fiscal, trade and environmental matters. It will also chair the Rural Development and Agrarian Reform Council that is envisaged by the recently-passed land reform bill: a council that will coordinate rural development initiatives with initiatives taken by the ministries responsible for health, education and infrastructure. This particular council would be an ideal vehicle for handling short run crisis management. Also, particular importance should be attached to involving the Ministry in the design of transport policy, ensuring that public spending on roads and ports maximizes the opportunity for realizing agriculture's potential and stimulating farm trade.

The analytical capabilities of the Ministry of Agriculture are in urgent need of strengthening. Once the present deficiencies have been rectified, the Ministry will be better placed to monitor and evaluate the performance of the sector, and to design appropriate strategies, whether for short or long term. This goal could be accomplished by setting up an economic think-tank, funded by the Ministry, but run as an autonomous entity with powers to hire and fire staff and to manage its own budget. An institution of this nature would be staffed by a group of well-paid, high-level professionals on relatively long term contracts. It would be relatively immune from the considerable lobby pressure to which the Ministry itself is exposed.

The Ministry should give high priority to developing a better system for collecting and disseminating sectoral data. The Ministry's current system is highly flawed and is frequently criticized for delays and biases in the information it generates. The new system should be designed to produce reliable and timely sectoral statistics, which would allow for monitoring the living standards of farmers and the rural population at large. The Ministry's role would be limited to coordination, design and implementation being left to the government statistical agency (DANE) and specialized private firms.

Finally, the Ministry needs to conduct a full review of the procedures it uses to allocate and evaluate public spending on the sector: this with a view to determining the efficiency of expenditures, paying particular attention to the impact of these expenditures on the livelihoods of small farmers and the rural poor.

(f) Coffee Strategy

Coffee remains by far Colombia's most important crop. Although coffee's mean contribution to merchandise export earnings fell from 47 percent in 1980-85 to 17 percent in 1990-93, coffee still plays a key role in the Colombian economy. Nearly 500,000 farm families depend for their livelihood on activities directly and indirectly related to coffee production, processing and trade. Coffee still accounts for nearly one third of agricultural GDP and a similar proportion of the rural labor force is employed in its production. The regional economies of the coffee growing provinces are still highly dependent on the demand generated by coffee incomes. Although there has been some diversification, for most farmers in the coffee zones, this crop continues to be the primary source of income.

Since 1989, the coffee sector has been hard hit by the price decline associated with the break up of the International Coffee Agreement's export quota system. Despite significant support from the National Coffee Fund (a stabilization scheme), the incomes of Colombian producers have dipped sharply. Between 1989 and 1993, world and producer prices were at their lowest level in decades, leading to reduced investment in maintenance and replanting. In response to the (delayed) supply adjustment and the retention scheme put in practice by a group of exporting countries, prices eventually began to recover in late 1993; they more than doubled in the first half of 1994.

The collapse of the International Coffee Agreement had a major impact on the world coffee market. But, in Colombia, internal and external coffee trading arrangements have remained relatively unchanged: they continue to be heavily regulated. Coffee policy was for long tailored to the Agreement's regulations--particularly the export quota. Now that the world coffee market has been freed, Colombia needs to adjust the policy and regulatory framework, allowing for a more flexible response to changing market conditions.

Although world demand for coffee is expected to grow slowly for the rest of this decade, some segments of the market are more dynamic. Colombia would be well advised to focus on exploiting the rapidly growing demand for "specialty" coffees. Colombian coffee has most of the qualities needed to capture a growing share of this market, including high quality, washed arabicas with diverse regional origins and a sophisticated distribution network. Exports to this specialty market amounted to 200,000-300,000 bags in the early 1990s and could potentially grow to around 1.5 million bags by the end of the decade, accounting for more than 10 percent of the average export volume.

Colombia will need to become far less reliant on exporting through the National Coffee Fund, allowing private firms to take a bigger share of the trade. Private firms are more able to respond quickly to changes in the market, and will be well placed to penetrate highly dispersed specialty

markets. The private sector is capable of assuming most of the stockholding functions now carried out by the Fund, whose finances are weak. Government intervention in domestic coffee markets should be limited to guaranteeing a minimum support price to low income farmers in marginal areas, and ensuring that exports meet quality standards. The Fund should relinquish its role as an export agency, allowing private firms and producer cooperatives to assume a larger share of coffee marketing.

The Fund would be advised to concentrate on stabilization, an area where it has a sound track record. Seeking to stabilize producers' coffee revenues is a legitimate objective, given the volatility of the market. It therefore makes sense for the Fund to accumulate savings when the world price is high, providing it with the means to support producer prices during the down phase of the world price cycle. Arguably, management of the fund would benefit from increasing delegation to private producer associations; government intervention in decision making (already low by developing world standards) could be gradually eliminated, in line with the progressive decline in coffee's contribution to national income.

A number of recommendations suggest themselves. First, procedures for shipping coffee from mill to port need to be streamlined. Second, calculation of the export tax (*contribución cafetera*) could be greatly simplified: one possibility is to introduce a progressive ad valorem levy. Third, it would make sense to introduce a voluntary system for certifying specialty coffees, making it easier for producers to penetrate these markets. Fourth, import agents--who receive a commission for each bag exported to the big markets--should be eliminated. Fifth, advertizing would do best to focus on specialty coffees and areas of the world where demand is growing fastest (Japan, South Korea and China). Sixth, there is a case to be made for easing restrictions on futures trading, in order to expand the range of marketing strategies available to export firms, increase stockholding opportunities and provide for better management of risk.

In the near term, coffee output will likely remain in the range of 12-15 million bags. Rather than trying to achieve ever greater production levels, Colombia would be advised to concentrate on increasing the producer's capacity to respond to market signals and to manage risk. Now that the world price is recovering, the industry may become less committed to diversification of coffee producers' incomes. This would be a serious mistake. The excellent progress made so far is grounds for consolidating rather than abandoning attempts to diversify on-farm and off-farm income sources.

The Colombian coffee industry faces three major challenges in coming years. First, if coffee is to remain competitive, an extra effort must be made to reduce costs and to adapt technologies to producer needs. Second, both government and producers need to take greater steps to contain the rapid

spread of the coffee borer (*broca*), in order to prevent a further decline in production levels. Third, a major research initiative is needed to identify environmentally sound ways of disposing of the residues from washing and milling coffee beans.

MAKING LAND AND LABOR MARKETS MORE EFFECTIVE

Colombian land and labor markets have operated in ways that have tended to limit the scope for absorbing labor in agriculture, aggravating rural poverty and obliging small farmers to adopt non-sustainable farming strategies on marginal land. The distortions in the land market appear to be more severe than those in the labor market, suggesting that there is a strong case for renewed agrarian reform. The present move to implement a market-based land reform is to be encouraged; but more attention needs to be paid to ways of increasing the incentive for large landowners to sell land. In addition, the loss of employment occasioned by temporary downturns in agriculture draws attention to the need for strengthening the capacity to implement emergency public works programs. Given that rural women experience relatively high levels of unemployment, interventions should take particular account of the needs of female-headed households.

Background

Labor. There are roughly three million farmworkers: equal to about 20 percent of the total labor force (Table A.1). Depending on the definition of "rural", the share of the workforce employed in the countryside is in the range of 30 to 40 percent: the difference between these two figures is probably made up of persons working mainly in small town service and commercial activities--but it also includes persons working occasionally as agricultural day laborers (who in many cases will not have been included under the "agricultural" workforce proper). There is some regional variation: farm workers are most preponderant on the Eastern cordillera, where they account for about one third of the workforce in that region; in other regions they account for about one quarter of the labor force. The Caribbean ("Atlantic") region (dominated by ranching and large estates) stands out for the large share of the farm workforce living in small towns: 16 percent, compared to only 8 percent in the Eastern cordillera (where peasant farms predominate).¹ Much of this Caribbean population is a rural proletariat: 50 percent of rural household income in the Caribbean region derives from wage earnings, compared to 44-46 percent in other regions.²

Land. In certain areas the pattern of land ownership is highly concentrated. The departments with the highest proportions of large farms are located in the Caribbean coastal lowlands and in the Orinoco savanna region east of the Andes: between them these areas account for almost one

1. Data on regional variations from CASEN 1993 Household Survey, cited in background paper by Reyes and Martínez ("*Funcionamiento de los mercados de trabajo rurales en Colombia*", June 1994).

2. CASEN, 1993, *op.cit.*

half of all holdings over 100 hectares.³ In the Caribbean region, with the exception of Atlántico, all departments have 65 percent or more of the land in holdings devoted to farms of over 50 hectares in area; this proportion rises to over 85 percent in César, La Guajira and Magdalena. East of the Andes, large estates are particularly preponderant in Meta, Casanare, Guaviare and Vichada. The size of the large estates is not necessarily "justified" by poor land quality. The Caribbean has the most concentrated pattern of landholding but also has the largest proportion of land of high crop potential: it contains 46 percent of all land in Colombia defined as "prime arable" but only 19 percent of the national crop area (Statistical Appendix, Table 4)--much of this land of arable potential is used for extensive cattle grazing.

Table A.1 - Colombia: Structure of Labor Force in 1993
(Thousands of Workers)

	Total	Rural	Farm
CASEN	13,387	3,997	3,128
DANE	13,161	5,364	NA
CEGA	NA	NA	2,232

Note: According to DANE, "rural" comprises that proportion of the population living outside municipal capitals (*cabeceras*); CASEN defines "rural" as persons living outside the *cabeceras* plus the population of 850 municipal capitals which either have fewer than 10,000 inhabitants or contain less than 50 percent of the population of the *municipio*. CEGA limits "agricultural" workers to those engaged in crop farming; CASEN also includes workers involved in livestock rearing.

The Low Propensity of Colombian Agriculture to Absorb Labor

Agricultural development in Colombia has involved substantial misallocation of resources: land has been very unevenly exploited; and, since the mid-1950s at least, farm output growth has absorbed less labor than might have been expected. The agricultural development strategy now calls for a major course correction. This will entail adopting policies to make land and labor markets operate more efficiently and equitably.

Compared to other countries in the same per capita income range, the growth of farm employment has been exceptionally low in Colombia.⁴ In the early 1950s, agriculture's share in GDP (34 percent) was in line with the average for other countries in the same per capita income range. After c.1953, this share declined more sharply than the international mean

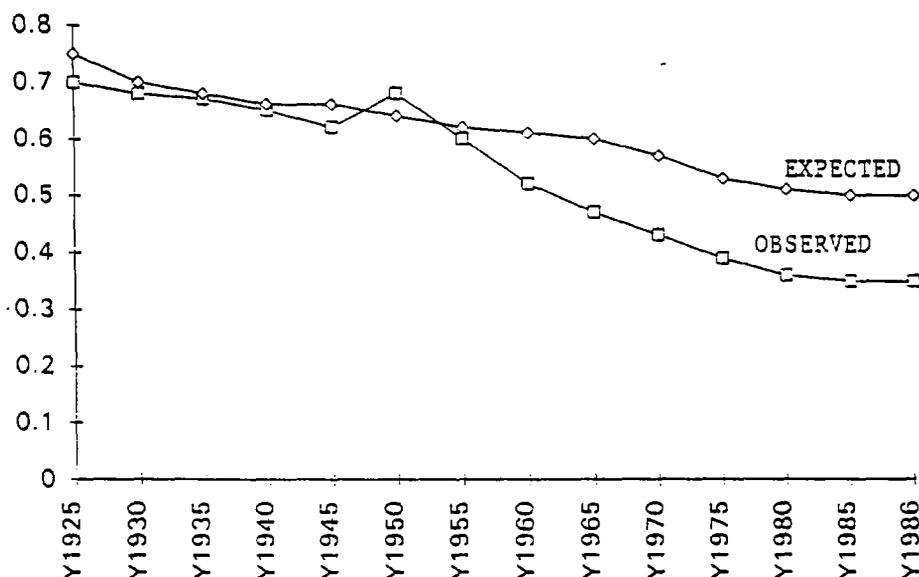
3. Misión de Estudios del Sector Agropecuario, *El desarrollo agropecuario en Colombia*, (three volumes), Bogotá: Ministry of Agriculture/DNE, 1990 (Study directed by Albert Berry and Jesús Antonio Bejarano), p. 110.

4. Misión, 1990 op. cit., Vol. I, pp. 4-14. These findings are an extension of earlier work by M. Syrquin and H. Chenery (*Patterns of Development, 1950-83*, World Bank/Harvard International Institute for Development, 1989).

(Figure A.1), reaching 18 percent by 1990. The annual growth rate was impressive, averaging 3.5 percent between 1950 and 1987. A detailed analysis has been made of the sources of agricultural growth. A little more than half of that growth was caused by improved productivity: total factor productivity grew at 1.9 percent. The growth path was extremely capital and land intensive. Capital grew by 2.8 percent, land area devoted to agriculture and livestock by 1.4 percent and employment by only 0.6 percent (Table A.2).

Figure A.1

SHARE OF PRIMARY SECTOR IN TOTAL EMPLOYMENT



Source: Syrquin & Chenery, 1989 *op.cit.*

6. The sector's relatively low propensity to absorb labor is reflected in the land use pattern. Crop farming has captured a relatively small proportion of the natural resource base. Sixteen percent of Colombia's land area is suitable for crops but less than four percent is actually cultivated. Livestock rearing is overextended: 13 percent of the territory is deemed appropriate for pasture but 35 percent of the land is put to this use. Small farmers with limited access to good quality flat land may end up deforesting marginal land on the Andean slopes. Only about one-half of Colombia is still forested, whereas it is estimated that two-thirds would be best left under tree cover.⁵

7. By subsidizing capital inputs and the livestock sector the Colombian government has sponsored a strategy of agricultural development that discriminates against small farmers. Tractor subsidies have encouraged

5. Data on land use and land potential from IGAC, *Suelos y bosques de Colombia*, Bogotá, 1988.

Table A.2 - COLOMBIA: SOURCES OF FARM SECTOR GROWTH, 1950-1987

PERIOD	GROWTH RATES				CONTRIBUTIONS TO GROWTH				
	FARM GDP	AREA	CAPITAL	EMPLOYMENT	AREA	CAPITAL	EMPLOYMENT	ALL FACTORS	PRODUCTIVITY
1950-1955	3.03	1.15	-0.37	2.09	0.22	-0.13	0.96	1.05	1.98
1955-1960	4.08	0.68	1.26	0.21	0.13	0.44	0.10	0.67	3.41
1960-1965	2.77	1.31	2.44	0.67	0.22	0.81	0.34	1.36	1.41
1965-1970	4.94	2.17	4.68	1.29	0.41	1.87	0.53	2.81	2.13
1970-1975	4.33	2.03	6.51	-3.91	0.38	2.60	-1.60	1.39	2.94
1975-1980	4.58	1.67	4.96	2.75	0.28	2.18	1.05	3.51	1.07
1980-1984	0.89	1.80	0.93	0.66	0.27	0.45	0.24	0.96	-0.07
1984-1987	3.53	0.48	1.97	0.76	0.07	0.95	0.28	1.30	2.23
1950-1987	3.52	1.41	2.80	0.57	0.25	1.15	0.24	1.63	1.89

Source: Misión, 1990, op. cit.

shedding of labor: already, by the early 1970s, one quarter of the cultivated area was mechanized. Public irrigation schemes have tended to favor larger rather than small producers; and, because much of the land in the irrigation districts is devoted to pasture and grain crops--which use less labor than higher-margin crops--employment generation has been much less significant than it might have been.

Cattle rearing spread rapidly in the immediate postwar period. The area under pasture grew from 12.1 million hectares in 1950 to 26.7 million hectares in 1986. (In the same period the area under crops increased from 2.6 to 4.3 million hectares). The Caribbean region accounted for 38 percent of the growth in pastures while the Andean valley bottoms accounted for a further 30 percent. There was also rapid growth of the pastoral area in the eastern savanna (centered on Meta): by the mid 1980s, no less than one half of all cattle pasture was located in the sparsely populated area east of the Andean ranges.⁶

The livestock sector has been more protected than the crop sector, helping to account for its rapid expansion. According to the World Bank's Trade Surveillance study, between 1980 and 1992, beef and milk absorbed 82 percent of the total support (price plus non-price interventions) that the government conferred on a group of nine farm commodities. Expansion of cattle rearing has been land extensive, favoring the creation of large estates: the rate of growth of the herd has only slightly exceeded the rate of growth of the area in pasture. The off-take rate remains very low--equal to 50 or 60 percent of that achieved in Argentina and the United States.

A separate factor that has tended to reduce labor absorption is the major reduction in tenancy. Between Law 200 of 1936 and Law 1a of 1968, a series of legal measures had the effect--intentional or otherwise--of reducing the incentive for large landowners to lease out land to tenants. The right of landowners to employ sharecroppers, other tenants and *colonos* was formally outlawed by Law 1a of 1968.

Between 1960 and 1988, there was a massive reduction in the land area occupied by tenants (Table A.3). Also, between 1950 and 1988, the steepest fall in rural employment--by 3.9 percent per year--occurred between 1970 and 1975. This suggests that the 1968 initiative outlawing sharecropping had a major impact; even though the ban was formally revoked by the *Ley de Aparcería* of 1975. Much of the decline of sharecropping centered on the coffee-growing region (associated with an increase in the importance of small owner-operated farms) and on areas of the Caribbean lowlands, following clearance of the land for cattle rearing.

6. Misión, 1990, *op. cit.*, Vol. I, p. 83.

Table A.3 - Colombia: Changes in Land Tenure, 1960-88

	1960 (^{'000} Hectares)	1988 (^{'000} Hectares)	Growth %
Owners	18,995	29,117	53.3
Sharecroppers	1,100	273	-75.2
Other Tenants	1,231	829	-32.7
<i>Colonos</i> ^{a/}	2,889	554	-80.8
Other ^{b/}	526	1,123	113.5
Total	24,741	31,896	28.9

a/ Occupants of untitled land ("internal" and "external" frontier).

b/ Includes Squatters.

Source: Misión, 1990, *op. cit.* (Tables 2.26 and 2.27).

The negative employment impact resulting from the decline of tenancy could potentially have been offset by redistribution of land toward smaller farmers. But colonization and redistribution by the land reform agency, INCORA (established in 1961) has done little to change the overall shape of the agrarian structure. Between 1960 and 1988, the area occupied by holdings under five hectares declined from six to five percent; the area in medium-sized farms (5-50 hectares) rose from 24 to 26 percent; and the area in larger farms (over 50 hectares) fell from 70 to 69 percent.

One effect of the lack of tenancy and land reform options was to encourage land invasion. During the 1970s, there was a wave of illegal farm occupations, affecting 1,500-2000 farms and roughly two thirds of departments. From this point on, INCORA's work tended to center on regularizing the claims of illegal invaders. But even this avenue for land acquisition was closed: Law 30 of 1988 banned INCORA from acquiring illegally occupied land.

This closing off of access to land has serious efficiency, equity and environmental implications. The rural poor are forced to occupy. All that is left for the poor is to occupy marginal--and often ecologically unstable--land. In many areas, the Andean slopes are being denuded of vegetative and soil cover, the resultant loss of moisture retention having an adverse effect on stream flow--reducing the availability of water for agriculture, both for poor farmers on the slopes and richer farmers located in the valley bottoms. In the scattered indigenous reserves (what remains from the colonial *resguardos*), there is an acute problem of holding fragmentation: deprived of access to land elsewhere, Indian farmers are carving up their resource into *microfundia*. In the Amazon and Orinoco basins, and on the Pacific coast, pressure is rising to put unstable lands of intrinsically limited fertility under annual crops. In short, over large areas, the poor's restricted access to land is undermining the sustainability of farming.

While rural violence in Colombia is by no means exclusively caused by the poor's limited access to land and farm employment, the narrowing of access undoubtedly aggravates the level of conflict. Compared to the national average, departments with the highest incidence of violence had a higher rate of decline in the land area operated by tenants and *colonos* between 1960 and 1988.⁷ The lack of alternatives for those evicted appears to have provoked a violent backlash, typically entailing land invasion. The incidence of violence is also high in zones of recent colonization (particularly in the *llanos*) and around indigenous communities, areas where land rights tend to be poorly defined.

There is probably a vicious circle in operation. Narrowed access to land and employment raises the propensity for violence; and violence has a negative feedback on investment and employment. Rural insecurity probably reduces the incentive to invest in agriculture and, more importantly, causes a skew in the pattern of investment toward activities that are relatively nonintensive in the use of labor (because the supervision costs and incentive losses that are typically associated with hired labor are even greater in an environment where hired workers may initiate, or collude in, violent reprisals against employers). This disincentive may encourage landowners in areas of arable potential to invest in livestock rather than crops; and it may reinforce the tendency for larger irrigated holdings to be placed under pasture or grain crops, rather than high-margin crops which require careful supervision and are intensive in the use of hired labor.

Nevertheless, the impact of violence on output and employment is hard to quantify. Of Colombia's 31 departments, the following ten are the most affected by violence: Santander, Arauca, Casanare, Meta, Huila, Antioquia, Cuqueta, Cauca, Cesar and Cordoba. In these departments, the index of crop output value rose by 33 percent between 1983 and 1988--slightly *more* than the nationwide increase (32 percent). But this does not mean that the hypothesis that violence has a negative impact on agricultural growth can be rejected. The incidence of violence may vary sharply between localities of the same department so that data that is aggregated at the department level does not furnish an appropriate means to examine the issue; the necessary micro-level data is usually not available.⁸

Labor Market Issues

Labor markets may be said to be efficient when there are signs of integration between urban and rural sectors, and between different rural localities. Integration suggests a trend toward lowering of wage differentials between localities and sectors for workers with comparable skills. The

7. Mison, *op.cit.*, 1990, 99. 145-155 and Table 2.41.

8. J.A. Bejerano, "Efectos de la violencia en la produccin agropecuaria", *Coyuntura Econmica*, Vol. 18, No. 3, September 1988. This study estimates that, in the late 1980s, 8 percent of the total population and 24 percent of the rural population was in some way the victim of violence.

urban-rural wage differential in Colombia is low: wages in construction are only about 10 percent higher than those in agriculture. The recent social security reform will probably tend to push up the cost of hiring workers in the urban formal sector; this will reduce the take up from the informal sector, a trend which may induce a greater slackness in the urban labor market, tending to keep wages for unskilled work close to those prevailing in the rural sector.

The rural labor market appears to function relatively efficiently. Intertemporal and regional wage differentials are not pronounced. First, agroclimates in Colombia allow most regions to produce a variety of crops, and the harvesting of these crops is often staggered, reducing the peaks and troughs in labor demand. In addition, there is a fair measure of diversification into commerce and service activities, particularly in areas, such as the Caribbean region, where the rural population is nucleated rather than dispersed. This diversification reduces intertemporal wage differentials.

Second, there is a substantial amount of temporary interregional migration, associated with contracting of casual labor for harvesting sugar cane, coffee, cotton and other crops; but this involves men much more than women. There is a long tradition of women working as day laborers (e.g. in the coffee harvest). Between 1973 and 1985, the share of women in the economically active population of rural areas rose from 14 percent to 32 percent.⁹ However, females are less able to respond with alacrity to demand for short term workers, because they often have young children to care for, which tends to reduce their mobility. Although women have less propensity than men to remain in rural areas, among those that do remain the rate of unemployment is much higher than it is for men. In the countryside in 1993, the number of women looking for work and unable to find it is 12 percent compared to only 2 percent in the case of men. (In towns, the gender disparity was much narrower--6 percent of men and 9 percent of women were unemployed). Unemployment was found to be particularly acute among young women: 25 percent of under-25s were unable to find work. Partly for this reason income transfers (including remittances) were of greater significance for female-headed households than they were for male households, accounting respectively for 11 percent and four percent of household income.

This brief overview suggests labor market rigidities are not a major problem in Colombia. But there is an urgent need to find adequate ways of responding to sharp downturns in rural labor demand occasioned by the periodic agricultural crises associated with import surges and price slumps; crises that are not caused by trade liberalization but may nevertheless be aggravated by it. The second issue is how to ease female unemployment.

9. R.A. Berry, "Agriculture during the eighties' recession in Colombia", in A. Cohen & F.R. Gunter (eds), *The Colombian Economy: Issues of Trade and Development*, Boulder: Westview, 1992, p. 188.

What impact did the "agricultural crisis" of 1992-93 have upon agricultural labor demand? The impact was probably greater than it would have been if the rural demographic transition had already been fully negotiated. Although the rural population has declined in absolute as well as relative terms since 1985, the population of working age increased at an annual average of 2.9 percent between 1985 and 1990, much higher than in previous periods. This reflects the relatively high rural birthrates of the late 1960s. Now that the demographic transition has largely worked itself through, the growth of the working age population will be much smaller (projected at 0.5-0.7 percent for the period, 1995-2005).

Between 1990 and 1993, the number employed in agriculture fell from 2.3 million to 2.2 million. *However, this loss (-54,000 jobs) was more than offset by the growth of employment in the "rural non-farm" sector (+163,000 jobs).*¹⁰ Within the farm sector, employment trends varied significantly by type of crop. Between 1990 and 1993 the non-perennials witnessed a contraction of 19 percent, most of this related to the declining profitability of cotton, rice and vegetables (and, to a lesser extent, maize, sorghum, soybeans and wheat). Coffee contracted by 2.4 percent. Other perennials grew by 9 percent: falls in the employment generated by cassava, *panela* and cocoa were more than offset by increases in bananas, plantains, oil palm and sugarcane.¹¹

The impact of contraction would have been felt most strongly by those households which depend significantly on rural wage incomes. In 1993, 57 percent of rural household heads had worked for a wage, and wage earnings made up 46 percent of rural household income. A larger proportion of the rural labor force was self-employed (58 percent); but incomes from these activities accounted for only 37 percent of rural household income. Wage employment was a much more significant source of income in the Caribbean region than in other rural areas.¹²

These data suggest that policy interventions could usefully stress (i) the creation of an enabling environment for rural non-farm enterprise and (ii) promotion of public works programs to alleviate "crisis"-related downturns in the agricultural demand for labor.

10. In this calculation, "rural non-farm" is the DANE figure for rural population less the CEGA figure for the number of persons engaged in crop farming (see footnote to Table 1 for coverage of these data sources).

11. Refers to changes in the number of mandays (*jornales*) worked in each crop per year. Total employment in crop farming fell from 402 million *jornales* in 1990 to 393 million *jornales* in 1993. Source: CEGA, *Coyuntura Agropecuaria*, No. 4, December 1993.

12. Background paper by A. Reyes & J. Martínez, June 1994 (Tables 6.1 and 6.2).

(a) Rural Non-Farm Enterprise

The rate of growth of the rural non-farm sector is striking. Much hinges on the definition of "rural". The census probably overstates the importance of non-farm work in rural areas by limiting the definition of the rural population to persons living outside municipal townships. Therefore, the finding that the "rural" population declined from 10.3 million in 1985 to 9.5 million in 1993 should be interpreted carefully--some of the outmigrants contributing to this decline may have continued to work in agriculture (this would be the case for itinerant day laborers, many of whom live in slums on the urban periphery).

Even with this caveat, the growth of small towns recorded by the census is *so rapid* that it would seem to corroborate the findings of the household survey concerning the dynamism of the rural non-farm sector. Between 1985 and 1993, towns other than departmental capitals grew at the staggering rate of 5.4 percent per year (compared to six percent growth for Bogotá and under three percent for the departmental capitals). Since 1973, the proportion of rural-urban migration that is targeted at small towns seems to have grown significantly (Table 5 in Statistical Appendix).

That there has been significant growth of the rural non-farm sector is further corroborated by the 1993 CASEN household survey. This defines "rural" as persons living outside the municipal township *plus* the population of 850 municipal townships which either have fewer than 10,000 inhabitants or contain less than 50 percent of the population of the municipality. Therefore, by not excluding urban dwellers who engage in farm work from the rural labor force, the survey does not give an artificially high impression of the importance of rural non-farm employment. This means that commerce and services in small towns do indeed appear to be important sources of job creation.

Rural industry, commerce and services is known to be a dynamic growth pole in the more densely settled parts of Asia. The importance of this phenomenon is often underestimated in Latin America. Taking Latin America as a whole it has been calculated that 28 percent of the labor force in rural settlements (not exceeding 2,000-2,500 inhabitants) are employed primarily in non-farm activities; for rural towns (not exceeding 250,000 inhabitants) the proportion rises to 85 percent. (The corresponding figures for Asia are 26 percent and 81 percent). In Latin America, 79 percent of rural women in employment are engaged in non-farm activities, compared to only 36 percent of men: the preponderance of women in these activities is much more marked than in the case of Asia (where 34 percent of employed rural women engage in non-farm work).¹³

13. P. Hazell & S. Haggblade, "Farm-nonfarm growth linkages and the welfare of the poor", in M. Lipton & J. Van der Gaag (eds), *Including the Poor*, Washington, DC: The World Bank, 1993.

The prima facie evidence for Colombia is compelling enough to suggest that closer investigation of the dynamics of rural non-farm enterprise is warranted. This investigation should be linked to two policy issues of great importance. First, it should consider to what extent microenterprise development might be an appropriate means of combating the unemployment of rural females. Because they typically require less travel away from the home, small businesses potentially offer more practical employment opportunities to women with dependents than itinerant farm work. However, if there were already multiple opportunities in this field, presumably the level of female unemployment would be lower than it currently is.

This points to a second area where more work is needed: it is important to look at the financial constraints faced by rural non-farm enterprise. Agricultural credit schemes have failed to address these needs. One of the reasons why intermediaries are reluctant to lend to agriculture is the high transaction cost associated with servicing a large number of small farmers scattered thinly over the countryside. Another reason concerns the climate and price risk typically associated with farming. In principle, transaction costs and risks would be less for non-farm businesses operating in small towns. The proposed research should consider prospects for lending to such businesses, with particular reference to the needs of females, and the prospects for non-collateralized group lending. Policy interventions should *not* entail selecting particular types of enterprise for promotion--the use to which funds are put would not be targeted--but would focus on creating an enabling environment for small businesses by seeking ways to make rural financial markets operate more efficiently and equitably.

(b) Rural Employment Programs

In addition to measures to strengthen rural financial services, steps could usefully be taken to enhance government's capacity to respond to temporary employment crises in the agricultural sector through short term public works programs.

Public works programs can be a very effective means of generating employment for target groups and providing infrastructure to rural communities. They can also be highly ineffective if they are not well designed. So far, there are few success stories; but the number of positive experiences is beginning to grow now that the lessons of past failures have been assimilated.¹⁴ Before implementing its own program Colombia would be well advised to review the experience of other countries.

14. Examples include the Social Fund in Honduras, the Social Investment Fund in Bolivia, the AGETIP in Senegal and possibly the Social Fund in Egypt which seems to be working well now after several years of slow progress.

Based on the record in Latin America and Africa, the following are some of the prerequisites for success:

- * the implementing agency should be autonomous and its operating procedures should be perfectly transparent;
- * the implementing agency should be staffed with well-paid, competent staff, preferably with experience of work in the private sector;
- * implementation should be decentralized and demand-driven, enabling communities, NGOs and local governments to submit proposals for funding;
- * there should be clear-cut criteria for project selection, focusing on labor intensive strategies, and clearly identifying the target groups and regions to be served;
- * the government should provide strong support, without political interference; and
- * rural works schemes should complement and not substitute the main government programs.

The Emergency Rural Employment Program. The 1991-92 crisis in the farm sector led to a significant reduction in the area cultivated and a corresponding increase in rural unemployment. Estimates of the number of job losses vary from 40,000 to 100,000. The departments most affected were César, Meta, Risaralda, Huila, Tolima, Magdalena, Sucre, Córdoba and Atlántico; specifically, the areas producing cotton, rice, coffee, tobacco and sorghum. Seventy municipalities were targeted by a rural employment program that was to be coordinated by the Ministry of Agriculture, managed by DRI and implemented under the auspices of projects run by various sectoral agencies.¹⁵ The program was initially designed as a pilot, which would be expanded if it bore fruit. The total cost was estimated at 12,000 million pesos, with this money being used to pay salaries and provide complementary inputs in labor-intensive projects, such as roads or irrigation works. It was estimated the program would generate employment for about 15 thousand people, for an average period of five to six months per job. The overall time frame for the pilot program was one year (1994). Although the program was designed in the heat of the crisis, the funds were disbursed extremely slowly: the response was too tardy to be effective.

The program could usefully be modified in a number of ways. At present, it only targets the population geographically. By paying wages at less than the official minimum, it will be possible to achieve self-targeting and cyclical withdrawal from the program. Although there should a standing

15. HIMAT, IDEMA, INDERENA, DRI, and PNR.

capacity to implement employment programs of this nature, their use should be limited to periods of acute rural unemployment and income loss. Given the high levels of female unemployment in rural areas it will be essential to address women's specific needs, by seeking to identify service sector job openings.

The employment program is most likely to be effective if projects are implemented by community groups (*Juntas de Acción Comunal, Empresas Solidarias*, women's groups), with funding provided by municipal government and cofinancing agencies (DRI, PNR, or FOSES). Projects identified by the program should be labor intensive, confined to the hardest hit areas and provide opportunities for women. Typical projects would include feeder roads (new construction and maintenance), secondary roads (operations and maintenance), electrification, water and sanitation, community housing, and cleaning and refurbishment of public buildings.

Land Market Issues

The measures outlined in the previous section are necessary palliatives but they will not be sufficient in themselves to redress the longstanding tendency for Colombian agriculture to absorb relatively less labor than it could do. This problem can only be tackled by removing distortions in the land market. On the one hand, measures to increase the rural poor's effective demand for land are called for: this must include grants for land purchase. On the other hand, it will be necessary to tackle the problems which create a bias in favor of property concentration, tending to reduce the supply of large estates available for subdivision and sale (or lease) to smaller farmers.

The rationale for land reform is as follows. First, outmigration from the countryside has not--contrary to the initial expectations of Colombian policymakers--served to eliminate rural poverty. Second, it is reasonable to suppose that putting land into the hands of the rural poor will help to defuse one of the causes of rural violence, and may thereby help to promote investment in agriculture. Third, the evidence suggests that small farmers in Colombia are capable of significant productivity gains. In other words, putting more land in the hands of small farmers is likely to generate efficiency as well as equity gains, helping to raise the competitiveness of Colombian agriculture.

The literature on farm size and productivity has established that factor productivity on farms operated primarily with family labor is typically larger than that of larger farms operated primarily with hired labor or tenants. Around 1970, the situation in Colombia was consistent with this generalization.¹⁶ Moreover, for any given level of resource use and output, the small family-based sector generates much more employment than the

16. See the data on Colombia in A. Berry & W. Cline, *Agrarian Structure and Productivity in Developing Countries*, Baltimore: Johns Hopkins University Press, 1979.

large scale sector. When there is technical change, the optimal size of family-based operations tends to increase. But once farm sizes have adjusted to the new technologies, the typical negative relationship reappears.¹⁷

Between 1976 and 1988, small farmer yields increased on average by 82 percent, compared to an increase of only two percent for medium and larger farmers. Much of this small farmer yield response is based on adoption of scale-neutral input packages (primarily involving agrochemicals), successfully promoted by the extension component of the integrated rural development program that was launched in 1976. The yield response is striking given that the volume of public resources channeled to the small farm sector was small in relation to the volume garnered by larger farms. The level and speed of the response by small farmers suggests that the farm size-productivity relationship observed for the 1960s and early 1970s continues to hold.

This raises an important question. If small family farms are more efficient than large farms relying on hired labor, why do large farmers not find it more profitable to subdivide their properties, and rent or sell these parcels to smaller farmers? The restriction on *leasing* has already been examined. Large farms in Colombia are not generally parceled out and *sold* to small farmers because the market price of agricultural land typically exceeds the capitalized value of farm profits. This occurs because the value of farm land is only partly based on its agricultural potential: in all areas, land serves as a hedge against inflation; its immobility makes land a preferred form of collateral in credit markets, conferring additional utility, particularly where production risk cannot be insured; in periurban areas, land holds out the prospect of higher returns from real estate development than from farming; finally, credit subsidies and tax writeoffs may be capitalized into land values.¹⁸

If the market price of land exceeds the capitalized value of farm profits, a poor smallholder or landless worker would not be able to finance the purchase of land out of farm profits; even if the owner, or a mortgage bank, were willing to advance him or her a loan covering the full purchase price of the land. This means that purchase would only be feasible if the productivity differential between small and large farms were huge; or if recourse were made to non-farm income; or if the purchaser were willing to exploit unpaid family labor, devoting the imputed labor earnings to the land purchase.

17. Recent studies confirm the earlier findings and provide a theoretical rationale for the observed relationship based on incentives issues and missing markets. This literature is summarized by Hans P. Binswanger, Klaus Deininger & Gershon Feder in "Power, Distortions, Revolt and Reform in Agricultural Land Relations" (*Policy Research Working Papers* No. 1164., World Bank, July 1993; also published in J. Behrman & T.N. Srinivasan (eds) *Handbook of Development Economics*, Vol III, in press).

18. Binswanger, Deininger & Feder, 1993, *op. cit.*, pp. 50-54.

This hypothesis is borne out by a study of 15 municipios located in distinct agricultural and agrarian systems in Colombia.¹⁹ The study demonstrates that the market for land is highly segmented, failing to transfer land from large farmers to small farmers. There is a very active land market among large landowners, more active indeed than in the United States or other countries.²⁰ There is also an active market for the sale of small parcels between smallholders. But there are few transactions between the two groups. The evidence presented in this study does not pretend to be statistically representative of the different regions covered. There are good grounds for making a closer, more precise evaluation of this phenomenon of segmentation.

Land reform is a highly appropriate response to this problem of segmentation. An alternative would be to create incentives for larger estates to hire in more labor--for example, by reducing capital investment and livestock subsidies. But rural violence would still reduce the propensity for large farmers to hire labor; and, even in the absence of violence, the supervision costs associated with using hired labor would make these estates less efficient than small farms using family labor. Therefore, there are good grounds for facilitating the subdivision and sale of estates to small farmers. (Leasing to small farmers can also be encouraged but incentive problems will make these farms less efficient than small owner-operated farms). However, this approach will only work if there are complementary measures designed to reduce the "non-farm" incentives for holding large estates--measures to reduce the wedge between the price of land and the capitalized value of farm profits.

(a) New Land Reform Initiative

Law 160 of 1994 proposes to increase the role of the market in transferring land to the rural poor. Eligible applicants will receive a subsidy of 70 percent toward the purchase of an area of land sufficient to support a farm family; credit would be provided to cover the remaining 30 percent of the purchase price. It is intended that beneficiaries of the subsidy would group together in cooperatives to negotiate purchases of land from owners of large holdings. INCORA would "facilitate" this process of negotiation. Although, in some circumstances, INCORA will continue to buy land directly, its role in transferring land will gradually be scaled back. However, the agency will continue to exist for a further 16 years--the estimated time

19. R. Suárez, G. Hurtado, L.A. Pacheco & E. Segun, *El mercado de tierras y la formación de propietarios en Colombia*, CEGA, Bogotá, 1993. Parts of this study were published in *Coyuntura Agropecuaria* (Bogotá), No. 35, (1992) pp. 63-70 and No. 40 (1993) pp. 93-112.

20. In Colombia, in 1990 and 1991, about 5 percent of farm land was sold (Suárez et. al., 1993, *ibid.*). The percentage of farm land transferred on average each year is 3 percent of the total in the United States, 1.5 percent in Britain and in the white sector of South Africa and 0.5 percent in Ireland and Kenya (P.G. Moll, "Transition to freehold in the South African reserves", *World Development*, Vol 16, 1988, p. 354).

needed to complete the land reform. In addition to land purchase, the new program entails giving title to established squatters located on frontier lands; and land improvement measures for indigenous communities.

Between 1995 and 1998, the intention is to facilitate the purchase of one million hectares by 69,900 families; and to title five million hectares of frontier land, benefiting 178,600 families. The total number of beneficiaries is estimated at 1.2 million, or 13 percent of the rural population. Land purchase costs are estimated at US\$8,933 per family: US\$625 per hectare, assuming a target farm size of 14.3 hectares. Titling costs are assumed to be US\$90 per family: US\$3 per hectare, assuming a target farm size of 28 hectares. The land purchase component will absorb 69 percent of the total budget assigned to the program.

The purchasing program would focus on the departments of César, Cauca, Huila, Magdalena and Norte de Santander, where there is a history of land conflict. Special emphasis would be given to areas of land invasion, targeting persons who had occupied the land at least one year before passage of Law 160. The titling component would give priority to the departments of Arauca, Casanare, Meta, Caquetá and Chocó, areas where there is significant land not yet open to farming.

(b) Evaluation of the New Initiative

The proposed grant of 70 percent toward the cost of land purchase seems about the right proportion. However, the government is proposing that the grants be tied to the purchase of areas deemed large enough to support a farm family--entailing holdings that will in many cases be 30 hectares or more. It is important to apply the 70 percent grant to the cost of the "farm project" rather than simply to the purchase of a particular tract of land: this would give the beneficiary the option of buying (cheap) land that is less well served by infrastructure--secure in the knowledge that part of the subsidy could be applied to financing subsequent on-farm works. In principle, Law 160 allows for this eventuality, but it needs to be more clearly spelled out in the regulations derived from the law. Failure to make this clarification would run counter to the principle of using land reform as a means of more fully employing underdeveloped land of arable potential.

Also, although the law is built around the concept of the "family farm"--defined as an area of land large enough to generate income equivalent to three minimum wages--there is no reason why the poor should be denied the option of buying a "sub-family farm" and supplementing farm revenue with income from off-farm sources. The analysis has suggested that off-farm income sources are important in rural Colombia; land reform should not be allowed--unintentionally--to choke off development of off-farm enterprise.

It is sensible that the recipients of land grants be asked to make some contribution to the cost of land purchase--30 percent in this case. This will help to reduce frivolous requests for land from people who are not really interested in operating a farm, and it will increase incentives for using land productively and sustainably.

The proposal makes no reference to infrastructure. Much of the land in large holdings that will come up for sale--and all of the frontier land earmarked for titling--will be located in sparsely-populated areas, remote from markets. It is therefore essential that the program provide for infrastructure: particularly roads, schools and clinics (and, in some cases, drainage); this component will typically account for one third of the project cost (absorbing almost as much as the grants for land purchase). It may have been implicitly assumed that existing rural development programs (DRI or PNR) would take responsibility for providing infrastructure. In any event, the arrangements for meeting infrastructure requirements need to be made explicit.

The issue of INCORA's role needs to be reexamined. One question is how best to promote the flow of information needed to facilitate land transfer: would-be buyers may not know where there is land on the market at any given moment. This job should be left in the hands of private agencies, for whose services buyers would pay a fee once the sale was closed: INCORA does not need to be involved. Nor is it clear that INCORA needs to be responsible for setting up cooperatives of would-be buyers--which, it is assumed, will remain in place after land transfer, and would assume marketing and input supply functions. Cooperatives created in this top-down fashion are rarely useful or sustainable.

The land reform program should retain the option of compulsory purchase by INCORA. Otherwise, coalitions of powerful farmers may block the program. However, compulsory purchase should only be used as a last resort: claimants should not be encouraged to think that government will directly purchase any particular tract that owners refuse to sell--compulsory purchase would only be authorized when there was no other land available in the locality.

One serious flaw in the new laws is their failure to recognize that the market price of land is itself a policy variable, one that is affected by macroeconomic conditions, non-farm investment options, tax policies and agricultural policies. For example, better collection of agricultural income taxes and capital gains taxes on farm land would reduce the attractiveness of land as a tax shelter, therefore tending to lower its price. It might be possible to give tax agencies the power to request information on the source of funds used for land purchases. There is also a case to be made for discouraging speculative land purchases. This could be done by creating lending instruments which allow for the principal of loans to be adjusted in line with the capitalization of inflationary appreciations into land value.

An important factor tending to push up the price of land is the laundering of money from drug trafficking. It is estimated that, in the late 1980s, the traffickers were investing between 8 to 23 percent of their cocaine revenues in the purchase of land and had accumulated nearly one million hectares (equivalent to 3 percent of the farmed area). Most of this land was located in the departments of Córdoba, northern Antioquia, Caquetá, Meta, Sucre, Atlántico and Casanare; and was primarily used for cattle rearing.²¹ One way to tackle this problem would be to place the onus on would-be buyers of large tracts to demonstrate that the cash used to buy land was obtained by licit means; failure to provide satisfactory proof would result in an embargo on sale of the land.

A further problem is that the recent agricultural credit initiatives are not conducive either to holding down the price of land, or to bringing more land onto the market. The agricultural investment incentives will mainly be captured by large farmers, giving them an unfair competitive edge in relation to small farmers. Past instances of the blanket rescheduling of credit have helped keep alive inefficient large farms which could fruitfully be parceled out and sold off to small farmer groups. A better approach would be to provide financial assistance for restructuring the assets and liabilities of potentially viable large farms; coupled with financial incentives to the owners of unviable farms to leave the agricultural sector--their land being made available for purchase by small farmers.

Finally, to remove one source of large farmer bias, it could be required that the users of untitled frontier land (*baldíos*) be required to purchase it; except in cases where the area exploited generates an income less than that required to support a farm family.

(c) Next Steps

The task at hand is to regulate and fund Law 160. This challenge should be set in the broader context of creating channels through which groups that have traditionally been political outcasts may begin to have an input into the decision-making process: this involves empowering small farmers and the rural poor--particularly poor women and indigenous groups. Only in this way will it be possible to devise adequate initiatives (e.g. rural works programs) to deal with crises such as that experienced in 1992.

The process of deriving regulations for the new laws should be based on the widest possible consultation with interested parties: this should include consultation at the departmental and municipal level. Standard solutions are unlikely to work; only those with local knowledge will be equipped to adapt the new legislative opportunities to local conditions. The

21. Bejerano, 1988, op.cit.

initiation and management of this consultative process may require advice and mediation by knowledgeable outsiders who are perceived as having nothing to gain from any policy or program option. It will also require commitment and involvement at the cabinet and presidential level.

REAPPRAISING PRIORITIES FOR ECONOMIC INFRASTRUCTURE IN RURAL AREAS

Investments in economic infrastructure have a central role to play in facilitating agricultural growth and reducing poverty. Establishing investment priorities must be based on social cost-benefit analysis. To the extent feasible, this should include proper valuation of the stock of natural assets, and weighing of investment scenarios according to distributional impact. The approach to evaluating public investment proposals should be "sector neutral": government should finance those proposals that generate the highest net present value, irrespective of the sector in which the investment is located.

This annex focuses on two elements of economic infrastructure, both with a direct bearing on agricultural competitiveness: **transport infrastructure** and **irrigation and drainage**. The central contention is that the public sector needs to conduct a thorough reappraisal of its investment strategies in these areas.

The following are some general conclusions applicable to public provision of economic infrastructure:

- (a) In evaluating different investment proposals, the government needs to give much more weight than it has in the past to comparing the economic rate of return to different proposals.
- (b) Public investment should be limited to those areas where private investment is unlikely to be attracted. This will be the case where significant externalities exist, and where goods and services are "non-excludable" (open to all persons, fee-paying or otherwise) and "non-rival" (consumption by one user does not reduce the supply available to other users). Thus, roads where traffic density is too low for tolls to be viable are natural candidates for public investment. Because of the significant positive externalities involved (and the difficulty of recovering costs), **drainage schemes** also lend themselves more to public than private investment. On the other hand, in the case of **irrigation works** that are limited to simple diversion schemes (no major headworks) private financing is usually indicated.
- (c) The government must create an enabling environment for private investment: in particular, this requires attention to the legal and regulatory framework.

- (d) Decentralization of planning and implementation for public infrastructure projects is sound because it increases client ownership; but it will only work if the respective obligations of departmental and municipal governments are clearly spelled out, and if the central government takes measures to strengthen local institutional capacity.

TRANSPORT INFRASTRUCTURE

Overview

The total cost of transporting produce to export markets may be divided into two parts: the cost from production zone to the "port gate"; and the cost from the port to overseas destination. Costs on the second of these two legs are already relatively competitive; and, with not too much difficulty, may be made more so. Internal transport costs are a larger and more intractable obstacle. This conclusion is supported by Table B.1, which compares transport costs for selected agricultural products for Colombia, Chile and Peru.

The following factors enhance Colombia's competitiveness on the "external" leg: the nautical distance between Colombia's ports and U.S. and European export markets is shorter than for Peru or Chile; flag restrictions have been eliminated, subjecting freight costs to greater competitive pressure; private sector charges for the reception and handling of export containers are relatively low in Colombia; and, following the privatization of ports in 1990, general handling charges are now substantially lower than they were.

A more detailed treatment is warranted when it comes to factors tending to push up transport costs on the internal leg. The discussion of each constraint is followed by suggestions about how it may be alleviated.

(a) Distance

There is a considerable distance between Colombia's major markets and production centers and the sea ports. The production zones in Chile and Peru are much closer to the coast: mangoes in Peru travel a distance of only 20 kms to the port, compared to 1,115 kms in Colombia; asparagus in Chile travels 60 kms by land. Similarly, imported grains for the largest urban market (Bogotá) must travel almost 1,000 kms by land, compared to 110 kms in Chile and only 10 kms in Peru. This reduces the competitiveness of Colombia's exports and protects import substitutes grown in the Andean heartland, close to the biggest markets.

Table B.1 - Transport Costs (US\$/ton).

	Colombia	Chile	Peru
IMPORTS			
Rice			
Sea	57		43
Land	50		5
Total	107 ^{a/}		48 ^{b/}
Maize			
Sea	24	20	
Land	45	7	
Total	69 ^{a/}	27 ^{d/}	
EXPORTS			
Asparagus			
Sea	227		258
Land	122		52
Total	349 ^{a/}		310 ^{a/}
Fresh Fruit			
Sea	281	311	
Land	147	32	
Total	428 ^{a/}	343 ^{b/}	
Onions			
Sea		152	
Land		15	
Total		167 ^{a/}	

Route/Sea Distance (nautical miles)/Land Distance (km)/Travel Time

a/ India--Santa Marta/ 12,563 nm/ 950 km/ 48 days.

b/ Vietnam--Callao/ 11,156 nm/ 10 km/ 48 days.

c/ U.S. Gulf--Santa Marta/ 1,400 nm/ 950 km/ 9 days.

d/ U.S. Gulf--Valparaíso/ 4,092 nm/ 110 km/ 17 days.

e/ Cartagena--New York City/ 1,853 nm/ 1,244 km/ 29 days.

f/ Callao--Hamburg/ 6,455 nm/ 300 km/ 27 days.

g/ Santa Marta--England/ 4,138 nm/ 1,115 km/ 20 days (mangoes).

h/ Valparaíso--New York/ 4,632 nm/ 206 km/ 20 days (peaches).

i/ Valparaíso--Rotterdam/ 7,448 nm/ 60 kms/ 26 days.

SOURCE: Background paper by Alan Harding, June 1994.

Boosting the production of export crops in the vicinity of the Caribbean ports is one way of addressing this problem. The Caribbean region holds 34 percent of the national stock of land designated as arable; but contains only 16 percent of the nation's feeder roads (Table B.2). Only 32 percent of land in the region that is of arable potential is actually cultivated. Admittedly, there are significant drainage problems in the Lower Magdalena area, alleviation of which would need to be handled carefully to avoid an adverse environmental impact. Nevertheless, here, more than in any other region, there is a case to be made for cost-benefit studies to examine the economic return to building more roads.

Table B.2 - Colombia: Regional Variation in Feeder Road Coverage

	Share of Arable Land	Share of Rural Population	Share of Feeder Roads
Caribbean	34.2%	21.3%	15.7%
Pacific	10.6%	18.7%	14.1%
Center	15.0%	30.0%	32.9%
East	21.4%	26.8%	33.4%
Far East	18.8%	3.2%	3.9%

Source: Background paper by Alfonso Corredor, May 1994.

Note: For composition of regions, see Table 6. In addition, "Far East" comprises Amazonas, Arauca, Casanare, Guainia, Guaviare, Putumayo, Vaupés and Vichada. Arable Land: IGAC classes I-IV; Rural Population: 1985 Population Census; Feeder Roads: Ministry of Transport, 1988.

(b) High internal transport costs

Compared to other countries in the region, Colombia has a relatively high proportion of mountainous terrain (17 percent of the land area lies at over 1,000m); moreover, roughly half of Colombia's population lives in this high altitude zone. This clearly adds significantly to transport costs. However, transport costs in non-mountainous regions are also not very competitive.

A rough comparison was made of overland transport costs per ton/kilometer in Colombia and in Chile. In the case of paved roads, it appears that Colombian costs (3.8-5.2 US cents) are one-quarter to three-quarters higher over flat land; over undulating land, the gap is smaller--Colombian costs (4.7-5.9 US cents) are higher by a margin of one fifth to one half.

Why are Colombian costs greater irrespective of terrain? There is a high degree of competition between truck operators and no significant barriers to

entry, factors which would tend to lower costs. However, insurance costs are high, partly because cargoes are sometimes hijacked and highway safety standards are low. There may be some scope for deregulating the insurance of truck freight. The Código de Comercio obliges truckers to take out full insurance against accidental damage to cargo (a cost which is passed on to the client). However, truckers often evade claims against them by attributing losses to *force majeure*, thus obliging clients to take out supplementary insurance. Ultimately, it is the client who should be allowed to decide what level of insurance he wishes to support.

Costs are also high because a large number of vehicles are not full on the return journey: this is more the case on the Bogotá-Caribbean route than on the Bogotá-Pacific route (tariffs are substantially higher on the first route). Tackling this problem will require wider circulation of information about (unused) freighthandling capacity on specific routes, and closer coordination between container users.

(c) *Poor farmer organization*

The small mean size of farms and the low level of producer organization appear to be significant constraints: at the farm level, costs of shipping maize are over three times higher than for rice, largely because, in the case of maize, average farm size is smaller and producers are not well organized (Table B.3).

Among agricultural producer organizations there is a striking lack of awareness of the proportion that transport costs contribute to the total cost of production and delivery. At the farm-to-local market level there is very little exploitation of the cost savings to be made by bulking up; or knowledge about the cost impact of different vehicle and container dimensions. In the absence of pressure from producers there is little incentive for vehicle operators to upgrade their equipment or to think about ways of making their operation more efficient.

This lack of awareness about transport cost constraints will possibly change as trade liberalization proceeds. Further economic integration of the Andean Pact countries will lead to an increase in the volume of foreign trade that is conducted wholly overland (particularly to and from Venezuela); therefore, farmers will be made increasingly aware of the impact of terrestrial transport costs on the competitiveness of their products.

With respect to overland transport, there is great scope for Colombia to lower its costs if the countries in the region can standardize vehicle and container dimensions, and packaging and handling procedures--thus avoiding the need to unload and reload at border crossings (border delays occasioned by these sorts of constraints are a major factor in elevating the cost of exporting potatoes to Venezuela via Cúcuta).

Table B.3 - Colombia: Overland Transport Costs (Col\$/ton/km)

	Farm to Local Market	Local Market to Wholesale	Total
Maize (a)	250	40	290
(b)	188	70	258
Rice (c)	89	67	156
(d)	50	40	90

Note: Both products are shipped in 50-60 kg sacks.

Marketing channel: (a) César--Valledupar--Bogotá
 (b) Tolima--Girardot--Bogotá
 (c) Tolima--Espinal--Bogotá
 (d) César--Valledupar--Barranquilla

Source: Background paper by Alfonso Corredor, April 1994.

Producer associations could usefully be encouraged--perhaps with the sponsorship of SAC and the government--to carry out logistical studies on transport and distribution costs, with a view to making recommendations about how the transport component of total costs might be cut. These findings should be disseminated in local workshops directed at both farmers and truckers. The recent (UNCTAD-sponsored) work on streamlining the shipment of potatoes for export to Venezuela is a model that could be replicated for other products. Armed with this cost information farmers will have more incentive to form marketing cooperatives; and to enter into longer-term, group contracts with local trucking firms.

(d) Poor container facilities

Incredibly, as yet, there are no specialized installations for the handling of containers at Colombian ports, slowing down the movement of goods from ship to shore. Container movement is very slow: containers spend 30-40 days between entering and leaving the country. Buenaventura handles the largest share of Colombia's container traffic; and yet the plans for upgrading its handling capacity are the least advanced. Hamburg--the main European port for Colombian coffee--is increasingly switching to bulk coffee handling. It is therefore imperative that facilities at Buenaventura--the port of export--are upgraded. (At Cartagena, progress has been faster: two specialized container cranes are being installed at Cartagena (El Bosque terminal) and there are plans to equip the public terminal).

Even the most basic infrastructure is often lacking: for example, at Santa Marta, there are not enough electrical sockets for refrigerated containers to be plugged into. The low tariffs charged on port sheds have

helped discourage the switch to containers; the recent changes to these tariffs--coupled with gradual demolition of the storage sheds--will force the pace of containerization. Owing to the entry of new shipping services, container tariffs from the Pacific seaboard of South America toward northern hemisphere ports are now at all-time low: this is an important opportunity for Colombian agricultural exporters to exploit.

(e) Limited intermodal links and inland handling

Facilities for exchanging goods between different forms of transport are highly inadequate: this severely penalizes the competitiveness of perishable goods. Significant scope for intermodal connections exists at Santa Marta and Buenaventura (rail); and at Barranquilla and Cartagena (river). Several feasibility studies have been conducted; but as yet there has been no follow up.

The switch to intermodal operations will be greatly facilitated by the construction of "dry ports": these are inland container facilities, which cut out the need for loading or unloading at coastal ports--goods travel to and from the coast under customs seal. Active consideration is being given to building dry ports at Medellin, Buga and Armenia (for coffee); and Bogotá (to serve the proposed duty-free zone). Cali and Santa Marta already have such facilities.

The new Customs Law allows for inland clearance of goods but implementation is very uneven. There are concerns that without repeated inspection of containers, the scope for passage of contraband will be increased. But it is the integrity of the officials rather than the number of inspections which is the core issue. There are good grounds for moving to a system where all forms and stages of cargo transport are covered by a single shipping document. Also, to address the serious problem of containers that are hijacked en route it will be important to improve electronic communications so that containers can be tracked at every point on the trajectory from inland assembly point to coastal port.

Government could offer infant industry grants to providers of container handling facilities. The *Comité de Transporte Multimodal* should coordinate its activities with the Ministry of Agriculture; and with the customs reform program. A review should be conducted of obstacles to inland customs clearance of imports and exports.

General Recommendations

On transport issues, there is need for much better interministerial coordination; and closer consultation between Government and private sector representatives. While the new *Corporación de Exportaciones* is an encouraging development, considerable consultative barriers remain. For

example, it is striking that the draft Port Expansion Plan makes only passing reference to the specific requirements of the agricultural sector. This is a major oversight, given that agriculture contributes almost 40 percent of merchandise export earnings.

The Ministries of Foreign Trade, Agriculture and Transport, and the private sector, could usefully cooperate in evaluating the various obstacles to the competitiveness of agricultural exports deriving from infrastructural and organizational deficiencies of the whole transport sector. A key issue is the coordination of container users to maximize the use of space: ensuring that there is a full cargo for the return journey. The interministerial review should therefore consider ways of improving the flow of information between container users so that, by coordinating shipments, exporters and importers can jointly reduce the cost of transport. The interministerial committee could usefully begin by sponsoring benchmark studies of transport cost in each department (and in other Andean Pact countries), using these as a basis for monitoring progress in improvement of the road network.

Specific Issues: (a) Ports

Background

Colombia has six major seaports (excluding specialized oil and coal ports): Santa Marta, Barranquilla, Cartagena and Uruba on the Caribbean coast, and Buenaventura and Tumaco on the Pacific coast. Specialized installations for the handling of agricultural products exist at Santa Marta (grain silo and banana handling), Cartagena (grain silos for brewery) and Buenaventura (grain silos and sugar handling).

Since the Ports Law of 1990, major progress has been made toward increasing the efficiency of port operations: the public ports have been privatized and the four largest ones have been placed in the charge of four *sociedades portuarias*, each with a twenty-year lease.

Following privatization, shipboard handling charges have fallen from US\$21 to US\$8 per ton. The fall has been greater for imports than for exports. Before 1990, handling charges were kept higher for imports (levied in dollars) than for exports (levied in pesos): the "tax" on imports was used to subsidize the overall inefficiency of port operations. This distortion has now been removed.

Now the only significant public expenditure on ports is the dredging works at Buenaventura and Barranquilla and the construction of a river dike at Barranquilla. Private port investment has been substantial, notably in the Bay of Cartagena. A number of other private interests own individual wharfs and at present the overall picture is one of extreme fragmentation; this should lessen over time as the least efficient operators are absorbed.

Airports present fewer cargo bottlenecks than seaports. Expanded warehouse capacity has been built at Bogotá, the largest cargo airport. Here, most air freight is loaded between midnight and early morning when temperatures are low (cutting out the need for refrigeration) and when there is no significant passenger traffic.

Constraints

Sea access channels are not properly maintained. Bulk grain carriers are currently obliged to unload part of their cargo in Venezuela in order to overcome the shallow channel depth at Barranquilla. Maintenance of access channels is nominally in the hands of the state, while in-harbor dredging is the responsibility of the (privatized) port authorities. Neither of these functions are being adequately carried out.

The land access routes to ports are severely congested. At present, maintenance of port access roads is the responsibility of the local municipality.

A pressing concern is the inadequacy of long term planning arrangements for ports. Ideally, the port area and its environs should be treated as a single unit for the purpose of physical planning and zoning. At present this does not happen. Thus, the Bay of Cartagena is managed both by the local government and the national Ports Superintendency and there is very little coordination between them. At Barranquilla, the most attractive remaining site for port expansion (Las Flores) is now being used for housing development.

Recommendations

Compared to other countries with a similar volume of foreign trade, investment in port infrastructure is well below par. Unless there is a major reversal of trade liberalization, grain imports are likely to remain at or near their present level. There is also significant potential for growth of export volumes. Therefore, a good case can be made for improving the handling capacity of Colombia's seaports.

Cost effective handling of imports will require a deep water port with appropriate support infrastructure alongside. Channel deepening and the widening of access roads will require public investment. Given that ports generate a number of positive externalities that are not fully captured by the local community, it is legitimate that central government contribute to the cost of improving sea and land access routes. Construction of all other installations, including handling facilities, may be financed by the private sector, possibly with some public assistance.

The central government has a role to play in ensuring that there is adequate physical planning: the expansion of ports must be properly coordinated with the development of the municipalities in which they are located.

There is also a sound argument for the government to sponsor a study of the impact of developments in transshipment. Transshipment makes it possible to expand the range of export destinations; but poses a challenge for perishables given the need to reduce delay and to ensure the continuity of cold storage. The major increase in transshipment capacity underway at Colón (Panama) holds important implications for Colombian trade. Increasingly, many of the larger ships will not stop at Colombian ports but will expect to dock at the deep-draft port of Colón, and to be fed by smaller vessels from Colombia. This represents both a potential constraint (longer shipping times) and an opportunity (wider markets).

Specific Issues: (b) Feeder Road Maintenance

Background

Colombia has fewer kilometers of paved road per inhabitant than any other country in Latin America, except Bolivia (Table B.4). Nevertheless, although there is clearly much scope for building new roads, the bigger challenge for government is to conserve the existing network. The case for good maintenance is highly persuasive. International experience shows that a highway can be maintained indefinitely at an annual charge of some 2 percent of the construction cost. Failure to maintain means that ultimately the road will have to be rebuilt. Rebuilding will cost about five times as much as the capitalized annual maintenance cost.

This section will focus on the challenges posed by decentralization of the responsibility for maintaining rural feeder roads since, of all roads, feeder roads have the biggest impact on agricultural competitiveness. Decentralization has been underway since legislation to this effect was passed in 1986-87. Progress has been slow. The long transition has demonstrated how difficult it is to mobilize departments and local governments to take responsibility for road maintenance.

Until recently, responsibility for construction and maintenance of feeder roads was divided between FNCV, a central government agency with jurisdiction over almost 7,000 kms--primarily in marginal areas with significant problems of social unrest; and the municipal governments, which were responsible for roughly 30,000 kms. In line with the decentralization initiative, FNCV will be wound up by the end of 1995 and its share of the feeder road network will be transferred to the departmental governments; the rest of the network will remain under municipal control.

Table B.4 - Paved Roads Per Million Persons

Country	GNP per capita	Roads (kms, 1990)	Population (m, 1992)	Roads/ Population (Kms/m)
Bolivia	680	1,769	7.5	236
Colombia	1,330	10,329	33.4	309
Peru	950	7,500	22.4	335
Honduras	580	2,400	5.4	444
Ecuador	1,070	6,322	11.0	575
Chile	2,730	10,983	13.6	807
Mexico	3,470	82,022	85.0	965
Brazil	2,770	161,503	153.9	1,049
Argentina	6,050	57,280	33.1	1,730

Source: World Bank, World Development Report, 1994.

The adjustment challenge posed by decentralization is greater for departmental than municipal governments. As well as assuming responsibility for FNCV feeder roads, the departments will take on secondary (largely intermunicipal) roads. Taking all classes of road together, in addition to the 44,000 kms of road already in their charge, the departments will assume control over a further 30,000 kms.

During a transition phase, the Ministry of Transport will oversee training of departmental personnel. A cofinancing fund (FCV) will play a key role in helping to determine investment priorities for the departments. Also, the Inter-American Development Bank is preparing a secondary roads loan which will help address the needs of the departments.

Constraints

In Colombia, as elsewhere in the region, decentralization has so far failed to result in higher levels of public investment or improved maintenance. Under the new decentralized system there are no clear guidelines for maintenance. Block grants to departments will be substituted for matching grants to municipalities: based on these grants, departments will be required to make ad-hoc arrangements for cofinancing with their municipalities.

Because it attracts more kudos mayors will always tend to favor road construction over maintenance. For the same reasons, local governments have shown themselves to be more interested in cofinancing rehabilitation (upgrading roads in poor condition), rather than maintenance.

At both departmental and municipal level the capacity for designing and implementing construction and maintenance programs is very limited. Particular concern has been expressed about financing, planning and implementation capacity at the departmental level.

Feeder roads under departmental jurisdiction are likely to be viewed as a lower priority than inter-departmental roads.

In principle, cofinancing funds can be used to reward municipalities with a good record of maintenance; but, at present, there is little scope for this sort of leverage because the volume of these funds is very small by comparison with the central government transfers that municipalities rely on to finance their programs; there is no earmarking of a certain proportion of the transfers for road maintenance.

Recommendations

At all levels of the road network, it will be necessary to establish a clear legal framework for road ownership, well-established funding mechanisms and accountability systems at both departmental and municipal level, and adequate technical support.

In the specific case of feeder roads, responsibility should be transferred entirely to the municipalities: it makes little sense that feeder roads formerly under FNCV jurisdiction be transferred to departments.

Municipios should also make some contribution to the cost of maintaining secondary (i.e. intermunicipal) roads from which they derive significant positive externalities.

Cofinancing resources must be substantially increased; and part of the transfers to municipalities from central government must be specifically set aside for road maintenance.

The allocation of resources from the cofinancing fund should be used to favor poorer departments; and to reward departments with a good record of road maintenance.

With the winding up of FNCV some of its former staff are using their skills to set up road building and maintenance enterprises which will contract out their services to municipal governments. So far, 18 of these microenterprises have been established. This is a highly positive step which government should consolidate by providing seed capital and training.

IRRIGATION AND DRAINAGE

Background

The country has abundant water resources; but significant supply bottlenecks. On the one hand, almost 80 percent of Colombia is classified as humid or super-humid; barely 1 percent is considered arid. But, on the other hand, except on the extremely humid Pacific Coast and in the Amazonian basin, the rainfall shows marked seasonality with at least three relatively dry months. Some measure of irrigation and drainage is therefore called for.

The total irrigated area is 750,000 hectares. It is estimated that between 6.5 and 7.5 million hectares are suitable for irrigation.

Private schemes. Just over 60 percent of the irrigated land was financed under private schemes, most of which entail modest diversion works and unlined canals. Of the land in private schemes, 44 percent is concentrated in a single department, Valle del Cauca. Most of the land in private schemes is used to produce two export crops, sugarcane and bananas. These schemes have typically been running for many years: most of the land under private irrigation was incorporated before 1960.

Rural insecurity may deter private investment in irrigation in certain parts of Colombia. A study, jointly sponsored by the World Bank and DNP, used an econometric model to examine determinants of private investment in irrigation. It concludes that between 1975 and 1992, violence was a statistically significant deterrent to investment: an increase in violence by one event per 100,000 inhabitants was found to reduce private investment by US\$0.15 per km² of arable land; this was stronger than the impact of an agricultural profitability variable (not significant); but weaker than the impact of a climate variable (which reduced investment by US\$0.52 per km²). Interestingly, the negative effect of violence on private investment was found to diminish as violence increases.²²

Public schemes. The public works consist of 22 districts, three of which are exclusively drainage schemes. Since 1976 these districts have been under the auspices of HIMAT, the state-owned irrigation agency. In the districts, there is considerable underutilization of land and the cropping pattern shows a preponderance of low-value cereals and fodder crops. Two thirds of the area in districts was incorporated after 1960. Almost half of the land in the irrigation districts is located in the Caribbean region (Table B.5).

22. Background paper by Ariel Dinar, July 1994: published in ... (DNP). The data used in this analysis are department-wide and do not reflect variations within each of the departments (e.g. between rural and urban areas). Therefore, the results should be interpreted carefully.

Table B.5 - Colombia: Irrigated Area by Region ('000 ha)

	Potential	Actual		
		Public	Private	Total
Caribbean	2,303	134	74	208
Pacific	628	11	234	248
Central	677	60	57	117
East	1,869	53	88	141
Far East	1,032	29	7	36
Total	6,509	287	463	750

Source: HIMAT 1992.

Public irrigation has been linked to land reform. When the districts were formed the government typically expropriated marginal lands from large landowners for allocation to the poor, leaving the original owners with blocks of up to 100 hectares--which would be equipped with primary irrigation and drainage infrastructure at little or no expense to these large farmers. Within the districts, landholding is relatively concentrated: 3 percent of farms containing almost 40 percent of the land.

Problems with Public Schemes

What priority should be assigned to irrigation and drainage in allocating public investment? The key question is whether returns to investment in this area exceed returns from investing elsewhere. The track record is not encouraging: returns on public schemes have frequently been inferior to the social discount rate.

Returns to public irrigation have been low for the following reasons:

- (a) Many projects have been poorly designed, with no reference to the expressed needs of the beneficiaries (partly for which reason there has been resistance by users to bearing operations and maintenance costs).
- (b) The design of districts is technically rigid, not allowing for variations in water delivery and therefore restricting the scope for changes in the cropping pattern.
- (c) Owing partly to its engineering bias, HIMAT paid insufficient attention to on-farm development (e.g. land leveling).

- (d) Rather than being used as a decision tool, economic and social analysis of projects has tended to be used to retrospectively justify relatively inflexible engineering designs.
- (e) Selection of public investments was often guided more by political than agricultural or engineering criteria: many of the districts are sited in areas that are not appropriate for intensification of agriculture.
- (f) Small scale initiatives, involving modest infrastructure investments that are line with expected returns have been neglected by HIMAT.

Costs for public irrigation have tended to be roughly double those of private irrigation; this only partly reflects the cost of major headworks and pumping stations needed to serve the much larger areas typical of public schemes. In fact, districts tended to be too small in relation to the primary infrastructure, resulting in diseconomies of scale for operation and maintenance. Project experience suggests that for public investment, districts smaller than 10,000 hectares may not be justified. Fourteen of the 22 districts cover an area of less than 10,000 hectares.

The land use pattern that prevails in the public districts--rice, other cereals and pasture--does not produce high enough returns to support the cost of irrigation schemes originally designed for intensive use with year round water supply; the shortfall in cost recovery is particularly marked in the case of schemes which entail extensive pumping of water.

Rainfall in most districts exceeds 1,000 mm per year, allowing significant output under rainfed conditions: not only does this limit the incremental benefits from irrigation; it also means that farmers are not fully dependent on the irrigation system and so have less of a vested interest in seeing that it is properly operated and maintained.

Administration of seven of the 22 districts has now been transferred to users. This still leaves HIMAT with the right to review major tariff, staffing and other decisions. Transfer of the remaining 15 districts has been retarded by the low returns to farmers--attributable partly to poor design of works and poor market access--which make users reluctant to shoulder the full burden of operations and maintenance costs.

Since the early 1970s, the bulk of public resources invested in irrigation have been devoted to the task of rehabilitating already existing districts; yet little progress has been made in this respect.

Drainage schemes have been neglected, largely because HIMAT's engineering bias has led it to focus on more technically challenging irrigation schemes. Drainage costs are more likely to be in line with anticipated returns, averaging US\$500 per hectare, compared to US\$3,000 or more for irrigation. Drainage investments tend to be cost effective, involving a per hectare outlay of about 25 percent of the cost entailed by irrigation. However, cost recovery may be more problematic for drainage than for irrigation schemes because farmers are less inclined to see drainage as an input and, unlike irrigation water, its supply cannot be readily switched off in the event of non-payment. Also, a careful environmental assessment must be undertaken before any drainage of wetlands is attempted.

Returns to Public Irrigation

HIMAT selected 13 of the 56 projects in its portfolio for review by the Mission: the aim was to look at upcoming initiatives, rather than to document past failures. Ostensibly these projects were most nearly consistent with the new irrigation guidelines contained in Law 41 of 1993. The results are not encouraging:

- * nine out of the 13 have investment costs exceeding US\$4,000 per hectare;
- * four have less than 200 beneficiaries;
- * over 70 percent of cropped areas are expected to be used for low-value annual crops (rice, maize, sorghum, cotton) or pasture; and
- * as formulated, seven of the projects have returns of only 12 percent or less.

There is a continuing mismatch between the costs of public investment in irrigation and the modest value of incremental output that is projected. Table B.6 illustrates the difficulty of amortizing public investments in irrigation if farmland in the project is used for grain production or pasture. The final column of the table indicates the maximum investment cost that can be supported if the project is to generate a return equal to the social opportunity cost of capital. In the case of sorghum, maize, rice and milk production, the investment limit is significantly lower than the cost typically incurred by a public project (US\$3,000-US\$4000 per hectare). To support this level of investment it will be necessary to grow higher margin crops such as mango and melon.

Table B.6 - Net Economic Returns per Hectare to Irrigation and Drainage Works

Crop	Irrigation system	Yield (t/ha)	Value of output (US\$/ha)	Variable costs ^{a/} (US\$/ha)	Net returns (US\$/ha)	Investment limit ^{b/} (US\$/ha)
Sorghum	Rainfed	1.8	264	217	46	
	Pumped	4.5	659	437	222	2,976
Maize	Rainfed	2.0	299	225	74	
	Gravity	4.6	688	499	189	2,273
Rice	Rainfed	4.5	602	694	-91	
	Gravity	5.9	790	757	33	490
Milk ^{c/}	Rainfed	4.0	1,080	1,113	510	
	Gravity	7.5	1,810	1,219	667	1,105
Melon	Rainfed	9.0	1,297	808	489	
	Gravity	16.0	2,305	1,119	1,186	6,621
Mango	Rainfed	7.0	1,177	594	582	
	Sprinkler	22.0	3,698	1,689	2,009	6,136

Note: Most of the crop data refer to the Guamo-Tolima area which, with an annual rainfall of over 1,300 mm is at the high end of the range for typical HIMAT projects (800-1,600 mm). Milk data from Alto Chicamocha/Samacá (mean annual rainfall 800 mm).

a/ Crop production costs plus irrigation system operations and maintenance costs.

b/ Present value (over 20 years at a discount rate of 12 percent) of the incremental benefit from the change to irrigation, equivalent to the maximum justifiable investment for a change from rainfed to irrigated agriculture. For sorghum, maize and rice assumes two irrigated crops per year; for melon assumes double-cropping in rotation with maize.

c/ Excludes value of stock sales.

Source: FAO/CP Background Paper.

This suggests that HIMAT will need to totally revamp its project portfolio. In selecting new projects, it is probably advisable to emulate the strategy of private irrigators: using simpler and cheaper irrigation systems for pasture and low-value crops; confining investment in more sophisticated systems to situations where markets allow diversification into higher value crops; and staggering the development of infrastructure to match increases in the absorptive capacities of markets.

New Directions

The government has now pledged to increase the efficiency of its interventions in this subsector. Law 41 (1993) marks a step in the right direction, incorporating sound criteria for future investments in irrigation with emphasis on (i) social profitability, (ii) community participation in design, (iii) proportion of beneficiaries who are small farmers, and (iv) access to markets.

Law 41 aims to make investments more demand driven: allocation of these resources will be contingent upon a careful assessment of the beneficiaries willingness to pay for operations and maintenance, plus some proportion of initial capital costs. Potential beneficiaries are required to form a user association to take over public schemes once they are completed; also, they must agree to participate in planning and to guarantee commitment of their own complementary resources for minor and on-farm works.

The government's intention is to significantly expand the irrigation and drainage area and to hand over administration of the districts to users themselves, redefining HIMAT's role to focus on provision of technical assistance.

Cost recovery

Under the terms of Law 41, the intention is to secure 100 percent collection of O&M costs, based on turnover of administration to user groups. In the case of new projects and rehabilitation of existing schemes, HIMAT now aims to recover a much higher proportion of capital costs. At present, HIMAT recovers no more than 40 percent of O&M costs. Recovery of capital costs on new schemes has been well below 20 percent.

According to the cost recovery schedule now proposed, the government will absorb 100 percent of the cost of all works where there is clear evidence of externalities: roads, flood barriers and watershed protection works. A proportion of all other costs (primary, secondary and on-farm) will be borne by each user, with the level of recovery varying according to the holding size (which, to control for land quality variations, will be measured in multiples of the area in each locality needed to support a farm family). The proportion of total costs recovered will likely be in the range of 40-65 percent for large farmers and 15-25 percent for small farmers (depending on the proportion of the total cost corresponding to works involving externalities).

Asking farmers to contribute to the cost of primary works should reduce the incentive for them to endorse projects with capital costs out of line with expected returns. Farmers will be required to make a downpayment of 10 percent before works proceed, with the balance payable over 20 years. Failure to payback the stipulated share of investment costs will result in confiscation both of the downpayment and the beneficiary's land.

Although the recovery schedule is progressive, it appears significantly less equitable than the intention signaled by Law 41. Also, the equity impact may be further undermined by Law 101 of 1993 which provides credit and investment subsidies of 30 percent to all private investments in irrigation and drainage, whether by fully private irrigators or by beneficiaries committing

their own resources on public schemes (e.g. for on-farm works). Because only those eligible for investment credit--mostly large farmers--would be able to capture these benefits, Law 101 would seem to discriminate against small farmers.²³ By artificially cheapening irrigation, these subsidies could exacerbate pressure on the resource base, particularly groundwater.

Recommendations

Arguably, public investment strategies should focus on providing complementary infrastructure (roads, electricity) which will encourage private investment in irrigation. This means that publicly-funded schemes of irrigation and drainage would be limited to areas where there is a genuine potential for intensification and where the needs of the smallest and poorest farmers can be effectively served. Greater emphasis should be given to drainage schemes, which appear to be relatively cost effective (subject to proper assessment of environmental impact).

The proposal that banks be asked to play a fiduciary role (recovering money disbursed by HIMAT in exchange for a fee) should be carefully reviewed: experience from around the world suggests that such schemes fail to work because banks have little incentive to recover funds that are not their own; and because initial allocation of money may bear no relation to creditworthiness of the recipients, making default probable.

Studies should be launched to compare the cost-effectiveness of *in situ* moisture management techniques in rainfed annual crops with supplementary irrigation. IICA research suggests that compaction and structural collapse of Colombia's arable soils is widespread. Improved management to increase rainfall retention might do much to reduce damage from within-season dry spells, without the need for supplementary irrigation.

Given the severity of soil erosion, particularly in the Andean highlands, there is a good case to be made for introducing integrated watershed management schemes, designed and managed by small farmer communities. The lessons from the failed pilot project in the Upper Magdalena should be fully assimilated: it is important that some components of the project offer a rapid return to farmers in order to win commitment to the broader objectives at an early stage.

Integrated watershed management should not be limited to surface waters: in this respect, the Spanish Water Law of 1985 might be taken as a model, allowing as it does for the "conjunctive management" of surface and groundwater. Conservation of groundwater is particularly critical in those

23. In response to this point, the government argues that mechanisms have been created to improve small farmers' access to investment loans, thus enabling them to benefit from the capital investment subsidy provided by Law 101. The government notes that, between 1994 and 1995, FINAGRO investment loans to small producers rose by 63 percent compared to a rise of 56 percent for medium and large producers.

areas of Colombia (e.g. Bogotá hinterland) where the combined pressure of farming and urban development is leading to the mining of aquifers. The new Environment Ministry has a role to play in setting the lead on these issues.

Conclusion

Improvements to transport and irrigation infrastructure can both potentially raise agricultural competitiveness and, by generating employment, reduce rural poverty. In the past, investment decisions concerning these two infrastructure items have been made largely independently of each other. There appears to have been **overinvestment** in irrigation districts and **underinvestment** in rural roads (with maintenance being particularly neglected). In future, government needs to subject proposals for both types of infrastructure to a uniform test of cost-benefit analysis: projects should be ranked according to the net benefit they generate and should compete on equal terms with proposals for investments in the non-farm sector. Also, it would be unwise to have *a priori* targeting of specific ("underprivileged") regions.

STRENGTHENING THE TRADE AND PRICE REGIME

Since 1990 Colombia has taken steps to liberalize its trade regime. During the past two years liberalization has come under threat from the more powerful farm interest groups who have been willing to ascribe the collapse of profits in particular subsectors--principally grains and oilseeds--to the adverse impact of opening up the economy. Although the commitment to liberal policies has not been totally reversed, the government has recently adopted a number of interventions that fail to target the poor and entail significant welfare losses for consumers. Price bands and negotiated procurement arrangements appear to be less satisfactory instruments than temporary import surcharges and measures to facilitate the development of competitive spot and forward markets.

Pre-1990 Trade and Price Regime

Before the 1990 move to liberalize, the agricultural trade regime was characterized by three significant features. First, the traditional export crops were taxed while import-competing food products were protected. Second, quantitative restrictions on agricultural trade (particularly import licenses), and state trading, were the main policy instruments affecting domestic supply and prices. Third, agricultural price interventions were highly discretionary and selective, lacking the necessary transparency required for an understanding of the effect of the prevailing policies on incentives, as well as on income transfers between the various segments of the rural and urban population.

Between 1960 and 1984, the net effect of the various direct, sector-specific measures was to impose an implicit tax of five percent on Colombian agriculture. Over this period, a World Bank study has found that, among 18 countries, the direct taxation of agriculture averaged eight percent of sectoral value added (Table C.1).²⁴ In Colombia, the taxation of exports (notably coffee) more than outweighed the protection of importables. Calculation of this direct effect includes consideration of government support to agriculture (marketing, credit and input subsidies, research and extension), most of which was captured by larger farmers. Even with these supports, the net effect of sector specific policies was to transfer income from agriculture to other sectors.

In all 18 countries, the burden of direct taxation was greatly outweighed by indirect taxation, which refers to the combined impact of policies which confer higher protection on industrial producers than on

24. The Colombia study was conducted by Jorge García García and Gabriel Montes and forms part of the larger work directed by A. Krueger, M. Schiff and A. Valdés (*The Political Economy of Agricultural Pricing Policy: A World Bank Comparative Study*, Baltimore: Johns Hopkins University Press, 1992).

Table C.1 - Direct and Indirect Taxation of Agriculture in Eighteen Countries, 1960-84
(period average in percent)

Country	Period	Indirect Tax (negative protection)	Tax Due to Industrial Protection	Direct Tax	Total Tax
Extreme Taxers	1960-84	28.6	25.7	23.0	51.6
Cote d'Ivoire	1960-82	23.3	23.2	25.7	49.0
Ghana	1958-76	32.6	32.4	26.9	59.5
Zambia	1966-84	29.9	21.4	16.4	46.3
Representative taxers	1960-86	24.2	32.8	12.0	36.4
Argentina	1960-84	21.3	39.5	17.8	39.1
Colombia	1960-83	25.2	37.8	4.8	30.0
Dominican Republic	1966-85	21.3	20.8	18.6	39.9
Egypt	1964-84	19.6	27.5	24.8	44.4
Morocco	1963-84	17.4	13.4	15.0	32.4
Pakistan	1960-86	33.1	44.9	6.4	39.5
Philippines	1960-86	23.3	33.0	4.1	27.4
Sri Lanka	1960-85	31.1	40.1	9.0	40.1
Thailand	1962-84	15.0	13.9	25.1	40.1
Turkey	1961-83	37.1	57.4	-5.3	31.8
Mild taxers	1960-83	15.7	22.9	0.2	15.8
Brazil	1969-83	18.4	21.4	-10.1	8.3
Chile	1960-83	20.4	37.4	1.2	21.6
Malaysia	1960-83	8.2	9.9	9.4	17.6
Protectors	1960-84	13.6	13.9	-24.0	-10.4
Korea, Republic of	1960-84	25.8	26.7	-39.0	-13.2
Portugal	1960-84	1.3	1.0	-9.0	-7.7
Sample Average		22.5	27.9	7.9	30.3

Source: Maurice Schiff & Alberto Valdés, *The Plundering of Agriculture in Developing Countries*, Washington, DC: World Bank, 1992, p. 6.

farmers, and macroeconomic policies, notably those tending to favor appreciation of the real exchange change—which tends to depress the revenue received by producers of tradables (particularly farmers) relative to producers of non-tradables. In Colombia, the taxation of agriculture by indirect means is higher than average, and the disparity is glaring in the case of industrial protection (38 percent, compared to the mean of 28 percent).²⁵ The impact of currency overvaluation appears to have been less, reflecting Colombia's long tradition of sound macroeconomic management (underpinned by the autonomy of the central bank). Between the 1960s and the 1980s, the volume of the net transfer out of agriculture increased: the various forms of taxation were not significantly offset by public and private investment in the farm sector.²⁶

Steps Toward Liberalization

In 1990, the Gaviria administration launched an economy-wide program of trade liberalization. Trade reform measures were applied roughly in the same degree to agriculture as they were to other sectors, in order to provide a neutral incentive structure for private decision makers. The main features of the reform were as follows:

- * All non-tariff barriers were eliminated, including IDEMA's monopoly over grain imports;
- * Export taxes were eliminated for all commodities except coffee;
- * The number of tariff positions was reduced from seven to four, and the range of tariffs declined from 0-50 percent to 0-20 percent; unprocessed products carry a maximum ad valorem tariff of 15 percent, processed products 20 percent (the average tariff for farm goods fell from 31 percent to 15 percent between 1991 and 1992);
- * The tariffs applied to agricultural inputs fell from 15 percent to two percent;
- * A price stabilization scheme was introduced for eight "sensitive" farm commodities (rice, maize, sorghum, soybeans, wheat, barley, sugar and milk), plus their derivatives and close substitutes (a total of 112 items): this "price bands scheme" involves specifying floor and ceiling domestic prices that are maintained through the application of variable import levies;

25. This conclusion is also reached by María del Pilar Eguerra ("Los flujos de capital entre la agricultura y el resto de la economía: Evidencia del caso colombiano, 1965-86", *Coyuntura Económica*, (Bogotá, FEDESARROLLO), No. 20, March 1990, pp. 131-148.

26. Pilar Eguerra, 1990, *ibid.*, p. 148.

Table C.2 - Colombia: Tariffs on Imported Agricultural Products and Farm Inputs, 1994

Agricultural Products	Basic Tariff (2nd semester of 1994), %
Wheat	15
Wheat flour	20
Pastas	20
Maize (yellow)	15
Maize flour	20
Rice (paddy)	30
Rice (white)	30
Soybean	15
Soybean cake	15
Barley	15
Malt	15
Beer	20
Sorghum	15
Cotton	10
Sugar	20
Vegetable oils	
Palm oil (unrefined)	20
Palm oil (refined)	20
Cotton seed oil	20
Corn oil	20
Corn oil (refined)	20
Sunflower oil (refined)	20
Soya oil (unrefined)	20
Soya oil (refined)	20
Farm Inputs (All)	
Produced wholly within Andean Group	10
Produced partly within Andean Group	5
Produced outside Andean Group	0

Source: *Surveillance of Agricultural Prices and Trade: A Handbook for Colombia*, Alberto Valdés and Barry Schaeffer, in collaboration with Lia Guterman, World Bank Technical Paper No. 268, 1995.

Table C.3 - Producer Support Prices, 1994

	Floor Price, ex-dock US\$/ton	Producer Support Price US\$/ton	Producer Support Price Col\$/ton
Sorghum	NA	176	145,000
Rice (paddy)	214	226	186,800
Soybean	295	325	268,100
Maize	184	196	162,000
Wheat	183	212 ^{a/}	175,300
Barley	165	215 ^{a/}	177,000

a/ Price negotiated under *convenio de absorción*.

Source: *Surveillance of Agricultural Prices and Trade: A Handbook for Colombia*, Alberto Valdés and Barry Schaeffer, in collaboration with Lia Guterman, World Bank Technical Paper No. 268, 1995.

- * IDEMA's program of price and marketing support was restricted to marginal areas where distance from markets, lack of infrastructure and political unrest deter private sector intervention; and
- * For producers selling in these marginal areas, the system of "producer support prices" (based on average production costs) was replaced by a system of "minimum guarantee prices": these were applied to grains in the price band scheme (plus beans and sesame), taking as a benchmark the floor price of the band (or world price), adjusted by port handling costs (added) and drying and storage costs (deducted).

In addition, progress was made on trade agreements. New export openings for farmers were created through the United States' Andean Initiative, through special preferences awarded by the European Union, through closer integration with Andean Pact countries and through a partial trade agreement with Chile. Antidumping and safeguard regulations were also drafted.

Current Status of Price and Trade Regime

How neutral is the agricultural trade regime after *apertura*? The signs are that Colombia still has a way to go with trade reform. Trends in income transfers are revealing (Statistical Appendix Table 27). These capture

transfers through input and output prices (measured by the disparity between border and domestic prices), plus net government expenditures. Overall, the level of income transfers on importables has substantially decreased since the early 1980s: the hidden income transfers to farmers (particularly dairy farmers) were very high in 1981-85. Among the exportables, there was a sharp increase in transfers to beef producers. In 1991-92, transfers in favor of beef, coffee and rice--which between them account for 40 percent of farm output--outweigh transfers to or from the other agricultural commodities under consideration.

Farmer resistance to trade liberalization has focused in particular on the threat of cheap imports from the many countries with whom Colombia has special trade agreements. Most of this concern centers on the Andean Pact: given that duty-free entry has almost been achieved, Colombia may potentially be flooded with residual imports at exceptionally low border prices. Although Colombia also participates actively in ALADI, and has negotiated additional trade agreements with Mexico and Venezuela (G-3) and with Chile, it is the Andean Pact that exerts most influence over Colombia's trade policies. The partners to this agreement have established a common external tariff (with rates of 5, 10, 15 and 20 percent), which now applies to 85 percent of all trade categories. In addition, rules of origin have been drawn up, together with common customs valuation rules, sanitary and phytosanitary regulations, technical standards, and intellectual property norms. Common regulations on antidumping, countervailing duties and safeguards have also been established, although no such measures have ever been approved for adoption by a member state against its partners.

However, the level of economic integration achieved under the Andean Pact remains strictly limited. In the "*Acta de La Paz*" of November 1990, the partners agreed to establish a common agricultural policy. This was to be promoted through harmonized price stabilization policies, common import and export policies, and free circulation of agricultural and agroindustrial products. Differences between the countries in the treatment accorded third parties has been a major stumbling block. Little progress has been made toward policy cooperation. For example, member countries failed to coordinate their positions and commitments during the Uruguay Round negotiations.

In Colombia, the thrust toward liberalization has stalled as a consequence of interest group pressures which have built up as a response to the declining profitability of certain subsectors, an issue that was brought to the fore by the "farm crisis" of 1991-92. Trade liberalization has been widely cited as the cause for this squeeze on farm profits. In reality, the root of the problem was the plummeting of world commodity prices. The World Bank Trade Surveillance study found that, with the exception of maize, trends in border prices accounted for a much greater proportion of the fall in

the real domestic price of farm goods than reduced protection (Statistical Appendix, Table 26). For example, in the case of wheat, the 17 percent fall in real domestic prices in 1991-92 is explained by a 13 percent fall in border prices, a three percent appreciation of the real exchange rate and a 2 percent reduction in the tariff. Also, protection of beef and milk actually increased in 1991-92.

A separate econometric study by Jaramillo and Junguito found that, in declining order of importance, the 1992 downturn in agricultural growth was attributable to (a) poor weather, (b) falling world prices and (c) lower protection of agriculture, and appreciation of the exchange rate (each of these last two ranking "equal third").²⁷ A further simulation exercise, carried out for the Poverty Assessment, found that the drop in prices caused real rural incomes to fall by ten percent--explaining 70 percent of the decline in incomes observed in 1992. The study isolates the effect of trade liberalization, finding that, taken by itself, reform had a positive impact, tending to raise farm revenues.²⁸

This evidence suggests that backtracking on trade liberalization would not be the best way to tackle the very real problem posed by the collapse of incomes in certain subsectors of agriculture. This is primarily because trade interventions are very blunt instruments that do not target poor producers and typically entail welfare losses for consumers (some of whom are poor). This is the tack that will be pursued in evaluating four specific policy responses to the challenge of devising an efficient and equitable way of adjusting to the crisis of agriculture: price bands; negotiated procurement arrangements; instruments for countering import surges; and measures to improve the efficiency of spot and forward markets.

(a) *Price bands*

How they work. Law 07 of 1991 empowers the government to apply variable levies in addition to the basic ad valorem tariff in order to reduce transmission of the instability in world prices to domestic producer prices. The moving bands are based on actual border prices during the previous 60 months. The price band for each commodity is adjusted every six months based on a formula that considers: (i) the deflated monthly c.i.f. border prices over the past 60 months; and (ii) the basic ad valorem import duty.

27. Carlos F. Jaramillo & Roberto Junguito, "Crisis agropecuaria y política macroeconómica", *Debate de Coyuntura Económica*, (Bogotá: FEDESARROLLO) No. 29, October 1993, pp. 47-66.

28. *Colombia. Poverty Assessment Report* (No. 12673-CO), World Bank, Washington DC, August 1994; an extension of the original simulation work was carried out by Eduardo Lora & Ana María Herrera: see "Ingresos rurales y evolución macroeconómica", in Clara González & Carlos Felipe Jaramillo (eds), *Competividad sin pobreza*, Bogotá: Tercer Mundo, 1994.

The resulting monthly prices are ranked in ascending order and the fifteen highest and fifteen lowest values are omitted to eliminate extreme values: observations ranked 16 and 45 therefore constitute the floor and ceiling price respectively.

As long as the c.i.f. price, adjusted by the basic import tariff, is within the band of floor and ceiling prices, only the basic ad valorem tariff will be applied to imports. When the spot border price is below the corresponding floor price, a variable levy (surcharge) is applied in addition to the basic tariff, sufficient to raise the import cost to the floor price (which thus becomes the minimum import price). Conversely, when the spot border price exceeds the ceiling price, the variable levy is not applied and discounts on the basic tariff are made up to the full amount of the price difference.

The system determines a minimum import price but does not guarantee that the domestic price will not fall below it: this will be the case when the level of domestic output is large enough to make the country selfsufficient in that particular commodity--at that point the producer price will be determined by the interplay of domestic supply and demand, or by the minimum guarantee price scheme. Minimum guarantee prices are applied to wheat, maize, soybean, sorghum, beans and rice (paddy) and amount to the band floor price (or border price), adjusted by port handling costs (added) and the drying and storage costs (deducted). In addition, farmgate prices may be significantly lower than the floor price as a function of storage costs, distance to market and transport costs.

Problems. First, expansion of trade within the region will be impeded as long as Colombia and her trading partners use price band systems with different design features. There is scope for countries to harmonize the world reference price that is used to derive the floor price of the band, for bringing tariff rates into line, and for reaching agreement about the number of products to be covered. (The same effect could be achieved, of course, by a mutual and simultaneous elimination of the various systems of price bands. Given the strong opposition of Mexico and the United States to price bands, Colombia may have to abandon them if it wishes to benefit from the advantages of belonging to an expanded North American Free Trade Area.)

A second problem with the Colombian system is its very long "memory" (60 months), meaning that extreme short run price deviations from the long run mean are slow to work themselves through, lessening the sector's alignment with world market trends. Third, the large number of commodities in the Colombia system (over 100) poses major administrative difficulties, may make the overall process of price formation excessively rigid, and could create strong pressures for maintaining a price support scheme in years when Colombia is selfsufficient in a given product (when, in principle, the band becomes irrelevant). Fourth, one of the effects of including a wide range of substitutes and derivatives in the scheme is to provide a rather arbitrary level of effective protection to agroindustry.

A study on the impact of the bands in Colombia simulated the effect that would have been achieved if the bands had been in operation continuously from 1976 to 1993.²⁹ It found that, overall, world prices of products in the bands had declined over this period. Therefore, given the system's long memory, at any one time, the spot price tended to be consistently and significantly lower than the floor price--and almost *never* above the ceiling price. Thus, the net effect of the bands was to protect the products they covered--arguably, merely serving to postpone the adjustment that the sector must eventually make to the world price environment. In any event, the protection effect greatly outweighs the stabilization effect: partly because for most of the commodities covered--rice and sugar are the principal exceptions--the world price is not highly volatile.

Table C.4 - Colombia: How Products in Current Price Band System Measure Up Against Appropriate Criteria for Inclusion in Such a System.

	Sugar	Maize	Barley	Wheat	Soy	Milk	Rice
Key criteria							
Chronic importer		X	X	X	X	X	
Volatile world price	X	X		X			X
Central international market	X	X	X	X	X		
Other factors							
Few substitutes or derivatives			X				X
Predominance of small producers		X	X	X			

Source: *Surveillance of Agricultural Prices and Trade: A Handbook for Colombia*, Alberto Valdés and Barry Schaeffer, in collaboration with Lia Guterman, World Bank Technical Paper No. 268, 1995.

There are three key criteria which may be considered as the minimum conditions for commodities to be eligible for price band coverage (Table C.4). The bands are clearly inappropriate for some products: for example, sugar, because it is an exportable not an importable; and rice, because it is only a borderline importable and there is no obvious world reference price. The only products meeting all three requirements are maize, sorghum (omitted from the table because it is a maize substitute with the

29. Alvaro Reyes Posada & Carmen Cecilia Ramírez, "Evaluación del sistema de franjas de precios", in Clara González & Carlos F. Jaramillo (eds), *Competitividad sin pobreza*, Bogotá: Tercer Mundo, 1994.

same characteristics as maize), and wheat. However, according to the study by Reyes and Ramírez, the welfare gains to producers from price risk reduction for wheat and maize are trivial in the short run, and small even in the long run. About 70 percent of the output of these crops is produced by small farmers. For these farmers--many of whom are poor--the negative impact of low prices will probably outweigh the negative impact of price instability. Alternative interventions are more appropriate--possibly timebound direct income transfers designed to smooth the incomes of farmers during a transition period in which they will diversify into other crops and activities. In addition, the bands have proved to be particularly inefficient and regressive, with respect to substitutes and derivatives where the *ad hoc* arrangements are complex and costly to administer. Therefore, a case could be made for taking *all* commodities out of the price band system and developing alternative instruments.

(b) Procurement Agreements

Agroindustries exercise oligopsony power in the market for grains and oilseeds: this tends to lower the price received by the producer; in addition, these industries often buy their raw material from overseas sources rather than from Colombian producers. To address this issue the government has recently introduced a series of negotiated procurement agreements (*convenios de absorción*), whereby farmers, manufacturers and government jointly reach an agreement about the volume of domestic output that will be absorbed by agroindustry, and the price to be paid to the farmer. The agreements apply to wheat, barley, sorghum and oil palm, products which between them account for nine percent of crop output value.

From an efficiency standpoint, society incurs welfare losses--in the shape of higher prices to the final consumer-- resulting from the obligation for agroindustry to buy its raw material from a source (domestic suppliers) which is often not the most cost efficient. However, to some extent efficiency losses are tempered by the choice of crop and the application of tariff discounts once domestic procurement targets have been met. This can be illustrated by comparing the contrasting cases of wheat and sorghum. Wheat is significantly protected (receiving a producer subsidy equivalent of 30-40 percent of output value in 1990-92): it is cheaper for manufacturers to import than to buy (and store) the local crop. However, Colombian output covers only ten percent of domestic supply: although the industry will be obliged by the procurement agreement to buy up all of domestic output, the small share of the domestic product in available supply reduces the upward pressure on costs; moreover, as an inducement, manufacturers will be offered tariff rebates on imports, once they have met their domestic procurement obligations. The net effect will probably be to keep the price paid to the Colombian producer in line with the adjusted border price--partly because in the tripartite price negotiation process agroindustry may be expected to bring substantial pressure to bear to keep its input costs down.

Colombia is a more efficient producer of sorghum than it is of wheat: the producer subsidy equivalent was negative in 1990 and 1991 and only 7 percent in 1992. In this case, supply is met 99 percent from domestic producers. Not surprisingly, industry put up more resistance to the procurement agreement since a significant increase in the producer price would greatly elevate the manufacturers' supply cost. Only one industry signed up and this will absorb 65 percent of domestic output; in exchange, it will be allowed to import substitutes (yellow maize and feed wheat) at a tariff discount. Once again, industry may be expected to "lean on" farmers to keep the procurement price low.

Even if the efficiency losses resulting from these agreements are likely to be small, from an equity standpoint they make little sense. To begin with, this is a very blunt instrument when it comes to targeting the poor. The wheat deal is more likely to benefit the poor than the sorghum deal, because respectively 71 percent and five percent of the output of these crops is produced by small farmers. On equity grounds, the scheme is hard to justify for sorghum. There will be substantial leakages. A procurement arrangement of this nature--the same as for a support price scheme--will end up conferring benefits in direct proportion to the volume of output that is marketing, thus favoring larger over smaller producers. Moreover, large farmers will probably have more leverage than small farmers in the tripartite process of price negotiation--sorghum farmers are likely to gain more from this process than wheat farmers. It could be argued that one of the reasons for protecting sorghum producers is to help save the jobs of the wage laborers they employ; but sorghum is not a particularly labor intensive crop so this is a weak argument.

(c) Measures to Counter Import Surges

As a result of the subsidies that Andean Pact members applied to their farmers, in early 1993, Colombia experienced huge inflows of soybeans from Bolivia, and rice from Venezuela, driving down domestic prices.

In cases where import pressure is deemed excessive, or trading practices are alleged to be unfair, Colombia has three resorts: it can take antidumping actions, apply countervailing duties or implement safeguards. The first two of these measures are covered by Decree 150 (1993), which enables producers to petition for antidumping measures or countervailing duties. They present their case to the foreign trade authority (INCOMEX) which decides whether or not to investigate. The investigation must determine whether dumping or subsidization is occurring, whether serious injury is caused or threatened, and whether such injury is attributable to the dumping or subsidization.

As a trade instrument, **antidumping** is procedurally and conceptually complex. Dumping is said to occur whenever there is price discrimination: meaning that the unit price of goods sold in a foreign market is less than the

unit price of identical or similar goods sold in the supplier's domestic market. There are many reasons why price differences may exist. Where markets are segmented, firms will often maximize profits by charging different prices in different markets. Suppliers whose domestic markets are protected by import tariffs are likely to charge higher prices in those markets than they do for exports of the same goods.

Dumping is defined by trade law in such a way that positive dumping margins can be found all over the place. Therefore, the decision to apply a dumping duty tends to center on whether or not injury is caused. Judgments on this matter tend to be highly subjective: not least because, while the petitioner's interests may indeed have been injured, it is not necessarily the case that dumping was the cause of the injury. In short, the definition of dumping, combined with the ample leeway for determining injury, make it relatively easy for antidumping to be used for protectionist ends.

Also, antidumping is not a particularly effective policy instrument for agriculture. Dealing with a large number of small producers poses severe administrative problems. Also, because antidumping procedures take a long time, they are not an appropriate way of delivering emergency relief to farmers hit by a short run "crisis".

Antidumping laws and regulations vary significantly among countries, even within the bounds of GATT consistency. They can be more or less protectionist in intent. Colombia's antidumping statute is better than most, containing several features designed to inhibit protectionist abuse of the instrument. But restrained use of even the best statute depends on the attitude of the authorities administering the system. In the three years or so since the system has been operating, only three antidumping petitions have been accepted, and only one definitive duty and one provisional duty have been applied (Table C.5). Colombia has therefore acted with considerable restraint, compared to the many countries that frequently accede to requests for antidumping action.

Countervailing duties may be applied to imported goods that are deemed to have been unfairly subsidized. In many parts of the world, agriculture (or certain subsectors at least) is subject to subsidy. Therefore, antisubsidy measures often have a more legitimate basis than is the case for the (more loosely defined and diffuse) instances of dumping. However, in Colombia, the three antisubsidy petitions so far presented have all been dismissed. This may be because subsidies are government-granted: if one government points the finger at another it may draw criticism (or retaliation) for subsidies that it has extended to its own producers.

On the other hand, domestic consumers benefit from foreign subsidies. Also, foreign subsidies may not be of a permanent nature: an antisubsidy action taken today may have to be removed tomorrow. The

Table C.5 - Colombia: Antidumping and Countervailing Duty Actions

Product	Exporting Country	Type of Action	Preliminary Findings	Final Determination
Chicken parts	USA	Subsidy	No investigation	NA
Coffee fertilizer	Belgium	Dumping	Provisional duties	Definitive
Other fertilizer	EU/Finland	Dumping	No duties	NA
Maize products	Mexico	Dumping	Provisional duties	No duties
Rice	Venezuela	Subsidy	No duties	NA
Cotton	USA	Subsidy	No investigation	NA

Source: Background paper by Claudia Uribe and Florencia Leal, May 1994.

administrative cost of keeping up with these short term adjustments may be considerable; and will make it harder for governments to adopt consistent policies. In other words, the benefits that antisubsidy measures confer on producers may be more than offset by the economy-wide costs they occasion.

If a choice is to be made between applying antidumping measures or countervailing duties, there are two reasons why the latter is generally the better instrument. First, a clearer rationale exists for antisubsidy measures. Second, political considerations--governments reluctance to criticize each other's subsidy programs--inherently restrain the use (abuse) of countervailing duties.

Ideally, antidumping actions or countervailing duties should be seen as a safety valve for use in exceptional circumstances. They may legitimately be used to relieve import pressures at those times when taking no action at all might make a broader program of trade liberalization politically untenable. However, maintaining the balance in these circumstances is no easy matter.

Safeguards offer an alternative safety valve. A safeguard is a temporary import surcharge applied to an existing tariff. Under the terms of Decree No. 809 (1994), producers may request special, temporary protection against imports on the grounds that an import surge is causing, or threatening to cause, injury to the domestic industry; or because the border price of an importable has sharply declined. Unlike the case with antidumping and countervailing duties, a government that provides safeguards can act rapidly; because there is no need to establish that foreign producers or governments are indulging in unfair trade practices. The government merely recognizes that a domestic industry is being hurt by import competition and takes an explicitly political decision that such an industry should be awarded temporary import relief.

There are several reasons why safeguard measures are generally preferable to antidumping actions or countervailing duties. First, a government does not have to wait for several months while the case for intervening is investigated: it can respond to the needs of the poorest (or, alternatively, the most politically powerful) very rapidly. Second, safeguard actions are explicitly temporary--they cannot be maintained for extended periods. Third, the application of safeguards may be more likely to involve a balanced appraisal of economy-wide costs; since the focus of attention is not defending the "national interest" against "foreign predators".

(d) "Market development"

In Colombia, spot and forward markets remain far from efficient. Difficult terrain, distance from markets and the poor condition of roads pushes up transport costs. For grains and oilseeds, production is relatively fragmented while end users (mainly food and feed manufacturers) are highly concentrated. With the exception of the rice sector, producers are poorly organized. Therefore, the development of cooperatives or commodity pools has not played a significant role in enhancing the marketing power of farmers, or the sophistication of the marketing system.

While it is true that food and feed manufacturers constitute an oligopsony in relation to farmers, there is a limit to which antimonopoly legislation may be expected to correct for this: there are important economies of scale in plant size, financing, transportation and management and these undermine the competitiveness of small agroprocessing firms. The best that can be done is to ensure that there are no legal or other barriers to entry, thus ensuring that the market is as competitive as possible. (This includes enforcement of antitrust legislation).

The development of efficient, private sector marketing has been constrained by: the procurement and pricing procedures carried out by the state marketing agency, IDEMA; the absence of a system of uniform grades and standards; the failure to develop standardized contracts; and uncertainties in the legal framework for warehouse operations.

With respect to this last point, it is noticeable that farmers make very little use of the receipts issued against goods stored in warehouses. The system for issuing warehouse receipts is already in place. However, it is not clear how negotiable these receipts are in practice. Specifically, there is a query as to whether farmers can use receipts as collateral to secure credit.³⁰ This would presuppose regular inspection and approval of warehouses, and

30. This issue requires closer investigation. In many Latin American countries (but not in the United States) lending against grain stored in elevators is not common. This appears to be because, in the eyes of the law, grain has no potential as collateral because it is not treated as potentially homogeneous: in other words, there is no scope for the warehouse to pool grain of a comparable quality, reducing the tradability of the receipts issued. If the law is indeed an impediment it should be changed.

verification of the quantity and quality of grain stored. The system for issuing receipts may itself constrain the expansion of storage facilities: the existing network of private warehouses (*Almacenes Generales de Depósito*) is owned by the banks. If non-banking firms were to set up their own warehouses, it is not clear that the receipts they issue would be accepted as collateral by the banks.

To create an enabling environment for market development, the government can take a number of steps. First, no attempt should be made to reverse the scaling back of IDEMA. Abolition of IDEMA's monopoly import powers was the single most important step and both the farm sector and the economy at large would suffer efficiency losses if it were reversed. Law 101 (1993) very partially restored some of IDEMA's previous role by increasing its procurement powers; but this was a *de jure* rather than a *de facto* enhancement of the agency's role--as yet, the measure has no teeth because no budget has been allocated to provide for expanded procurement. If IDEMA is given a larger role it will tend to drive out private operators, undercutting efforts at market development.

Consistent with these recommendations, two IDEMA-related measures could usefully be introduced. First, at the ports, IDEMA continues to own a number of silos (currently operated by a group of *Almacenes Generales de Depósito*): these facilities could be sold off. Second, IDEMA holds a large number of shares in the Farm Commodity Exchange (*Bolsa*): these could also be sold off. These actions could be accomplished at low cost and would send a signal that the government was fully committed to encouraging the private sector to play a larger role in market development.

Government has an important facilitating role to play. A reliable system of agricultural statistics and market news is indispensable. It would probably make sense for the collection of production data to be handled by the national statistical agency (DANE), which may be respected as a more "neutral" agency than the Ministry of Agriculture. Collection of price data could be shared with (or delegated to) the private sector. The accuracy of data collection and sampling and the timeliness of information dissemination both need checking.

The government can also help to promote development of uniform contracts. It also has a role to play as arbitrator whenever disputes over contracts arise. These functions are reinforced by recent legislative provisions: Law 23 (1991) and Resolutions 3497 and 3498, passed by the Justice Ministry in 1992. It appears that many in the private sector are poorly informed about the implication of these provisions: the government might consider launching an information campaign. The government may also serve as a catalyst for private sector action by initiating a dialogue with the *Bolsa*, *Almacenes* and producer groups concerning ways to institute a

system of grades and standards for grains and oilseeds. The existence of such a system--coupled with periodic warehouse inspections--would tend to increase the collateral value of warehouse receipts. But, in addition to this, the government would need to revise the legislation to ensure that there are no actual impediments to using these receipts for the purpose of securing loans.

Investments in primary marketing facilities should be demand driven; and the facilities should be privately managed. With the scaling back of IDEMA intervention and the decentralization of investment initiatives, the current thrust is broadly in the right direction. In principle, municipal funding provides an adequate framework for meeting farmer demand for marketing infrastructure. While it is not the job of central government to build and maintain local roads and storage facilities, through its control over the allocation of cofinancing funds, it can help to ensure that the poorer regions are better served by marketing infrastructure. Nevertheless, it should be recognized that such infrastructure does not target the poor very effectively: given that the primary objective of the funds should be to alleviate poverty, it is probably the case that, in many regions, infrastructure may need to take second place to more direct assistance to the poorest groups.

To strengthen private warehousing, a number of steps need taking. To begin with, the legal framework should carefully be revised to make sure that there are no barriers to entry. Competition between warehouse operators should be encouraged. At present, the *Almacenes Generales de Depósito* do not compete with each other because they are vertically integrated with the banks that own them. One way of encouraging competition would be to allow the Almacenes to take title over the goods they store: if they could make and retain a profit from buying and selling grain there might be more incentive for them to store it. These warehouses are, in principle, well placed to cover the price risk entailed by storage through hedging on overseas futures markets: there are apparently no legal impediments to such operations and, moreover, the warehouses presumably have access to the banks' telecommunications facilities, which would greatly facilitate trading.

While there is little scope for developing a domestic futures markets, there is potential for expanding forward operations through the Bolsa. To encourage private warehouses to become more active players in the marketing system, it would be appropriate to allow the Almacenes to participate in the Bolsa: this will entail reversing the restriction imposed by Decree 663, which was passed in 1993.

Recommendations

(a) Make safeguards the primary instrument for easing the adjustment to a liberal trade regime

A common failing of both price bands and procurement arrangements is that they are not transparent in their implementation; and take little account of the specific characteristics of different crops. In both respects, safeguards are preferable because policymakers are obliged to be explicit about the reasons for taking temporary protective measures; also, the arrangement encourages government to weigh up the advantages and disadvantages for each commodity, rather than offering blanket protection to a range of commodities; and safeguards are timebound. This instrument has been available to Colombia since April 1994 and it is fully consistent with Article XIX of GATT.

(b) Make instruments more focused and commodity specific

If price bands are scrapped, what specific proposals may be made for each of the crops that was formerly covered? A system of minimum custom values would probably be appropriate for milk and perhaps rice. This would provide a means of offsetting explicit export subsidies (milk). It would also be appropriate when the customs value cannot be determined on the basis of the reported transaction value of the imported good--which is sometimes the case in "thin" markets with no central international referent (rice).

A system of deficiency payments could be applied to products produced predominantly by small farmers in disadvantaged areas (wheat and barley): these would be "decoupled", meaning that the amount of the transfer would not be proportional to past production levels (Mexico's recent experience with the Pro Campo program is worthy of consideration). Another alternative for products where small farmers predominate would be to apply a tariff surcharge (this measure would be less costly in fiscal terms but may also be less precisely targeted).

In the case of sugar--which is an exportable and therefore wholly inappropriate for band coverage--Colombia's highly efficient and well organized producers could arguably set up a private stabilization scheme to handle world price volatility; or promote diversification schemes to help smooth incomes. For other products, some of the onus for managing price risk should be borne by "market development" measures.

(c) Take measures to support market development

The government can facilitate the development of a more competitive and transparent market for grains and oilseeds by taking steps to remove legal and institutional obstacles. The full extent of these obstacles remains poorly understood and it would be worthwhile for government to undertake a thorough review of the issue.

More widespread use of domestic commodity exchanges by farmers, traders manufacturers and bankers should help to reduce transaction costs and inhibit monopsonistic behavior by the processing industry. This should result in higher net farm gate prices for farmers. Institutional development of this nature will encourage the development of new financial instruments to deal with price risk: giving Colombian farmers greater opportunity to "shift" price risk--an option that is poorly developed today. However, it is important to recognize that, for some products, low volume and market concentration may continue to impair the competitive operation of commodity exchanges.

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Table 1 - Colombia: Potential and Actual Land Use ('000 hectares)

	Potential	Actual
Cropland	18,295	3,841
- rainfed	(10,864)	(3,386)
- irrigated	(7,431)	(455)
Pasture	15,320	40,079
Forest	78,301	55,092
Other*	2,260	15,164
TOTAL	114,176	114,176

* Marshes, rivers and areas unsuited for crops, pasture or forest; built-up areas.

Source: IGAC, *Suelos y bosques de Colombia*, Bogotá, 1988.

Table 2 - Colombia: Land Quality by Department (km²)

	CAT 1	CAT 2	CAT 3	CAT 4	CAT 5	CAT 6	CAT 7	CAT 8	TOTAL
Antioquia	0.0	0.0	5,744.1	3,032.6	2,161.5	17,688.3	27,111.6	7,481.2	63,219.3
Atlántico	0.0	0.0	808.9	1,353.8	0.0	168.2	926.0	85.6	3,342.5
Bolívar	0.0	767.2	2,608.6	1,497.2	2,809.3	5,121.9	7,353.7	6,292.6	26,450.5
Boyacá	0.0	0.0	0.0	412.7	32.2	3,273.3	11,155.1	8,024.5	22,897.8
Caldas	0.0	0.0	0.0	132.3	0.0	2,035.9	5,147.3	163.0	7,478.5
Caquetá	0.0	0.0	426.5	2,986.3	9,214.2	24,315.5	39,753.2	13,517.9	90,213.6
Cauca	225.7	0.0	948.6	2,448.0	294.5	3,003.7	13,415.4	8,947.3	29,283.2
Cesar	0.0	2502.3	4,630.7	2,310.1	2,096.4	744.6	4,45.5	5,953.0	22,687.6
Córdoba	0.0	0.0	1,702.8	7,870.3	752.5	3,462.3	10,075.0	1,198.0	25,060.9
Cundinamarca	404.3	0.0	3,148.9	1,720.7	557.9	6,991.3	5,960.7	5,341.7	24,125.5
Guajira	0.0	0.0	1,133.6	2,345.2	0.0	1,166.0	10,637.9	5,242.6	20,525.3
Huila	0.0	0.0	0.0	747.4	0.0	4,188.6	12,949.3	1,167.4	19,052.7
Magdalena	0.0	426.3	1,931.0	3,785.0	302.7	7,569.9	6,747.9	1,824.9	22,587.7
Meta	0.0	0.0	7,67.5	6,108.1	8,565.5	17,569.1	35,217.4	9,903.2	85,040.8
Nariño	55.0	590.0	0.0	1,007.7	3,110.9	1,628.5	18,764.4	7,578.1	32,734.6
N. de Santander	0.0	37.9	566.5	1,899.0	0.0	2,711.7	15,706.5	2,916.6	30,698.2
Putumayo	0.0	0.0	0.0	2,458.5	2,824.2	1,990.3	16,283.2	1,283.5	24,839.7
Quindío	0.0	0.0	0.0	464.9	0.0	0.0	1,244.5	118.8	1,828.2
Risaralda	0.0	0.0	0.0	249.8	0.0	408.1	2,413.0	586.8	3,657.7
Santander	0.0	29.5	439.0	2,457.0	934.9	12,483.5	11,428.7	2,916.6	30,689.2
Tolima	282.2	0.0	1,755.4	1,166.7	0.0	4,690.3	13,204.9	2,902.5	24,001.8
Valle del Cauca	987.4	0.0	2,716.1	784.1	0.0	4,099.6	7,906.2	5,328.8	21,822.2
TOTAL	1,954.4	4,353.2	36,238.2	47,237.4	33,656.7	125,310.6	277,852.4	96,952.2	623,555.1

Note: Categories 1-4 refer to land of arable potential.
Source: IGAC.

Table 3 - Colombia: Regional Variations in the Intensity of Cropping ('000 hectares)

	Prime Arable Area	Annual Crops	Perennial Crops	Land in crops/ Arable area
Caribbean	1,857	405	184	31.7%
Coffee Zone	101	12	245	255.3%
Center-East	907	451	556	111.0%
South-West	238	114	67	75.9%
Amazon	111	49	42	82.0%
Upper Magdalena	304	252	225	157.1%
North-West	555	175	352	94.9%
TOTAL	4,073	1,458	1,671	76.8%

Note: "Prime arable area" refers to land in IGAC soil categories I-III.

Source: Misión de Estudios del Sector Agropecuario, Bogotá, 1990 (Table 2.6b, p. 81).

Table 4 - Colombia: Key Indicators of Rural Regions.

	Caribbean	Pacific	Center	East	Total
Rural pop., 1992 ('000)	3,300	2,500	4,300	3,600	13,700
(%)	24.1	18.2	31.4	26.3	100.0
Rural poor, 1992 ('000)	1,116	930	992	1,302	4,340
(%)	25.7	21.4	22.9	30.0	100.0
Farm labor force, 1993 ('000)	668	610	886	927	3,091
(%)	21.6	19.7	28.7	30.0	100.0
Arable land ('000 has.)	3,867	1,205	1,699	2,428	9,199
(%)	42.0	13.1	18.5	26.4	100.0
Roads (Kms)	17,911	19,420	33,614	36,270	107,215
(%)	16.7	18.1	31.4	33.8	100.0
Area harvested, 1991 ('000 has.)	925	532	871	853	3,181
(%)	29.1	16.7	27.4	26.4	100.0
Area in coffee ('000 has)	42	223	501	246	1,012
(%)	4.2	22.0	49.5	24.3	100.0
Area in "crisis" crops 1991 ('000 has.)	331	171	297	427	1,226
(%)	27.0	13.9	24.2	34.9	100.0

Note: "Crisis" crops are those whose mean profitability was lower in 1992-93 than in 1985-90, according to an index where 1985-90=100: barley (79.6); sesame (43.2); cotton (51.8); rice (72.3); soybeans (79.6); cocoa (44.4); tobacco (70.5); oil palm (77.5); panela (82.1). (Source: Boletín de Coyuntura, No. 2, Ministry of Agriculture, May 1994).

Departments included in rural regions. "Caribbean": Atlántico, Bolívar, César, Córdoba, Guajira, Magdalena, Sucre; "Pacific": Cauca, Choco; Nariño, Valle del Cauca; "Central" Antioquia; Caldas, Caquetá, Huila, Quindío, Risaralda, Tolima; "East": Boyaca; Cundinamarca, Meta, N. de Santander; Santander. This is the classification used by DANE for its household surveys.

Sources: Rural population and rural poor from DANE 1992 nationwide household survey; farm labor force from 1993 DNP/CASEN nationwide household survey; arable land (Classes I-IV) from IGAC, 1988; roads from Ministry of Transport, 1993; area harvested and area in "crisis" crops from DNP/Ministry of Agriculture *Anuario*, 1991; area in coffee from Atlas Cafetero, 1975.

Table 5 - Colombia: Population Growth, 1938-93

	Total	4 Cities ^{a/}	Urban	Rural
Thousands				
1938	8,702	708	2,692	6,010
1951	11,548	1,484	4,468	7,080
1964	17,485	3,491	9,093	8,392
1973	22,915	5,641	13,580	9,335
1985	30,061	8,556	19,750	10,311
1993 (p) ^{b/}	35,886	10,818	26,377	9,509
Growth (%)				
1938-51	2.5	8.4	5.1	1.4
1951-64	4.0	10.4	8.0	1.4
1964-73	3.5	6.8	5.5	1.2
1973-85	2.6	3.6	3.8	0.9
1985-93	2.4	3.3	4.2	-1.0

a/ Bogotá, Cali, Medellín and Barranquilla.

b/ (p) = Preliminary.

Source: Population Census.

Table 6 - Colombia: GDP by Economic Sector Activity Group at Constant 1975 Prices (a)

1970-1992 (pr)

(Millones de pesos)

Agrupación de actividad económica	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Agricultura, silvicultura, caza y pesca	77,893	78,529	84,667	86,669	91,477	96,766	99,720	102,979	111,338	116,730	119,314
Minería	8,192	8,023	8,689	9,085	6,681	6,937	6,794	5,946	5,559	5,524	6,661
Industria manufacturera	65,783	71,395	79,046	85,789	92,936	94,088	98,210	99,625	109,559	116,264	117,672
Electricidad, gas y agua	2,253	2,611	2,975	3,438	3,560	3,807	3,850	3,982	4,388	4,846	5,210
Construcción y obras públicas	10,647	11,007	11,984	13,965	15,023	13,535	14,753	15,877	15,471	15,383	17,632
Comercio, restaurantes y hoteles	38,321	42,078	45,222	49,130	52,634	53,787	56,445	58,377	62,809	65,159	66,681
Comercio	30,503	33,533	36,325	39,484	42,187	42,903	45,102	45,877	49,559	51,410	52,991
Restaurantes y hoteles	7,818	8,545	8,896	9,648	10,447	10,884	11,343	12,500	13,250	13,749	13,690
Transporte y comunicaciones	23,853	25,432	27,812	31,106	33,556	34,117	36,210	39,393	43,842	47,075	48,944
Transporte y almacenamiento	21,656	23,152	25,228	28,161	30,377	30,430	32,414	35,080	38,857	41,243	42,074
Comunicaciones	2,197	2,280	2,584	2,945	3,279	3,687	3,796	4,313	4,985	5,832	6,870
Establecimientos financieros, seguros inmuebles y servicios a empresas	43,802	47,486	48,745	50,827	54,117	56,570	58,318	61,258	66,087	68,968	73,463
Bancos, seguros y servicios a empresas	19,457	22,221	22,672	23,695	25,948	27,532	28,306	30,183	32,954	34,558	37,911
Alquileres de vivienda	24,345	25,265	26,073	27,132	28,169	29,038	30,012	31,075	33,133	34,410	35,552
Servicios personales (b)	13,920	15,375	16,514	17,858	19,070	20,134	21,307	22,704	24,151	25,319	25,811
Servicios del gobierno	21,243	23,839	26,120	27,588	28,165	28,300	30,682	32,845	34,776	37,036	40,840
Menos: Servicios bancarios imputados	8,585	9,383	9,336	9,701	10,321	11,240	11,461	11,465	12,600	12,562	14,095
Subtotal valor agregado	297,322	316,392	342,118	365,750	386,998	396,779	414,818	431,522	465,378	489,841	508,133
Derechos e impuestos sobre importaciones	10,174	9,433	8,695	8,648	8,912	8,329	9,435	10,384	13,957	15,278	17,632
Producto Interno Bruto	307,496	325,825	350,813	374,398	395,910	405,108	424,263	441,906	479,335	505,119	525,765

Agrupación de actividad económica	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991 (p)	1992 (pr)
Agricultura, silvicultura, caza y pesca	123,135	120,803	124,196	126,375	128,456	132,792	141,270	145,182	151,423	160,245	168,970	167,230
Minería	7,020	7,143	6,156	9,948	13,730	22,262	27,624	28,876	32,237	34,146	34,392	34,736
Industria manufacturera	114,556	112,906	114,197	121,035	124,610	132,021	140,229	142,887	150,913	157,290	158,604	166,296
Electricidad, gas y agua	5,381	5,554	5,640	5,930	6,111	6,478	7,056	7,429	7,819	8,114	8,414	7,830
Construcción y obras públicas	18,884	19,648	22,193	23,806	25,641	26,890	24,191	27,382	25,154	21,868	21,711	24,210
Comercio, restaurantes y hoteles	67,789	68,886	68,598	69,984	71,239	73,800	77,059	80,928	82,420	84,855	84,487	87,892
Comercio	53,640	54,172	53,765	55,034	55,810	58,130	60,919	64,302	65,677	67,773	67,058	69,939
Restaurantes y hoteles	14,149	14,714	14,833	14,950	15,429	15,670	16,140	16,626	16,743	17,082	17,431	17,953
Transporte y comunicaciones	50,945	53,586	53,131	54,486	55,044	55,569	57,426	59,396	61,307	63,597	65,716	67,563
Transporte y almacenamiento	43,257	45,020	44,388	44,711	44,977	45,393	47,408	48,282	49,402	50,264	51,548	nd
Comunicaciones	7,688	8,566	8,743	9,775	10,067	10,176	10,018	11,114	11,905	13,333	14,168	nd
Establecimientos financieros, seguros inmuebles y servicios a empresas	78,191	80,641	84,284	81,764	83,299	86,953	91,580	98,816	101,026	107,289	112,898	117,248
Bancos, seguros y servicios a empresas	41,350	42,629	44,765	40,875	40,954	43,119	45,788	51,484	52,185	57,034	61,005	64,421
Alquileres de vivienda	36,841	38,012	39,518	40,889	42,345	43,834	45,772	47,332	48,841	50,255	51,893	52,827
Servicios personales (b)	26,848	27,325	27,945	28,214	28,324	29,410	30,950	31,518	32,153	32,864	34,333	35,363
Servicios del gobierno	43,211	44,249	43,371	47,242	49,272	52,290	55,989	59,905	62,274	64,049	66,307	70,418
Menos: Servicios bancarios imputados	16,643	18,391	19,071	15,503	14,409	14,380	16,708	20,584	21,057	20,349	26,864	26,486
Subtotal valor agregado	519,115	522,351	532,640	553,081	571,317	604,085	636,646	661,735	685,669	713,968	729,968	752,301
Derechos e impuestos sobre importaciones	18,621	20,485	18,740	16,774	16,244	17,696	18,518	20,058	19,389	21,293	20,726	24,871
Producto Interno Bruto	537,736	542,836	551,380	569,855	587,561	621,781	655,164	681,791	705,068	735,259	750,694	777,172

(p) Provisional; (pr) Preliminar; (nd) no disponible.

(a) La metodología de elaboración de las Cuentas Nacionales corresponde a la Revisión 3 de Naciones Unidas.

(b) Incluye servicios domésticos.

Source: Departamento Administrativo Nacional de Estadística.

Table 7 - Colombia: Farm Output Growth, 1991-1993

CROPS	VALUE Col\$ (millions of 1975 pesos)		CHANGE (%)	
	1992	1993	1991-92	1992-93
Annual Crops	26,164.5	26,597.4	-12.1	1.7
Cotton	3,279.3	1,929.7	-26.0	-41.2
Rice (paddy)	5,687.2	5,408.9	-0.2	-4.9
Barley	303.3	392.7	-45.3	29.5
Beans	1,744.8	1,776.5	10.9	1.8
Maize	4,843.4	5,338.8	-17.1	10.2
Potatoes	5,835.8	7,316.7	-3.8	25.4
Sorghum	2,705.7	2,271.1	1.8	-16.1
Soybeans	940.3	1,108.9	-50.4	17.9
Wheat	486.4	622.7	-19.9	28.0
Others ^a	338.2	431.4	-23.3	27.5
Perennial Crops	46,155.4	48,706.8	10.0	5.5
Bananas	3,068.2	3,316.9	7.1	8.1
Cocoa	1,611.3	1,631.4	-5.6	1.3
Sugar cane	11,868.9	12,292.4	22.0	3.6
Panela	6,373.2	6,640.6	7.6	4.2
Flowers	7,257.5	8,019.6	23.4	10.5
Oil Palm	4,537.1	4,955.8	-0.1	9.2
Plantains	7,706.4	8,038.4	6.2	4.3
Cassava	2,636.6	2,716.8	0.3	3.0
Others ^b	1,096.2	1,094.9	-22.9	-0.1
Coffee	20,559.4	17,886.7	-0.6	-13.0
Crops w/o Coffee	72,319.9	75,304.2	0.8	4.1
Crops with Coffee	92,879.3	93,190.9	0.5	0.3
Livestock	52,596.0	56,166.0	1.2	6.8
Beef	34,042.2	34,691.3	-2.2	1.9
Pork	2,651.8	2,839.3	-0.8	7.1
Poultry	15,902.0	18,635.4	9.8	17.2
Farm Output without Coffee	124,915.9	131,470.2	1.0	5.2
Farm Output with Coffee	145,475.3	149,356.9	0.8	2.7

^a Includes sesame, peanuts and light tobacco.

^b Includes coconut, jute, yam and dark tobacco.

Source: Ministry of Agriculture (Data reproduced in *Estrategia* (Bogotá), March 18, 1994, p. 24).

Table 8 - Colombia: Growth Rates, 1988-93

	Agriculture		Whole Economy	
	Value (Col\$m, 1975)	Growth (%)	Value (Col\$m, 1975)	Growth (%)
1988	145,182	2.8	681,791	4.1
1989	151,423	4.3	705,068	3.4
1990	160,245	5.8	735,259	4.3
1991	166,918	4.2	749,976	2.0
1992	163,825	-1.9	778,709	3.8
1993 (p)	168,248	2.7	819,777	5.3

p = provisional

Source: DANE.

Table 9 - Colombia: Crop Structure, 1993

	VALUE (Millions of 1975 pesos)	%	AREA (Thousands of hectares)	%
ANNUALS	26,505	28.8	2,038	44.9
Cotton	1,930	2.1	114	2.5
Rice	5,409	5.8	384	8.4
Beans	1,776	1.9	134	3.0
Barley	393	0.4	36	0.8
Maize	5,339	5.8	767	16.9
Potatoes	7,317	8.0	185	4.1
Sorghum	2,271	2.5	201	4.4
Soybeans	1,109	1.2	53	1.2
Wheat	623	0.7	51	1.1
Others ^{a/}	338	0.4	113	2.5
PERENNIALS	66,678	71.2	2,480	55.1
Coffee	17,971	19.1	1,087	24.0
Bananas	3,317	3.6	43	1.0
Cocoa	1,631	1.8	113	2.5
Sugarcane	12,292	13.1	150	3.3
Panela	6,641	7.1	204	4.4
Flowers	8,020	8.5	10 ^{ca}	0.2
Oil Palm	4,956	5.3	120	2.7
Plantains	8,038	8.6	416	9.1
Cassava	2,717	2.9	171	3.8
Others ^{b/}	1,095	1.2	186	4.1
ALL CROPS	93,183	100.0	4,518	100.0

a/ Includes: sesame, peanuts, and light tobacco.

b/ Includes: coconuts, jute, yam and dark tobacco.

Note: Exportables are potatoes, cotton, rice (borderline), bananas, cocoa, sugarcane, sesame and tobacco. Importables are barley, beans, maize, sorghum, soybeans, wheat, and oil palm. Non-tradables are horticultural, fruits, brown sugar (panela), coconuts, jute, yams, plantains, cassava and peanuts.

(c) Estimate.

Source: *Estrategia* (Bogotá), March 18, 1994; CEGA, *Coyuntura Agropecuaria*, No. 4, December 1993; *Boletín de Coyuntura*, No. 2, Ministry of Agriculture, Bogotá, May 1994).

Table 10 - Colombia: Output of Key Farm Commodities, 1980-92

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Beef ('000 head)	3,493	3,815	3,565	3,196	3,315	3,334	3,321	3,109	3,389	3,772	4,076	3,659	3,193
Milk ('000 ton)	2,161	2,391	2,565	2,726	2,852	2,900	3,106	3,236	3,456	3,751	4,033	4,131	4,232
Coffee ('000 bags)*	10,348	11,546	10,394	11,782	9,910	9,651	9,182	11,121	10,857	9,000	11,143	13,868	13,795
Cotton ('000 ton)	121	124	52	52	92	118	117	117	138	101	113	151	118
Maize ('000 ton)	853	880	898	864	864	763	788	860	908	1,044	1,213	1,274	1,057
Rice ('000 ton)	1,798	1,788	2,018	1,780	1,705	1,796	1,632	1,865	1,727	2,036	2,060	1,739	1,735
Sorghum ('000 ton)	430	532	568	595	590	499	600	704	707	695	777	738	752
Soybean ('000 ton)	155	89	99	122	94	104	167	128	115	116	232	194	96
Wheat ('000 ton)	46	62	71	78	59	76	82	74	63	80	105	94	75

* 70 kg bags

Source: "Colombia - Sector Agropecuario: Situación y Perspectivas," Fondo Internacional de Desarrollo Agrícola (FIDA), Instituto de Cooperación para la Agricultura (IICA), May, 1993.

Table 11 - Colombia: Production Trends for Principal Crops

PRODUCT	MEAN AREA CULTIVATED (^{'000} Hectares)			GROWTH (% per year)		MEAN OUTPUT (^{'000} Tonnes)			GROWTH (% per year)	
	1971-73	1981-83	1991-93	1971-73/1981-83	1981-83/1991-93	1971-73	1981-83	1991-93	1971-73/1981-83	1981-83/1991-93
Rice (paddy)	263.7	421.1	428.6	6	1.8	1000.2	1865.6	1751.6	8.7	-0.6
Barley	57.2	88.5	41.2	5.5	-5.3	95.6	46.6	82.4	-5.1	7.7
Wheat	54.7	45.2	48	-1.7	6.2	64.9	70.3	92.5	0.8	3.2
Maize	623.8	615.8	768.8	-0.1	2.5	787.9	880.8	1186.5	1.2	3.5
Sorghum	103.8	264.8	236.9	15.5	-1.1	243.3	565.2	721.3	13.2	2.8
Cassava	250	183	176.1	-2.7	-0.4	1999.7	1752.4	1673	-1.2	-0.5
Potatoes	92.1	161.7	157.5	7.6	-0.3	907.6	2113.9	2504.3	13.3	1.8
Plantain	325.5	382.7	352.5	1.8	-0.8	1577.6	2213.6	2576.6	4	1.6
Panela	188.3	178.1	192.7	-0.5	0.8	496.3	772.3	1152.1	5.6	4.9
Beans	79.9	114	132	4.3	1.6	51.2	78	119.2	5.2	5.3
Cocoa	52.2	76.6	117.5	4.7	5.3	20.3	38.8	56.3	9.1	4.5
Cotton	237.4	132.3	189.2	-4.4	4.3	359.8	216.7	301.8	-4	3.9
Soybeans	54.4	50.9	66.4	-0.6	3	100.8	103.4	133.8	0.3	2.9
Sesame	42.4	13.6	7.9	-6.8	-4.2	25.9	7.9	5.2	-6.9	-3.4
African Palm Oil	15.1	30.7	106.7	10.3	24.8	40.5	89	296.1	12	23.3
Sugarcane	71.8	93.3	135.8	3.1	4.6	792.5	1260.3	1953.5	5.9	5.5
Bananas	14.3	21.8	39.5	5.2	8.1	311.3	1099.9	1637.4	25.3	4.9
Tobacco*	25.2	29.6	18.7	1.7	-3.7	38.4	48.7	32.7	2.7	-3.3

* White plus dark tobacco.

Source: 1971-73 & 1981-83 data from Thomas (1985); 1991-93 data from Ocampo (1993).

Table 12 - Colombia: Crop Yields Compared to International Mean

Crops (Kg/Ha)	1981		1991	
	Colombia	International	Colombia	International
Rice	4354	2855	4096	3571
Wheat	1597	1914	1985	2562
Barley	1567	3370	2069	2402
Maize	1399	1507	1550	3980
Sorghum	2300	14,387	3068	1542
Potatoes	13,196	9055	14,697	15,094
Cassava	10,386	567	10,030	9886
Beans	757	1751	943	656
Soybeans	2027	311	1999	2088
Sesame	530	1369	665	376
Seed Cotton	1645	574	1072	1730
Coffee	752	358	968	545
Cocoa	580	56,102	482	473
Sugar Cane	86,333	1313	91,845	61,591
Tobacco	1653		1720	1533

Source: FAO, Production Yearbooks, 1981 and 1992.

Table 13 - Colombia: Distribution of Crop Areas by Department ('000 ha)

	Rice	Barley	Wheat	Maize	Sorghum	Cassava	Potato	Plantain	Panola	Beans
Atlántico				7.1	9.4	12.6		0.5		0.1
Bolívar	28.4			69.4	19.0	30.0		7.4	0.4	15.8
César	28.0			76.7	35.9	12.7		4.0	2.5	5.8
Córdoba	39.6			102.4	27.7	16.8		4.3		2.5
Guajira	5.4			10.1	5.4	1.8		3.2		0.5
Magdalena	7.8			18.2	13.6	19.6		2.1		0.8
Sucre	22.0			19.3	9.9	17.0		0.8		
Cauca	0.2		0.4	16.2	3.6	5.3	4.1	8.9	6.2	2.7
Choco	2.2			21.1		1.7		20.7	1.9	0.4
Nariño	0.2	7.4	21.9	29.8		0.7	23.6	8.2	17.2	19.4
Valle del Cauca	7.2		0.2	10.0	34.8	1.5	1.0	27.0	7.5	3.6
Antioquia	13.6			115.7	1.4	6.4	14.1	52.0	34.4	25.0
Caldas				2.7	2.9	1.7	2.0	29.3	10.8	1.7
Caqueta	5.0			52.7	0.4	18.9		24.7		0.2
Huila	33.5			32.0	16.3	3.5		1.5	6.7	17.6
Quindio				0.7	0.8	1.5	0.2	46.3	0.1	0.5
Risaralda				0.1	0.2	2.1	0.1	13.0		0.6
Tolima	64.8			21.8	54.0	3.2	4.7	7.6	13.6	9.2
Boyaca	0.2	23.4	14.9	26.6	0.5	2.9		6.7	24.7	7.2
Cundinamarca	7.0	18.1	6.9	42.9	4.9	3.5	49.2	11.3	43.5	
Meta	93.9			24.8	7.3	6.1		12.6		0.7
Norte de Santander	28.2	0.1	1.0	14.8	2.6	8.9	3.8	12.5	9.3	2.5
Santander	9.6	0.5	2.0	47.0	4.8	22.6	4.1	13.0	20.2	11.8
Amazonas	1.0			0.3		0.3		0.2		
Arauca	2.0			15.2	0.3	3.0		14.0		0.2
Casanare	26.2			8.3	0.8	1.2		14.3		
Guainia				1.1						
Guaviare	2.1			6.0	0.1	0.6		0.9		
Putumayo	2.6			30.2		1.6	0.1	4.3		0.2
Vaupés	0.1			0.9				0.4		
Vichada	0.2			0.7		0.2		0.3		
TOTAL	431.0	49.5	47.3	824.8	289.9	207.9	107.0	352.0	199.0	129.0

Continued.../

Table 13 - Colombia: Distribution of Crop Areas by Department ('000 ha)
(Continued)

	Cocoa	Cotton	Soybean	Sesame	Palm oil	Sugar cane	Banana	Tobacco	Coffee
Atlántico	0.2	3.4		0.2					
Bolívar	0.8	14.1		0.7				2.2	1.3
César	1.3	61.0		0.1	17.0			0.2	15.5
Córdoba	0.7	34.4	0.2	2.3					0.1
Guajira	0.3	8.3		0.1				0.4	11.2
Magdalena	0.4	9.9		0.6	15.5		11.6	2.5	14.2
Sucre	0.3	14.3		0.7				4.1	
Cauca	0.2	1.4	4.1			19.7			79.3
Choco	5.5							0.2	53.8
Nariño	20.6				10.0				17.1
Valle del Cauca	1.1	23.6	52.4			82.5		0.1	126.8
Antioquia	8.2						22.5		155.1
Caldas	4.2	0.6	0.4						88.3
Caqueta	1.4				0.4				3.0
Huila	12.3	9.8	1.5					0.9	47.9
Quindío	0.4		1.3						62.5
Risaralda	1.0		0.3			5.0			61.5
Tolima	6.4	55.0	2.5	3.4				0.5	136.2
Boyaca	0.2							1.4	26.8
Cundinamarca	1.5	0.1	0.4		2.5				101.9
Meta	6.6	8.3	36.5		26.0			0.3	8.8
Norte de Santander	7.0				2.0			0.2	45.6
Santander	34.1				12.5			6.9	63.0
Amazonas	0.3								
Arauca	10.1								0.1
Casanare		2.4	0.4		7.4				2.9
Guainia	0.3								
Guaviare	0.3		0.1	0.2					
Putumayo			0.2						0.1
Vaupés									
Vichada	0.7	0.9							
TOTAL	126.4	247.5	100.3	8.3	93.3	107.2	34.1	19.9	1123.0

Source: DNP, Anuario: *Estadísticas del Sector Agropecuario*, 1991.

Table 14 - Colombia: Contribution of Crops to Output Value and to Trade (percentages)

	Share in value of crop production /a	Share of exports in production /b	Share of imports in estimated availability /c
Cereals			
Rice	5.8	3.6	3.5
Barley	0.4	0.0	187.2
Maize	5.8	0.0	23.6
Sorghum	2.5	0.0	1.4
Wheat	0.7	0.0	874.2
Cotton & Oilseeds			
Cotton	2.1	34.1	3.4
Sesame	0.2	100.0	46.8
Soybeans	1.2	0.0	56.6
Other			
Beans	1.9	10.8	1.2
Potato	8.0	1.6	0.0
Cassava	2.9	0.0	0.0
Perennials/d			
Sugarcane	13.1	19.8	0.0
Banana	3.6	75.3	0.0
Tobacco	0.9	67.6	19.7
Flowers	8.5	95.0	0.0
Panela	7.1	0.0	0.0
Plantain	8.6	0.0	0.0
Oilpalm	5.3	10.6	17.8
Cocoa	1.8	9.4	0.1
Coffee	19.1	81.0	0.0

a/ Based on calculations for gross production at 1993 prices.

b/ Quantity of exports divided by production.

c/ Quantity of imports divided by estimated availability (output less exports).

d/ Except tobacco.

Source: FAO Production and Trade Yearbooks, 1991-93; DNP estimates.

Table 15 - Colombia: Farm Exports, 1992-93

	Volume (tonnes)		Change (%)	Value (FOB) (US\$'000)		Change (%)
	1992	1993		1992	1993	
Crops	2,676,113	2,646,138	-1.1	2,154,841	2,035,764	-5.5
Crops w/o coffee	1,707,872	1,858,171	8.8	893,564	883,611	-1.1
Coffee	968,241	787,967	-18.6	1,261,277	1,152,153	-8.7
Flowers	124,618	132,527	6.3	340,810	381,997	12.1
Banana	1,320,279	1,478,779	12.0	377,609	393,807	4.3
Plantain	94,782	106,646	12.5	29,656	31,778	7.2
Tobacco	18,964	9,515	-49.8	34,221	19,972.6	-41.6
Cotton	42,101	7,166	-83.0	56,498	9,750	-82.7
Potatoes	49,790	54,152	8.8	12,071	12,745	5.6
Cocoa	4,313	8,092	87.6	4,380	7,967	81.9
Rest	53,025	61,294	15.6	38,319	25,595	-33.2
Livestock	100,945	61,936	-38.6	206,333	165,650	-19.7
Agroindustry	598,088	849,254	42.0	340,720	337,443	-1.0
Sugar	415,153	623,573	50.2	120,566	155,781	29.2
Molasses	49,981	140,486	181.1	2,763	6,687	142.0
Processed sugar	12,213	13,598	11.3	14,519	20,423	40.7
Processed cocoa	3,919	3,291	-16.0	3,784	3,600	-4.9
Processed tobacco	6,416	3,378	-47.3	30,181	15,854	-47.5
Processed coffee	9,827	10,432	6.2	63,218	55,542	-12.1
Rest	100,580	54,496	-45.8	105,690	79,556	-24.7
Farm Sector	3,375,146	3,557,328	5.4	2,701,894	2,538,857	-6.0
Farm Sector w/o coffee	2,397,078	2,758,929	15.1	1,377,399	1,331,162	-3.4
Total merchandise exports	32,924,242	36,213,467	10.0	6,908,800	7,110,600	2.9

Note: "Farm Sector" = Crops + Livestock + Agroindustry.

Source: Ministry of Agriculture, *Boletín de Coyuntura*, No. 2, 1994.

Table 16 - Colombia: Livestock Production Trends, 1981-91

YEARS	BEEF (^{'000} tons)	MILK (^{'000} lts)	PORK (^{'000} tons)	CHICKEN (^{'000} tons)	EGGS (millions)
1981	698.1	2,321	106.4	128.4	3,430
1982	654.0	2,490	102.1	132.1	3,460
1983	567.7	2,647	111.4	137.1	3,520
1984	607.9	2,769	111.1	146.9	3,661
1985	614.9	2,816	111.9	165.2	3,601
1986	615.5	3,016	120.5	186.3	4,166
1987	603.6	3,142	128.5	214.7	4,520
1988	657.3	3,357	141.4	233.3	4,782
1989	726.9	3,643	124.4	221.5	3,678
1990	786.2	3,916	110.7	229.1	3,714
1991*	739.1	4,131	122.8	246.5	3,981

* Provisional

Source: Ministry of Agriculture/CEGA.

Table 17 - Colombia: Small Farmer Shares of Crop Area and Output, 1988

Crop	Area (%)	Output (%)
Sesame	75.5	74.2
Cotton	9.3	9.0
Rice (Paddy)	16.2	12.1
Barley	54.3	52.6
Beans	89.1	90.2
Maize	80.1	68.6
Peanuts	38.0	23.8
Yam	100.0	100.0
Potatoes	59.1	57.5
Sorghum	6.8	5.1
Soy	11.8	9.3
Tobacco	96.1	95.8
Wheat	74.2	71.1
Cassava	86.1	86.8
Vegetables	75.5	78.7
Bananas	2.3	1.8
Cocoa	72.4	66.6
Panela	89.2	83.3
Jute	100.0	100.0
Fruits	69.3	74.1
Oil Palm	2.8	2.6
Plantain	66.4	71.4
TOTAL	57.1	56.7

Source: Ministry of Agriculture/DNP, 1990.

Table 18 - Colombia: Livestock Owned by Small Farmers, 1990

Type of Livestock	Number of Heads	Share of National Total
Cattle	33,804,124	20.6
for Beef	818,620	11.6
for Beef & Dairy	246,566	24.2
Dairy	5,199,838	40.3
Horses	297,359	82.4
Pigs	488,843	71.4
Goats	46,901	27.5
Rabbits	16,665	99.6
Poultry	15,448	5.3
for meat	6,888	3.6
for eggs	7,838	8.0
for meat & eggs	722	100.0
TOTAL	4,669,340	22.8

Source: Ministry of Agriculture/DNP, 1990.

Table 19 - Colombia: Distribution of Area in Holding by Holding Site

DEPARTMENTS	LAND IN HOLDINGS ('000 HAS)	PERCENTAGES			TOTAL
		Under 5	5 to 50	Over 50	
Caribbean					
Atlántico	296	2.4	34.7	62.9	100.0
Bolívar	1729	1.9	19.6	78.5	100.0
César	2023	0.3	11.4	88.3	100.0
Córdoba	2104	1.5	22.0	76.5	100.0
Guajira	486	0.4	12.2	87.4	100.0
Magdalena	2082	0.6	13.5	85.9	100.0
Sucre	1178	1.5	19.2	79.3	100.0
Pacific					
Cauca	1461	9.6	30.3	60.1	100.0
Choco	NA	NA	NA	NA	NA
Nariño	1138	18.8	36.3	44.9	100.0
Valle Del Cauca	1313	4.9	30.1	65.0	100.0
Central					
Antioquia	NA	NA	NA	NA	NA
Caldas	755	21.6	34.6	43.8	100.0
Caqueta	1467	0.1	17.9	82.0	100.0
Huila	1434	3.6	29.8	66.7	100.0
Quindio	163	8.2	45.3	46.5	100.0
Risaralda	325	10.0	38.1	51.9	100.0
Tolima	2033	4.3	30.8	64.9	100.0
East					
Boyacá	2018	21.6	34.6	43.8	100.0
Cundinamarca	2112	16.3	40.6	43.1	100.0
Meta	4887	0.3	4.9	94.8	100.0
N. Del Santander	2083	1.9	24.4	73.8	100.0
Santander	2663	6.1	29.7	64.2	100.0
Far East					
Amazonas	NA	NA	NA	NA	NA
Arauca		0.2	16.3	83.5	100.0
Casanare		0.5	8.3	91.3	100.0
Guainia	NA	NA	NA	NA	NA
Guaviare		0.0	4.1	95.9	100.0
Putumayo		2.4	44.1	53.5	100.0
Vaupéz	NA	NA	NA	NA	NA
Vichada		0.0	0.0	100.0	100.0

Source: Llorente et al., 1985.

Table 20 - Colombia: Distribution of land in holdings, 1960-84

HOLDING SIZE (Ha)	1960 ^a				1984 ^b			
	OWNERS		AREA		OWNERS		AREA	
	No.	%	Ha	%	No.	%	Ha	%
0 - 1	298,271	27.0	84,770	0.5	447,831	28.3	133,651	0.6
1 - 3	311,415	28.2	457,002	2.9	366,135	23.1	506,352	2.3
3 - 5	127,627	11.5	414,069	2.6	173,942	11.0	507,112	2.3
5 - 10	134,236	12.1	786,544	4.9	190,401	12.0	1,010,771	4.5
10 - 20	91,145	8.2	1,099,391	6.9	146,412	9.3	1,547,711	7.0
20 - 50	74,653	6.7	1,957,094	12.3	136,006	8.6	3,193,080	14.4
50 - 100	32,923	3.0	1,676,484	10.5	62,155	3.9	3,136,664	14.1
100 - 200	19,418	1.8	2,139,059	13.5	34,487	2.2	3,293,682	14.8
200 - 500	11,530	1.0	2,674,797	16.8	19,034	1.2	3,714,278	16.7
500 - 1000	3,162	0.3	1,730,858	10.9	4,856	0.3	1,840,438	8.3
Over 1000	1,695	0.2	2,875,589	18.2	1,889	0.1	3,349,299	15.0
TOTAL	1,106,075	100.0	15,895,657	100.0	1,583,148	100.0	22,233,038	100.0

^a DANE.

^b IGAC.

Source: JAD/IICA, 1993.

Table 21 - Colombia: Distribution of Farms and Area Benefitted by Farm Size in Himat's 22 Districts

	No. of Farms		Irrigation or Drainage Area		Average Size (ha)
	Number	%	ha	%	
Farm Size Category					
< 5 ha	15,319	61.8	20,806	8.9	1.4
5 a 10 ha	4,261	17.2	29,416	12.6	6.9
10 a 20 ha	2,722	11.0	37,192	15.9	13.7
20 a 50 ha	1,727	7.0	55,007	23.5	31.9
50 a 100 ha	598	2.4	49,025	21.0	82.0
> 100 ha	176	0.7	42,276	18.1	240.2
TOTAL	24,803	100.0	233,722	100.0	9.4
Land Reform Beneficiaries	5,432	21.9	67,808	29.0	12.5
Private Farmers	19,403	78.2	165,915	71.0	8.6

Source: HIMAT, 1993.

Table 22 - Colombia: Areas (ha) under Public and Private Irrigation by Regions, as of 1992

Region	Potential Irrigated Area	Public Irrigated Area	Private Irrigated Area	Total Irrigated Area
Antioquia	328,921	0	3,625	3,625
Atlántico	203,080	24,618	1,206	25,824
Bolívar	329,785	9,293	3,915	13,025
Boyacá	436,328	11,202	1,300	12,502
Caldas	55,216	0	2,765	2,765
Caquetá	150,822	0	0	0
Cauca	87,924	0	34,496	34,496
Cesar	860,600	0	45,860	45,860
Córdoba	224,092	52,871	3,170	56,041
Cundinamarca	409,475	21,000	18,172	39,172
Guajira	217,830	0	15,714	202,116
Huila	99,450	4,601	24,831	29,432
Magdalena	467,728	47,594	8,177	55,771
Nariño	173,029	0	40	40
N. de Santander	294954	11,619	5,000	16,619
Meta	571700	0	56,515	56,515
Quindio	0	0	0	0
Risaralda	49,680	0	0	0
Santander	156,114	8,698	7,000	15,698
Tolima	322,226	55,790	25,700	81,490
Valle del Cauca	303635	10,700	202,113	212,813
Total (include others)	6,509,200	287,454	463,059	750,513

Source: HIMAT (1992).

Table 23 - Colombia: Public Spending On Agriculture, 1980-90
(millions of 1990 pesos)

ENTITY	1980	1981	1982	1983	1984	1985	1986	1988	1989	1990
ICA	1547.6	1482.4	1448.1	2800.0	3911.9	5292.2	6162.0	5599.3	6036.0	8245.3
CENTRAL ADMINISTRATION	14261.9	13103.0	13103.0	20060.9	19420.2	18058.1	20963.8	31939.7	30945.2	33493.3
INCORA	18944.4	19371.9	19371.9	23847.8	25442.2	24932.6	32059.0	38342.0	41139.0	51844.0
INDERENA	7984.1	8222.4	8222.4	8587.0	8121.1	7237.0	8012.9	8114.3	9241.0	9551.1
HIMAT	11730.2	9817.8	9817.8	16095.7	13691.7	13623.0	18966.8	32.634.8	26023.5	26030.5
FONDODRI	30785.7	30766.3	30766.3	31056.2	21346.8	17398.9	18488.6	17341.2	21586.9	22772.8
IDEMA	0.0	0.0	0.0	443.5	22.0	545.4	1144.7	918.9	1630.7	814.7
COAFIAGRO	285.7	94.2	94.2	1400.0	605.5	0.0	3144.2	1112.7	0.0	136.4
CAJA AGRARIA	0.0	0.0	0.0	0.0	0.0	7072.0	10275.0	11240.5	12986.7	13681.8
TOTAL SECTOR	85539.6	82858.0	82.858.0	104291.1	92561.4	94159.2	119217.0	147243.4	149589.0	166569.9
% PRES. NACIONAL	4.8	4.2	4.2	4.4	3.2	3.4	4.7	4.7	4.7	M.D

Note: The figures refer to the sum of operating costs, investments, and debt service.
Source: FIDA/IICA, 1993 (Table A10).

Table 24 - Colombia: Interest Rates, 1990-95

	1990-91	1992	1993	1994	1995
MAXIMUM INTEREST RATE FOR FARMERS					
SMALL	DTF-4	DTF-2	DTF+2	DTF+2	DTF+2
OTHER	DTF+4	DTF+6	DTF+6	DTF+6	DTF+6
INTEREST RATES FORCED ON INVESTMENT FOR AGRICULTURE					
A Bonds	DTF-9	DTF-6	DTF-4	DTF-4	DTF-4
B Bonds	DTF-5	DTF-2	DTF-2	DTF-2	DTF-2

- Notes: 1. For 1991-93, the rates are based on Resolution 77 of 1990 of Junta Monetaria. For 1994-95, farmer interest rates are derived from Law 101 of 1993, and bond rates are taken from from Regulación Externa 8 of 1994, Junta Directiva del Banco de la República.
2. All interest rates are expressed with respect to DTF (*Tasa de Depósito a Término Fijo*), an index of short-term market interest rates published by Banco de la República.

Table 25 - Colombia: Summary of Protection Indicators

		EXPORTABLES													
		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993 ^d
Beef ^{b/}	NPR	12.4	7.1	10.7	9.1	-1.0	6.1	16.7	10.0	5.5	-16.1	-22.6	21.8	78.4	78.9
	ERP	8.9	2.1	6.8	3.9	-9.2	-1.5	12.0	3.3	-2.4	-30.6	-39.4	22.1	99.1	100.3
	PSE	12.8	8.3	11.5	10.0	0.5	6.8	15.3	10.0	5.8	-16.7	26.8	16.1	44.0	
	ERA	34.4	39.0	50.6	48.7	31.8	29.5	26.1	20.1	-2.5	-26.2	36.7	21.1	92.7	
Coffee ^{b/}	NPR	-23.4	-21.8	-22.4	-20.3	-26.3	-26.1	-20.6	-4.0	-26.0	-10.6	-3.1	2.5	20.8	9.8
	ERP	-24.2	-23.9	-27.8	-27.2	-35.3	-36.7	-31.0	-5.9	-35.9	-11.1	-3.1	1.1	22.8	11.1
	PSE	-19.6	-18.5	-14.5	-8.5	-14.9	-17.2	-7.6	15.6	-24.7	-12.0	15.8	6.5	16.1	
	ERA	-15.5	-15.2	-13.5	-9.6	-11.8	-14.0	-7.5	14.9	-19.3	16.7	17.2	24.9	42.5	
Cotton	NPR	3.1	8.4	10.2	8.7	3.6	16.5	30.1	3.1	-1.0	0.2	-9.9	-3.7	14.1	5.3
	ERP	1.7	7.0	11.4	5.5	-9.3	13.4	44.0	-14.0	-23.6	-33.5	-59.2	-21.2	26.7	3.7
	PSE	1.1	9.8	5.9	8.0	6.1	12.1	17.1	-0.1	-9.8	-8.9	-17.3	-8.0	8.4	
	ERA	17.5	35.6	28.1	23.1	12.9	35.1	59.1	-0.5	-18.8	-27.5	-56.5	-20.7	27.4	
Rice	NPR	16.6	25.2	121.1	112.2	136.6	151.2	144.7	101.9	106.0	62.6	56.0	50.3	79.2	4.6
	ERP	37.9	54.6	327.4	296.5	362.5	395.5	380.8	281.9	274.2	110.2	95.1	97.2	178.6	1.5
	PSE	15.3	20.5	58.0	55.3	106.2	60.9	59.1	49.4	49.4	31.3	26.3	27.0	41.5	
	ERA	50.9	73.0	365.3	354.0	398.1	436.6	414.1	265.0	265.7	117.4	97.7	92.7	168.1	
		IMPORTABLES													
White Maize ^{b/}	NPR	23.7	14.9	23.2	2.6	-7.3	5.9	8.0	27.1	0.5	0.2	-11.7	-14.6	-13.7	-14.9
	ERP	34.0	17.0	30.6	-5.0	-23.6	-8.0	-0.2	35.3	-10.6	-9.6	-26.7	-26.9	-20.6	-23.0
	PSE	15.2	7.9	14.2	-0.7	-14.7	-3.1	-0.7	15.2	-9.7	-10.6	-21.1	-22.4	-19.0	
	ERA	38.4	22.3	36.5	0.7	-20.3	-3.5	3.3	37.0	-8.3	-8.1	-26.3	-29.7	-20.6	
Milk ^{b/4}	NPR	61.3	105.9	125.2	135.2	125.5	83.0	36.5	45.5	9.9	11.1	4.1	16.6	34.2	
	ERP	117.4	216.6	282.5	285.5	282.6	159.2	52.6	66.6	-11.9	-8.9	-22.2	15.6	74.1	
	PSE	65.2	109.6	129.5	139.7	129.5	85.7	40.5	47.5	11.0	11.9	4.2	3.1	2.7	
	ERA	34.4	39.0	50.6	48.7	31.8	29.5	26.1	20.1	-2.5	-26.2	-35.7	21.1	92.7	
Sorghum	NPR	20.0	23.7	35.1	18.3	15.5	25.9	16.9	114.3	15.9	13.7	7.7	6.1	11.7	3.2
	ERP	52.3	54.5	83.0	32.8	19.3	39.3	24.9	49.5	26.8	-3.2	-11.3	-0.5	21.6	-0.9
	PSE	13.1	14.8	22.0	11.5	8.2	80.6	9.4	23.9	0.9	-0.2	-2.8	-0.3	7.2	
	ERA	70.7	75.0	111.4	55.1	38.3	64.5	43.1	131.2	38.6	4.2	-10.1	-0.1	22.0	
Soybean	NPR	13.6	23.6	45.3	32.6	51.3	46.9	30.5	23.0	19.9	24.6	26.4	21.8	16.1	4.3
	ERP	23.6	40.0	86.0	56.6	92.7	78.6	45.1	29.7	23.1	21.7	31.7	32.5	29.9	2.1
	PSE	7.1	15.7	32.2	21.4	35.6	31.3	18.2	10.9	5.6	6.6	15.6	12.5	11.1	
	ERA	31.4	55.3	106.8	69.5	112.6	100.6	59.3	47.5	43.1	35.8	34.4	33.5	32.2	
Wheat	NPR	26.7	31.7	41.6	41.3	24.6	21.0	33.6	52.6	51.7	41.1	64.5	75.8	41.7	40.6
	ERP	45.0	52.7	73.6	71.2	33.4	20.7	47.1	66.6	67.3	59.9	105.5	131.4	75.8	70.4
	PSE	17.1	16.6	26.1	26.0	15.0	11.6	16.0	26.2	24.5	20.7	33.9	39.9	26.4	
	ERA	54.6	61.4	85.0	78.0	42.9	28.3	52.6	94.1	93.0	59.7	107.0	133.6	80.6	

a/ Evaluation at the point of price determination. In most cases, unless otherwise noted, it corresponds to the processing center.
(mills for grain, auction center for beef, etc.)

b/ Estimates of ERA and PSE for beef and milk are combined.

c/ It was assumed 50% of the coffee tariff is re-invested within the sector.

d/ Based on the international price of New Zealand butter CIF London.

e/ Reference border prices were adjusted upwards by 25% to account for differences in yellow and white corn. Estimates with out adjustments are available.

f/ First semester only.

Table 26 - Colombia: Evolution of Colombian Agricultural Prices 1986-92

Product	Period	(1) Change in Domestic Prices	(2) Change in International Prices	(3) Change in Real Exchange Rate	(4) Change in Intervention
Coffee	1986-89	0.01	-0.20	0.11	0.10
	1990-92	-0.27	-0.28	-0.03	0.03
	1986-92	-0.26	-0.49	0.09	0.13
Beef	1986-89	-0.05	-0.07	0.11	-0.10
	1990-92	0.12	-0.15	-0.03	0.30
	1986-92	0.07	-0.22	0.09	0.20
Cotton	1986-89	0.08	0.03	0.11	-0.07
	1990-92	-0.11	-0.12	-0.03	0.03
	1986-92	-0.03	-0.08	0.09	-0.03
Soybean	1986-89	0.05	0.01	0.11	-0.07
	1990-92	-0.19	-0.11	-0.03	-0.06
	1986-89	-0.14	-0.10	0.09	-0.13
Sorghum	1986-89	0.02	-0.05	0.11	-0.05
	1990-92	-0.09	-0.03	-0.03	-0.04
	1986-92	-0.08	-0.09	0.09	-0.08
Maize	1986-89	0.05	-0.06	0.11	-0.01
	1990-92	-0.17	-0.04	-0.03	-0.10
	1986-92	-0.12	-0.10	0.09	-0.11
Wheat	1986-89	0.12	-0.07	0.11	0.07
	1990-92	-0.17	-0.13	-0.03	-0.02
	1986-92	-0.05	-0.19	0.09	-0.05
Rice	1986-89	0.10	0.06	0.11	-0.08
	1990-92	-0.13	-0.09	-0.03	-0.02
	1986-92	-0.04	-0.02	0.09	-0.11
Milk	1986-89	-0.04	0.07	0.11	-0.23
	1990-92	-0.07	-0.11	-0.03	0.06
	1986-92	-0.12	-0.04	0.09	-0.17

Note: The table presents the change in the log of real producer prices decomposed as follows:

$P_d = P_i + RER + INT$ (where P_d , P_i , and RER are the % changes in domestic and international prices and real exchange rate, and INT is a residual that approximates the % change from intervention. For small changes, the difference in the log can be approximately interpreted as a percentual change in direct intervention.

Table 27 - Colombia: Agricultural Income Transfers

(Expressed in Current US\$ Millions)

Total Assistance Across All Commodities (Program)

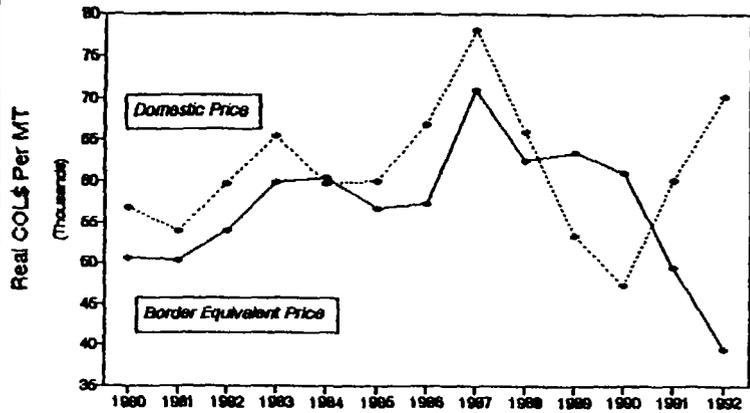
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Market Price Support	45.8	352.8	735.0	615.0	48.5	256.7	118.0	585.4	182.9	(88.8)	(226.4)	140.5	1,014.7
Market Subsidies	150.4	118.3	200.2	274.1	288.9	300.0	365.9	300.8	203.6	263.4	246.2	335.0	187.5
Input Policies	(43.6)	(73.1)	(67.3)	(67.5)	(56.4)	(83.1)	(78.9)	(87.0)	(107.2)	(121.0)	(99.7)	(59.3)	(22.7)
Credit Assistance	74.4	107.4	110.5	100.3	93.8	81.8	55.6	58.6	41.0	37.3	11.0	1.8	0.8
Research and Extension	38.2	34.3	32.5	28.3	26.8	22.6	24.9	23.2	21.3	19.1	6.1	5.6	5.9
Total Assistance	265.3	539.7	1,011.0	950.3	401.6	577.9	485.5	881.1	(24.3)	110.0	(62.8)	423.6	1,186.1

Total Assistance Across All Commodities (Commodity)

Beef	197.0	146.3	220.9	183.3	8.2	96.3	207.5	146.7	81.4	(232.0)	(337.7)	258.5	780.9
Coffee	(345.5)	(298.8)	(227.8)	(147.5)	(222.8)	(246.8)	(157.2)	(242.8)	(374.5)	143.5	203.2	104.0	235.5
Cotton	2.4	21.3	5.3	7.7	10.0	20.4	23.5	(0.1)	(21.0)	(15.2)	(32.7)	(20.4)	14.9
Maize	39.3	20.6	36.7	(1.8)	(31.4)	(5.7)	(1.1)	26.1	(19.6)	(25.4)	(51.8)	(56.2)	(41.2)
Milk	292.3	525.8	636.4	653.7	567.0	393.5	214.0	259.9	75.6	93.0	37.2	29.7	28.5
Rice	59.6	95.0	288.4	219.4	40.3	215.9	173.9	160.5	224.2	138.2	98.5	89.2	147.0
Sorghum	13.5	19.6	31.6	16.7	11.0	88.0	10.1	35.3	1.2	(0.2)	(4.0)	(0.5)	11.2
Soybeans	4.4	6.1	13.3	12.3	16.9	14.0	11.3	4.9	4.4	3.2	14.4	9.0	3.7
Wheat	2.3	3.8	6.1	6.4	2.5	2.3	3.6	5.1	4.0	4.9	10.1	10.0	5.5
Total Assistance	265.3	539.7	1,011.0	950.3	401.6	577.9	485.5	881.1	(24.3)	110.0	(62.8)	423.6	1,186.1

Source: Handbook on Surveillance of Agricultural Price and Trade: Colombia, Alberto Valdés and Barry Schaeffer, Technical Department, Latin America and the Caribbean Region, The World Bank, December 17, 1993.

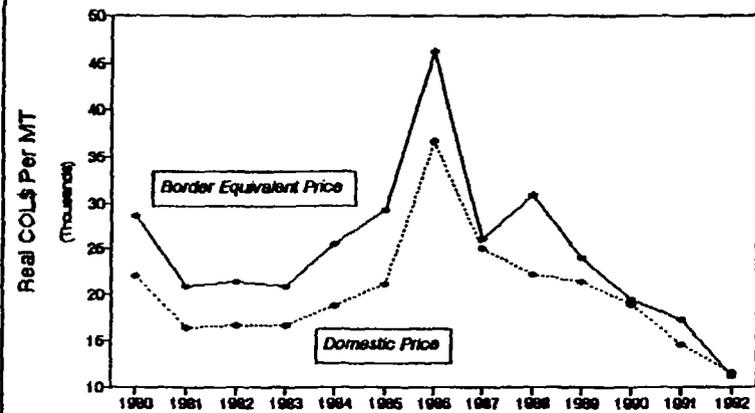
Figure A-1a. Evolution of Real Domestic and Border Equivalent Beef Prices in Colombia



Note: Both prices measured at the point of competition. Real Border Equivalent Price is what the domestic price would be in the absence of intervention, deflated by CPI ($P_w \cdot E_o / CP_t$). Real domestic price is domestic price deflated by CPI (P_d / CP_t).

Source: Surveillance Project, LATAD, 1994.

Figure A-1b. Evolution of Real Domestic and Border Equivalent Coffee Prices in Colombia

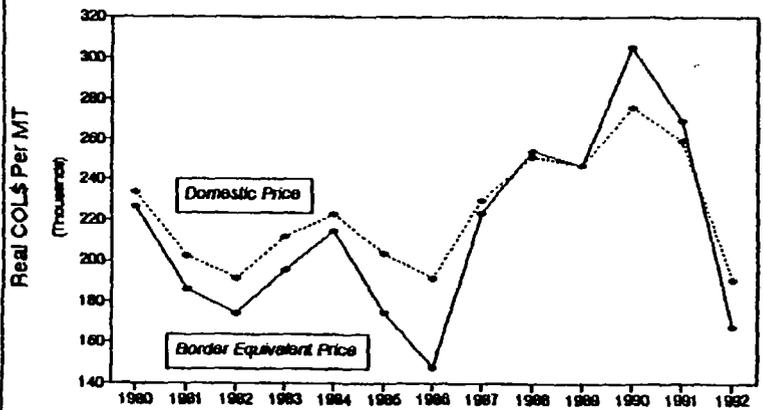


Note: Both prices measured at the point of competition. Real Border Equivalent Price is what the domestic price would be in the absence of intervention, deflated by CPI ($P_w \cdot E_o / CP_t$). Real domestic price is domestic price deflated by CPI (P_d / CP_t).

Source: Surveillance Project, LATAD, 1994.

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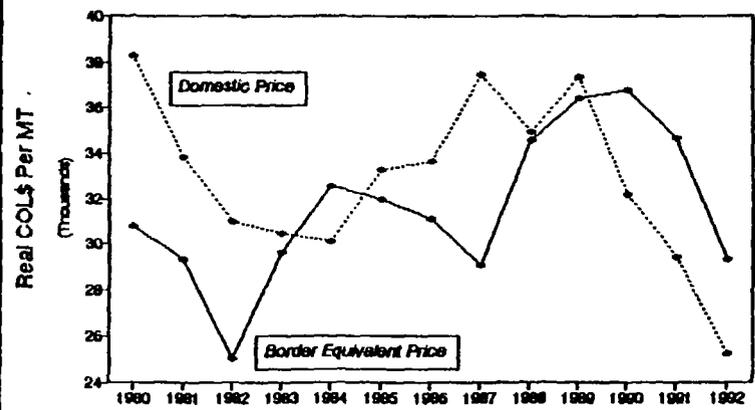
Figure A-1c. Evolution of Real Domestic and Border Equivalent Cotton Prices in Colombia



Note: Both prices measured at the point of competition. Real Border Equivalent Price is what the domestic price would be in the absence of intervention, deflated by CPI ($P_w \cdot E_o / CP_t$). Real domestic price is domestic price deflated by CPI (P_d / CP_t).

Source: Surveillance Project, LATAD, 1994.

Figure A-1d. Evolution of Real Domestic and Border Equivalent Maize Prices in Colombia



Note: Both prices measured at the point of competition. Real Border Equivalent Price is what the domestic price would be in the absence of intervention, deflated by CPI ($P_w \cdot E_o / CP_t$). Real domestic price is domestic price deflated by CPI (P_d / CP_t).

Source: Surveillance Project, LATAD, 1994.

Figure A

Figure A-1e. Evolution of Real Domestic and Border Equivalent Milk Prices in Colombia

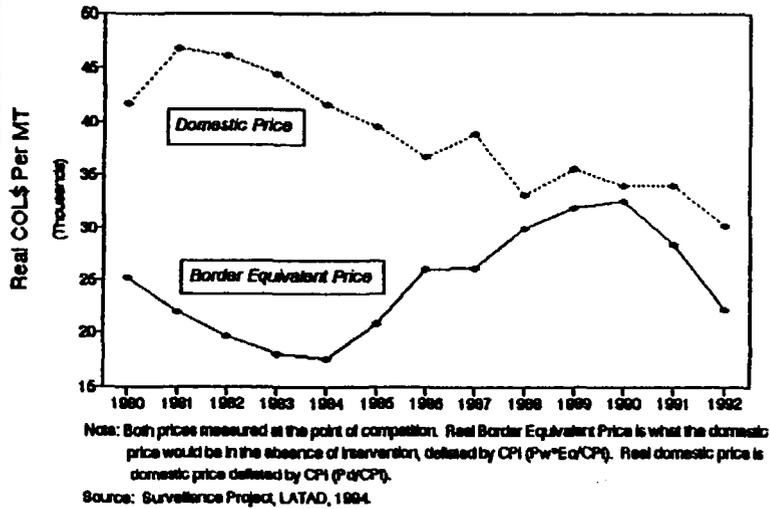


Figure A-1f. Evolution of Real Domestic and Border Equivalent Rice Prices in Colombia

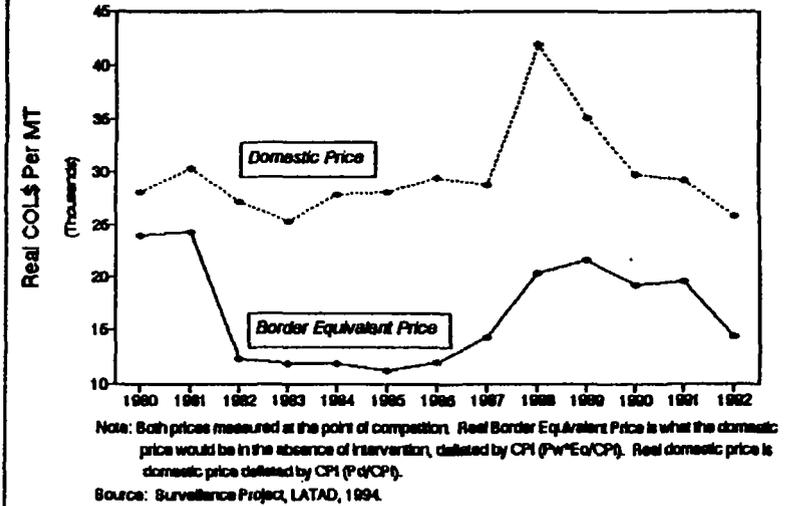


Figure A-1g. Evolution of Real Domestic and Border Equivalent Sorghum Prices in Colombia

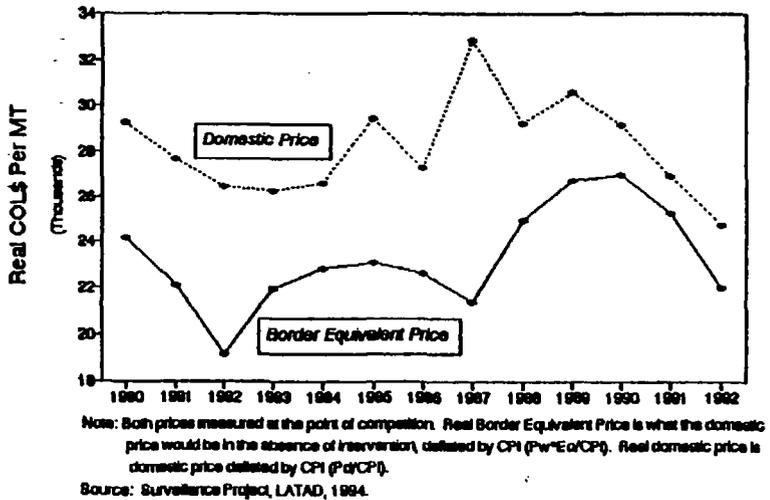


Figure A-1h. Evolution of Real Domestic and Border Equivalent Soybean Prices in Colombia

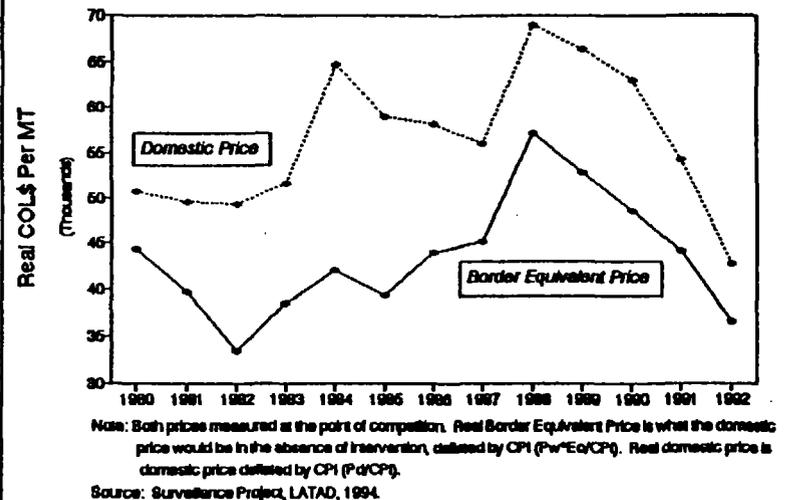
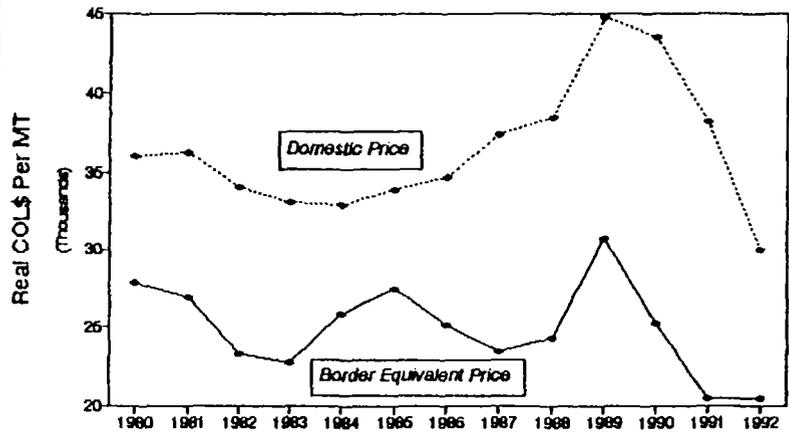


Figure A-1i. Evolution of Real Domestic and Border Equivalent Wheat Prices in Colombia



Note: Both prices measured at the point of competition. Real Border Equivalent Price is what the domestic price would be in the absence of intervention, deflated by CPI ($P_w \cdot E_c / CPI$). Real domestic price is domestic price deflated by CPI (P_d / CPI).

Source: Surveillance Project, LATAD, 1994.

Figure B-1
Total Irrigated Area, and Area of Projects
under Public and Private Investment in Colombia (1945-1990)

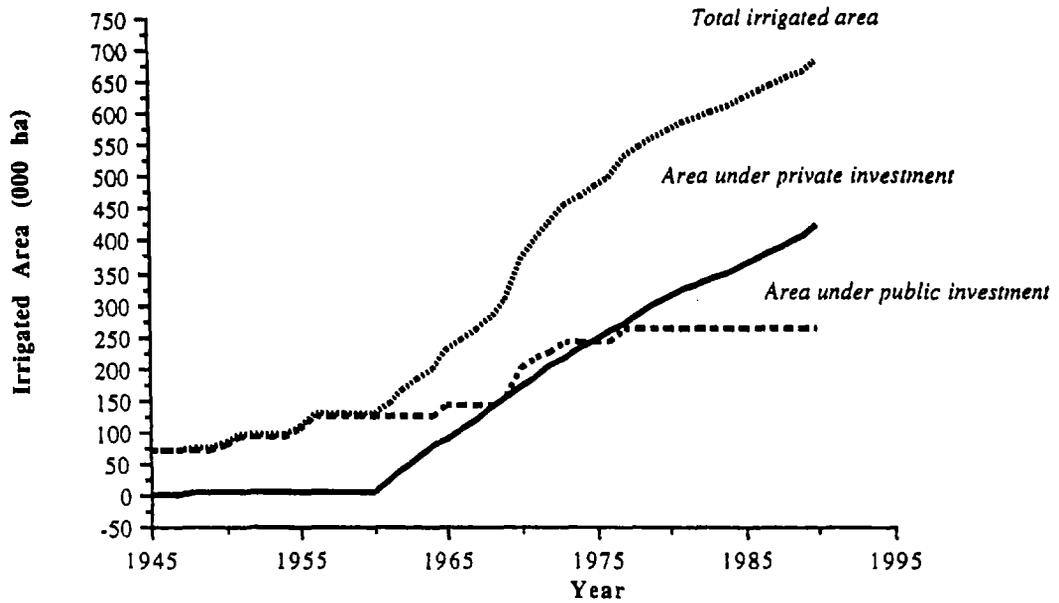
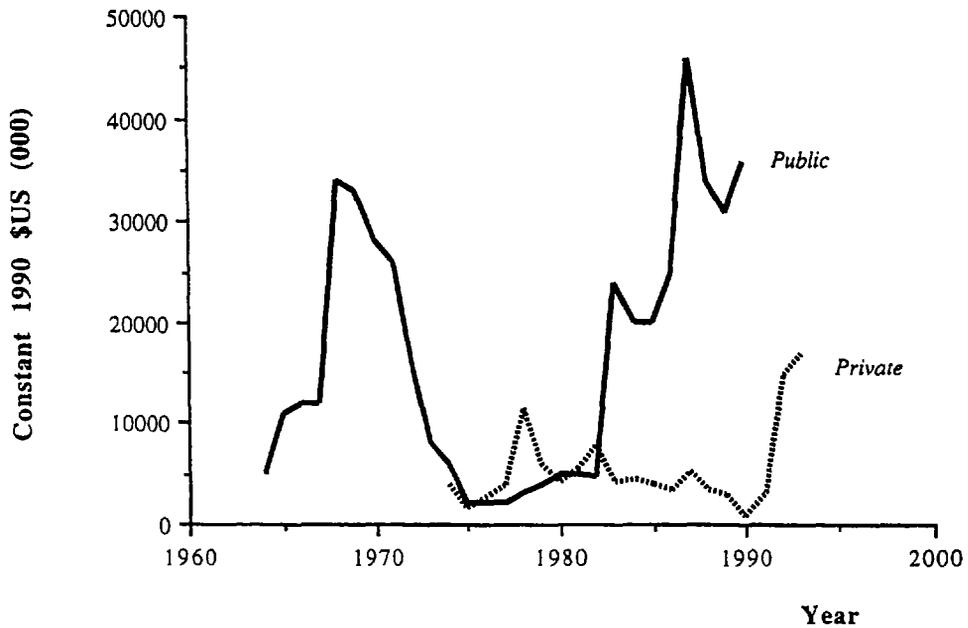
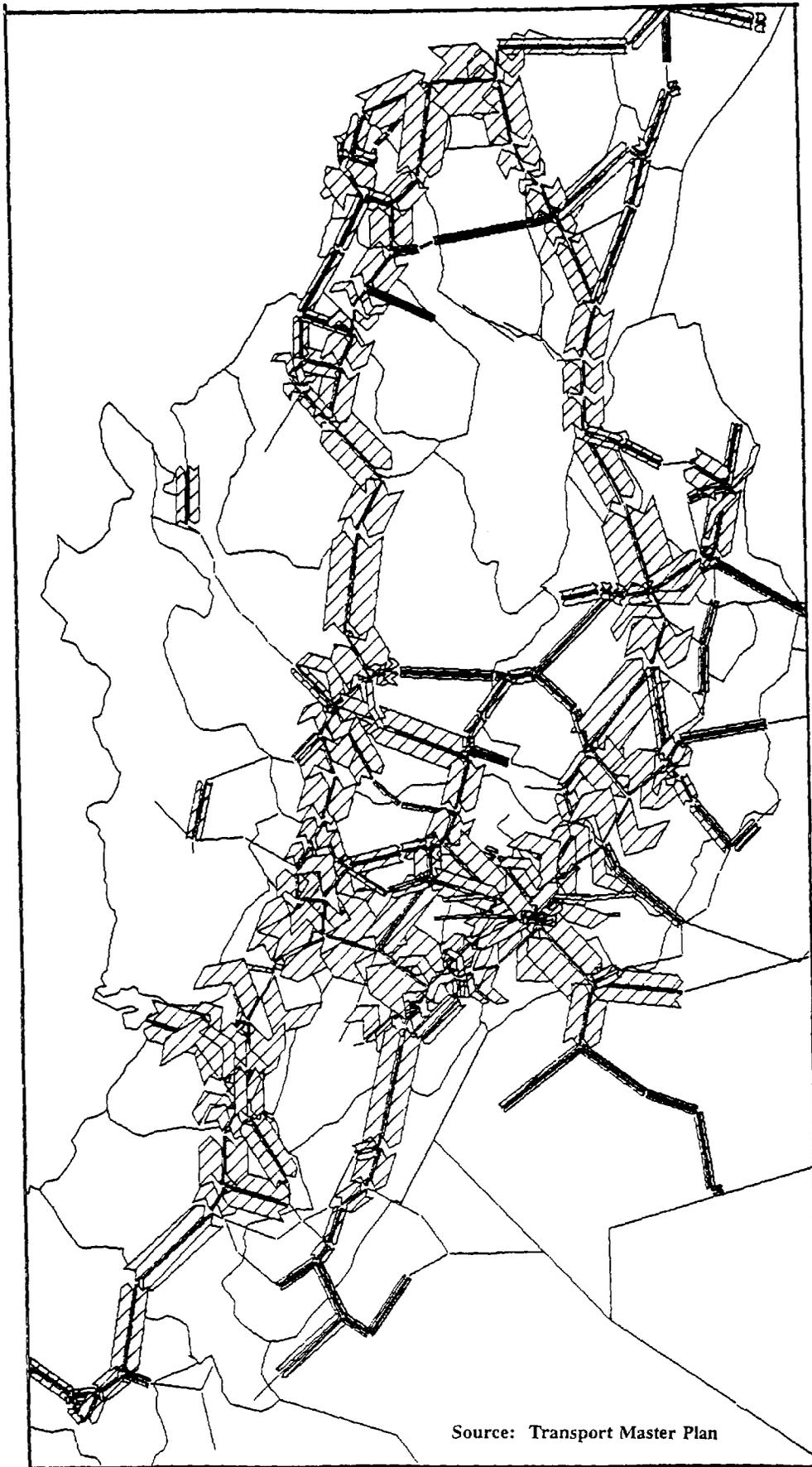


Figure B-2
Public and Private Investment in Irrigation Projects
in Colombia (1964 - 1993)



Source: Adapted from DNP (1991).

Figure C. Colombia - Transport Flow Density (vehicle equivalents)



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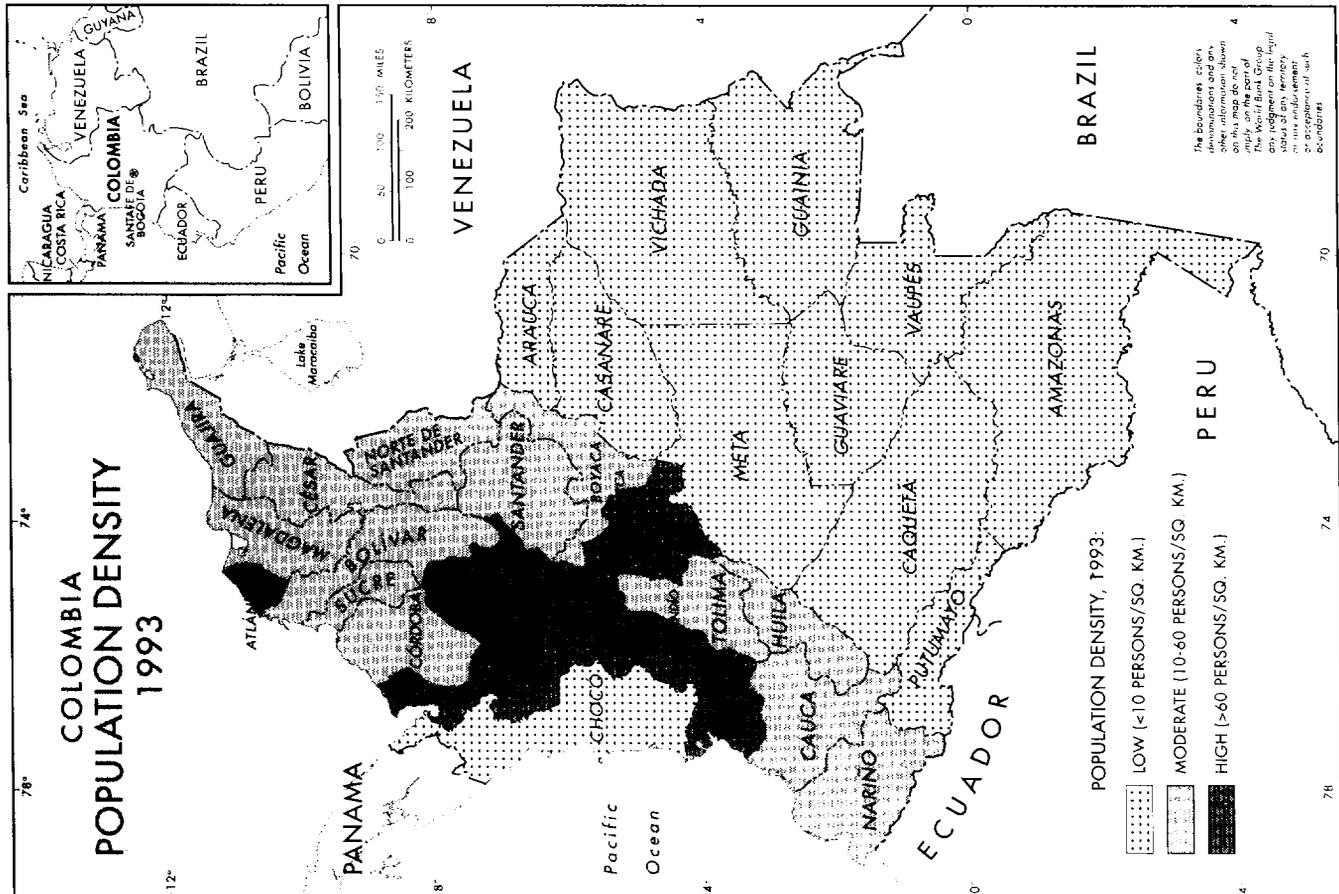
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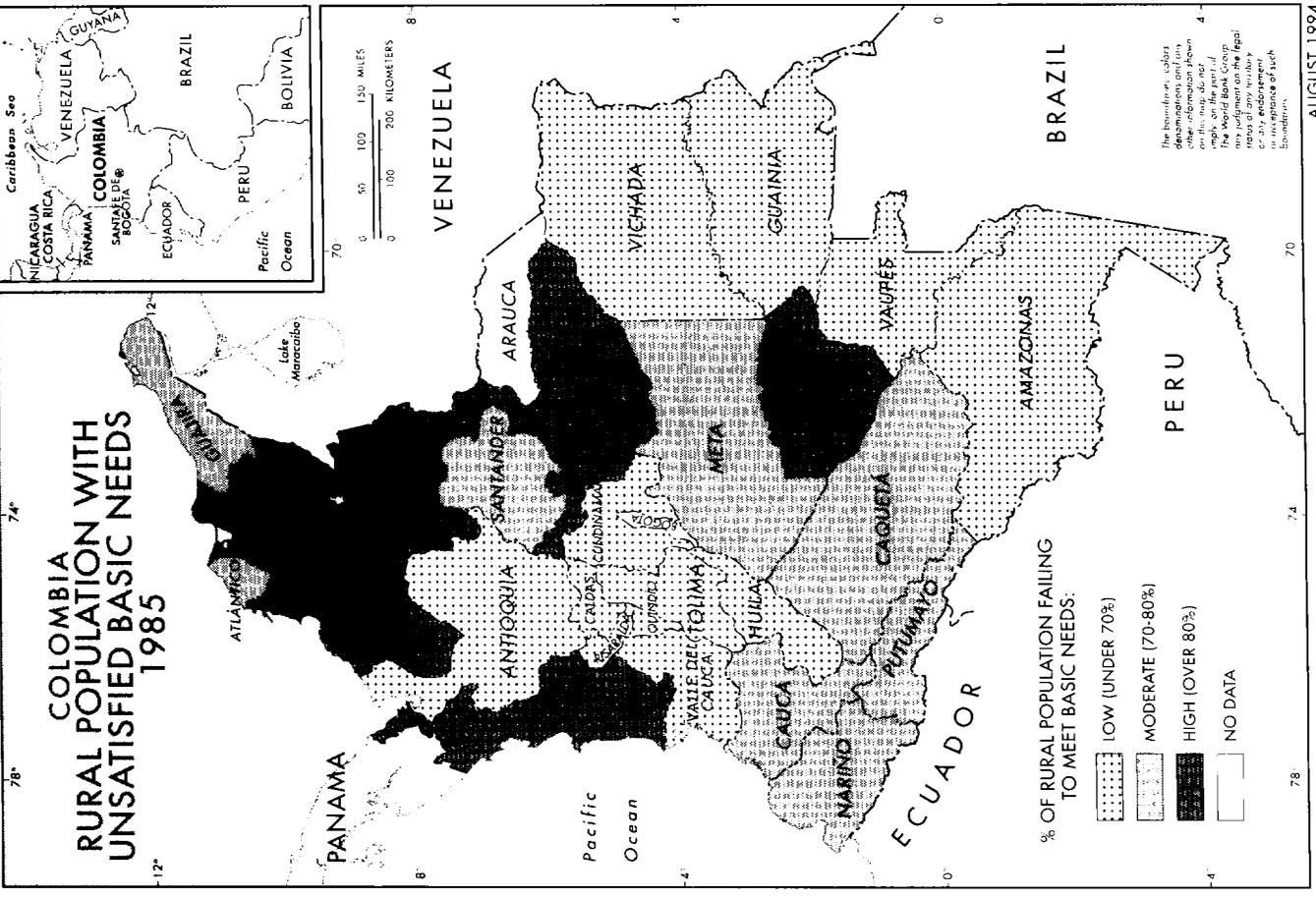
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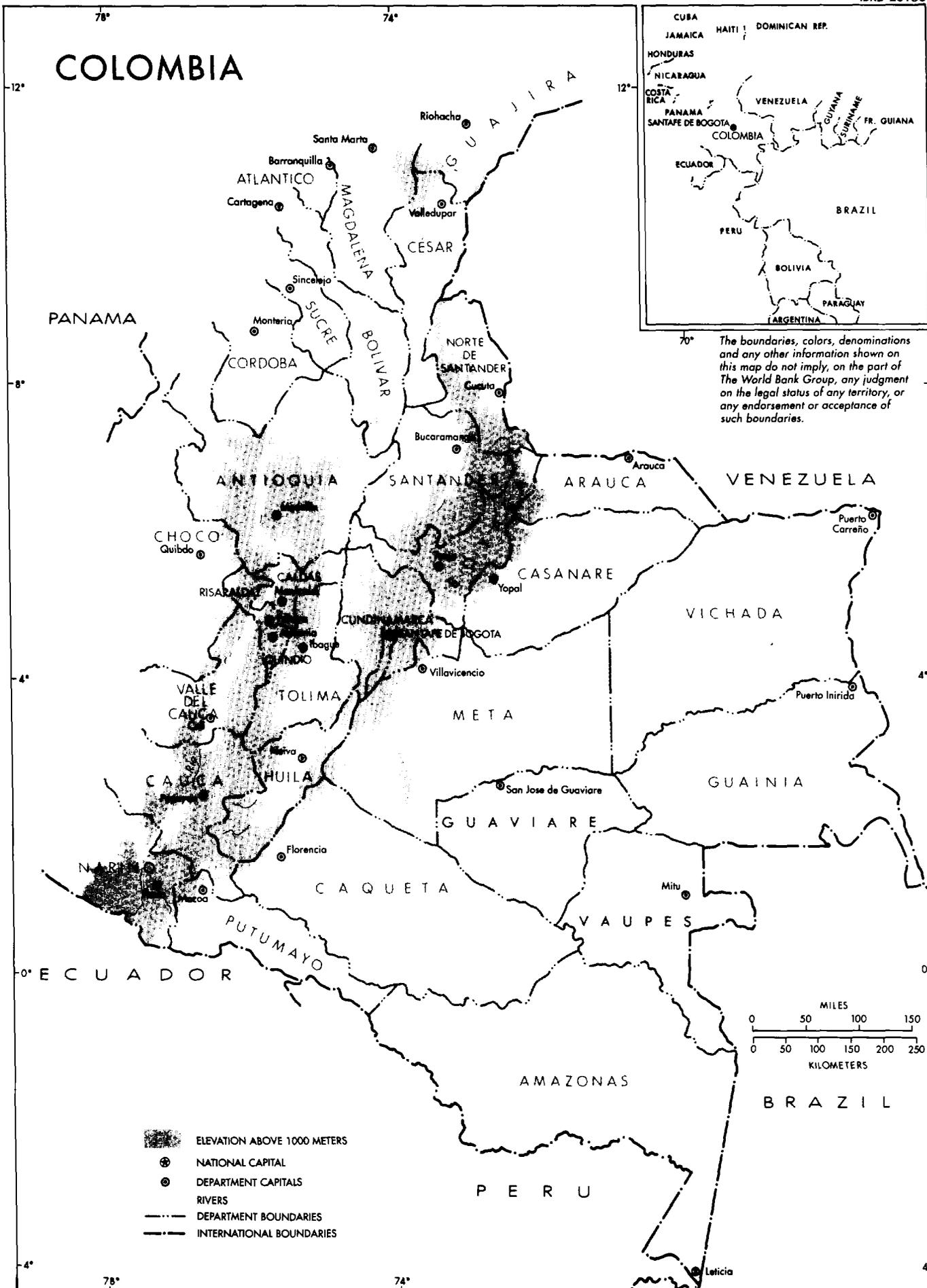


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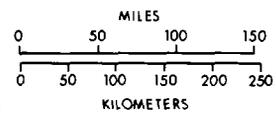
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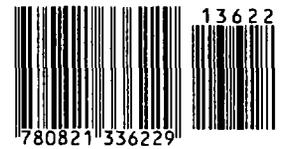
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- ELEVATION ABOVE 1000 METERS
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