THE WORLD BANK
RESEARCH PROGRAM
1988

Abstracts of Current Studies

The World Bank
Washington, DC
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INTRODUCTION

The World Bank's research program is intended to support all aspects of the Bank's operations, to broaden understanding of the development process, to improve the Bank's capacity to provide advice to member countries, and to assist in developing indigenous research capacity in member countries. These objectives underline the two functions of research in the Bank, both supporting Bank operations as an intermediate input—increasingly important to the role of the Bank as a policy adviser to developing countries—and keeping the Bank in the forefront of thinking on the economies of developing countries.

Now in its nineteenth year, the program covers a broad range of development-oriented issues in about sixty countries, with most research undertaken by the Bank's staff. To the extent possible, collaborators from client countries are also involved in the research. The wide-ranging topical interest of the research portfolio reflects the types of policy advice and information sought by member countries, according to their needs and priorities, and the data requirements of the Bank as a leading development institution.

These abstracts set forth the objectives, methodology, and achievements of ongoing or completed research projects during fiscal year 1988. This basic information is presented to keep development practitioners and researchers well informed of the Bank's research activities, with the intention of maintaining and expanding the dialogue on development issues.

Part I of this volume provides a summary of ongoing or completed research projects in the Bank's central research program during fiscal year 1988 (July 1, 1987-June 30, 1988).1 Centrally approved projects are reviewed by the Research Committee and are funded by the Research Support Budget. Part II of this volume provides a summary of departmentally funded research. These are projects undertaken by the departments with their own funds and are not subject to central review by the Research Committee.

Dissemination of Research

To give wider dissemination to the results of its research, the Bank established a three-tier structure of publications to serve several audiences. In addition to working papers, Research News appears four times a year and combines descriptions of newly approved research projects, abstracts of completed projects, and highlights from selected Bank publications. It updates initiatives by the Bank's research administration and brings new research findings to the attention of a wide audience.

The World Bank Research Observer, issued twice a year, seeks to help policymakers and nonspecialists concerned with the problems of developing countries keep abreast of the growing body of relevant research. Articles in the Observer are written primarily for the generalist reader with some knowledge of economics.

The World Bank Economic Review is a refereed professional economics journal of high standard aiming for worldwide readership among professional economists and social scientists in government, business, and international agencies, as well as in universities, and development research institutions. The Review publishes articles by Bank staff and consultants and is intended to serve as the principal professional outlet for the dissemination of Bank-sponsored research, policy analyses, and other studies in economic development.

Acquisition of Documents

Requests for information on specific research projects should be addressed to the project manager of the World Bank department listed in the "Responsibility" section of each abstract.

Reports stemming from the research projects are listed at the end of each abstract. Informal documents, such as divisional or departmental discussion papers or mimeographed and draft papers, are generally available from the responsible department.

All books and officially published documents of the World Bank are listed in the Index of Publications, which may be obtained from:

The World Bank, Publications Sales Unit
1818 H Street, NW
Washington, DC 20433, USA

The World Bank, European Office
66 Avenue d'lena
75116 Paris, France

Local distributors of World Bank publications are listed in the back of this book.

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1 This program excludes research projects funded by loans and credits to member governments. Research projects completed or closed during fiscal 1988 have a "C" notation next to their reference numbers. Discontinued projects are not included.
PART I

CENTRALLY FUNDED STUDIES
## CENTRALLY FUNDED STUDIES BY FUNCTIONAL CATEGORY

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1 COMPARATIVE STUDIES

The Timing and Sequencing of a Trade Liberalization Policy

Ref. No. 673-31

Lack of information on the desirable sequencing of trade policy reforms, specifically of economic measures that lead to reductions of effective rates of protection, is a significant gap in research on trade policy. Previous comprehensive studies have examined the causes and effects of liberalization policies rather than the attributes of a successful policy path. The purpose of this research project is to fill that gap by examining the timing and sequencing paths of trade policy under alternative economic structures in nineteen developing countries.

Starting from a policy of protection, many paths of change could lead to trade liberalization. The preferred policies, presumably those with the lowest adjustment costs, would depend on a multitude of political and economic circumstances and attributes that change over time. Even so, the characteristics of a preferred path may be common to enough countries, over long stages of development, that general principles can be identified. The fundamental question then is: What are the determinants of the timing, phasing, and sequencing of a successful and sustainable liberalization policy?

The optimal policy of trade reform would maximize the present value of net output; but in many cases, large net benefits in one stage may lower long-term benefits. In this complex process, political and economic conditions are significant. In exploring this process, the authors of the country studies have attempted to identify the factors responsible for the economic costs and benefits during the transition, thus implicitly addressing the sustainability of reform.

The nineteen study countries were selected for their experience with trade reform and the potential value of the findings of the studies to similar economies. Each country study incorporates substantial quantitative and descriptive evidence within a common methodology, from which inferences on liberalization policies will be drawn.

The project had two stages. The first, involving the individual country studies, consisted in turn of three phases. Phase I provided the general economic background to the liberalization episodes in each country, using an index to quantify the degree of liberalization over time. Phase II described the liberalization and accompanying economic policies, their implementation, and the following economic performance. Phase III drew inferences for the timing and sequencing of liberalization policies for each country. Nineteen separate country studies were prepared from the material from these three phases.

The second stage of the project is the preparation of a synthesis of these country studies. This has mostly been completed. As subcomponents of this project, special studies have been commissioned for subsets of countries on such topics as the order of economic liberalization between the goods market and the capital market, the contribution of tariff commissions to maintaining and extending trade liberalization efforts, and an analysis of impediments to trade unrelated to tariffs and other commercial practices, such as quality control.

The countries selected, the principal authors of the individual studies (in parentheses), and in some cases, collaborating institutions, are as follows: Argentina (Domingo Cavallo and Joaquin Cottani) Fundacion Mediterranea; Brazil (Donald Coes); Chile (Dominique Hachette and Sergio de la Cuadra), Instituto de Economia, Pontifica Universidad Catolica de Chile; Colombia (Jorge Garcia Garcia); Greece (George Kottis), Institute of Economic and Industrial Research (IEIR); Indonesia (Mark Pitt); Israel (Nadav Halevi and Joseph Baruh), Maurice Falk Institute; Republic of Korea (Kim Kwang Suk); New Zealand (A. C. Rayner and R. G. Lattimore); Pakistan (Stephen Guisinger and Gerald Scully); Peru (Julio Nogues); Philippines (Geoffrey Shepherd and Florian Albuero); Portugal (Jorge de Macedo, Cristina Corado, and Manuel Porto); Singapore (Bee Yan Roberts); Spain (Guillermo de la Dehesa, Angel Torres, and Jose Juan Ruiz); Sri Lanka (Andrew G. Cuthbertson and Premachandra Athukorala); Turkey (Tercan Baysan and Charles Blitzner); Uruguay (Edgardo Favaro and Charles Spiller); and Yugoslavia (Oli Havrylyshyn).

The country studies will be published in six
volumes; a seventh volume will synthesize the findings from the thirty-six episodes of trade liberalization. The first three volumes, containing the studies of Israel and Yugoslavia of Mediterranean; Chile, Uruguay, and Argentina of Latin America; and Korea, Singapore and the Philippines of Asia, are scheduled for publication in spring 1989. The other country studies and the synthesis volume will be published in late 1989.

**Responsibility:** Latin America and the Caribbean Country Department I–Armeane M. Choksi, Michael Michaely, and Demetris Papageorgiou.

**Closing Date:** October 1988.

**Reports:**


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**The Political Economy of Agricultural Pricing Policies**

Ref. No. 673-64

The objective of this study is to examine systematically in eighteen countries representing all World Bank regions the evolution of agricultural pricing policies and their effects over time on output, consumption, trade, income distribution, resource transfers, and the budget. By examining these issues for each country within a common framework, the study seeks to identify some guidelines for agricultural pricing policies. The study examines the impact of both sector-specific policies and economy-wide policies on the agricultural sector.

The relationship between short-term and long-term effects of agricultural pricing policies is being emphasized, as well as the role of initial conditions. Political economy aspects of agricultural pricing policies are also being analyzed, such as the dynamic interaction between policy decisions and the economic and political forces motivating or reacting to these policy decisions. Finally, by evaluating the costs and benefits of typical agricultural price policy packages in selected countries, the study is attempting to identify alternative policies that achieve the same ends but at lower efficiency costs and to assess the possibilities for their implementation based on the historical experience of administrative feasibility.

The countries selected for the study, the authors (in parentheses), and in some cases, collaborating institutions are as follows: Argentina (Adolfo Sturzenegger and Wylan Otrera) Fundacion Mediterranea; Brazil (Jose Luis Carvalho and Antonio Brandao); Chile (Hernan Hurtado, Eugenia Muchnik, and Alberto Valdes); Colombia (Jose Garcia Garcia and Gabriel Montes); Dominican Republic (Terry Roe and Duty Greene); Egypt (Jean-Jacques Dethier); Ghana (Dirck Stryker), Associates for International Resources and Development; Cote d'Ivoire (Achi Atsain, Sylvestre Ehouman, and Allechi M'Bet); Republic of Korea (Pal Yong Moon and Bong Soon Kang); Malaysia (Andrew Lai and Glenn Jenkins); Morocco (Hasan Tuluy and Lynn Salinger), Associates for International Resources and Development; Pakistan (Ijaz Nabi and Naved Hamid); Philippines (Ponciano Intal and John Power); Portugal (Timothy Josling, Francisco Avillez, and Timothy Finan); Sri Lanka (Surjit Bhalla), The Policy Group; Thailand (Ammar Siamwalla and Suthad Set boon-saeng), Thailand Development Research Institute; Turkey (Hasan Olgun and Haluk Kasnakoglu); and Zambia (Doris Jansen).

The country studies have been completed.
These are being published in the World Bank Comparative Studies series. The main findings, by country, will be published as chapters in three volumes. Still to be completed is a comparative analysis based on the country studies; the findings of this analysis will be presented in a synthesis volume in early 1989.


Closing date: March 1989.

The Political Economy of Poverty, Equity, and Growth

Ref. No 673-73

What has been the experience of developing countries with growth and income distribution in recent decades, and how has their experience been affected by public policy decisions? Under what circumstances is a policy package likely to lead to better equity and growth outcomes than another policy package? How do initial conditions--physical and human resource endowments, trade orientation, agricultural systems, socioeconomic institutions--affect the growth and equity outcomes?

Previous studies have examined the experience of individual countries to derive guidelines and policy lessons relating to growth and equity. Still needed, however, are useful generalizations and policy lessons with wider relevance than those emerging from individual country studies. This study is attempting to find broadly applicable answers to these questions, within a political economy framework, through a comparative analysis of experience in twenty-one developing countries.

For each country, researchers are recording its recent economic history and evaluating alternative interpretations of the "facts" of the case to show the processes at work in the economy and are assessing the relative importance of three sets of factors: initial conditions, institutional influences, and public policy interventions.

After the historical experiences of individual countries have been accounted for, the findings will be analyzed comparatively for "twinned" countries. By comparing the experiences of two countries with similar or contrasting experiences, the study should provide a new perspective on the development experience even for countries that have been frequently studied individually.

Finally, the findings of the country studies and the twinned studies will be pulled together in a synthesis report so that any further generalizations applicable to larger clusters of countries may be considered. This gradual expansion of the network of comparisons should capture broadly applicable guidelines for policymaking while avoiding any arbitrary forcing of the experiences of individual countries into a preconceived theoretical framework.

The countries selected for the study and the principal authors (in parentheses) are as follows: Brazil and Mexico (Angus Maddison); Colombia (Mauricio Carrizosa and Alberto Urdinola); Costa Rica and Uruguay (Simon Rottenberg); Hong Kong, Singapore, Mauritius, Malta, and Jamaica (Ronald Findlay and Stanislaw Wellisz); Madagascar and Malawi (Frederic Pryor); Nigeria and Indonesia (Paul Collier, David Bevan, and Jan Gunning); Peru (Richard Webb); Sri Lanka and Malaysia (Henry Bruton); Thailand and Ghana (Oey A. Meesook and Gus Edgren); and Turkey and Egypt (Bent Hansen).

Responsibility: Latin America Technical Department, Human Resources Division--George Psacharopoulos. With Deepak Lal, University College, London; and Hla Myint, London School of Economics.

Closing date: December 1989.

Macroeconomic Policies, Crisis, and Long-Term Growth

Ref. No 673-99

A comparative study of the macroeconomic performance of developing countries has been long overdue. The recent theoretical literature on macroeconomic adjustment has been confined to industrial countries, while adjustment in the context of development has been little researched. Yet the experience with adjustment over the last two decades provides a rich source of empirical information for the study of the adjustment experiences of developing countries.

This comparative study of macroeconomic management during periods of crises focuses on three central questions: (1) Why have some countries succumbed to crisis and others not? (2) How can a country best effect the transition to more stable but rapid growth? (3) What are the effects of crises and the manner of resolving them on long-term growth?

The study examines the constraints affecting policymakers' choice of one set of macroeconomic decisions over another. In this context, the study considers the relationships between short-run adjustment and growth and the influence of the inter-
Comparative Studies

action of a country’s history and its alignment of political and economic forces on policy outcomes.

The method of such a multidimensional study of the “styles” of macroeconomic management is to use a broad view of macroeconomic performance rather than a single model. The comparative approach allows the delineation of performance across different countries and stages.

In Phase I of the project, studies were carried out for seventeen countries. For each country, an analytical macroeconomic history is recorded and critical episodes (for example, oil shocks, agricultural booms) that have led to macroeconomic policy reactions have been identified. In Phase II, these critical episodes are analyzed, along with the shocks and policies that may have precipitated them. Particular attention is paid to policies during a crisis that did not lead to critical episodes. Phase III, where the relationships between macroeconomic policies and sustainable paths for growth are explored for each country case, is currently underway. Upon completion of the country studies, a synthesis volume comparing macroeconomic policies and adjustment in the seventeen countries, and analyzing the repercussions for long-term growth will be prepared. This comparative volume will provide the Bank and policymakers with a broader understanding of how and why some countries have succumbed to crises while other countries, subject to similar external shocks, have not, and of the relationship between the response to crises and long-term growth.

In June 1987, a workshop was held to discuss drafts corresponding to Phase I of the country studies. A second workshop to discuss drafts of Phase II was held in May 1988. The workshop to discuss Phase III drafts will be held in March 1989. The countries selected for study and the authors (in parentheses) are as follows: Argentina (Juan Carlos de Pablo), Brazil (Donald Coes and Marcelo Bianconi), Cameroon (Michael Connolly), Chile (Hernan Cortes), Colombia (Jorge Garcia Garcia), Costa Rica (Claudio Gonzalez-Vega), Côte d’Ivoire (Jean-Claude Berthelmy and Francois Bourguignon), India (Vijay Joshi and Ian Little), Indonesia (Bruce Glassburner and Wing Woo), Kenya and Nigeria (Paul Collier, David Bevan, and Jan Gunning), Mexico (Francisco Gil-Diaz), Morocco (Emil Claasen), Pakistan (Nadeem Haque and Mohsin Khan), Sri Lanka (Premachandra Athukorala and Sisira Jayasuriya), Thailand (Peter Warr), and Turkey (James Riedel).

Responsibility: Economic Advisory Staff—Sarath Rajapatirana, and Policy, Planning, and Research—Hernan Cortes. With Ian Little, Nuffield College, Oxford University; Max Corden, Australian National University /International Monetary Fund; and Richard Cooper, Harvard University.

Closing date: June 1990.

Reports:
Income Distribution and Poverty Alleviation

The Distribution of Welfare in the Côte d’Ivoire

Ref. No. 673-22C

This investigation of welfare levels in the Côte d’Ivoire is the first sponsored by the World Bank for a Sub-Saharan African country. The project has three main objectives: (1) to analyze welfare distribution in the Côte d’Ivoire using data from a 1979 nationwide consumption and income survey of 1,980 households; (2) to establish, in collaboration with the Ivorian Direction de la Statistique, a permanent household survey for monitoring market and household activities; and (3) to compare the distribution of welfare in 1985 with that in 1979 and to explore sources of welfare differences.

The analysis of the 1979 data showed that the distribution of welfare in the Côte d’Ivoire is more unequal than had been thought. The analysis also revealed the importance of home-grown produce for the welfare of Ivorian households, especially in rural areas. This analysis of welfare distribution is supplemented by several detailed studies on consumption of electricity and other sources of energy and a comprehensive analysis of the demand for housing in Abidjan.

In the project’s second phase, Bank staff, in collaboration with the Direction de la Statistique, established a permanent household survey in the Côte d’Ivoire to provide policymakers and planners with regularly updated information. The survey, modeled on recommendations from the World Bank’s Living Standards Measurement Study (LSMS), is designed to gather a wide variety of information on household characteristics that reflect living conditions or explain differences among them. Permanent survey staff interview a national probability sample of 1,600 households each year. In each subsequent year, half the interviews are with the previous year’s households and half are with new households. Permanent survey field operations began in February 1985; preliminary statistical abstracts were released in November 1985 and June 1986. A statistical abstract of the 1986 data became available in July 1987.

Research is now under way in the project’s third phase on topics relating to the measurement and analysis of living standards in the Côte d’Ivoire. Studies include a comparative analysis of welfare distribution based on 1979 and 1985 data and an analysis of the causes underlying differences in well-being among Ivorian households. This second set of activities will emphasize household labor market activities and public sector service provision. Permanent survey data also will be used in conjunction with similar data being collected in Peru ("Education and Informal Sector Employment," Ref. No. 673-26) to evaluate and refine LSMS survey and research recommendations.


Closing date: December 1987.

Reports:

Phase I

"Étude de la dépense d’électricité des ménages en Côte d’Ivoire."
"Étude de la consommation totale d’énergie des ménages en Côte d’Ivoire."
"Tables de composition des plats et des produits."
"Etude des prix des produits alimentaires."
"The Demand for Urban Housing in the Côte d’Ivoire."
"Household Consumption and the Distribution of Welfare in the Côte d’Ivoire."

Phase II

"Enquête Permanente Auprès des Ménages: Questionnaire sur les ménages."
"Enquête Permanente Auprès des Ménages: Questionnaire supplémentaire."
"Enquête Permanente Auprès des Ménages: Questionnaire sur les villages."
"An Annotated Questionnaire to Measure Levels of Living."
"Enquête Permanente Auprès des Ménages: Manuel à l’usage des opérateurs de saisie."
"Enquête Permanente Auprès des Ménages: Manuel d’instruction aux superviseurs."
The Costs and Benefits of Food Subsidies in Morocco

Ref. No. 674-16

An important objective of many developing country governments is to provide food products to consumers at low prices in order to meet the nutritional needs of their populations. In most cases, this is achieved through a food subsidy program. There is, however, widespread belief in the development community that such policies should be reconsidered. Some developing countries are experiencing food shortages due to unfavorable weather conditions or structural rigidities in the agricultural sector, while their populations are growing at a rapid, sometimes alarming, rate. Consequently, increasing quantities of food must be imported, which drains foreign reserves and tends to increase budget deficits. To cut costs, governments must decrease subsidies by increasing food retail prices. Egypt, the Sudan, Tunisia, and Morocco have already embarked on such policies.

The purpose of this research study is to design and implement a method for evaluating the impact of increases in food prices on various socioeconomic groups. Because ways must be found to compensate groups seriously hurt by the elimination of food subsidies, this study is investigating one approach to lowering subsidy costs without unduly affecting the poorest groups: subsidizing the consumption of one or more inferior goods. This subsidy would guarantee that needy households benefit from the program while better-off households are excluded.

The analysis requires estimates of price and income elasticities obtained using an Almost Ideal Demand System. The estimates are used in a cost-benefit analysis to determine the welfare effects on various socioeconomic groups of removing the subsidies. The estimates are also used in designing a compensatory program for low-income households.

The results of the study should be useful for World Bank analyses of the performance of various countries and should help developing countries determine the repercussions of their food policies on the well-being of their populations.

The study focuses on Morocco because of the availability of information on household food expenditures from two cross-sectional surveys (1970 and 1984) and because Morocco's food subsidy program is under increasing pressure. Per capita agricultural production has been decreasing or stagnating since 1970, and the population has been growing at annual rates exceeding 2.5 percent. Under these conditions, the food subsidy program has become extremely costly (10 percent of the Government's current expenditures), and Morocco has decided to decrease its food subsidies.


Closing date: June 1988.

Economic Policy Analysis of Household Data

Ref. No. 674-19C

Knowledge of household responses is central for policy formulation, but there is currently very little hard knowledge on the estimation of elasticities of supply and demand. This research project is using recent advances in theory and data collection to develop and test a method that produces accurate estimates of price responses from the type of household survey data that is widely available in developing countries. Such a method allows precise estimation of key consumption and production response parameters that have typically been exceptionally difficult to measure for a majority of developing countries.


Closing date: March 1988.

Reports:

Deaton, Angus. "Estimation of Own- and Cross-Price Elas-
Public and Private Transfers in Peru
Ref. No. 674-49

Public transfers are an important component in government's attempts to insulate the poor in the adjustment process. These transfers include both subsidized provision of public services, as well as direct monetary payments. They generally move resources from higher to lower income households. But only looking at public transfers can be deceptive. Suppose that widespread, altruistically-motivated private "safety nets" exist, and that any change in public transfers simply causes corresponding offsets in private transfers. If public transfers are reduced, private ones take up the slack; if they are increased, private ones are crowded out. With a pervasive private transfer network, public transfers might have more limited effects in fighting poverty.

The motive for private transfers -- altruism versus exchange -- determine private responses to public income redistribution. If the motive is altruism, the impact of public transfers will be dampened or neutralized by private behavioral responses. But economists have recently begun to consider non-altruistic transfers -- payments exchanged for in-kind services or future cash transfers. If the motive is exchange, the public-transfer impact can actually be amplified by private responses. For a person relying on private transfer income in an exchange relationship, an increase in public transfers buys two things: increased consumption and increased power and independence in the exchange relationship.

While the connection between public transfers and some aspects of private behavior (savings, labor supply) have been studied extensively, the links between public transfers and private family transfers remain virtually unexplored. The research will address the interaction between public and private transfers in developing countries. It will use microlevel data available in the Peru Living Standards and Informal Sector Study.

The Peru data set is well-suited to the task: it contains details on both private transfer income (for example, remittances given and received) and public transfers (such as unemployment insurance), as well as a comprehensive set of demographic, labor market, consumer-balance-sheet, and expenditure variables. Estimates of the relationship between the income of private-transfer recipients (mainly earnings and public transfers) and the private transfer amount received will allow the inference of private-transfer motives. This estimated model will then be used to simulate the responsiveness of private transfers to changes in public transfers. Such an analysis, to be presented in one or two research papers, will show the impact of income redistribution policies, such as social security and other subsidy programs, net of the impact of private behavior.

Responsibility: Country Economics Department, Public Economics Division--Emmanuel Y. Jimenez and Donald Cox (consultant).
Closing date: June 1989.

Planning, Growth, and Country Economic Analysis

Bank Seminar Series on "The Frontiers of Economics"
Ref. No. 673-52C

"The Frontiers of Economics" seminar series is jointly sponsored by the Latin America and the Caribbean Regional Office and the Africa Regional Office. The series is intended to keep Bank staff abreast of the latest developments in economic research. Guest speakers from outside the Bank have presented nontechnical surveys of their current research and have discussed its applicability to immediate policy or ongoing research interests within the Bank. This series of seminars introduces current thinking on a variety of topics from leading economists and enables Bank staff to obtain the intellectual stimulus that is increasingly important for effective Bank operations and research.

Responsibility: Latin America and the Caribbean Regional Office--Armeane Choksi and Bruce Fitzgerald, and Africa Regional Office--Stephen O'Brien.
Closing date: June 1988.

The Effects of Fiscal Deficits in LDCs
Ref. No. 673-62C

A basic doctrine of macroeconomic theory is
that increases in fiscal deficits have an expansionary effect on nominal income. The value of this "fiscal multiplier" in Keynesian theory depends on the spare capacity in the economy. Recently, however, econometric work and the experience of governments have shown that, despite high levels of spare capacity and unemployment, fiscal multiplier effects have been considerably smaller than they had been under conditions of much fuller employment. Indeed, there is evidence for countries of the Organisation for Economic Cooperation and Development (OECD) that increasing deficits may generate expansion in the short run but contraction in the long run. 

If under specified conditions the expansion of deficit spending generates a long-run contraction in real GNP, the justification for projects involving additional public spending with less than full cost recovery will need to be reexamined. Similarly, programs for structural adjustment loans will need to absorb these new findings.

This study examines the experience of developing countries to determine whether the behavior of fiscal multipliers corresponds to that found in OECD countries and ultimately to determine whether the standard doctrine needs substantial revision. The study also attempts to explain the "perversity" of the fiscal multiplier by finding the circumstances that influence the variation in its value, given that the level of unused capacity is not the sole determinant.

The central hypothesis of the research is that variation in the fiscal multiplier can be explained by the omission from the standard economic model of "credibility" and "confidence." The recent emergence of the perverse multiplier may be explained by the deterioration of confidence since the currency regime change. Before 1972, when governments were financially conservative or disciplined by fixed exchange rates, people were confident that the government would reverse deficits during an economic upswing. But as fiscal discipline diminished, so too did expectations of the reversal of deficits. As examples of such regime changes, the researchers examined currency board regimes in developing countries before independence and the removal of the fixed peg. They also examined behavior before and after the regime change in several countries currently experiencing high inflation.

One aim of this study is to conceptualize and quantify "confidence" and to determine the main factors behind loss of confidence and expectational shifts. Using such a measure, the researchers attempted to determine whether changes in confidence affect the fiscal multiplier and whether the experience of developing countries parallels that documented for industrialized countries.

The first part of the research examined the records on deficits, money, inflation, and growth for a large sample of countries using reduced-form equations as the main analytical tool. Six countries (Peru, Mexico, Singapore, Zambia, Israel, and Argentina) were analyzed in terms of a simple structural model. The model was adapted from the Liverpool (Rational Expectations) Macroeconometric Model to incorporate (1) a more detailed treatment of external debt and the budget constraint, (2) a variable interest rate risk premium, and (3) a terminal inflation condition to reflect developing country political constraints. The model has been tested to ensure robustness.

**Responsibility:** Office of the Vice President, Development Economics and Chief Economist--Alan A. Walters.

**Closing date:** December 1987.

**Report:**


**Structural Adjustment in a Newly Industrialized Country: Lessons from Korea**

**Ref. No. 673-83**

The Bank is becoming increasingly involved in policy lending that aims to restructure economies suffering from macroeconomic imbalances that result in inflation and balance of payments problems. The purpose of this project is to examine the experience of the Republic of Korea, a country that has tackled such problems successfully, and to draw appropriate lessons from this experience.

The study examines Korea's success in adjusting to the typical macroeconomic imbalances of low growth, high inflation, and a faltering balance of payments. Korea suffered from high inflation in 1978-81, and its growth in 1980 was negative—minus 6.4 percent. Nevertheless, it was able to reduce inflation to 2 percent by 1984 and to achieve real GNP growth of 9.3 percent in 1983 and 7.5 percent in 1984. Furthermore, its current account deficit was cut from $5.3 billion in 1980 to $1.4 billion in 1984.

The country's adjustment policies included (1) a large real devaluation, (2) a slowdown in the push for heavy and chemical industries, (3) an increase in domestic competition, (4) further trade liberalization, and (5) partial deregulation of financial markets.

The research results will be presented in thirteen papers dealing with specific aspects of Korea's
successful adjustment. The various elements contributing to this success will be synthesized, and the papers and synthesis will eventually be published as a book.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Vittorio Corbo. With Suh Sang-Mok, Vice President of the Korea Development Institute and member of Korea’s National Assembly.

Closing date: October 1988.

Public Sector Behavior in Highly Indebted Countries: A Comparative Study for Latin America

Ref. No. 674-02C

Although there exists a well-developed framework for analyzing household expenditure behavior in both its transitory and permanent dimensions, there is a lack of similar understanding of government expenditure behavior. The purpose of this research is to identify and analyze government expenditure and financing behavior, particularly under external shocks such as those that occurred in the 1970s when terms of trade for oil-exporting and oil-importing countries changed drastically. At the same time, a sharp increase in the world supply of credit and a very active international financial market increased the accessibility of foreign financing to developing economies. Although developing countries were affected differently by these changes in terms of trade and domestic adjustment policies, most experienced significant swings in their growth performance and increased their external indebtedness.

Most conspicuous among the countries affected by the economic turmoil of the 1970s is a group of Latin American countries: Brazil, Chile, Peru, Mexico, Argentina, and Venezuela. Not only did these countries become the top international debtors of the developing world, but they also experienced unparalleled fluctuations in their macroeconomic performance throughout the 1970-85 period. During 1970-81, there was also a sharp and steady increase in total spending, much of it financed by external loans. After 1981, spending fell precipitously. The gap between spending and income narrowed, reflecting smaller current account deficits (in Mexico and Venezuela, even surpluses). This trend is expected to continue, as countries will have to produce larger trade surpluses to finance their external debt burden.

It is now clear that a better strategy from the perspective of long-run welfare would have been to pursue more conservative macroeconomic policies during the 1970s to keep absorption more in line with GNP growth. Both the magnitude and length of the post-1981 contraction are expected to be substantially greater than the temporary increases in spending before 1981.

In most cases, excess absorption resulted from a substantial increase in the size of the public sector, which was financed principally by higher external indebtedness. Of particular interest is that both oil importers and oil exporters behaved alike: both sets of countries increased fiscal expenditures significantly during the period. It is apparent from the increasingly larger public deficits that emerged in Latin America (with the notable exception of Chile) that the upward movement in government spending was not matched by a rise in revenues.

This strong expansion of the public sector resulted not only in the need for strong contractionary policies after 1981 but also in a long-run increase in the size of government because of the asymmetric pattern of adjustment between the expansionary and contractionary stages. There is evidence that a large part of the recent downward adjustment in absorption has been taking place in the private economy rather than in the public sector. A typical case is Argentina: although private savings in 1984 were roughly at the same level as in 1980 (16 percent of GDP), public savings declined from 2 percent of GDP to -7 percent. Thus, it is also necessary to study the post-1981 period for this group of countries.

Responsibility: Latin America and the Caribbean, Office of the Regional Vice President—Marcelo Selowsky. With Professor Felipe Larrain, Catholic University of Chile.

Closing date: June 1988.

Impact of Public Enterprises on Domestic Savings in Sub-Saharan Africa

Ref. No. 674-07C

The creation of public enterprises to achieve macroeconomic goals has perhaps been more prevalent in Africa than in other developing regions. Many African governments in the post-colonial era believed that public enterprises would raise aggregate savings and investment above the levels that would otherwise prevail because of the low marginal propensity of indigenous and foreign private firms to reinvest or because they would remit abroad resources the government could otherwise have directed toward economic development. Public enterprises were to be used to allocate investment to priority areas determined by planners rather than to nonpriority areas determined by market mechanisms.
It has been evident for some time, however, that these anticipated savings and investment goals have been largely unrealized. In fact, public enterprises in Sub-Saharan Africa seem generally to have had a negative impact on domestic savings, but the documentation of this phenomenon has been severely hampered by the inadequacy of data.

This research study produced a preliminary set of data that was then used to analyze this issue. Within a basic accounting framework, the total savings rate was disaggregated into public and private components. Using empirical values for these accounting variables, the study documented the contribution of the declining public sector (including public enterprises) savings rate to the fall in the aggregate savings rate in four Sub-Saharan African countries--Zambia, Malawi, Senegal, and Côte d'Ivoire.

The study also examined the hypothesis that underadjustment of public enterprise-related expenditure to external shocks might be a causal mechanism linking deteriorating public sector and aggregate savings performance. Some evidence supporting this hypothesis was considered for Zambia and Senegal, which had the largest public sectors, the lowest public sector savings rates, and the sharpest decline in aggregate savings in the four-country sample.

Responsibility: Latin America and the Caribbean, Office of the Regional Vice President--Marcelo Selowsky and Govindan Nair (consultant).

Closing date: December 1987.

An Analysis of the Macroeconomic Implications of Reductions in Government Spending: Methodology and Applications to Mexico

Ref. No. 674-08C

This project developed an intertemporal general equilibrium model that can be used to analyze the implications for the exchange rate and the balance of payments of reductions in government spending. The model is based on the exchange rate regime typical of many developing countries: a fixed rate that is, however, devalued when the foreign reserves of the central bank fall below a critical level. The current and capital accounts are fully endogenous in the model.

The model was estimated and applied to Mexico. Between 1972 and 1982, central government spending in Mexico rose from 12 percent of GDP to 29 percent while inflation, the government budget deficit, and the external debt all rose substantially.

Four papers have been completed. The first paper, by Carlos Jarque of the Mexican Secretaria de Programacion y Presupuesto, uses a time-series analysis to estimate disaggregated sectoral production functions for the Mexican economy. Jarque used the estimates to examine the impact on sectoral output of government investment in infrastructure. Output elasticities of the stock of infrastructure in most sectors were found to be significant.

The second paper, by Andrew Feltenstein of the World Bank and Stephen Morris of Yale University, presents the general equilibrium model described above. Parameter estimates from the Jarque study and estimates of the Mexican financial sector were used to simulate the implications of government expenditure cuts. Among the paper's conclusions is that a reduction in spending on infrastructure can actually be inflationary because of the resultant reduction in efficiency of private output. (The model is available as a user package for microcomputers.)

The third paper, by Woo Jung of the University of Kansas, presents the results of estimates of money demand and portfolio balance equations for Mexico, using a variety of alternative specifications. The final paper, by Willem Buiter of Yale University, examines a generalized macroeconomic model to determine the applicability of the results of the other three studies to other countries.

Responsibility: Country Economics Department, Public Economics Division--Andrew Feltenstein.

Closing date: September 1987.

Reports:

Buiter, Willem H. "Can Public Spending Cuts be Inflationary?"
Jung, Woo. "A Portfolio Balance Model of Mexico."

Uniformity versus Discrimination in Indirect Taxation and Tariff Regimes

Ref. No. 674-11C

Taxation and tariff reforms have become crucial components in the policy dialogue of the Bank with client countries. Because tariffs represent an important share of fiscal revenues, tariff reforms aimed at a more open trade regime must be coordinated with reforms in the rest of the tax system. Two conflicting currents of thought must be considered. This research is attempting to...
integrate both approaches into a general framework. The pros and cons of both approaches will be discussed, as well as their relevance to specific country taxonomies.

One approach to the problem of taxation and tariff reform works strictly from a second-best theory. Proponents of this view argue that because only a subset of the economy can be covered, different tax rates must be applied to different goods to minimize the welfare loss entailed in raising a given revenue. The optimal structure of tax rates thus becomes a function of a series of behavioral and technological parameters.

The proponents of the second line of thought, although recognizing that only a subset of the economy can be taxed, favor uniformity of taxation. They approach the problem more pragmatically, reacting to the limitations of effectively implementing the first approach and its fragility to exogenous pressures. The first approach requires a considerable amount of information and a continuous reevaluation of the effect on the optimal structure of taxes of changes in taste, technology, and world prices. In addition, a system of nonuniform taxes is much more open to political pressures whose outcomes are difficult to predict.

Responsibility. Latin America and the Caribbean, Office of the Regional Vice President—Marcelo Selowsky and Arnold Harberger (consultant).
Closing date: December 1987.

Links between Foreign Savings, Domestic Savings and Investment, and Growth

Ref. No. 674-12

Serious debt-servicing difficulties in many developing economies have led to a large reduction in the inflow of external resources—reduction that has, in turn, contributed to a slowdown in growth of real GNP. A return to orderly debt repayment will require policy reforms aimed at controlling balance of payments deficits and enhancing economic growth. The acceleration of growth is clearly an imperative, not only because of recent economic stagnation but also because growth would facilitate debt repayment and catalyze external resource inflows to help meet these countries' financing needs.

Because economic growth requires the mobilization of both domestic and external resources, recent proposals have stressed the need to increase the flow of foreign savings into developing economies and to reduce fiscal deficits and the size of the public sector. This research project is examining the effect of increased capital inflows, reduced public sector deficits, and accelerated economic growth on key economic determinants of growth, such as domestic savings and investment.

In the first phase of the project, the linkages between domestic saving behavior and public saving were examined. Conventional analysis, which assumes that individual saving decisions are based on disposable income, regards consumption and saving as sensitive only to current taxation, not to current accumulation of debt by the government, even though debt accumulation may represent future taxation. Thus, each method of financing a deficit—by current taxation or by current debt—would have different real consequences for the economy. Recent theoretical studies have shown, however, that financing government expenditures through government debt could have the same effects on private sector saving as would financing through taxation. But this equivalence of the two forms of government financing would not obtain, for example, if consumers and the government had the same planning horizons, if economic agents faced liquidity constraints, or if the tax system were distortionary.

This study tested this equivalence proposition for developing economies, using an optimizing model of consumer behavior in a rational-expectation setting. The empirical evidence suggests that there are no differences between the planning horizons of the government and the private sector but that liquidity constraints do prevail in most developing countries. The source of deviation from full equivalence is, therefore, the presence of liquidity constraints.

Under the second phase of the project, which builds on the findings of the first phase, the effects of public sector deficits and foreign inflows on investment and saving behavior and growth are being examined using a simultaneous equation model. A model incorporating equations for consumption, investment, growth, foreign savings, imports, and exports has been developed to simulate the effects of alternative policy packages on growth. The model will be estimated for a group of representative developing countries to enable broad policy conclusions to be drawn.

The results of this project have important implications for Bank policy. In general, most Bank country work assumes without any empirical basis that perfect nonequivalence prevails in developing economies, that is, that any increases in public savings will not be offset by decreases in private savings. This project has provided evidence to suggest that, although any offset will not be complete, some offset cannot be ruled out. The empirical
model developed under the project can be used to examine the implications of various policy choices that are available for adjustment and growth and is also parsimonious enough to use for developing country projections or to serve as a check on policy projections in country work.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Miguel A. Kiguel. With Nadeem Ul Haque and Peter Montiel, International Monetary Fund.

Closing date: October 1988.

Reports:

Trade Policies and Economic Efficiency in Developing Countries

Ref. No. 674-13C

The belief is widespread that more liberal, outward-looking trade policies are superior to restrictive, inward-looking ones. This idea has been explored mainly in terms of better export performance, higher GDP growth, and increased employment and income distribution effects.

Past research, however thorough and academically solid, has not quantified the large gains that liberal policies are said to generate. The objective of this research study is to increase knowledge of the efficiency or productivity gains brought about by liberalization of trade regimes. The research entailed a literature review of the theoretical and empirical research on efficiency gains from liberalized trade, and an empirical cross-country analysis of the relationship between productivity changes and the nature of the trade regime.

The literature review covered the relationship between trade policies and four categories of efficiency effects: (1) benefits from increased competition as monopolistic and oligopolistic internal markets are broken down by imports, (2) the related effects of the X-efficiency that results from the increased trade activities and competition, (3) effects related to the rent-seeking activities often induced by protection and to the probably smaller resource costs involved in the administration of restrictive regimes, and (4) the effects of scale economies that may result after trade expansion.

Four general conclusions can be stated from the literature review: (1) although few of the studies on sources of growth examine the contribution of trade policy, those that do emphatically attribute a large positive role to liberalization and a negative role to protection; (2) the empirical evidence of a positive effect of liberalization on efficiency remains mixed; (3) there is a lack of comparability among the many productivity studies because of differences in scope, methodology, hypotheses addressed, and thoroughness; and (4) the evidence, although not overwhelming, on balance favors the hypothesis of a positive efficiency gain from liberal trade policies.

In the empirical analysis, a flexible production function was estimated, using annual data across 20 developing countries. Although the production function was constrained for all countries in some respects, it was allowed to differ across countries through the introduction of indicator (dummy) variables to control for country-specific effects. Moreover, the production function incorporated the effect of trade-restricting policies and so differs across countries according to a country's degree of trade liberalization. The introduction of indicator variables for trade liberalization enabled the production function to be used to measure the impact of trade liberalization on output in the manufacturing sectors of the study countries. Moreover, because the impact of a change in the extent of trade liberalization can be expected to occur over a period longer than one year, lagged indicator variables for trade liberalization were included in the function to measure the influence on output over time.


Closing date: October 1987.

Report:

Privatization: An Option for Development

Ref. No. 674-18

Privatization of state-owned enterprises has become a priority for numerous developing countries in recent years as public sector deficits have increased and the financial performance of many state-owned enterprises has failed to meet expectations. But despite agreement in principle that privatization is an important national objective, implementation of a privatization strategy has proved extraordinarily elusive. The obstacles confronting privatization have been formidable, even in countries where political backing is strong and the economic rationale appears sound. As a result, there are few concrete examples of the successful transfer of ownership and operating control of state-owned enterprises to private investors.
The macroeconomic and political explanations for the paucity of privatization transactions are well documented—weak domestic capital markets, stiff opposition by groups with a vested interest in preserving the status quo, a shortage of qualified private sector buyers, an unsupportive macroeconomic policy environment, and so forth. Far less analytical work has been undertaken on the array of practical issues confronting policymakers in developing countries once they have decided to privatize.

This research project has been addressing operational questions such as the following: What type of technical assistance is required for privatization and who should provide it? What are the trade-offs between developing a privatization master plan and pursuing privatization on a case-by-case basis? How can a privatization strategy effectively address the concerns of employees whose jobs may be in jeopardy? What is a suitable pricing strategy for public sector assets? What criteria should be used in determining the role—if any—of foreign participation?

The project has been preparing a series of case studies reflecting the diversity of experiences governments have encountered in their efforts to implement privatization strategies. The case studies focus on a particular transaction or strategy that has been or is being implemented. Field research is being undertaken to determine what happened. (For example, what was the price and how was it determined?) And the results are being analyzed and presented in a form that will be useful for implementing privatization strategies. (For example, how did the pricing decision affect the outcome of the transaction?)

The project has three principal aims: (1) to identify the key operational issues of concern to practitioners responsible for implementing privatization strategies; (2) to provide these individuals with some insights about what works, what does not, and why; and (3) to lay the foundation for further research once developing countries have gained more experience with privatization.

Several jointly funded activities were undertaken in conjunction with this project. A privatization study group, directed by Dr. Roger S. Leeds (project researcher), was created to provide a forum for Harvard University faculty who are conducting research on topics pertaining to privatization, including the broader array of issues surrounding the shifting balance between the public and private sectors. In addition, Dr. Leeds completed a project funded by the United Nations Development Programme in which five case studies of privatization activities in developing countries were prepared.


Closing date: December 1988.

Reports:


"Malaysia: The Shifting Balance between the Public and Private Sectors." 1988


Stopping High Inflation:

Four Case Studies, Phase I

Ref. No. 674-24

The main objective of this project is to examine both "orthodox" and "heterodox" programs for stopping inflation in chronic high-inflation countries. The analysis will be based on the experience of several Latin American countries and Israel. The project will focus on the mechanisms through which the budget deficit, wage indexation schemes, credibility, and exchange rate and monetary policies affect the inflationary process. Special attention will be paid to the conditions under which the stabilization programs were attempted.

The implementation of traditional anti-inflation policies has not only failed to achieve significant and sustainable reductions in the rate of inflation, but in many cases has had undesirable side effects (for example, increases in unemployment and reductions in investment and growth). The major problem of the orthodox approach is its failure to deal with inertial forces caused by staggered contracts (with backward-looking elements) and the credibility problems characteristic of chronic-inflation countries.

In the presence of inertia, tight monetary and fiscal policies, though necessary, are not sufficient for achieving price stability. Indeed, in many instances in which the orthodox approach was followed, inflation came down very slowly, while in others the programs were quickly abandoned and inflation returned to previous (and sometimes even higher) levels.

The heterodox approach, based on wage and price controls, is one alternative way of dealing with the difficulties encountered in the implementation
of orthodox programs. Brazil, Uruguay, and Argentina in the 1960s and Israel and Argentina in more recent years have supplemented the traditional orthodox approach with price controls. The remarkable success of a few of these programs argues for a thorough analysis of these cases.

The orthodox approach has also recently been revindicated by Bolivia’s success in abruptly halting in August 1985 a hyperinflationary period that began in 1984. The program was based on strict fiscal and monetary discipline and a fixed exchange rate. The program’s remarkable impact on inflation merits special treatment in the analysis and a thorough comparison with the successful heterodox programs.

The research project will produce analytical papers discussing the various mechanisms that produce price inertia, including backward indexation and credibility coordination issues, and describing the most relevant aspects of orthodox and heterodox experiences. An empirical study will be conducted on the various mechanisms that initiate and maintain the inflationary process. Finally, a paper will present the policy lessons learned concerning fiscal policy and inflation, macroeconomic adjustment in chronic-inflation countries, and the role of indexation.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Miguel A. Kiguel, and Latin America and the Caribbean Country Department—Sweder van Wijnbergen. With Nissan Liviatan, Hebrew University of Jerusalem, and Peter Montiel, International Monetary Fund.

Closing date: December 1988.

The Effectiveness of Government-Sponsored Investment Promotion

Ref. No. 674-31

The primary objective of this study is to evaluate the effectiveness of the promotion programs used to attract foreign investors. The study looks at a large number of developing countries and analyzes what kinds of programs work in what circumstances.

This project was designed to be of direct use in the advisory work of Foreign Investment Advisory Service (FIAS). It generates information needed to advise governments on promotional programs. The research will be widely useful; almost every country in which FIAS works wants help on this topic.


Closing date: December 1988.

Techniques of Privatization of State-Owned Enterprises

Ref. No. 674-33C

An ever increasing number of developing countries is conducting privatization operations, and the Bank is regularly called on to assess, support, and monitor such programs. Bank support to privatization has been included in many types of operations, including structural and sectoral adjustment.

Government initiatives in the area of privatization of state-owned enterprises and assets have increased substantially in recent years. Many governments have effectively privatized state-owned enterprises. An even larger number have announced privatization programs but are only at the earliest stages of implementing them. In at least eighty-three countries, privatization is an inherent part of efforts to rationalize the state-owned enterprise sector, in most cases to reduce their burden on the national budget, to improve the efficiency of individual enterprises, to assure wider distribution of business ownership, or to achieve a combination of objectives. The Bank and other financing agencies have been providing support and financial assistance to facilitate these efforts, and an expansion of this area of activity is envisaged. The question has become not only whether to privatize, but how to overcome or address the numerous difficulties associated with the process. There is now sufficient experience with privatization that it can be used as a tool for discussing or recommending appropriate techniques for use in developing countries. A few governments have already drawn on this experience to devise improved techniques for their own divestitures. However, no comprehensive review of experience existed.

The project reviews what is known about the techniques of privatization. At the broadest level, privatization refers to the introduction of market forces into the economy. In this project, privatization covers more specifically the transfer of commercially-oriented state-owned enterprises, activities, or productive assets of the government (in the fields of agriculture, manufacturing, and public services, such as transport and communications) to total, majority or minority private ownership, or to private control. That is, it goes beyond the strict transfer of ownership to cover, as well, leases and management contracts. It is important to remember that privatization is often only an element of a broader economic policy (or reform) that may include deregulation and liberalization as well.

To develop recommendations on or to assess
3 INTERNATIONAL TRADE AND FINANCE

The Magnitude and Effects of Nontariff Barriers on International Trade

Ref. No. 674-04

Open international markets are an important vehicle for economic growth in developing countries. But as tariff levels have dropped, the use of nontariff barriers has increased. The objective of this study was to estimate econometrically the magnitude and restrictiveness (for example, the tariff equivalence) of nontariff barriers.

Previous research at the World Bank has shown that one cannot infer the existence of nontariff barriers as econometric residuals—as either quantity or price residuals. Quantity residuals on imports, exports, and consumption contain too much other information to be interpretable, and comparative disadvantage is an important determinant of protection and trade. Thus, quantity residuals will be biased. Price comparisons also contain too many features unrelated to nontariff barriers, and when dealing with differentiated industrial goods, it is hard to tell what any measured difference reflects. Simple tariff equivalents do not exist because the structures of various industries and their product mixes influence the kind and degree of protection provided and are, in turn, affected by that protection. This is particularly true of the types of nontariff barriers that have recently become popular in the industrial countries—restrictions with an important effect on the product mixes of both trade and production.

To estimate the magnitude and effects of nontariff barriers, this project is applying to the detailed qualitative information on nontariff barriers available in a World Bank data base a methodology developed by Edward Leamer (UCLA) in his comparative advantage model. The model simultaneously takes into account the effects of nontariff barriers on product-by-product trade flows between pairs of countries and the influences of factor-intensity differences between products and of factor-endowment differences between countries.

This empirical study of the effects of nontariff barriers is (1) devising a variable to reflect the existence of a nontariff barrier; (2) estimating a function that describes the political economy of nontariff barriers; (3) estimating a function that maps nontariff barriers according to their effects on trade; (4) using an estimated system to simulate the effects of existing and proposed nontariff barriers and to measure their welfare and income distribution consequences; and (5) estimating the effects of a multilateral removal of nontariff barriers and testing for and quantifying the interaction of protection and world prices.

The results of the study will be presented in a book-length manuscript to be submitted for publication in the World Bank's university press series.

Responsibility: International Economics Department, International Trade Division—Samuel Laird. With Edward Leamer and Maria Carkovic, UCLA.

Closing date: December 1988.

International Transactions in Services and the Interests of Developing Countries

Ref. No. 674-09

Under this project, the World Bank commissioned a set of papers and held a two-day symposium in July 1987 on "Developing Countries' Interests and International Transactions in Services." The purpose of the symposium was to provide a forum for the discussion of the role of services, particularly internationally tradable services, in the development process.

The output of the project includes the papers prepared for the symposium, a selection of which has been published in The World Bank Economic Review; a summary was also prepared.


Closing date: April 1989.

Reports:

Bhagwati, Jagdish N. "International Transactions in Services from a Developing Country Perspective."


The Efficiency and Effectiveness of Export Credit and Export Credit Insurance Programs

Ref. No. 674-10C

Many countries have introduced programs to improve export performance, such as export credit and export credit insurance. Export credit programs provided preshipment or postshipment credit to finance export activities. Export credit insurance programs insure exports or guarantee export credit against commercial or political risks in international transactions. In many cases, the arguments underlying these programs and their efficiency and effectiveness have not been critically reviewed.

This study examines the justifications for these programs and the experience of several developed and developing countries to determine whether, and under what circumstances, these programs would be efficient and effective export-promotion instruments.

Broadly speaking, market-failure arguments (such as lack of access to credit) are the most compelling rationales for their introduction. But these arguments have been neither well articulated nor well supported with strong empirical evidence. The country experiences examined in this study offer little recommendation for these programs. In developed countries, the programs have long histories of subsidy and support from entrenched economic and political interests. In developing countries, export credit insurance did not appear to be significant in stimulating exports, while export credit programs have not necessarily been established in response to capital-market failures. More often, export credit programs have been a rather weak means of offsetting biases elsewhere and increasing incentives to export.

This review suggests that the benefits of these "active" export promotion instruments have often been overstated, while the costs in terms of new economic distortions have been neglected. Careful empirical analysis is required to determine whether these programs would be welfare-enhancing in any given country.


Sovereign Borrowing, Debt, and Default in the Interwar Years: Lessons for the 1980s

Ref. No. 674-17

The debt-servicing difficulties of developing countries that began in 1982 are the latest in a series of episodes stretching back over centuries. These problems have frequently culminated in defaults, with those of the 1930s being the most dramatic and generalized occurrence of this phenomenon.

This research project is systematically analyzing the interwar record on external debt and default in a form that will facilitate comparison with recent developments. The project will allow policymakers to assess the relevance of the historical experience to current problems and policy issues. In particular, the study is designed to explore two key issues: (1) the causes and macroeconomic and microeconomic consequences of debt-service difficulties and defaults, and (2) the effect of the structure of financial markets and institutions on the resolution of these problems. These topics have not been addressed in depth in past studies of the debt problems of the 1930s.

The research project has implications for policymaking by both debtors and creditors. Initial responses to the current debt difficulties were inevitably ad hoc and based on short-run considerations. The underlying problems have persisted, compelling investigations of the longer-run strategies open to debtor countries and financial institutions and of solutions that will benefit both groups. Historical research and comparison with the current situation provide important guidance on these issues and complement debt-projection exercises using macroeconomic models.

The study builds on an earlier study by Richard Portes and Barry Eichengreen, the principal researchers. The emphasis of the study is data development and interpretation, rather than the validation of specific macroeconomic models. During the first phase of the study, through September 1987, the researchers reviewed data on rates of return on interwar bond issues, taking into account buybacks at less than par, and investigated the effects of the institutional setting and of the international economic environment on the eventual settlements of defaults.
The results indicate that the ex post rate of return on interwar bonds, while far below the ex ante rate, compared favorably in most cases to rates of return on US and British government bonds of approximately equal maturity. The institutional features of the day may have an overall favorable impact on the ease of settlement, compared to the institutional setting today, but these features are more than outweighed by the unfavorable international situation after 1932. The results of the first phase are summarized in a series of papers and monographs. The second phase of the study, through the end of 1988, is addressing a number of related issues. The researchers are reviewing the macroeconomic determinants and effects of default, using econometric techniques and case studies pairing defaulting and similar nondefaulting countries. They are further refining earlier work on the rates of return on interwar bonds, looking at the effects of buybacks on market prices and on the ease of eventual settlement, and studying the legacy of defaults on later credit market access and on risk premiums. A series of papers will document the research undertaken in this phase of the project.

Responsibility. International Economics Department, Debt and International Finance Division—John M. Underwood. With Richard D. Portes, Director of the Centre for Economic Policy Research; and Barry J. Eichengreen, Research Fellow at the Centre and Professor of Economics, University of California at Berkeley.

Closing date: June 1989.

Reports:

The Footwear Industry in Developing Countries and How It Adjusted to Nontariff Barriers to International Trade

Ref. No. 674-20

Shifting patterns of comparative advantage call for a relocation of production of mature industries from developed to developing countries. Textiles and footwear, labor-intensive industries that have been little affected by technical progress, are cases in point. Now that multilateral trade negotiations have eliminated the use of tariffs by developed countries to protect their markets from developing country imports, nontariff barriers to trade are the major tool for retarding the relocation of mature industries from developed to developing countries.

Little is known, however, about the effects of nontariff barriers on the suppliers of products subject to these barriers: that is, on developing countries. Nor has a case study been done of the relocation of a mature industry from a developed to a developing country. The purpose of this research is to fill this gap by investigating how mature industries get relocated to developing countries and the role of trade restrictions in impeding that relocation. The study will focus on developing country footwear exports, which currently exceed $4 billion a year.

The research will address two sets of questions that arise when a nontariff barrier is raised on a particular product. One set of questions concerns the instruments and negotiation processes by which nontariff barriers come into existence and, in rare instances, disappear. For lack of a better term, these are referred to as political economy issues. The second set of questions concerns the welfare costs of nontariff barriers.

The investigation of the effects of footwear trade restrictions has three parts: (1) a study of the transformation of the world footwear industry over time, emphasizing the relocation of production from developed to developing countries; (2) a study identifying and analyzing the strategies and responses of developing country suppliers in countries subject to restrictions and in those without them; and (3) econometric and simulation studies quantifying the relevant relationships and estimating the costs and benefits of the trade restrictions to developing country exporters.

This research will produce a more accurate picture of the transformation of the world footwear industry and of the role of protectionism in that transformation than is now available.

Responsibility: Country Economics Department, Trade Policy Division—Jaime de Melo and Taeho Bark, Carl Hamilton, and Alan Winters (con-
Managing Latin America's External Debt: The Contributions of Debt Swaps

Ref. No. 674-36

The purpose of debt renegotiation between Latin America's highly indebted countries and their foreign creditor banks has been evolving for more than a year. The question is no longer how to adjust debt service payments to the country's capacity to pay, but how expected loan losses are going to be realized and distributed. The new expectations about the recoverable value of loans have transformed the debt crisis into a solvency problem, resembling the experience of Latin America's debt crisis of the 1930s. In particular, the reality of secondary markets for bank loans has encouraged renegotiations for a reduction in the present value of commercial banks' claims. Some agreements have already provided for a limited amount of debt reduction through several mechanisms implemented by governments of debtor countries. Also, the repurchase of private sector's external debt with no government intervention has already been significant. Future negotiations are likely to focus almost exclusively on reducing debt through either repurchase or conversion, but resolution of the conflicting interests of debtors and creditors will be hard to attain.

This project aims to assess the prospects for the voluntary reduction of Latin America's long-term debt with foreign commercial banks. Because of the relative importance of public sector's debt and significant differences in renegotiating the debts of the public and private sectors, the study centers on the prospect for a quick settlement of the public sector's debt with foreign commercial banks. The focus is on voluntary reduction agreements (that is, agreements that are mutually beneficial to the debtor and the collective of creditors) implemented through a swap scheme. This focus limits the analysis of third-party intervention to the possible role of facilitating the agreements. The study does not compare voluntary agreements with proposals for global or comprehensive schemes in which a third party would play a central role in their financing and implementation.

The research projects will support the Bank's economic work on related issues for specific countries. As stated in the special report on "The World Bank and the Heavily Indebted Middle-Income Countries" (May 1988): "The Bank will need to take a stronger role in the future in helping mobilize incremental financing from other creditors, relying primarily on the quality of its own policy dialogue and the adjustment programs that it is prepared to support. But a broader catalytic role is also required in which a balance must be struck on a case-by-case basis between providing a catalytic role in encouraging new money from other creditors and assuming an overly disproportionate share of the debt. In other cases, it would also be appropriate for the Bank to play a role in facilitating debt conversions and reductions, especially in cases where adequate amounts of new money are not forthcoming." (page 39)

The project's approach for assessing the prospect of voluntary reduction begins with an evaluation, from the viewpoint of the debtors and the creditors, of the costs and benefits of different strategies for debt reduction, including specific schemes for repurchasing and converting debt at a discount. In addition to a study of creditor banks (US banks in particular), four countries (Chile, Brazil, Mexico, and Argentina) are being studied, including an assessment of schemes that are already being implemented and the potential for expanding present schemes or implementing new ones.

This strategy evaluation is then used to analyze the potential for mutually beneficial outcomes. This potential is a necessary, but not sufficient, condition for effectively reaching an agreement. Thus the identification of mutually beneficial outcomes has to be complemented with a discussion of other factors (transaction costs) that may prevent the parties to reach an agreement. Since the study is not a theoretical inquiry of the potential for voluntary reduction but an empirical assessment of its prospects, an attempt is made to determine the likelihood of those outcomes and the relevance of transaction costs.

In addition to four country studies and a special study on creditor banks, the project's output includes a general paper on the contribution of debt reduction schemes. The six papers are expected to
be published jointly.

Responsibility: Latin America and the Caribbean Office of the Regional Vice President—Edgardo Barandiaran.

Closing Date: December 1988.

Reports:
Guidotti, Gabriella. "Commercial Banks and the Reduction of Latin America's External Debt."


**Debt-Equity Swaps and Foreign Direct Investment in Latin America**

Ref. No. 674-40

This research looks at the effectiveness of debt-equity swap mechanisms as incentives to foreign direct investment. The work complements other work which looks at debt equity-swaps as one of the many available tools of debt management. By comparing the effectiveness of programs in different countries (and changes over time in the same country) the research casts light on which elements of the swaps are important in influencing investor's behavior, and how to design swap programs for maximum benefit of the host countries. Advice on appropriate measures for attracting foreign direct investment and on the best design for swap programs is developed. The study also develops policy advice that takes into account not only debt management problems, but also considerations relevant to foreign direct investment. The study explores the motivations, structures, and functions of swap programs, focusing on Chile, Brazil, Mexico, Jamaica, and Argentina.

This project was designed to be of direct use in the advisory work of Foreign Investment Advisory Service (FIAS). The project generates information needed to advise governments on the design of debt swap. Using the results of this research, FIAS has already advised or is about to advise the governments of Chile, Brazil, Mexico, Argentina, Yugoslavia, and the Philippines and is contemplating similar work in several other countries, including Egypt, Ecuador, Jamaica, Nigeria, and Costa Rica.


Closing Date: December 1988.

**Currency Management of External Debt**

Ref. No. 674-64

Fluctuations in cross-country exchange rates have caused major capital gains and losses for countries holding parts of their external debt in currencies other than the US dollar. Such fluctuations complicate the interpretation of year-to-year changes in debt, since the fluctuations are not related to standard measures of national income and expenditure. They highlight that many debtor countries are exposed to exchange risk because of such cross-currency fluctuations. There are also other channels through which countries are exposed to cross-currency exchange rate risks. Composition of production and expenditure rarely match in any country, even if the aggregate levels are close. The differences are made up through international trade. The net trade position with any individual country is often unbalanced. This implies that relative price changes between trading partners may have substantial income effects on the debtor country under consideration. Empirical work on exchange rates and prices widely supports the view that relative prices are influenced by nominal exchange rate fluctuations.

Exposure to exchange risk raises the question whether active management of the currency composition of the external debt could help reduce exchange risk exposure. Existing work suffers from several defects. First, it has largely focused on management of Central Bank debt and assets, not liabilities. Net debt (total debt minus foreign debt) is the relevant variable from the welfare point of view. This deficiency is simple to remedy. Second, existing work has looked at currency management of debt (reserves) in isolation, attempting to derive a portfolio strategy that minimizes the variance of the rate of return expressed in an arbitrary vehicle currency (typically the dollar) subject to a constraint on the expected value of the rate of return. The link with exchange risk exposure through international commodity trade has not been made.

It is easy to tell, with the benefit of hindsight, what an optimal currency composition of external debt should have been. Capital gains and losses due to exchange rates could have been avoided by matching in the right fashion the currency composition of external liabilities with the effective currency composition of cash flows. But such hindsight does not provide practical policy rules on how a country, given its external debt situation, can hedge the economy against future exchange movements.

The study aims to develop a framework to assess the optimal currency composition of a country’s external debt taking into account exchange risk exposure through commodity trade and the exposure arising directly out of the currency composition of the debt itself. To what extent can the composition of debt be altered to achieve insurance against terms of trade shocks? While theoretical work is needed, the ultimate aim of the study is practical: What rules can be used, without the benefit of hindsight, to manage a country’s currency composition of external debt? The framework is then applied to two ac-
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tual case studies, Turkey and Indonesia.

The study consists of five phases: (1) development of the model that captures the determinants of an optimal currency composition of a nation's external liabilities; (2) analysis of the current structure of Indonesia's and Turkey's external debt; (3) analysis of the effects of exchange rate and commodity price movements on Indonesia's and Turkey's debt; (4) derivation of the optimal currency composition of external debt for Indonesia and Turkey; and (5) recommendations to the government of Indonesia and Turkey regarding its external liability management in the short and long term.

Phase I has been completed and has resulted in two theoretical papers. The structures of each country's debt have been evaluated in missions. Phase III and IV have been completed and a paper has been prepared synthesizing the results. The results have been presented to the Indonesian government, and plans are underway to address the issues with the government of Turkey in an upcoming mission.


Closing date: June 1989.

Report:
Managing Agricultural Development in Africa: A Comparative Analysis of Six Countries

Ref. No. 673-04

There is considerable agreement about agriculture's importance to African economic development and its generally poor performance in the 1970s. Little consensus exists, however, between African policymakers and their donor supporters or among donors on the causes of the poor performance or the most effective ways of improving performance. The Managing Agricultural Development in Africa (MADIA) study is intended to address these issues empirically and to develop operationally relevant conclusions.

MADIA draws on evidence from six African countries--Kenya, Cameroon, Malawi, Senegal, Nigeria, and Tanzania--to investigate in detail the nature, causes, and consequences of the agricultural policies pursued over the past twenty-five years. The study identifies growth points as well as areas in which reforms are needed to induce self-sustained agricultural development. Particular emphasis is being placed on practical ways to improve government and donor policies.

The study examines three distinct but related subjects: the relationship of domestic policies to agricultural performance in the six countries, the politics of agricultural policy, and the effectiveness of foreign aid to African agriculture. Because of the very large role of donors in supporting agricultural development in Africa, the MADIA study is being carried out in cooperation with (and with financial support from) the US Agency for International Development, the UK Overseas Development Administration, and the official aid agencies of France, Denmark, Sweden, Germany, and the European Community.

The study is generating a substantial amount of published material. The first book arising from the MADIA research, to be completed in draft form by the spring of 1989, is on the political economy of agricultural policy. It presents a comparative historical review of agricultural policymaking in each of the six countries.

A second volume, planned for publication in early 1989, will review the effectiveness of donor assistance to MADIA countries for agricultural and rural development in the context of overall aid issues and assistance patterns. The aid to agriculture in the six MADIA countries since the early 1960s will be examined to assess its influence on agricultural growth, the choice of policies and investments by governments, and the institutional, manpower, and technological capabilities of recipient countries. This book will include individual reports on the experience of each donor and a discussion of the general lessons for donor and recipient countries.

Also to be published as independent volumes are case studies of the agricultural development experience of each of the six MADIA countries and of the World Bank's role. Finally, the research is expected to yield a number of papers and journal articles on such topics as fertilizer policy, food security, the impact of structural adjustment on agricultural development and poverty, and the current status and potential impact of national agricultural research systems in Africa.

In addition to these published materials, MADIA research results are being disseminated through seminars and conferences. At the first of these, held in April 1987, MADIA staff and donor agency and recipient country officials discussed the preliminary findings of the study on aid effectiveness. Nearly thirty seminars and workshops have been held in Africa, in donor countries, and in the World Bank since January 1987 to provide opportunities to present results and obtain feedback on a country-by-country basis. A final meeting, in the spring of 1989, will explore the complete cross-country, cross-donor results of the study.

Responsibility: Country Economics Department, Special Studies Division--Uma Lele. Teams of consultants and Bank staff are preparing individual studies. The project involves close collaboration with the Bank's operational staff, African government officials, donors, and recipients.

Closing date: June 1989.

Reports:
Gaviria, Juan. "The Role of Transportation in Agricultural Performance in Malawi."

"The Role of Transportation in Agricultural Per-
Agricultural Investment, Infrastructure, and Rural Financial Markets

Ref No. 673-35

Investment processes are fundamental to agricultural development, and their importance will increase as population densities in developing countries increase. In the absence of a land frontier, the major sources of agricultural growth are investments in research and extension and in animals, machines, land improvements, private and public irrigation, roads, communications, and marketing facilities. In addition, physical investments in land and infrastructure are often the precondition for the adoption of techniques for intensive agriculture. Yet the relationship of private investment to agroclimatic characteristics, public infrastructure and irrigation, prices, rural credit institutions, and individual characteristics (such as farmer experience, ownership of assets) are poorly understood.

The objective of this project is to study these relationships in order to improve the understanding of the determinants and consequences of private and public investments in agriculture and of the development and performance of formal rural financial institutions. Because evidence of the effect of agricultural credit institutions (and of large World Bank commitments to agricultural credit) on private investments is especially weak, the study is also examining the influence of agroclimatic factors and infrastructure on the expansion and success of financial institutions.

Basing the analysis on recent advances in the theory of rural financial intermediation that stress the importance of risk and information problems, personal characteristics, collateral and collateral substitutes, and the fundamental material conditions of agricultural production, the study is investigating two hypotheses. The first is that it is difficult to create a sound system of financial intermediation in regions far from and poorly connected with urban centers and where the agroclimate is risky and seasonality is pronounced. The second is that special government efforts to expand rural credit, such as compulsory branch expansion and agricultural lending quotas, may be effective in well-endowed regions but may lead to faltering institutions in poorly endowed regions.

The project is examining the relationships between investment and preexisting ownership of assets, parental influence, and credit policy and other public interventions. The joint effect of these factors on life-cycle asset accumulation has never been measured and differentiated from the effect of un-
measurable personal characteristics such as ability, stamina, and drive and thus the causal relationships are not well understood. Using two unusual longitudinal data sets from India, the study is attempting to measure the extent of socioeconomic mobility in different agroclimatic regions and to relate relative success and failure of individuals over the long run to the investment process and the public interventions that influence investment.

**Responsibility:** Latin America and the Caribbean Country Department II--Hans Binswanger. With Mark Rosenzweig and Guillermina Jasso, University of Minnesota; Shahidur Khandker; and the staff of the Economics Program of the International Crop Research Institute for the Semi-Arid Tropics.

**Closing date:** December 1988.

### Tree Crop Development and Support Programs: Project Design and Cost Recovery

Ref. No. 673-44C

Many public sector support programs for agriculture are heavily subsidized and are financed through indirect cost recovery or general tax revenues. Although such programs may be a rational response to failures in information or credit markets or a sensible way of offsetting some of the disincentive effects of taxes on the sector, there are reasons for concern. Attention must be given to the distortionary consequences of the subsidies and of the taxes used to finance these programs. Intervention may substitute for, rather than stimulate, private sector activity. Vested interests may develop around programs dispensing subsidies and prevent the phasing out of support efforts. Long-run development may be better served by more moderate levels of taxation, even if this requires some curtailment of government support efforts or the introduction of direct cost recovery.

This research project on tree crop programs reflects continued concern with these questions within the World Bank. To prepare for this project, a general review of World Bank lending in support of the tree crops sector was conducted. The review identified different approaches for supporting tree crop development and distinguished them by differences in organization, level of support to intended beneficiaries, and source of financing. The review also documented the importance of questions about mechanisms for cost recovery for the efficiency and equity goals of Bank-supported projects. Case studies of Thailand, Sri Lanka, and Indonesia were then undertaken to develop a broader perspective on issues of project design, cost recovery, and efficient taxation policies for the tree crop sector.

The Thai case study focuses on support for tree crop development and replanting. The combined effect of heavy subsidies to replanting activities but not to new plantings, indirect cost recovery via export taxation, and price and regulatory disincentives to crop diversification appears to have led to significant costs due to distortions to the choice of techniques and crops and strong disincentives to new planting. Despite the benefits from the widespread adoption of an important technical change, the long-run appropriateness of the present design for policy intervention is in question.

The Sri Lankan case is characterized by high indirect taxation on tree crops via export and ad valorem taxes. Some of these revenues are channeled back to the sector through grants or subsidies for various development activities or inputs. The tree crops sector accounts for a greater share of government revenues than it does in the other countries in the study, so the need for substantial net revenues from the sector is an important constraint on the set of feasible "tax-subsidy" policy packages. The public sector accounts for a large percentage of the tree crops sector—about 60 percent of tea lands and 30 percent of rubber lands—which raises questions concerning the long-run role of the state in tree crop production and the impact of development programs on the prospect for privatization. The research project analyzes the efficiency and distributional implications and revenue effects of present policies and of an alternative "tax-subsidy" package, based on (1) a direct "rent" levied on the public assets managed by the public sector estate corporations; (2) a much lower level of export taxation; and (3) less extensive use of subsidies for inputs, replanting, or new planting.

The Indonesian case study covers a variety of project models ranging from the use of existing estates as the nucleus for smallholder development, through project management units providing intensive support for block replanting and development of existing smallholdings, to experimental attempts at more dispersed development programs based on subsidized supply of planting material. To avoid making farmers dependent on subsidy programs, the Indonesian government has opted for provision of on-farm support and inputs on credit rather than of grants financed by indirect or general tax revenues. This policy also avoids the distortionary effects of indirect taxes and subsidized inputs identified in work on Thailand. The research project pays special attention to rural credit markets and credit recovery mechanisms in assessing the relative merits
of the alternative development approaches that have been used in Indonesia.

Working relationships have been established with Team Khusus, an Indonesian government unit responsible for tree crop projects funded with foreign assistance, and with a Working Group on Tree Crop Producer Incentives set up by the Ministry of Finance and Planning in Sri Lanka. Research was a cooperative effort with the World Bank Country Policy Department and the regional departments responsible for Indonesia and Sri Lanka.

Results will be presented in separate papers on Thailand, Sri Lanka, and Indonesia and in a volume that uses cross-country comparisons and analyses to draw out the main lessons and policy implications for project design and cost recovery in agricultural support programs.

Responsibility: Agriculture and Rural Development Department—Trent Bertrand.

Closing date: August 1987.

Reports:


The Role of Risk in Sahelian Agriculture

Ref. No. 673-67

Sahelian farmers' decisions about production and marketing are strongly influenced by the risk associated with rainfall and prices. An understanding of their behavior requires an understanding of how they deal with the risks of their environment. This research seeks to improve the factual base of Sahelian agricultural policy by investigating farm technology and farmers' production behavior. The data for the investigation come from the five-year farm survey of six villages in three agroecological zones in Burkina Faso conducted by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). This unique data set is valuable by virtue of its longevity, its geographical distribution, its coverage of both farm production and marketing, and the care taken to ensure its accuracy.

The study's emphasis on risk stems primarily from its importance for subsistence farms in the Sahel. By highlighting how farmers deal with risk, the research helps in the design of programs and policies associated with unfavorable, risky environmental conditions. The analysis should yield results that can be applied to improve agricultural policies in a number of areas: technology choice, input priorities and constraints, pricing policies, and biological research priorities.

Drawing on the ICRISAT data, the specific objectives of the project are (1) to investigate the relationships among risk, technology, and productivity for the major Sahelian crops (sorghum and millet) and (2) to determine the influence of risk and other variables (for example, prices and incomes) on cropping patterns, technological choice, and farm production responses.

Sequential yield functions are estimated, using field-level data collected weekly, for the major crops as a function of soil quality, rainfall, labor, crop variety, and fertilizer use. The yield functions reflect the sequential nature of the production decisions throughout the growing season (for example, planting and weeding), and a multistage production function is estimated. Because rainfall variability is assumed to strongly influence farmers' decisions at each stage of crop growth, careful attention is given to the estimation of rainfall probability distribution over time and space. This estimation provides the basis for investigating the influence of rainfall uncertainty on production adjustments throughout the growing season and for identifying the desirable characteristics of improved varieties suitable for existing farm conditions.

The study analyzes the responses of output, consumption, and marketed surplus to price and nonprice factors. The focus is on a positive analysis of farm production decisions made at the beginning of the growing season, such as technology decisions (for example, use of animal power) and acreage decisions. Risk-responsive production functions corresponding to such decisions will be estimated econometrically using ICRISAT data.

Responsibility: Africa Technical Department, Agriculture Division—Arndt Uhlig. The actual research is being carried out by a team from the University of Wisconsin at Madison, headed by Kenneth M. Shapiro and comprising Jean Paul Chavas, A. Cobe Johnson, and Michael Carter.

Closing date: December 1988.

Crop-Livestock Systems in Sub-Saharan Africa

Ref. No. 674-06

The Bank has invested $1.3 billion in livestock projects in Sub-Saharan Africa. A recent evaluation of 125 such projects by the Operations Evaluation Department showed that 71 percent of them had failed—that is, they had earned returns of less than 10 percent. In most cases the technologies and institutions promoted were inappropriate for existing farming systems and economic environments.
This research identifies: (1) the conditions under which crop farmers will adopt increasingly labor-intensive technologies for producing fodder, milk, and meat and for maintaining soil fertility; (2) historical patterns in moving from crop-livestock interaction to crop-livestock integration (mixed farming systems); (3) the role of modern inputs (like chemical fertilizers) in inducing a movement away from mixed farming to specialized production; (4) appropriate technologies for areas with different farming intensities and agroclimatic conditions; (5) the impact of existing land rights and land tenure policies on the security of herders' access to land; (6) village- or region-based regulatory mechanisms for controlling access to common grazing areas, and the way these need to change in the face of rapid population growth; and (7) the effectiveness of government interventions as a substitute for traditional mechanisms to control rapid resource depletion.

Surveys are made of farming systems, land-use patterns, tenural arrangements, and the interaction between crops and livestock. An analysis of these data will help in the selection of appropriate technologies and institutions for future projects in the region.

Responsibility: Africa Technical Department, Agriculture Division—Cornelis de Haan. With staff of the International Livestock Center for Africa.

Closing date: July 1989.

Uncertainty and Agricultural Price Policies: An Application to Brazil

Ref. No. 674-14

Government intervention in agricultural markets is pervasive. Among the most important forms of intervention are the pricing policies for agricultural commodities that are in place in most developing (and developed) countries. Agricultural pricing policies have been of long-standing interest to the World Bank, most recently as a policy reform element in structural adjustment packages.

This project seeks to determine whether interventions in agricultural pricing are justified and, if not, how interventions can be modified to better serve the goals of development. In particular, the project aims to develop and implement a method for analyzing policy tradeoffs in agricultural price reform, with an emphasis on the role of uncertainty in determining the efficacy of intervention. Although the method will be applied specifically to Brazil, where the nature and extent of agricultural price intervention is currently being debated, the approach is intended to be applicable to other countries as well.

The limitations of standard tools in use within the Bank and elsewhere for the analysis of agricultural policy alternatives (calculations of nominal and effective protection rates, single-market analysis of consumer and producer surpluses) have been highlighted by Braverman, Hammer, and Brandao (1986). The current project will extend their work on a "multimarket" method that aims at an intermediate position between single-market analysis and a full-scale, computable general equilibrium model. While emphasizing key interactions within the agricultural sector, and certain of the links between the agricultural sector and the urban and external sectors, the approach keeps the models simple enough to preserve intuition. This method has been applied to several countries, and one of the consistent findings is that neglect of multimarket interactions can seriously mislead policy.

In addition, the project will attempt to integrate uncertainty into its analysis. Uncertainty concerning climatic conditions and key world prices is an important feature of agriculture in developing countries, and mitigating the effects of these exogenous fluctuations is frequently the rationale for intervention in these markets. The best known recent literature on uncertainty in agricultural markets, that of Newbery and Stiglitz (1981), seriously questions, within the context of international agriculture, the desirability of price stabilization schemes to both producers and consumers. This project will extend their methods to Brazil to try to determine if the same conclusion holds true for producers and consumers within individual countries.

The Braverman-Hammer and Newbery-Stiglitz approaches complement each other; one emphasizes multimarket effects while the other emphasizes uncertainty. An integration of the two approaches, and an assessment of the application of the integrated approach to Brazil, is the main objective of this research project.

The method should prove useful for Bank analysis and policy advice. The results of the project will be disseminated through the Bank to policymakers in Brazil and to wider academic and policy circles through seminars. In addition, the papers emerging from the project will be circulated and submitted to academic journals for publication. The overall findings of the project will be presented in a book on uncertainty and agricultural pricing policy, with application to Brazil.

Responsibility: Agriculture and Rural Development Department, Agricultural Policies Division—Avishay Braverman, regional coordination and involvement by Latin America and the Caribbean Country Department IV—John Joyce (Agriculture
Agricultural Supply Response in Sub-Saharan Africa

Ref. No. 674-28

Advice to Sub-Saharan countries concerning the effects of changes in the agricultural policy environment is, and will long remain, an important function of the World Bank and other development agencies. But Bank assistance to Sub-Saharan countries in the design and monitoring of improved agricultural policies has been hampered by the lack of knowledge about the sector’s responses to changes in price policies, infrastructure investment, and regulations affecting inputs and outputs. There has been little research on these topics in many African countries, largely because of the difficulty of assembling reliable data on agriculture.

This project collects and tests data and then estimates agricultural supply responses to changes in prices and other incentives in three countries in Sub-Saharan Africa: Ghana, Malawi, and the Sudan. Extensive data are collected at regional and national levels and tested statistically by cross-checking with related series to assess their reliability. Estimation techniques that maximize the extraction of robust information from the data sets are used. Because the agricultural sectors of each country are not homogenous, the sectors are disaggregated so that different economic environments, production alternatives, and degrees of market orientation can be taken into account for each subsector.

The outcome will be a set of agricultural subsector models for each country. These agricultural subsector models should be of great assistance in the design of policy advice. The data collected by the project and the analysis of these data should also help in the identification of the important gaps in the agricultural statistics of these countries.

The results of the analysis will be discussed with policymakers in each country. Seminar papers and a book-length manuscript will be produced. If the work on the three countries is successful, the project will be extended to other African countries, as data availability and resources permit.


Closing date: September 1989.

Agricultural Research in Africa and Asia: Comparative Lessons from Rice in Sierra Leone, Sri Lanka, and Elsewhere

Ref. No. 674-29

Agricultural research in Sub-Saharan Africa receives more national and foreign resources (per unit of land, labor, or output in agriculture) than in other developing regions, yet the economic rates of return are much worse, and the disparities are increasing. Unless the policy processes leading to these poor returns in Sub-Saharan Africa can be understood and corrected, efforts to improve African agricultural research may well collapse in waste and disillusionment.

This research project is concerned with the question of how to improve the design and performance of agricultural research in Sub-Saharan African, particularly in the light of Asian experience. The study’s focus is on public policy on agricultural research and on the balances within agricultural research between adaptive research and technology transfer, between project-linked and national systems, and between research-station work and farmers’ own experiments and smallholder testing of proposed innovations.

To improve complementarity with Bank research and operations, and to make the question addressed by the research tractable, the study examines agricultural research processes in two small rice-based food systems—those of Sri Lanka and Sierra Leone—to identify any transferable lessons on improving agricultural research. These countries’ agricultural research systems capture much of the diversity of Asian and Sub-Saharan African systems, while the commonalities between their agricultural systems suggest the feasibility of mutual learning. The project attempts to determine whether differences in, for example, agroclimate, person-land ratios, incentives, human capital, or central and local power structures between Asia and Africa limit the scope of the transfer of agricultural research approaches. The in-depth case study of Sierra Leone-Sri Lanka is complemented by a review of experiences in other countries (Mali, Guinea, Senegal, Liberia, Côte d’Ivoire, and parts of India) that will help to establish the relevance of the case study to other countries.

The project surveys rice farmers and researchers in Sri Lanka to identify the relations among varietal adoption, household type, farming system,
and agro-ecology and relates these findings to agricultural research policy, organization, procedures, and processes of technology generation relevant to plant breeding. For Sierra Leone, interviews, village-level participant observation, and literature review are used to gather information on the connections between rice research and agricultural policy, the costs and benefits of rice research initiatives, adoption and impact of improved rice varieties, the requirements of specific client-groups, and the prospects for reorienting rice research to these requirements. For other countries, desk reviews and brief field visits are conducted to collect information on national rice research and dissemination of new varieties.

The results of the research will be presented in journal articles or working papers, an issues paper on Afro-Asian transfers in agricultural policy, and a book.

Responsibility--Africa, Office of the Chief Economist--Akbar Noman. With Michael Lipton, Institute of Development Studies, Sussex University; Adam Pain, University of East Anglia; and Paul Richards, University College, London.

Closing date: February 1990.

Rural Land Tenure, Credit Markets, and Agricultural Investment in Sub-Saharan Africa

Ref. No. 674-32

Rapid population growth and liquidity requirements for more input-intensive agriculture in Sub-Saharan Africa will necessitate important adaptation in existing land rights systems. There is, however, little agreement on the implications of various institutional and legal systems relevant to land ownership, tenancy, and other usufructuary rights. With only a few exceptions, the distribution of land in Africa is not yet as skewed as in many Latin American countries. The fundamental question in Africa is the extent to which indigenous tenure arrangements constrain agricultural development. There is widespread belief, generally not based on empirical evidence, that existing tenure systems tend to induce insecurity and, by implication, discourage long-term investment, thereby constraining increased farm productivity. But evidence from several microstudies in Kenya, the only Sub-Saharan African country with a national land registration and titling program, does not indicate any direct causal relationship between conversion to freehold title and increased productivity. Thus, there is serious doubt concerning conventional expectations about the cost-effectiveness and productivity responses to land tenure reform in the African context.

So far there are very few empirical studies on the influence of land tenure on factor markets and farm productivity in Sub-Saharan Africa. Existing land policies are severely hampered not only by lack of adequate and reliable data, but also by the absence of coherent and informed debate on the economic interplay between land tenure security, labor, credit, and farm productivity. Not surprisingly, dialogue between development agencies, including the World Bank, and African governments on issues affecting agricultural credit, rural labor markets, and farm productivity has remained less effective than desirable.

This study builds on an extensive review of literature already undertaken within the Agricultural Policy Division by Raymond Naronho. The main objective of the present study is to provide empirical description and establish the facts about the security of rights over land enjoyed by African farmers, existence of markets for leasing and selling land, access to and use of credit (especially those predicated on land as collateral), the incidence of land disputes, and investments in land improvement. The second objective is to show how increased security of land holding affects farm productivity. While the first objective will rely on analysis of descriptive statistics, the second will be tackled with the aid of econometric modelling.

In order to ensure generality of implications for most Sub-Saharan countries, it is important that the study be conducted in a number of countries representing major agroclimatic zones as well as different jural and political orientations. The countries selected for this initial phase are Ghana, Kenya, Rwanda, and Burkina Faso. The study is being undertaken in collaboration with local institutes to contribute to local institution capacity building. Information is being gathered on farm household characteristics as well as a broad range of basic farm level data. In Burkina Faso, arrangements have been made to use data collected by the International Crop Research Institute for Semi-Arid Tropics (ICRISAT) in a comprehensive farm level survey.

The results of this study will provide a clear understanding of the different but interrelated aspects of land tenure security and their quantitative implications. This will provide guidelines for appropriate intervention in agricultural projects in which credit and land rights systems play an important role, especially since very limited reliable quantitative information is presently available. This information will be of primary value to governments of Sub-Saharan African countries and donor organizations. The findings of the study will also be directly useful in the work of the World Bank, both
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at the project level (design and appraisal) and in supporting policy dialogue with member countries.

The results of the study and their implications will be discussed with policymakers and representatives of aid agencies. Book length manuscripts and seminar papers will be produced. Based on the experience gained during this study, a more refined methodological design will be proposed. It is envisaged that this work will be extended to other African countries.

Responsibility: Agriculture and Rural Development Department, Agricultural Policies Division—S. Migot-Adholla, Peter Hazell, and Benoit Blarel. With Peter Matlon, ICRISAT; Lawrence Lau, Stanford University; and Frank Place (consultant).

Closing date: August 1989.

Rural Credit Markets, Investment, and Agricultural Productivity in China

Ref. No. 674-34

In many less developed countries, rural credit markets play an important role in helping levels and allocative efficiency of investment and production that could not be achieved with a less developed or less efficient credit system. With rural households now acting as entrepreneurial units in China's new economic system, the efficiency and scope of interactions between households and rural financial markets will be important for sustained agricultural growth. The credit market in China developed rapidly after the economic reforms of the late 1970s and early 1980s. There was an enormous expansion of the volume of transactions between households and institutional lenders (essentially the Agricultural Bank of China and the Rural Credit Cooperatives). While aggregate information is available on credit and deposit volumes in the formal sector, there is little information on, or analysis of, many of the crucial issues that can be affected by government policies in the rural financial sector. These issues include: reasons for the paucity of long-term credit, extent of credit rationing to different types of rural borrowers, modes and roles of collateral and the efficiency implications, scope and procedures of the non-institutional credit market, the causes and extent of credit market segmentation, factors affecting liquidity-holding behavior, and the productivity impact of credit.

The lack of information hampers the design and evaluation of necessary policies. The objective of the study is to gain understanding of factors affecting credit demand by and supply to households within the agricultural sector of China, and the implications of the present credit system for agricultural investment and productivity.

In order to achieve these objectives, detailed micro-level data on agricultural households' activities were necessary. Farmers from four study sites, officers from lending institutions, and relevant local leaders were interviewed.

The first phase of the analysis used the survey data, as well as other existing data, to formulate stylized facts. The extent of commercially-oriented informal credit transaction is quite limited among agricultural households. Informal markets are segmented and they tend to provide credit for purposes that are not funded by the formal sector. In some areas the demand for credit was low because input supplies were inadequate. The extent of credit rationing was variable, depending on the situation in the input market. The second phase of the analysis develops an econometric model where credit supply and demand are interrelated with input demands, output supply, and investment demand. The approach recognizes the disequilibrium that typically characterizes credit markets due to rationing. The tracing of the implications of credit market disequilibrium to input and output decisions provides for a more appropriate specification of the model, and is an innovative feature of the analytical approach. The estimates will clarify the extent of credit rationing as well as enabling an assessment of the productivity and investment effects of credit. Such insights are of much relevance in Bank work on agricultural development. At the same time, specific policy issues that arise in the context of China and other socialist economies will be investigated, such as the implications of an uncertain legal status on non-institutional credit transactions.

The study is aimed at policymakers, development officers, and scholars within China, Bank staff involved in operations in China, development officers in other donor agencies, and the international development community. The study results will be disseminated through interim and final reports (in English and Chinese) and an integrated monograph. Shorter reports using less technical language and highlighting project and policy implications will also be written. Seminars for different audiences will be organized, with the content and presentation tailored appropriately.

Responsibility: Agriculture Department, Agricultural Policies Division—Gershon Feder and Lawrence Lau (consultant), and China Country Department—Anthony Ody and Ramesh Deshpande. With Justin Lin and Luo Xiopeng, the Research Center for Rural Development of the State Council of the People's Republic of China.

Closing date: October 1989.
International and Macroeconomic Policies in the Agricultural Development of Mexico

Ref. No. 674-42

This research investigates the interaction of Mexican domestic policies with other policies affecting domestic agriculture. These other policies include Mexican domestic macroeconomic policy and foreign agriculture and macroeconomic policy. The increasing significance of these interactions can be explained in part by the emergence of a well-integrated world capital market in the 1970s and the ensuing worldwide monetary instability. The resulting large currency realignments under flexible exchange rates have imposed significant burdens of adjustment on trade sectors of the economy, often falling primarily on agriculture. Furthermore, both domestic and foreign agricultural policies often have unexpected effects because these macroeconomic policies are not anticipated.

Because of the complexity of these interactions, adequate policy analysis is difficult, if not impossible, without a formal framework. But models that embody all of these interactions are not available. The methodologies developed in this project are used to estimate the magnitude of individual effects of policy instruments on specific commodity markets in Mexico. These methods permit the identification of policy concerns that may be of overriding importance in formulation of Mexican agricultural development.

Four different sets of policy impacts on the Mexican domestic agricultural economy are addressed: (1) macroeconomic policies of major trading partners (the United States, for example), (2) Mexican domestic macroeconomic policies, (3) commodity-specific agricultural policies of countries that have an impact on the relevant world market, and (4) Mexican domestic commodity-specific agricultural policies.

These issues are addressed in the context of a Mexico-United States focus that is directed primarily at major import commodities, such as maize, sorghum, soybeans, and interlinked livestock commodity markets, such as beef, pork, milk, eggs, chicken. A framework is being developed to represent the equilibrium effects of these sets of policy instruments on Mexico’s agricultural economy so that a host of general policy issues can be addressed. In brief, the framework specifies links and paths of causation between countries and between macro and agricultural commodity market levels. Questions of interest include: Should Mexican domestic agricultural policies adjust automatically to changes in macroeconomic policies, domestic or foreign, or to changes in foreign agricultural policy? Should these responses be different in the short and long run? What gains can be made by determining whether exchange rate adjustments are temporary or permanent? Can these determinations aid in identifying sectors with long-term potential comparative advantage and those with greater risk due to vulnerability to foreign or macroeconomic policies?

With the increasing importance of structural adjustment credits and policy-oriented sector loans, the incorporation of a comprehensive understanding of the policy interactions of domestic and foreign (that is trade partners) macroeconomic and agricultural policies in the dialogue with borrowers is crucial to the effectiveness of Bank policy advice. The project seeks to develop new approaches to assessment of these complex policy interactions between Mexico and its trading partners. Development of such approaches would contribute to improvement of the quality of Bank policy-based lending not only to Mexico, but also to other countries with similar adjustment situations.

Responsibility: Agriculture and Rural Development Department, Agricultural Policy Division—Gerald T. O’Mara. With Ray Fair, Yale University; Andrew Feltenstein, University of Kansas; Richard Just, University of Maryland; Jose Alberro, El Colegio de Mexico; David Barkin, Centro de Ecodesarrollo Mexico; Jan Bisschop, Technical University Twente; Merlinda Ingco, Michigan State University.

Closing date: June 1989.

Agricultural Diversification in Asia

Ref. No. 674-61

Nearly all Asian agricultural economies were originally based on rice. In the early stages of development in Indonesia, for example, more than half of the agricultural GDP was generated by rice cultivation. Successful agricultural development meant successful expansion of rice production and, in most Asian settings, this meant rising rice yields. Available data reveal the dramatic but uneven increase in yields between 1960 and 1984, as well as the relative decline in the importance of rice in the rapidly growing economies.

As domestic requirements for rice have been met by local farmers and prices in the world market have declined due to lack of international demand, the rice sector has ceased to be a source of income growth for the majority of the labor force still in rural areas in Thailand, the Philippines, and Indonesia. In response to low farm incomes caused by low prices
of rice or by high budgetary costs incurred in an effort to support farm prices, farmers in these countries are seeking alternative sources of income growth. Public investment and service programs are also adjusting their focus to address the changing needs of rural communities.

There is sharp debate about the relative scarcity of specialization versus diversification at the farm level. Mixed farming requires more diverse management skills and may reduce risk. The debate suggests that Asian rice subsector diversification will take place at the farm level as mixed farming enterprises proliferate to include multiple cropping and/or integrate livestock-feedgrass enterprises.

The development of modern technology within agriculture and other sectors—pesticides, irrigation, agroindustry, marketing, and communications—has produced an economic and technological environment conducive to more specialized or developed farming operations. How have farmers reacted to the new environment of declining commodity prices? How did public sector services, research, extension, credit, and marketing information respond to this situation? What role can the government's agricultural policies play in influencing the farmer's decision to diversify or specialize?

The study addresses the technical, economic, and institutional issues of diversification at the farm level, within a framework that links these issues with public agricultural policies and services. The main objectives of the study are to: (1) provide information on technical, economic, financial, and institutional factors affecting the diversification process; (2) assess how farmers in different ecological zones address the problem of diversification and how they adjust to a changing economic, financial, and incentive environment; (3) study how agricultural institutions (mainly research, extension, credit, and marketing) have responded to changing needs observed at the farm level; (4) analyze public policies in agricultural support and investment, and how resources allocated to agriculture have affected the links between agriculture and other sectors; and (5) identify action programs required to develop flexible and efficient farming systems.

In order to achieve these objectives, the study, in cooperation with the International Rice Research Institute (IRRI), uses field level data (collected by IRRI, the Indonesia, Thailand, and Philippines National Research Programs) from 750 farm families—250 from each country. These families have been studied by IRRI for several years. In cooperation with Kasetsant University in Bangkok, the Thailand Research Institution, and the Agroeconomic Research Center in Bogor, Indonesia, the project will collect policy-level data on the agricultural sector, its institutions, and the policy performances as related to the process of diversification in these communities.

The results of the study will be synthesized in order to build a reliable framework of analysis of the diversification process based on the experience of the three countries. The study will inform decision-makers concerned with agricultural development in the Bank, other donor agencies, and in the Asian rice producing countries, managers and scientists at IRRI, and other national and international agricultural research centers. The results will be presented in four sections: one for each country and a synthesis section. A series of seminars and workshops will be organized in the three countries to articulate action programs required to ensure efficient evolution of the diversification of agricultural systems in these countries.


Closing Date: December 1990.

Reports:
5 INDUSTRY AND ENERGY

Collaborative Research Project on Chinese Collective Industry

Ref. No. 674-05

Chinese rural collective and private industry has grown extraordinarily rapidly in the past half decade and has become a key part of the industrial system, bringing about considerable changes in the ownership structure of Chinese industry. The central questions addressed by this research project concern the present and future role of this "nonstate" sector. How do Chinese collective and private industrial enterprises function, and what kind of environment do they operate in? Have they performed better than state enterprises, and if so, why? What is the potential for future growth and development and for efficiency-enhancing interactions with the state sector? These questions go to the heart of China's industrial reform effort, whose success may depend on the growth, development, and integration of the dynamic nonstate sector.

This project builds on a recently completed collaborative research project on Chinese state-owned industry. The main goal is to understand and analyze Chinese rural "township and village" industry, which includes a variety of nonstate enterprises ranging from genuinely private firms (individual proprietorships and partnerships) to enterprises that differ little from small state-owned enterprises. The focus is on both the internal arrangements and incentives and the external environment faced by this sector, such as the ways enterprises get started, ownership arrangements, acquisition of factor inputs and technology, managerial and labor incentives, external constraints on expansion and development, competition within the nonstate sector and with state enterprises, and relationships with local community and government.

The project has gathered several types of information and is applying a variety of methodological techniques. Five surveys, designed jointly by the Chinese and World Bank teams, were distributed: one to township government authorities, three to enterprises, and one to workers. The samples were drawn from four target counties selected to provide contrasts in important areas such as agricultural development and rural per capita income, ownership and control structure, proximity to large urban centers, and sources of capital financing. Aggregate data on the four target counties have also been gathered, and extensive interviews have been conducted with sample enterprises, local government authorities, and entities having business relationships with township and village enterprises.

The comparative approach has been particularly fruitful in this study because of the variation in crucial dimensions of the information base: location, industry and technology, ownership and size of enterprises, degree of rural development, wage and incentive systems for workers, educational level and income of workers, and others. A key task is to sort out the influence of these different factors on growth and performance.

The results obtained by the project will be of interest to Chinese policymakers and policy-oriented economic researchers and to World Bank economic and operational work in China (which already involves some lending to township and village enterprises). The study of the issues of ownership, incentives, and economic regulation within the nonstate industrial sector should be useful to researchers and policymakers concerned with economic reforms in other developing countries as well, particularly to other socialist countries undergoing economic reform.

Responsibility: World Bank Resident Mission in India--William A. Byrd, Country Economics Department--Alan H. Gelb, Western Africa Department--Josephine Woo. With Jan Svejnar, Cornell University. The project is being conducted in collaboration with the Institute of Economics of the Chinese Academy of Social Sciences; the Rural Development Research Center of the State Council Rural Development Research Institute; the China Economic Reform Research Institute; and the Department of Sociology, Beijing University. It is being financed by these organizations in addition to the Ford Foundation.

Closing date: June 1989.
Industrial Competition, Productive Efficiency, and Their Relation to the Trade Regime.

Ref. No. 674-46

A firm's conduct is often less than competitive in the manufacturing sectors of semi-industrial countries. Scale economies, rationed credit markets, institutional constraints, and other barriers to entry breed oligopolistic behavior. Welfare losses result from distorted price signals, and are compounded when the cushion of monopoly profits allows inefficient firms to survive. Even if profits are competed away through entry or the threat of entry, limited domestic demand can lead to inefficient small-scale production.

Conventional wisdom has it that increased exposure to world markets reduces monopoly power among tradable goods producers by increasing the demand elasticities producers face. The removal of trade barriers forces firms to produce efficiently or shut down. But detailed evidence on the nature of these adjustment processes is scant. This project is concerned with measuring the sensitivity of various dimensions of industrial competitiveness and efficiency to changes in the trade regime.

The analysis is done at the micro level, within countries, and over time. Hence this study focuses on basic questions left by existing sectoral and macro studies. When efficiency changes occur, do they derive mainly from the curtailment of oligopolistic pricing, the exploitation of scale economies, the elimination of waste, or the adoption of more appropriate factor mixes? How do trade reforms influence each dimension of performance? When reforms fail to generate improvements, is it because industries were already deficient, or because adjustment costs, institutional rigidities, and other impediments permitted inefficiencies to persist?

The project is expected to yield new stylized facts regarding the effect of changes in trade regime on industrial competition and efficiency. These findings will help policymakers recognize the conditions under which trade reforms are likely to generate significant intra-industry improvements in performance, and the types of reforms that are likely to yield the largest gains. They will help analysts recognize the circumstances under which trade liberalization will not affect industrial competition and efficiency.

The project will also advance the literature on trade and efficiency in several ways. First, the analysis tracks changes in market structure and efficiency that take place within countries undergoing trade reforms. The results control for country-specific factors and avoid the criticism, common to cross-country studies, that the results basically reflect idiosyncratic performance of a few super-exporters. By looking at intra-industry changes in market structure, the project avoids problems of interpretation inherent in cross-industry analyses. Finally, the methodology permits isolation of different types of efficiency changes form one another, and provide a basis for generalization regarding which types of efficiency change are the most important.

Five countries are being studied: Chile, Turkey, Morocco, Côte d'Ivoire, and Colombia. Each country satisfies two basic criteria: each has undergone significant changes in trade regime during the recent past, and each has collected detailed plant-level panel data that span the period of regime change.

The analysis of these countries is divided into two phases. First, nontechnical papers focus on (1) changes in trade regimes and other policies that took place, (2) patterns of competition and productive efficiency that emerged, and (3) correlations between changes in policy and performance. Various descriptive statistics summarize changes in industrial performance.

Phase II will produce technical papers suitable for publication in journals. Aided by findings from the first phase, researchers will develop parametric representations of firms' interaction in the product markets, and the various dimensions of efficiency in production. Estimates of conjectural variations and production technologies (among others) will be constructed. The former will indicate the extent of collusion among firms; the latter will serve as a basis for analysis of factor mix choice, scale economies, and deviations from the efficient frontier.

Responsibility: Country Economics Department, Trade Policy Division--James Tybout and Jaime de Melo.

Completion date: July 1990.
Demand for Rural Water Supply

About $1.5 billion is spent annually on the construction of rural water supplies in developing countries, but the efficiency of these investments is generally low. Often, water systems that have been built are neither used correctly nor properly maintained. It is estimated that at least 25 percent of rural water supplies in developing countries are not working, and in some countries construction of new facilities is not even keeping pace with the rate of failure. The number of people using improved supplies is much less than the number ostensibly served. In Kenya and Côte d'Ivoire, for instance, surveys have shown that only one third of the population reported to have access to improved facilities actually used these facilities.

Though this poor record is not the result of a single factor, a major impediment to improved performance is inadequate information on the response of consumers to new service options. The behavioral assumptions that typically underlie most rural water supply planning efforts are simple. It is commonly assumed that so long as the financial requirements of an improved water system do not exceed 5 percent of income, rural consumers will choose to abandon their existing water supply in favor of the new water system. In many instances, however, such rules of thumb have led to poor choices of service levels and inappropriate investments.

The principal objectives of this research project are: (1) to investigate the determinants of households' willingness to pay for improved water supplies in a variety of socioeconomic and cultural settings in different developing countries, and (2) to develop valid yet relatively rapid and inexpensive procedures for assessing households' demand for improved water services so that communities, governments, and donor agencies can make better choices on technical issues (such as level of service) and financial issues (such as cost recovery mechanisms, tariff levels, and subsidies).

Case studies of willingness to pay for water are under way in six countries: Brazil, India, Pakistan, Zimbabwe, Nigeria, and Tanzania. In most of these country studies, household surveys have been conducted at six sites. In each country, the sites selected include villages in which improved water supplies are in operation and other villages in which improved water supplies are to be installed. For villages with improved water supplies, inferences will be drawn based on observed behavior. For villages without improved water supplies, contingent valuation surveys have been carried out in which households were asked a series of structured questions designed to determine how much they are willing to pay for access to improved water supplies. The researchers will examine the effect of family socioeconomic characteristics and the characteristics of different water sources (including type of service, monetary cost, reliability, and perceived quality) on how many households choose to use the new water service, and the maximum they are willing to pay for the service. The research is designed to assess the reliability of the contingent valuation method in the context of household water demand in developing countries.

The study is being undertaken in collaboration with the Institute of Resource Assessment, University of Dar es Salaam; the Department of Economics, University of Nigeria, Nsukka; the Applied Economics Research Center, University of Karachi; Zimconsult Economic and Planning Consultants, Harare; the Institute for Economic and Social Planning of the Secretariat for Planning of the Government of Brazil; and the Center for Social and Technological Change, Bombay. The study's results will be presented in country studies and a monograph on water demand and willingness to pay.

Responsibility: Infrastructure and Urban Development Department, Urban Development Division—Dale Whittington. With V. Kerry Smith, North Carolina State University, and Charles Griffin, Oregon State University.

Closing date: December 1989.

Reports:
Transport Taxation and Road User Charges in Sub-Saharan Africa

Ref. No. 674-37

Transport taxes are traditional and significant sources of public revenue in most countries of Sub-Saharan Africa, much the greater part coming from road transport. In the present decade, practically all African countries face severe shortages of public resources while the road infrastructure in many is already severely deteriorated or should soon begin to decay, failing substantial and regular expenditures. Road deterioration, in its turn, is explained by varying combinations of neglect and unexpectedly heavy or inappropriate use of roads: costs are not generally transmitted to users through pricing. In the proliferating major urban centers, roads are increasingly congested. Transport taxation thus appears as an important policy issue for purposes of both efficient resource use and resource mobilization.

The distinct problem of road transport taxation arises from mixed objectives having to be pursued with limited fiscal instruments. Taxes on road users consist nationally of a charge corresponding to the cost caused to infrastructure and other users, and of an element of pure tax. Totally different principles are appropriate to the design of these two components. The set of practicable tax instruments is always limited, but not in the same way in different countries. The objectives include efficient allocation of infrastructure resources that demands the equalization of social and private marginal cost, and here the task differs between the urban setting and interurban roads; also distributional objectives; revenue mobilization, but also price stability. Any scheme of transport taxation will thus have to be a compromise between objectives, the compromise itself constrained by the small number of instruments and, especially, by administrative capacity.

The study will focus on the allocative and distributional effects of transport taxation. It builds on earlier research supported by the Bank, in engineering economics and the economics of transport taxation, and seeks to adapt and develop this to yield guidance for improving the design of transport taxation in countries of Sub-Saharan Africa. Particular attention is given to adapting principles of fiscal economies to different circumstances of infrastructure supply, transport demand, varying tax systems and administrative capacity, and the state of information in the region. It proceeds initially by case studies. The exploratory stage is devoted to ascertaining the adequacy of available information and available tax instruments for the development of simple and administratively practicable schemes.


Closing date: Phase I, April 1989.

Report:

Indigenous Peoples, Conservation, and Sustainable Development

Ref. No. 674-38

Scientists and development planners have only recently come to recognize and appreciate the positive role that indigenous or tribal peoples can play in the conservation and sustainable development of fragile environments. The World Conservation Strategy, approved in 1980 by the International Union for the Conservation of Nature and Natural Resources, the United Nations Environmental Program, and the World Wildlife Fund, for instance, omitted any reference to the importance of indigenous peoples in conservation and development. At the 1986 World Conservation Strategy Conference in Ottawa, however, a special workshop focused on how to incorporate indigenous peoples and their environmental knowledge into the World Conservation Strategy. More recently, the World Commission on the Environment and Development, in its report Our Common Future (Oxford University Press, 1987), has called upon national governments and international development agencies to pay more attention to the needs of indigenous peoples and to respect their traditional land rights, environmental knowledge, and subsistence systems.

The Bank has played an important role in this effort to highlight the ecological and economic potential of so-called tribal or indigenous societies. As far back as 1982, the Bank published a report, Tribal Peoples and Economic Development: Human Ecological Considerations, and formulated a policy for preventing or mitigating the more adverse effects of Bank-financed development projects on tribal and indigenous populations. This was followed, in 1986, by a policy for wildlands protection and management that, in combination with the Bank's tribal peoples policy, provides guidelines for the preservation of the closely related phenomena of cultural and biological diversity.

The major issue that the Bank, like other institutions, faces is how to adequately implement its tribal peoples and wildlands management policies. It was this issue that led the Bank's new Latin America and Caribbean Environmental Unit to design a research project that would look at ways of reconciling the often divergent and conflicting interests of indigenous peoples, conservationists, and development planners.

The research project, as originally phrased, hoped to produce a manual that would draw on the experiences of native peoples in industrial countries (for example, hunting and foraging groups in northern Canada), Latin America, and other parts of the world, to provide policymakers and project planners with a guide on how to design plans that combine traditional land use and conservation objectives. As research proceeded, however, it became clear that a manual was somewhat premature, as many projects that contain these objectives are still at an experimental stage and are not readily generalized as universal models. For this reason, the project draws on a series of case studies from northern Canada and Latin America and suggests certain principles for more adequately incorporating indigenous environmental knowledge and resource management strategies into conservation area planning.

As part of the project, a consultant was hired to visit several ongoing conservation projects in indigenous areas on Central and South America. A number of case studies on the topic was also solicited from international conservation organizations and anthropological experts. The result is a set of case studies that looks at both successful and unsuccessful experiences of collaboration between indigenous peoples and conservationists, and a set of principles for improving conservation and economic development practices in indigenous areas. The cases were discussed at a seminar in August 1988, attended by Bank staff and representatives of nongovernmental organizations, and are being prepared for dissemination in a Bank publication.

Responsibility: Latin America and Caribbean Technical Department, Environment Division—Shelton H. Davis, and Peter Poole, Brian Housel, Dennis Glick, Kim Hill, and Jorge Uquillas (consultants).

Closing date: December 1988.
Incentives for Smallholder Forestry,  
Phase I  

Ref. No. 674-47  

Working toward the objectives of the Tropical Forest Action Plan, the Environment Department is carrying out research into the incentives to encourage smallholder involvement in tree planting. These incentives include cash payments or subsidies in kind (free seedlings, tools), food for work (particularly under the World Food Program), land tenure reform (to provide security of tenure to groups of landless people or individual farmers for tree growing), agricultural credit, fiscal incentives (such as tax exemptions), price guarantees, and contracts for production. The research program is intended to develop a better understanding of farmer responses and the effectiveness of different types of subsidies in various agroecological situations. The initial field work for this project is being undertaken in Kenya. It is linked to a wider research project of the same issue conducted by the Oxford Forestry Institute with ongoing field work in India and Zimbabwe and planned for Costa Rica. An interim report will be available in early 1989, followed by a presentation to the Environment Department staff.

Responsibility: Environment Department, Environmental Systems and Technology Division—John Spears.
8 URBANIZATION AND REGIONAL DEVELOPMENT

Rent Control in Developing Countries, Phase I

Ref. No. 674-01

Earlier Bank research on rent control demonstrated that analysis of rent control as a simple price control does not adequately explain the real-world consequences of such controls. In some markets rent controls greatly reduce total investment in housing, while in others investment continues at surprisingly high levels. In both cases the distributional implications of controls need to be clarified.

This research project seeks to answer several questions about rent control: How common is rent control in developing countries? What are the most common types of rent control? What are the costs and benefits of different types of controls under different market conditions? What is their effect on the supply of housing services? What alternative methods of decontrol exist, and what are their relative merits?

The research project will survey the nature and extent of rent control laws across countries. The study will focus on identifying the kinds of units that are controlled, the methods for setting controlled rents, whether and how controls are adjusted over time, related laws (for example, tenant occupancy rights and land price controls), and enforcement practices. Several case studies of controlled markets will be undertaken to provide empirically based findings on the costs, benefits, and distributional implications of rent control. Specific provisions of rent control laws will be analyzed in detail. The results from the case studies will be integrated with an internally consistent model of market behavior that includes costs and benefits of rent control to different agents (landlords, tenants, governments) and from different sources (changes in prices, consumption, mobility, tax revenue). Alternative methods of decontrol will be studied within this framework.

Phase I of the research project is under way and consists of a broad survey of many markets and five case studies. Phase II will consist of additional case studies, if needed.

Responsibility: Infrastructure and Urban Development Department, Urban Development Division—Stephen Malpezi and Ricardo Silveira. With Vinod Tewari, Indian Institute of Management, Bangalore; Graham Tipple and Kenneth Willis, University of Newcastle-upon-Tyne; Marja Hoek-Smit, University of Pennsylvania; and Peter Rydell, The Rand Corporation.

Closing date: December 1988.

Reports:


Satellite Images in Urban Planning and Urban Management

Ref. No. 674-66

Effective urban planning requires access to accurate and up-to-date spatial data on the changing conditions of the urban area. In most third world cities, this type of data is either non-existent or inaccurate. The costs of obtaining such data and the time involved often prove to be insurmountable hurdles in the development process. The new generation of commercial satellites, however, provides a simple, cost-effective means of collecting data. Although the satellites are ideally suited for monitoring third world urban growth, little systematic work has been done so far in this area.

This project is a case study of Karachi to determine the feasibility of urban planning applications of satellite imagery. Specifically, the study aims to: (1) apply computer analysis and mapping of land use patterns, including built-up areas, housing areas, transport and infrastructure networks, and provide data for updating censuses, infrastructure projections, tax base mapping, and other urban planning needs; (2) test different levels of technology for
use, including computer software and equipment, and technical skills, so as to tailor technologies to different uses under different budgets; (3) determine the relative benefits of the levels of technology vis-a-vis existing methods of data collection; (4) provide guidance to future users as to the availability of technologies and their likely applications; and (5) prepare an agenda for future research on the use of satellite imagery for urban planning and management.

A final report will document the potential uses of satellites based on the Karachi case study. This report would be a basis for the Bank to advise borrowers on how to use satellite imagery to improve the spatial component of feasibility studies prior to Bank lending and subsequently to monitor urban growth. Planners in developing countries could use the study's results to develop and monitor urban programs, to devise strategies to accommodate growth within cities, and to develop programs targeted for specific areas.


Closing date: November 1988.
Returns to Investment in School Quality in Rural Brazil

Ref. No. 672-93

Little evidence is available to help financially strapped governments of developing countries make informed choices on investment in rural primary schooling. Yet these governments continue to invest in rural primary education to the extent possible, more from a sense of equity than from confidence in the returns to the investment. This research project is a modest effort to provide some of the information needed for policy evaluation.

As part of a World Bank loan to Brazil (EDURURAL), primary schools in 268 counties in nine northeastern states were earmarked for improvements in quality improvements, such as textbooks and classroom materials, more training and better pay for teachers, and better school administration. About $1.1 million of the loan (1.2 percent of total project costs) was allocated for an evaluation of the project's contribution to improved primary school enrollment, to reducing repetition and dropout rates, and to learning.

The goal of the evaluation is to determine which improvement in educational quality or mix of improvements introduced by the project was most cost-effective in terms of gains in learning. An important aspect of the study is the development of measurements of changes in learning over a limited time as a result of the project.

The project's sample was randomly chosen from second and fourth-grade pupils in rural primary schools in three Brazilian states (Pernambuco, Ceara, and Piaui) in the nine-state project area. Data were collected biennially from 1981, a preproject year, through 1987, when investments were complete. Some pupils feature in more than one round of data.

Analysis of the data through 1985 show that material inputs, such as textbooks and writing materials, appear to be the most cost-effective way to raise achievement, followed by formal education of teachers. Achievement gains per dollar invested in teacher education were higher for completed primary education than for secondary education. With the exception of water projects, investment in infrastructure such as school buildings and furniture was more costly in raising achievement.

Data from 1981, 1983, and 1985 have been analyzed and the findings from 1981 and 1983 are reported in a working paper. Findings from the 1985 data and an update of the earlier findings were presented at the Comparative and International Education Society meetings in 1987.

Responsibility: Europe, Middle East, and North Africa Technical Department, Population and Human Resources Division—Ralph W. Harbison, Latin America and the Caribbean Country Department I—Donald B. Holsinger, and Africa Region Country Department VI—Jane Armitage. Raimundo Helio Leite of the Federal University of Ceara in Fortaleza (Brazil) directed the Brazilian research team responsible for conducting the evaluation. The Brazilian Ministry of Education and the Carlos Chagas Foundation collaborated in the evaluation project as a whole.

Closing date: June 1989.

Reports:


Therrien, A. "Selecitividade Social e Escola Rural: Comparacao Entre Alunos de 2 e 4 Serie."
Education and Informal Sector Employment

Ref. No. 673-26C

This project explores the effects of education on labor productivity and earnings in Peru, with an emphasis on earnings differentials among self-employed workers and those in the informal sector. Because education may affect earnings in part by influencing decisions regarding migration and occupational choice, the study includes both rural and urban workers and those engaged in both formal and informal sector activities.

Earlier studies on the economic role of education were based mostly on samples of urban wage employees working in large firms and government service. In most developing countries, including Peru, however, such workers represent only a fraction of the labor force. Further, it is often argued that institutional factors, such as minimum wage legislation, unionization, and legal barriers to entry, cause formal sector wages to exceed market-clearing levels. In contrast, informal sector employees work in small, unregistered enterprises that are unregulated and not protected by legal barriers to entry. Informal sector wages should, therefore, more accurately reflect the relative economic value of different types of labor. If so, comparing rates of return to education between formal and informal sector workers gives one measure of the degree of wage distortion in the formal sector.

This study attempts to break new ground both conceptually and methodologically. An appropriate framework for analyzing earnings in the Peruvian context needs to model the public and private determinants of a sequence of decisions that eventually determine productivity and earnings. These include decisions on how much and in what types of education to invest and where and in what sectors/occupations to seek employment. The returns to investment in education consist conceptually, therefore, of a direct component (higher earnings attributable to education's effect on productivity within the chosen location and sector/occupation) and an indirect component (higher earnings attributable to education's effect on locational and sectoral/occupational decisions).

Since the earnings of self-employed workers tend to fluctuate over time and are difficult to evaluate, the study is pursuing several alternatives for measuring such earnings. In addition to attempting direct measurement of income in a variety of ways, data on household consumption and savings may be used to approximate permanent income.

The study is using data collected in a nationwide survey of 5,000 households conducted by the Peruvian Instituto Nacional de Estadistica. The survey questionnaires were based on prototypes developed by the Bank's Living Standards Measurement Study and were designed to capture information on all types of workers, including the self-employed, unpaid family workers, and informal-sector wage employees. In addition to information on income and schooling, the study collected data on household expenditure, time use, family composition, and housing characteristics and on characteristics of all farm and nonfarm family enterprises.

Initial entry and cleaning of data were done using microprocessors located in sixteen regional centers in Peru. This novel use of personal computers has improved the overall quality of the data by allowing more in-field checking of questionnaire responses and has shortened the time lag between field operations and the release of data for analysis. "Clean" data sets are available and have already been used for analyzing various aspects of household behaviors.

This project is closely related to an ongoing research project in the Côte d'Ivoire, which is providing information on the full range of workers in the Ivorian economy (see Ref. No. 673-22). Together, these two projects are expected to provide a unique comparative picture of the characteristics and workings of informal labor markets in the developing world.

Responsibility: Policy, Planning, and Research—Dennis de Tray, and Population and Human Resources Department, Education and Employment Division—Peter Moock and Jacques van der Gaag; and Ana Maria Arriagada, Roxana Carvalho, Paul Glewwe, Elizabeth King, Hailu Mekonnen, John Newman, and Morton Stelcner (consultants). With Paul Gertler, Harvard University; Philip Musgrove, Pan American Health Organization; Carola Pessino and Hanan Jacoby, University of Chicago; and Wim Vijverberg, University of Texas. Collaborating Peruvian institutions include the Instituto Nacional de Estadística, Banco Central de Reserva del Peru, Ministries of Education and Labor, Universidad del Pacifico, and Universidad Catolica del Peru.

Closing date: June 1988.

Reports:
Some of the key questions examined are: How does cost vary by type of technical or vocational experience of recent secondary school graduates, and nonformal training provided by enterprises. How is the unit cost influenced by the cost of technical and vocational education compared with that of general education? How does the productivity of labor must be determined? What is the most cost-effective combination or sequence of general education, vocational education, and employment experience of graduates. Policymakers seeking to raise the productivity of labor must determine what is the most cost-effective combination or sequence of general education, vocational education, and nonformal training provided by enterprises.

The purpose of this research is to gather information on two issues related to the government's strategy to increase vocational education at the upper secondary level: the relative costs of various kinds of general education and technical-vocational education at that level and the technical-vocational education transition patterns from school to work. Some of the key questions examined are: How does the cost of technical and vocational education compare with that of general education? How does the cost vary by type of technical or vocational institution? How is the unit cost influenced by the curriculum content (general subjects, specialized subjects, and practicals)? What is the employment experience of recent secondary school graduates, and how is it related to the particular kind of secondary education received?

The project examines the relative costs of various types of secondary education and prepares the groundwork for a larger project that would examine the transition from school to work. The cost study, undertaken in collaboration with the Population Research Institute of the Department of Economics, Fudan University, Shanghai, collected data from a sample of over 100 schools in Shanghai. With a population of more than 13 million, Shanghai is China's largest city and a principal industrial center. Shanghai has led in the development of specialized secondary education and in the reform of the assignment and employment systems.

The findings of the cost study, which will be published by Fudan University, served as the basis for a conference on technical and vocational education in Shanghai, held at Fudan University in March 1987.

Ref. No. 673-69C

A Cost-Effectiveness Analysis of Different Types of Secondary Education in Shanghai Municipality, China

The need to improve the skill level and technical competence of the workforce in China is evident. Less clear is the most efficient arrangement for industrial training, especially given China's rapidly changing rural and urban economic environments. Although government planners believe that greater occupational content in secondary education is an appropriate response to this rapid change, no systematic studies have been done of the cost of different forms of technical and vocational education in China; even less attention has been paid to the employment experience of graduates. Policymakers seeking to raise the productivity of labor must determine what is the most cost-effective combination or sequence of general education, vocational education, and nonformal training provided by enterprises.

The purpose of this research is to gather information on two issues related to the government's strategy to increase vocational education at the upper secondary level: the relative costs of various kinds of general education and technical-vocational education at that level and the technical-vocational education transition patterns from school to work. Some of the key questions examined are: How does the cost of technical and vocational education compare with that of general education? How does the cost vary by type of technical or vocational institution? How is the unit cost influenced by the curriculum content (general subjects, specialized subjects, and practicals)? What is the employment experience of recent secondary school graduates,
several developing countries.

This study has four objectives: (1) through the use of the new analytic tools, to obtain better estimates of school and classroom effects on student achievement, (2) to employ these improved estimates to better compute the cost-effectiveness of alternative inputs and mixes of inputs with respect to improving educational quality, (3) to examine efficiently the use of materials by teachers and principals within schools, and (4) to answer questions that can be uniquely posed through multi-level analyses, regarding the effects of school and classroom policies on intra-classroom techniques. While the latter questions are of considerable interest to researchers and policymakers, they are incapable of being answered through traditional ordinary least squares methods, and the new methods permit exploring questions rarely examined quantitatively up to now.

The contribution of this study is both methodological and substantive. The project contributes a more sound method for assessing the relative effects of alternative educational interventions and policies; it urges researchers to find more appropriate techniques for estimating the influence of hierarchically arranged factors. It also addresses policymakers with respect to what specific policies and school inputs more efficiently raise pupil achievement. Its substantive contribution is in identifying the inputs, input mixes, and social/management processes that contribute to student achievement. The research tests for achievement effects from material inputs, such as text books, exercise books, and teacher training, teaching practices linked to how materials are used by teachers, and school- and classroom-level management practices.

The research involves secondary analysis of data from such developing countries as Poland, Thailand, Hungary, Korea, Malawi, Swaziland, Nigeria, the Philippines, Papua New Guinea, and the Dominican Republic. Both cross-sectional and longitudinal (panel) multi-level analyses are undertaken. The products of the study will include several papers, presentations at major international conferences, and a planning document for a conference on improving education effectiveness and efficiency. Because the methodological issues and the resulting papers will be of general interest to Bank staff, small conferences will be held to discuss project findings.


Closing date: June 1989.

Reports:
Lockheed, Marlaine E. and Andre Komenan. "School Ef-


Quality and Socioeconomic Impact of Education in Sub-Saharan Africa

Ref. No. 674-57

Education plays a critical role in the development process, both in terms of costs incurred and anticipated benefits. In Sub-Saharan Africa, governments have spent large amounts of money to raise educational levels. This effort has resulted in improvements in educational attainment, but recent economic stagnation has been accompanied by stagnation in school enrollments and significant deterioration in the quality of schooling. This study constitutes a comprehensive investigation of both the process by which education is obtained and the benefits provided to individuals who become educated. The study complements recent research on East Africa (Kenya and Tanzania) by focusing on two West African countries, Ghana and Côte d'Ivoire.

The research contributes to the stock of knowledge from previous research in two ways. First, the study clearly distinguishes between years of school attendance, which is one input in the production of educated individuals, and learned cognitive skills, which are relevant outputs of education. Second, the study examines the contribution of education to economic development within a broader framework than has been done in the past. These two approaches contribute to a deeper understanding of education in economic development and have the potential to provide clear recommendations on the design of effective education policies.

In both Ghana and Côte d'Ivoire a great deal of money, time, and effort is saved by building on the Living Standards Surveys now in place. Additional data will be collected in three short tests: a reading test, a mathematics test, and an abstract test which attempts to measure innate ability (Raven's Progressive Matrices). These tests began in Ghana in October 1988, and are planned to begin in Côte d'Ivoire in May 1989. One can answer four questions with the data from these tests: (1) the extent to which reading and mathematics skills are acquired in school; (2) the retention of these skills by adults; (3) the contribution of these skills to economic productivity, measured by earnings, agricultural productivity, and so on; and (4) the effects of these skills on noneconomic outcomes, such as fertility and the nutritional status of children. This knowledge will provide policymakers with information on the effectiveness of present education policies and will also
have implications for the design of future policies. A 1988 World Bank policy paper on education in Sub-Saharan Africa called for such research. The findings will also be relevant for policy design in other African countries.

Several products will emerge from this research. First, individual papers will appear in the World Bank's Living Standards Measurement Study series. At a later stage, revised versions of these papers will be submitted for publication in academic journals to allow for broader dissemination of the findings. Finally, a monograph will pull together the various studies into a comprehensive assessment of the role of education in the development process.


Closing date: December 1990.

Labor and Employment

Employment and Earnings in Senegalese Industry

Ref. No. 674-03

The project examines how and to what extent employment and wage-setting processes hamper industrial development in Senegal and what their effect is on allocative and productive efficiency. The emphasis is on the modern industrial sector, although links with other sectors of the economy are also explored as the basis for future research. Senegal's modern industrial sector merits special attention for three reasons: (1) it has suffered most from labor market inefficiencies and could therefore register the greatest gain from labor reform, (2) it is the chief producer of Senegal's exports, and (3) it should play a key role in generating stable employment over the long run.

The goal of the project is to estimate the impact of the tripartite system—government, unions, and managers—on wages and productivity. The World Bank is especially interested in learning about relative productivity and wage differentials in Senegal, but the method and findings should be useful for policy analysis in other highly regulated developing economies as well.

The principal period of analysis is 1980-86. The findings from this period are compared with those of earlier studies of Senegal's industry in the 1960s and 1970s. Data were gathered from all groups in the labor market. In addition to discussions with government and union officials, questionnaires were administered to managers and workers in 17 of the 230 firms in the industrial sector. The analysis also makes use of a 1980-85 panel of data (provided by the Ministry of Finance) on 80 firms, which represent 80 percent of total value added and 75 percent of employment in the industrial sector. This combined data base provides new insights into the functioning of the labor market and permits more accurate measurement of wage and productivity differentials among different groups.

The project findings will be presented in a report to the World Bank and two academic papers.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Guy P. Pfeffermann and Jan Svejnar and Katherine Terrell (consultants), and the Africa Regional Office, Office of the Regional President—Stephen O'Brien.

Closing date: January 1988.

Changes in Employment and Real Wages during Recession and Adjustment: Côte d'Ivoire, 1979-84

Ref. No. 674-21

While the labor market is often recognized as a source of many constraints on adjustment, little information is available on labor market responses to economic shocks. Empirical evidence on labor market responses to variations in relative prices experienced during a recession could provide an indication of how the labor market is likely to respond to policy-induced variations in relative prices.

This research project is analyzing the effects of macroeconomic shocks to the economy on the labor market and the survival of firms in the modern sector of Côte d'Ivoire. Côte d'Ivoire was chosen as a case study because good micro data on employment and wages are available and because it has experienced a considerable number of adverse shocks since 1979, with large differences in their impact within and across sectors. The empirical analysis is based on data from two labor force surveys, the Enquêtes de Main d'Oeuvre, conducted as a joint effort among the Ministries of Education, Labor, and Economy and Finance. The surveys furnish longitudinal information on each firm and its employees for 1979, at the beginning of a recession,
and 1984, in a period of recovery. The first phase of the research project describes and analyzes changes in employment and wages, using information at both the firm and individual worker levels. Information at the firm level is used to analyze changes in employment due to the dissolution of firms, the formation of new firms, and the survival of firms through the recession, and to relate these transformations to characteristics of the firm such as size, age, sector, and public-private ownership.

Unlike analyses based on aggregate employment data, analyses based on firm-level data can show where job losses occurred. Thirty-four percent of job loss between 1979 and 1984 was due to the contraction of surviving firms and 66 percent to firms going out of business. Turnover among firms was very high: over 2,000 firms went out of business and over 2,000 new firms were established. The new firms did not generate enough employment, however, to offset the loss due to firms going out of business.

The project also examines real wage flexibility over the recession, an important issue because wage rigidity may impede adjustment to changing relative prices. Longitudinal firm-level information was used to examine real changes in average wages across firms by firm size and sector. Because changes in average wages still mask compositional changes in the firms' work forces, longitudinal data on employees were used to explore the extent of wage flexibility. The analysis shows that real wages fell 10 percent for workers who retained their jobs but over 30 percent for newly hired workers.

The second phase of the research combines time-series data on domestic and external shocks to the economy with the panel data from the manpower surveys to ascertain how the shocks affected wages and employment. The specific external shocks considered are those caused by changes in foreign interest rates and real exchange rates. The domestic shocks are those arising from changes in domestic credit growth and public consumption and investment.

Responsibility: Population and Human Resources Department, Welfare and Human Resources Division—Jacques van der Gaag. With Professor Victor Lavy, Hebrew University, and John L. Newman (consultant). The project is being undertaken in cooperation with La Direction des Etudes et de la Recherche de l'Office National de Formation Professionnelle.

Closing date: December 1988.

Report:

International Comparisons of Labor Costs and the Effect of Wage and Nonwage Regulations on Exports

Ref. No. 674-22
This research project is examining the hypothesis that wage and nonwage regulations, by creating artificially high labor costs in protected sectors of the economy, are impeding the economic reorientation toward exports needed to attain sustainable economic growth. The project focuses on the impact of labor costs and regulations on observed export performance in the manufacturing sector of nineteen developing countries for the years 1975-85.

The effect of labor market regulations on labor costs is analyzed using information on wage and nonwage costs and on labor market regulations. Total labor costs are calculated for production workers in the manufacturing sector and are compared across sectors within a country to assess the enforcement of labor market regulations, and with total labor costs in other countries to assess competitiveness. The impact of labor market regulations and labor costs on export performance is analyzed using a regression model with a pooled cross-section/time-series export-supply function. The dependent variable is manufacturing exports, and the independent variables are wage costs, nonwage costs, real exchange rates, relative export prices, and capital costs.

Two major reports are expected from this study: an intercountry comparison of wage and nonwage costs and labor market regulations, and an econometric analysis of the impact of wage and nonwage costs and labor market regulations on manufacturing exports in developing countries.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Luis A. Riveros.

Closing date: March 1989.

The Impact of Changes in Job Security Regulations in India and Zimbabwe

Ref. No. 674-23
Almost all countries have enacted job-security regulations governing periods of notice, compensation for dismissal, and government involvement in proposed labor force retrenchment. It is likely that countries facing contractionary economic forces will be tempted to tighten such regulations in the face of
growing unemployment. To date, however, there has been almost no research on the empirical effects of such regulations.

The immediate impact of job-security regulations is to preserve employment in contracting sectors. In the longer term, however, the effect is likely to be slower industrial growth, less competitiveness in relatively labor-intensive export markets, and a reduced ability to adapt to changing market conditions. Although the Bank has noted these possibilities in various country reports, it has been unable either to quantify these effects or to identify the sectors with the greatest vulnerability.

This research project examines the effect on employment creation and industrial growth of new, more stringent job-security regulations in India and Zimbabwe that require government permission prior to laying off workers. Whether these tighter regulations have had adverse effects on employment creation and industrial growth is important because these issues are of major concern in both countries. Measuring the effects of these tighter regulations will provide important information regarding the likely consequences of removing or reforming job-security policies.

More generally, the study indicates whether reform of such regulations should be included as a condition for policy-based lending in these and other countries with similar regulations. In addition, study findings regarding the susceptibility of different manufacturing sectors to this kind of policy intervention and the likely time path of employment response should be useful to policymaking agencies.

Statistical analyses of time-series data on various manufacturing industries in each country are being used to explore the hypothesis that job-security regulations diminish labor productivity, raise the implicit cost of labor, and retard adjustments in the labor force. The basic approach is to test for structured shifts in the parameters of production and labor demand functions following the introduction of the new regulation.

The data for India permit a comparison of the behavior of establishments requiring government permission prior to retrenching workers with that of other establishments in the same industry that are exempt from the requirement. In both countries the project is also analyzing the relationship between the magnitude of estimated structural shifts arising from the new regulations and individual industry characteristics.

Two papers that present the full theoretical and empirical analysis for each country are currently being completed. An executive summary will be available to disseminate the results and conclusions of the research to a non-technical readership.

Ref. No. 674-30

This research project examines the interactions between the structure of labor markets and the exchange rate policies accompanying stabilization and structural adjustment efforts. Its central hypothesis is that the erosion of nominal devaluations and the link between devaluations and spiralling inflation depend critically on the extent of segmentation in the labor market, real wage resistance in the protected sector, and limited labor mobility. The research also examines how policies that affect labor market segmentation affect the success of a devaluation and its impact on wage differentials and unemployment.

A two-sector, open-economy model that distinguishes between tradable and nontradable commodities, skilled and unskilled labor, and free and protected labor markets will be formulated and tested empirically. The model will test the impact of exchange rate policies on the wages of skilled and unskilled workers, on the prices of nontradables, and on inflation, using data for 1965-85 for Chile, Argentina, and Colombia. These countries were chosen for comparison because of their varied experiences with inflation, exchange rate policies, degree of labor market segmentation, real wage changes, and levels of open unemployment. Their record has been studied extensively, and yet the impact of the structure and institutional components of their labor markets has been relatively ignored.

The empirical model is a five-equation system in which the dependent variables are wage rates for skilled and unskilled workers, prices of nontradables, aggregate income, and the unemployment rate. The stylized facts surrounding labor market performance will be analyzed in the context of the model, and econometric testing will be applied regarding restrictions on the parameters.

Two major reports are expected from this study: an examination of labor market trends in the three Latin American countries and an econometric analysis of structural adjustment and the role of labor market segmentation.
Health Care Demand and Resource Mobilization: The Case of Peru

Ref. No. 673-38C

The issues of user fees, cost recovery, and resource allocation in social services have elicited increased interest in developing countries in recent years, as finance ministries confront macroeconomic constraints to social program spending and service ministries struggle to meet ambitious sectoral goals requiring substantial investment. Attention has focused, in particular, on the possibilities for and likely consequences of wider application of user fees for publicly provided services.

This project is examining the impact of user fees on the demand for health services, using Peru as a case study. The study addresses such questions as: How would the use of health services be affected by new fee policies? Would users shift from some types of health care providers to others? Would some user groups fare better or worse than others? Would there be differences by type of health service (for instance, curative as opposed to preventive)? How much in additional resources would be mobilized?

Only a handful of studies have investigated the determinants of health care demand, and because of data limitations, the results have left many questions unanswered. Some researchers have hypothesized that factors other than price, particularly perceived quality of care, dominate in household health care choices and that existing fees for public health services could be raised substantially without appreciably affecting utilization. If so, it would be useful to know under which conditions and for which groups a range of relative price inelasticity would apply. Information would also be helpful on the likely implications of policies that alter the quality of service provided.

Thus, this study is also exploring the influence of nonprice factors on the demand for health care, including the quality of services available, taking into account traditional health practitioners as well as modern public and private providers, costs other than fees (time and travel costs), health status, socioeconomic level, environmental conditions in the home and community, and education.

The principal data for the study came from two closely linked surveys, one of households and the other of health care providers, conducted in the second half of 1984. The household survey is being administered by Peru’s national statistics bureau; the provider survey was a collaborative effort among multilateral and bilateral development agencies and health organizations. The surveys were undertaken to remove a major impediment to the improvement of health sector policies on cost recovery and resource allocation: the lack of adequate empirical evidence on user responses to health care prices.

The household survey covers more than 12,000 households, selected on a cluster-sampling, stratified, random basis. The questionnaire, although designed to serve multiple purposes, includes several sections expressly for this study. Questions concern episodes of illness of household members, the sources and nature of health services received, maternity history, amounts and forms of fee payments, waiting and travel time, sources and levels of income and assets, characteristics of the home and community, and standard socioeconomic indicators.

The survey of health care providers concentrated on six areas subsampled from the household survey districts. Information was obtained on the types of services offered, fees charged, utilization figures, supply factors (size and composition of staff, number of beds), accessibility factors (location, hours of operation, restrictions on who can be served), quality indicators (status of drug stocks, condition of equipment and facilities, degree of overcrowding), and whatever cost data (usually very limited) were available.

A descriptive component of the analysis traces current patterns in health care utilization and related topics in the context of Peru. A modeling component draws on recent findings in the literature on the economics of health care. Data on users’ reported willingness to pay for health care services is being tested against their actual behavior.

Responsibility: Population and Human Resources Department, Welfare and Human Resources Development Division—Jacques van der Gaag. With Avi Dor; Philip Musgrove, Pan-American Health Organization; and staff and consultants of USAID. Cooperating Peruvian institutions include the Ministry of Health and the
The Second Amman Population and Health Survey

Ref. No. 673-45C

Improved health is often cited as a benefit of urban water, sewerage, and other infrastructure projects. Yet despite the common belief that the upgrading of urban infrastructure was responsible for health improvements in nineteenth-century Europe, researchers have failed to conclusively demonstrate this connection in modern developing countries. To some extent, this failure can be explained by lack of information on the socioeconomic characteristics of the community and the subject populations, including behavioral factors.

This project seeks to address this information gap by conducting follow-up surveys of five slum areas in Amman, Jordan, for which baseline surveys were carried out in 1980-81 under the Jordan First Urban Development Project. Four of these areas were subsequently upgraded, and one was not. In addition to evaluating the impact of the upgrading project, the study provides an opportunity to secure more accurate measures than are often available at the family level and to measure changes that have resulted from different degrees of policy intervention.

This study seeks to demonstrate the effectiveness of simple, low-cost techniques for surveying the health status of populations of low-income neighborhoods as an aid to selecting future upgrading sites and to designing and evaluating interventions dealing with specific health problems. The surveys should provide a data base that can be used for further studies of the Amman upgrading projects and health-related issues.

In the analysis of the data from the surveys, emphasis is being given to relationships most relevant to judging the impacts of upgrading interventions. Cross-sectional analyses and assessments of the relationships between changes over time in the physical environment and the health status of populations are also being performed. The study's anthropological component will add to the experience gained from participant observation of upgrading projects in other countries, yielding information useful for project implementation (see Sal-
availability of health services. Yet concern about food consumption is a concern about health and nutrition. This research project is one of the first analyses of these issues and is the first using African data.

The objective of the research is to explore the effects of government policies on the nutritional and health status of children. In particular, the study seeks to estimate the impacts of government services (such as health facilities and schools) and of agricultural pricing policies on standardized anthropometric measurements and on morbidity.

A major reason for the lack of this type of research is the absence of appropriate data. The national probability household survey in Côte d'Ivoire, based on recommendations from the World Bank's Living Standards Measurement Study, offers a unique opportunity to create the required data set. Most of the necessary data are already being collected: household data on income, education, and morbidity and community data on the availability of government health, school, water, and extension services and food and nonfood prices. Missing only are direct indicators of nutritional status; these will be provided through the anthropometric measures being collected under the project.

Factors other than the survey data also make the Côte d'Ivoire a particularly appropriate country for this study. It is one of the few African countries with no dependency on food aid, and yet sketchy information on nutritional status indicates that up to 30 percent of children in the rural north aged 9-24 months suffer from severe malnutrition. Data from Abidjan indicate that most children suffer from some degree of malnutrition within a few months of birth.

The effects of government policies on morbidity and changes in standardized anthropometric measurements will be established by estimating reduced-form equations based on a structural model of household decision making. The dependent variables will be standardized weight and height measurements and changes in those measurements over time. Exogenous variables will include prices of foods, nonfoods, and farm inputs (for farm households); male and female wages; the availability of public health and schooling programs; parents' standardized height; and other individual and family background characteristics (such as age and sex, and education of the parents).

The reduced-form equations derive from an economic model in which households produce such commodities as nutrition and health. Separate regressions will be run for farm and nonfarm households and for different age groups of children. Appropriate regression techniques, such as those developed for use with limited dependent variables in the case of morbidity, will be used.


Closing date: June 1988.
Part II

DEPARTMENTALLY FUNDED STUDIES

An attempt is made here to present an inventory of the departmentally funded studies that were ongoing or completed during fiscal year 1988. These studies—undertaken at the initiative of departments with their own staff and discretionary resources and sometimes with outside financing—were not subject to central review by the Research Committee. The inventory may be incomplete because it includes only the studies that departments reported to the Research Administrator's office, and there may be overlaps between these studies and centrally-funded research projects. Moreover, the information is given as reported without following a preset format. Nor was an attempt made to differentiate policy work from research. And for studies continuing into fiscal 1989, there may be changes in content, responsible personnel, and scheduled completion dates.
DEVELOPMENT POLICY AND PLANNING

Income Distribution and Poverty Alleviation

Review of Income Distribution in Chile

This study is using survey data to explore empirical estimates of income distribution in Chile since 1975. Its purpose is to determine whether social expenditures by the government were effective in reaching the poorest classes of the population.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division--Luis Riveros.
Completion date: March 1988.

Living Standards Measurements Surveys

The Living Standard Measurement Surveys (LSMS) are underway in Ghana, Mauritania, and Côte d'Ivoire. The LSMS survey in Ghana is implemented to monitor the socioeconomic impact of the country's structural adjustment measures. Impact evaluation will initially focus on the social sectors (health, education, nutrition).

In Mauritania, the survey was developed with a heavy focus on the role of food aid. The survey will, among other things, provide the information to evaluate the target efficiency of alternative food aid programs.

The Côte d'Ivoire LSMS is in its third year. Based on earlier analysis of the health care data, the third year household questionnaire was revised to allow for more detailed studies. A healthcare provider questionnaire was developed to complement the household survey.

Completion date: June 1988.

Growth Linkages

The rural nonfarm economy often accounts for 20 to 30 percent of total rural employment and 30 to 50 percent of rural cash income. Evidence suggests that because of various consumption and production links between agriculture and the rural nonfarm economy, agriculture growth generates sizable income and employment multipliers within the rural nonfarm economy that are beneficial for poverty alleviation as well as national economic growth. Knowledge of the extent of the linkages and the circumstances under which they are large or small is important for a proper assessment of the full impact of agricultural projects. In particular, poverty alleviation considerations may require better understanding of secondary and indirect effects of projects and policies which are not directly geared towards poverty groups.

The objective is to review the recent literature on growth linkages and assess their relevance for policy and project issues. To point out the quantitative implications of linkages, and their income distribution aspects. The review should help in improving the assessment of Bank projects and policy advice, particularly with respect to their impact on poverty groups.

Responsibility: Agriculture and Rural Development Department, Agricultural Policies Division--Peter Hazell and Steven Haggblade (consultant).
Completion date: March 1989.
Reports:

Food Security and Poverty Alleviation

The Bank's policy study on poverty and hunger defined the issues. The need now is to address the problem of finding effective policies and implementation modes for alleviation poverty and food insecurity.

The objective of this research study is to develop a better understanding of key issues concerning food policies and strategies to alleviate poverty. The project emphasizes the development of readily applicable tools for policy analysis, including a computer software library; aims to bridge the current gap between recent theoretical advances; and addresses the needs of practicing economists and policymakers.

The project focuses on several countries, attacking the problem from different dimensions in a rigorous manner, including in-depth analysis of household and rural structures, overall strategies for growth, and implementation of policies.

Responsibility: Agriculture and Rural Development Department, Agricultural Policies Division--Martin Ravallion.
Completion date: March 1991.
Reports:
Departmentally Funded Studies

Hazell, Peter. "Determinants of Rural Poverty in the Semi-Arid Tropics of India"  

Social Dimensions of Adjustment

Another set of research studies is being undertaken under the rubric of the Social Dimensions of Adjustment project (a joint effort of the Bank, the UNDP, and the African Development Bank and cosponsored by other donors) that aims to integrating the social dimensions into adjustment programs. One ongoing research activity under the project is the developments of Sub-Saharan Africa, particularly structural adjustment, affect households and individuals in different socioeconomic groups. At the theoretical level, the research is oriented toward identifying how the macroeconomy and the structural adjustment programs, in particular, affects households, both in comparative static and in dynamic terms. There are primarily three links: markets and other resource allocating mechanisms, economic infrastructure, and social infrastructure at the empirical level. The challenge of the research is to identify the set of data that needs to be collected to provide the basis for an empirical analysis of those macro links.

Country-specific studies constitute the second main element of research under the project. While the precise content of this research will vary from country to country, there are six core topics that are likely to be relevant to all the countries covered by the project. These are the relationship between structural adjustment and (1) poverty profiles, (2) the labor market, (3) health services, (4) education, (5) women in development, and (6) nutrition and food security. Research on these topics is currently underway for Côte d'Ivoire and is to be initiated shortly for Ghana and Mauritania. The research on the conceptual framework is expected to be completed by June 1989. The country-specific research will run over the four years of each national Social Dimensions of Adjustment project since the data collection in each country is continuous.

The third task is to translate the empirical information from the household surveys into well-targeted policies and projects, to alleviate short-term costs associated with adjustment, as well as to ensure an equitable long-term growth process.

Responsibility: Occidental and Central Africa Department, Social Dimensions of Adjustment Unit.

Program for Alleviating the Social Costs of Adjustment and Poverty

Separate, but related to the Social Dimensions of Adjustment project, this research was undertaken in the context of a mission to the Sudan. In addition to a set of projects/programs, the mission involved a study of the social impact of proposed adjustment measures. It included a survey designed to shed light on such issues as which consumer subsidies actually benefit the poor and to what degree. The study demonstrated that a small, quick, sharply honed and purposive survey (designed, conducted, and largely tabulated in the field), can give indications of how the removal or reduction of subsidies on a number of consumer items would affect the poor. The surveys thus show how to minimize the impact on the poor of a program to reduce such subsidies.


Poverty

The Human Capital and Poverty study looks at the determinants of school enrolment and health care use, especially by the poor. The focus is on the determinants that can be changed by national policies (distance, price, quality). Conversely the project aims to show the importance of (and lack of) human capital as a determinant for poverty.

A second project, Human Resources Development and Adjustment, aims to answer the question of how (sectoral) adjustment policies can be implemented while protecting the human resource development capabilities of the poor. Preliminary results indicate that current expenditures for the social sectors do very poorly target the poor. Thus, increasing target efficiency could have favorable budgetary effects and benefit the poor as well.


Poverty and Adjustment: Issues and Practices

This study reviews salient issues concerning poverty and adjustment, presents examples to illustrate how countries in practice have treated the poor during adjustment, and proposes some solutions.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Elaine Zuckerman.
Thinkpiece on Poverty and Adjustment

This study identifies some of the basic issues and approaches that have been tried in various countries.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Elaine Zuckerman.

Report:

Zuckerman, Elaine. "Thinkpiece on Poverty and Adjustment."

The Policies of Pro-Poor Adjustment Policies

This study focuses on pro-poor policies as a goal and considers the political forces that encourage or discourage such measures. The study considers political obstacles and some of the political factors that may mitigate them and suggests certain characteristics of specific types of pro-poor measures that affect their political attractiveness.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Elaine Zuckerman.

Structural Reforms, Financial Stress, and Targeting the Poor: The Chilean Case

This study summarizes existing evidence on the pattern of income distribution and government social expenditure in Chile during 1974-85. The purpose of this summary is two-fold: to analyze the central elements of the social policies in terms of distributive results, and to study the issue of efficiency of social expenditures in a context of global deterioration of the income distribution. The final aim of this paper is to extract some policy lessons in connection with equity impact of the transition and the targeting of the poor.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Luis Riveros.

Report:


Strain and Targeting the Poor: Trends in Income Distribution and Social Expenditures in Chile, 1974-85."

Growth Oriented Adjustment with Targeted Social Policies: A Proposal for Brazil

This study focuses on social policies targeted to the poorer groups, combined with growth-oriented economic policies for a country with declining rates of investment and stagnated rates of "per capita" growth, a high degree of income inequality, and high inflation rates.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Elaine Zuckerman.

Report:


Capital Mobility and Income Distribution Costs of Trade Liberalization

This study examines the costs and the appropriate speed of trade liberalization reforms when income distribution concerns, arising from tariff changes, are present.

Responsibility: County Economics Department, Macroeconomic Adjustment and Growth Division—Joaquin Cottani (consultant).

Report:

Cottani, Joaquin. "Capital Mobility and Income Distribution Costs of Trade Liberalization."

Structural Adjustment and Social Welfare

This study examines the state of our knowledge about the impact of adjustment on social welfare.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Elaine Zuckerman.

Report:

Zuckerman, Elaine. "Adjustment Programs and Social Welfare."

Planning, Growth, and Country Economic Analysis

Determinants of National Savings

This study of the determinants of national savings rates compared the experience of South Korea and the Philippines. A simulation model is developed to analyze such variables as income growth and monetary and fiscal policies, based on time series data from International Monetary Fund and national income statistics. The research paper will be distributed to World Bank staff and policymakers in South Korea and the Philippines.

Responsibility: Asia Country Department II—Sang-Woo Nam.

Completion date: November 1987.
Measuring the Real Rate of Interest

This study is designed to determine whether there is a strong theoretical justification for standard methods of measuring the real rate of interest and to assess the impact of a change in the real rate on the outcome of loan decisions. A tentative conclusion of the work is that the best deflator to use in the calculation of the Fisher residual (nominal rate of interest minus the rate of increase of prices) for developing country debt is a price index that measures the purchasing power of the currency in which the debt is denominated.

Completion date: December 1987.

Public Enterprise Performance Contracts in Sub-Saharan Africa

Performance contracts between government and public enterprises were first used in France as a way to set objectives and targets for public enterprises and safeguard their autonomy. They have since been tried with Bank assistance in Mali, Benin, Guinea, Niger, Senegal, Morocco, and elsewhere. The record of contracts in Sub-Saharan Africa is mixed at best, but they continue to appear in Bank projects because of the appeal of the basic idea and the belief that they have not been given a proper trial.

The objective of this task is to evaluate the effectiveness of performance contracts as a means of promoting efficiency and ensuring public enterprise accountability, in order to provide guidance to staff and borrowers on the appropriate design and use of such contracts.

Responsibility: Country Economics Department, Public Sector Management and Private Sector Development Division—Arturo Israel.
Completion date: April 1988.

Analysis of Public Expenditures

Many developing country governments are facing increased pressures from lending institutions and multilateral and bilateral assistance agencies to restrain public expenditures and rationalize their composition and use. To assist these governments in following prudent and austere fiscal policies, two studies are being conducted to distill conventional economic wisdom for policy analysis. The first study is reviewing and synthesizing the results of various Bank public investment/expenditure reviews in order to identify important aspects of public expenditure analysis that have not yet been carefully studied.

To provide some empirical evidence for intersectoral investment allocation decisions in developing countries, which are now often based on value judgments on relative rates of return in various sectors, a second study seeks to quantify aggregate rates of return by sector for a cross-section of developing countries. It will provide an empirical framework and estimates for the contribution of public sector investments in infrastructure and human resources to private sector productivity and overall economic growth.

Responsibility: Country Economics Department, Public Economics Division—Martha de Melo and Anwar Shah.
Completion date: June 1988.

Stabilization in High Inflation Countries

This study is evaluating the success of stabilization programs in several high-inflation countries (Brazil, Chile, Argentina, Bolivia, and Israel), based on their balance of payments, inflation, employment, and distributive impact. The study will focus on the fiscal, monetary, and exchange rate policy mix followed by these countries, and will attempt to isolate the main factors that explain the success or failure of each program. Most of the data to be used in this study are available in the International Monetary Fund and World Bank data banks. A paper presenting the research findings will be directed to government officials, Bank staff, and the academic community.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Miguel A. Kiguel.
Completion date: June 1988.

Reports:

Taxation of Financial Institutions

This project is examining experience with the taxation reforms of financial institutions. The study shows that the removal of constraints (interest rate ceilings, credit targets) has a very powerful impact on the level of financial assets in the domestic sector. Reforms were successful in Thailand and Indonesia because all interest and credit constraints were removed. Similar reform failed in the Philippines.
because taxes were monitored on the financial sector and interacted with the inflation rates.

The efficiency gains of the successful reforms were small when compared to GDP, but very large when compared to the levels of transfers (explicit or implicit) that were induced by the policies of regulation. The lesson of the experience is that a reallocation of resources through the manipulation of the financial system may be very inefficient relative to other fiscal policies. This hypothesis was verified for Thailand and Indonesia, and most certainly applies to the Philippines. It remains to be tested in further work that will concentrate on other countries.

Responsibility: Country Economics Department, Public Economics Division--Christophe Chamley and Quaizar Hussain.
Completion date: June 1988.
Report:

Contractual Savings

Most of the Bank's work in the area of financial systems has concerned the banking and development banking sectors. Recently, however, with the scarcity of long-term financial resources for investment, the role of contractual savings schemes has become an important issue. Such schemes play a major role in developed countries' capital markets and of substantial size in some developing countries. Yet their investments are often prescribed by governments, to the detriment of returns and private investment alike.

The objective of this research is to undertake a comparative review of such schemes to enable a comparison of returns, and to assess the regulatory frameworks and identify those that allocate investible resources efficiently. A preliminary report on the topic was prepared, which concentrates on a half-dozen such schemes in developing countries. Results show that resources are sometimes not negligible, but that their use is market-determined in very few countries. The study forms the basis for further work on contractual savings planned for next fiscal year in conjunction with other divisions.

Responsibility: Country Economics Department, Financial Policy and Systems Division--Dimitri Vittas.
Completion date: June 1988.
Report:

Adjustment Lending

A review of the Bank's experience with structural adjustment loans led to four major conclusions. First, sectoral adjustment loans in questionable macroeconomic environments are not appropriate. To provide an appropriate basis for sector loans, the Bank and government need to reach greater commonality of understanding about the medium-term adjustment path for the economy and the policy initiatives to support that path. Second, the qualifications for adjustment lending are threefold: an agreed medium-term adjustment program, commitment from the government to carry out a specified set of actions, and a need for external financing because of a present or anticipated deterioration in the balance of payments or because of costs arising from the adjustment program. Once these prerequisites are met, there should be considerable flexibility concerning what the proceeds of any adjustment loan would finance. Third, appropriate levels of external financing are essential to adjustment programs, and recent initiatives to obtain greater financing for highly indebted countries and Sub-Saharan countries deserve support. Fourth, although the level of adjustment lending to any individual country should be based primarily upon country-specific considerations, it is desirable to set some limits on the continuation of adjustment lending to an individual country and on the share of adjustment lending in total Bank commitments. These limits should not be rigid ceilings, but triggers for reevaluating adjustment lending's effectiveness.

Responsibility: Country Economics Department, Trade Policy Division--Vinod Thomas and Jaime de Melo.
Completion date: September 1988.
Report:

Relative Prices, Inflation and Fiscal Adjustment

The purpose of this work is to improve the framework for analyzing the relationship between nominal price changes, relative prices, and inflation in the formulation and assessment of adjustment programs. This will involve empirical work on the experiences of the major countries in Southern Africa with an initial focus on Zimbabwe. Despite the importance of these issues, there is relatively limited analysis of them in the context of adjustment programs. Assessment of inflation is predominantly done using a straightforward macroeconomic approach, and is formulated in terms of the relationship between fiscal deficits, the financial program, and targeted inflation rates. The conse-
quences of specific price changes on the consumer price level are frequently assessed but only in partial terms.

An important feature of this framework is the determination of the link between various prices such as the exchange rate, the price of food, public enterprise prices, and wage policy. A subsequent link looks at the implications for overall inflation of alternative ways of financing the budget deficit. The project is being comanaged by the Southern Africa Department, Country Operations Division.

Responsibility: Country Economics Department, Public Sector Management and Private Sector Development Division—Arturo Israel.

Completion date: December 1988.

Determinants of Real Exchange Rates

This research project is an empirical investigation of the determinants of real multilateral and bilateral exchange rate changes in developing countries. A detailed econometric modeling framework will be used to analyze the misalignment and instability of the real exchange rate in fifty developing countries over a twenty-five year period. Data will be collected from the International Monetary Fund and the Bank Economic and Social Database.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Joaquin Cottani (consultant).

Completion date: September 1988.

Institutional Aspects of Adjustment Operations

A country’s institutional capacity for managing sectoral policies is one of the key constraints to the success of sectoral adjustment programs. The purpose of this research is to review and analyze Bank experience with the institutional components of sectoral adjustment operations to provide guidance for improving the design and implementation of future operations and as a basis for eventual policy changes. The experience with sector lending through apex institutions will also be examined to determine how apex institutions might be strengthened to improve the institutional aspects of this type of operations.

The Public Sector Management and Private Sector Development Division prepared background papers on the institutional aspects of structural adjustment and on public enterprise reform, most of which has been pursued through adjustment operation, for the Country Economics Department adjustment study. The division is expanding these background papers and will complete a synthesis of the experience with the institutional dimensions of all types of adjustment operations. The review is expected to arrive at conclusions that will permit the reorientation of these important components of adjustment programs.

Responsibility: Country Economics Department, Public Sector Management and Private Sector Development Division—Arturo Israel.

Completion date: December 1988.

Country Studies on Private Sector Development

Effective private sector development calls for imaginative efforts by governments to reform their policy and institutional environments. In recent years, several developing country governments have taken steps to liberalize economic policies, deregulate industrial and commercial activities, and promote private initiative in sectors with weak institutional and resource bases. The purpose of this study is to analyze and evaluate processes and outcome of the liberalization and deregulation efforts of selected countries (for example, Brazil, Malaysia, India) and to distill the lessons of experience with a special focus on their institutional reforms and innovations. The scope of the study is limited to sectors such as industry and trade where the greatest progress has been made, and where data may be more readily available. The audience for the policy paper expected of this review are the Board, Bank staff, and borrower countries.

Responsibility: Country Economics Department, Public Sector Management and Private Sector Development Division—Arturo Israel.

Completion date: December 1988.

Tax Incentives and Industrial and Technological Development in Developing Countries

Tax incentives are widely used by developing countries to promote industrial and technological development. Countries often compete with neighboring nations to attract foreign capital by offering relatively more attractive tax incentives. While such policies are actively pursued, little guidance is available to policymakers as to the effectiveness of such policies in meeting stated policy goals and their revenue costs. An assessment of past practices and experience will provide helpful information to the appropriate design of such policies for future use. Economic literature is surveyed to review theoretical arguments and empirical support for and against tax incentives for industrial and technological development. The survey also examines the relative
merits of alternative empirical approaches for possible implementation using data from a sample of developing countries. If promising, a second phase will undertake a quantitative assessment of the effectiveness of tax incentives for industrial development in a few countries.

Responsibility: Country Economics Department, Public Economics Division—Anwar Shah.
Completion date: Phase I, December 1988.

Lessons from Tax Reform

The purpose of this task is to integrate the results of the Public Economics Division's diverse studies of tax reform in several developing countries and to draw some general conclusions about the desirable directions of tax reform. The task will be carried out in three parts: (1) an analysis of the process of tax reform in each country (Bangladesh, Colombia, Indonesia, Jamaica, Malawi, Mexico, Morocco, Tunisia, Turkey, and Zaire), (2) an evaluation of the content of reform measures as they affect economic efficiency and taxpayer equity, and (3) a consideration of how improvements in tax administration affect the range of tax reform options and the results of particular tax reforms. Given the constraints on tax reform imposed by economic structure and tax administration capacities, an effort will be made to extract some general lessons of tax reform in developing countries. The study results should assist future Bank missions in analyzing and suggesting policy reforms of different tax systems by indicating the range of tax issues that require special attention and the type of information needed to determine how well the current tax system is functioning.

As work is completed on a particular country, project output will appear in the form of a discussion paper describing the preliminary results. A synthesis paper will be prepared at the conclusion of the country studies.

Responsibility: Country Economics Department, Public Economics Division—Wayne Thirsk.
Completion date: February 1989.

Assessment of Public Enterprise Performance Evaluation System in Pakistan and Korea

Performance evaluation has been used to strengthen accountability for public enterprise management and as an incentive for improving performance. Pakistan and Korea have instituted performance evaluation systems, and other countries including Philippines, Venezuela, and Egypt, are interested in replicating these systems. Furthermore, virtually every public enterprise reform project in the Bank contains a component directed at improving the performance evaluation of public enterprises (for example, Ghana, Mali, Benin, Brazil, and Morocco).

The objectives of the task are (1) to assess the impact of the performance evaluation systems in Pakistan and Korea on the performance of public enterprises, (2) to suggest ways the systems can be improved, (3) to weigh the pros and cons of introducing the system elsewhere, and (4) to analyze how it can be adapted to the needs of other countries. A methodology has been developed to undertake this assessment.

Responsibility: Country Economics Department, Public Sector Management and Private Sector Development Division—Arturo Israel.
Completion date: March 1989.

Managing Economic Reform in Asia

The origin of this activity is the Public Sector Management and Private Sector Development Division's support of the Economic Development Institute for the preparation of a high level policy seminar on the subject. The group has prepared an initial position paper and produced and discussed terms of reference for six case studies of economic reform management in Asia. Since the seminar, held in November 1987, the division is helping incorporate the results of the seminar into case studies and prepare the material for publication as a book, including the writing of an initial chapter on the conceptual framework and another on conclusions.

Responsibility: Country Economics Department, Public Sector Management and Private Sector Development Division—Arturo Israel.
Completion date: April 1989.

Methodology for Private Sector Assessments

A diagnosis of the strengths and weaknesses of the existing private sector in a country is a prerequisite for designing a strategy for its development. These assessments could be undertaken for a whole country, when that is feasible, or for selected sectors. The purpose of this task is to develop a methodology for private sector assessments that could be adapted and used by Bank staff and borrower countries. Conceptually, such a methodology may entail a review of: (1) the size and structure of the private sector, (2) the policy, legal and regulatory framework relevant to private sector development,
Public Sector Pricing

This study sets out the principles that underlie the setting of public sector prices in developing countries, paying particular attention to the use of public sector prices as instruments of revenue-generation. The analysis is based on the Bank’s two step approach to public sector pricing: first calculating marginal cost, and then adjusting it to take account of other factors. The aim, therefore, is to show how adjustment should be made to take account of fiscal concerns. Such analysis is needed because these adjustments are not widely used at present.

The study begins with a consideration of whether short-run or long-run marginal costs should be used as a basis for pricing, and comes to the conclusion that the choice of marginal cost concept depends on the costs of price uncertainty and the importance of excess capacity. A weighted average of the two measures might be better than either on its own.

The study then turns to fiscal considerations and shows that the imposition of financial constraints can be an inefficient method of achieving fiscal objectives. It is better to decide prices on the basis of their economywide effects without regard to financial targets and then, if necessary, impose financial targets that are consistent with those prices. Prices should be decided using information on their revenue-raising, distortionary, and distributional effects. The study shows that it is better to raise prices above marginal cost by the use of trades, rather than by raising the price received by the enterprise.

Finally, the study looks at the consequences of metering problems that prevent direct observation of the use of publicly produced goods, a problem that particularly affects road user charges. Results are obtained on how charges should be set in the face of trades, rather than by raising the price achieved by the enterprise.

Responsibility: Country Economics Department, Public Economics Division—Pradeep Mitra and Christopher Heady.

Completion date: April 1989.

Selected Aspects of Tax Policy Reform

This research activity encompasses three topics concerning tax reform as it relates to Bank operation support and policy work.

1. Company taxation. In the last decade, taxes on company income have increased their importance as a source of government revenue in developing countries generally. Their contribution to revenue generation is positively correlated with the degree of development, so that these taxes are important not only as an actual but also as a potential source of revenue. But inappropriate designed company taxes can have a detrimental effect on investment incentives and the structure of production. This study intends (1) to identify major features of company tax law and practice that significantly distort investment choices, and (2) to assess the economic and administrative allowances that different countries have introduced to reduce the level and dispersion of investment distortions. A paper surveying approaches taken by different countries to these problems as well as typical Bank and International Monetary Fund recommendations in this area is in an advanced stage of preparation.

2. Alternative approaches to mineral taxation. Natural resource and taxes are another major source of income in many developing countries. The purpose of this task is to identify alternative instruments for taxing mineral resources that are accompanied by fewer incentives to misallocate resources than current instruments. One paper completed under this project has shown that, when these resources are in public trust, tax instruments should separate the dual role of the government as tax collector and resource owner to avoid adversely affecting resource extraction and development policy.

3. Costs of distortionary taxation. The distortionary costs of various tax instruments have been frequently noted, but reliably quantifying these costs has proven very difficult. This project is preparing a tax policy paper on Sub-Saharan Africa that will calculate revenue requirements and the efficiency cost of using various tax policy instruments (domestic indirect taxes and import taxes) for raising government revenue. An analytical paper indicating how distortionary costs can take into account rent and revenue-seeking activities is also being prepared.

Responsibility: Country Economics Department, Public Economics Division—Zmarak Shalizi and Robert F. Conrad, Jack M. Mintz, and Anand
controls drive a large number of activities
control over macroeconomic balances.

Rajaram (consultants).

Completion date: June 1989.

Reports:

Conrad, Robert F., and Zmarak Shalizi. "A Framework for
the Analysis of Mineral Tax Policy in Sub-Saharan Africa."

Mintz, Jack M., and Anand Rajaram. "Cash Flow or In-
come? The Choice of Base for Company Taxation."

"Tax Holidays and Investment."

Liberalization and Factor Markets

Because trade liberalization can lead to impor-
tant realignments of the relative prices of import-
ables and exportables, factor market rigidities are
particularly significant during the ensuing adjust-
ment process. Thus there is frequently a need to
coordinate import liberalization with factor market
improvements.

This research seeks to identify practical strategies for dealing with the widespread problem
of factor market rigidities. Its objectives are: (1) to
measure the effects of labor market policies on supply
responses of the export and import-substitution
sectors to trade liberalization, (2) to determine the
quantitative effect of credit policies and capital
market regulations on supply responses, and (3) to
provide insights on factor market policies needed to
complement trade reforms, including the sequenc-
ing of trade and factor market reforms.

The research will estimate how the effects of
trade liberalization on aggregate supply are
modified by wage dispersion. It will attempt to ex-
plain wage dispersion by observable labor market
distortion variables such as minimum wages, public
sector wage variables, proportion of nonwage
benefits in total wages, and other conventional vari-
able. The research will build on the findings of
recent empirical research on labor market regula-
tions and will use available sources of data on wages
and employment by subsectors.

Responsibility: Country Economics Depart-
ment, Trade Policy Division—Ramon Lopez.
Completion date: June 1989.

Review of the Role of the Informal
Sector in Private Sector Development

The relationship between the regulatory and
institutional framework and private sector develop-
ment impinges on the informal sector in a double
sense. On the one hand, high taxes and excessive
controls drive a large number of activities "under-
ground" with consequent loss of fiscal revenues and
control over macroeconomic balances. On the other,
many informal sector activities represent a potential
for growth and development that deserves en-
couragement. In order to develop a coherent ap-
proach to these issues, the Bank needs to increase its
knowledge of the informal sector in developing
countries and the forces that make it dynamic. Ac-
cordingly, the objective of this task is to investigate
the nature and scope of informal sector activities in
selected countries, and the policies which have in-
fluenced the sector's development. Special attention
will be paid to the institutional framework in which
such policies are determined and implemented. The
work will be undertaken jointly with regional staff
with a view to eventually developing findings into
appropriate policy conditionality. Each mission
would be followed by a special report, jointly
prepared, but for which the Public Sector Manage-
ment and Private Sector Development Division
would assume managerial responsibility. The
audience would be governments, Bank staff, and
outside agencies interested in the subject.

Responsibility: Country Economics Depart-
ment, Public Sector Management and Private Sector
Development Division—Arturo Israel.
Completion date: June 1989.

Case Studies of Public Enterprise
Reform (Book)

Based on its operational work, the Public Sec-
tor Management and Private Sector Development
Division has case materials on reforms in a number
of countries. Most of this material has never been
made public despite widespread interest in the
topic. The objective of this task is to produce a book
on the reform experience that would be useful for
developing country decisionmakers and Bank staff
in designing and evaluating reform programs. To
this end the authors will develop a conceptual
framework for the cases and revise and edit existing
materials for wider distribution and to draw out
common themes and lessons.

Responsibility: Country Economics Depart-
ment, Public Sector Management and Private Sector
Development Division—Arturo Israel.
Completion date: June 1989.

A Review of Experience with Land Taxes

Revenue objectives, administrative con-
straints, and incentive consequences severely limit
the tax instruments that can be used to extract public
resources from agriculture without interfering with
programs to stimulate and rationalize the develop-
ment of the sector. While land taxes have frequent-
ly been recommended in lieu of widely used
revenue-raising and risk-sharing export taxes, dif-
Departmentally Funded Studies

ficulties in designing and implementing such taxes (or their equivalents) coupled with revenue requirements have stood in the way of their implementation.

The division has completed a detailed review of the land tax in Bangladesh in the context of tax reform work in that country. It has also explored the implicit taxation of agricultural exports via marketing boards in Malawi. The first phase of the task: (1) provides a review of literature and country experiences with the most prominent types of taxes on agriculture; and (2) identifies the suitability of land taxes under different revenue and administrative constraints and different institutional organizations of the agricultural sector. A second phase will attempt to collect information on the compliance and administration costs of land taxation and assess their distribution across different classes of taxpayers. Since these are thought to be substantial, especially when compared to the potentially modest distortionary costs, the analysis is expected to provide a checklist of questions that would be relevant in deciding whether to recommend an enhanced role for land taxation. This activity will be done in collaboration with the Agriculture and Rural Development Department.

Responsibility: Country Economics Department, Public Economics Division.
Completion date: Phase I, June 1989.

Long-term Capacity Building for Policy Analysis in Sub-Saharan Africa

Capacity for policy analysis within and outside governments is Sub-Saharan African countries continues to be weak. Institutions set up to assist in this process have generally declined and are in need of rehabilitation. The supply of trained manpower for policy analysis also continues to be a major constraint. This project has been taken up as a regional study by the Country Economics Department in collaboration with the Africa Region and the Economic Development Institute to explore ways and means to strengthen the capacity in Sub-Saharan Africa for policy analysis through collaborative action among donors and governments. The first phase of the study is over; the proposals for Phases II and II have been prepared. A workshop with African policymakers and scholars was held in the fall of 1988 to assess the African perspective on this subject. The final phase will provide a plan of action which the Bank might support along with other donors and Sub-Saharan African governments interested in the proposals.

Responsibility: Country Economics Department, Public Sector Management and Private Sector Development Division.
Completion date: June 1989.

Analytical Approaches in Public Investment/Expenditure Reviews

The task is addressed to the Bank staff who carry out public investment/expenditure reviews. The objective is to produce an essentially methodological paper which will (1) identify the major concerns that should affect decisions on public expenditures, and (2) set out the analytical approaches that have been used, or could have been used, by Bank staff to form judgments under typical time constraints. It is hoped that such a study will serve as a framework for the preparation of sector-specific guidelines that encourage and facilitate comparability in analysis and presentation. This comparability would, in turn, permit aggregation of data across sectors and development of cross-sectoral themes leading to stronger, more consistent and more concrete public investment/expenditure analysis recommendations.

Responsibility: Country Economics Department, Public Economics Division.
Completion date: June 1989

Financial Sector Issues

By matching three to four cases of ongoing operational work in the financial sector with a number of issues, the study focuses on the impact of monetary and credit policies on the ability of the financial system to provide adequate financial services, to mobilize and to channel resources toward the most productive activities. The study draws lessons from ongoing operations and provides the basis for designing financial sector and institutional reforms to complement and reinforce policy measures in the real sector.

Responsibility: Africa Technical Department, Trade and Finance Division.
Completion date: early 1990.

Public Enterprise Performance

This UNDP-funded study measures public enterprise performance in selected countries, and studies ways of and tools for improving that performance in eight to twelve countries.

Responsibility: Africa Technical Department, Public Sector Management Division
Completion date: June 1990
Taxation and Growth

Can tax policies be designed to encourage economic growth in developing countries? One view holds that by providing the government with a stable source of funding and reducing the current account deficit, tax revenues encourage long-term growth. In this view, the economic distortions aggravated by tax rates are slight in comparison to such institutional constraints as price controls, foreign exchange allocations, and trade quotas.

The other view is that high marginal tax rates constrain long-term economic development by discouraging business expansion, investment and foreign trade. The contention is that the benefits of a carefully designed, moderate tax structure exceed the costs of budget deficits or spending cuts.

This study tests these view by measuring the effect of government spending and taxation on output growth. In theory, higher tax rates shift investment and employment to sectors with low—or even negative—tax rates, such as import-substitution or underground sectors. The lower returns to investment and labor in these sectors mean that the economy will generally record lower growth rates.

Data from thirty-one African countries show the medium- and long-term effects of fiscal policies on growth during 1965-73 and 1974-82. Government investments for the earlier period were sufficiently productive to justify the distortions imposed by the relatively high tax rates necessary to finance them. By 1974-82, however, the return on government investments had fallen to almost zero, suggesting that the burden of personal and corporate taxes led to a contraction in growth. Although taxes on imports did not affect output directly, such taxes reduce investment and thereby indirectly curtail growth. On balance, sales and excise taxes had the most moderate effects on growth and investment.

In sum, a balance increase in government spending financed by sales and excise taxes, or by a shift from personal and corporate taxes to consumption taxes, can increase growth rates.

Responsibility: Country Economics Department, Public Economics Division—Zmarak Shalizi and Jonathan Skinner (consultant).
Report:

Taxation and Exchange Rate

This study provides a general equilibrium framework for the analysis of indirect taxation in the context of an open economy. Different tax instruments, including tariffs, selective excises, and general consumption tax, are examined in a three-sector model in which alternative specifications of monetary and exchange rate policy on the real exchange rate are sectoral prices and, through these relative prices, the impact of taxes on consumption, production, and trade.

One particular question highlighted by the study is the relationship between tariffs and the exchange rate. An increase in tariffs leads to real exchange-rate appreciation, irrespective of whether the exchange rate regime is fixed or variable. Under fixed exchange rates, a tariff increase lowers import demands and leads to a temporary trade surplus, which raises the money stock. Service prices rise as factors move to the protected sector and the real regime, both the real and nominal exchange rates are affected by tariff changes. The real exchange rate adjustments are the same as under fixed exchange rates. The nominal exchange rate, however, depends on monetary policy. In particular, nominal appreciation is reduced by an increase in money stock.

Responsibility: Country Economics Department, Public Economics Division—Chad Leechor.
Report:
Leechor, Chad. "Taxation and Exchange Rate: An Analysis of Policy Change and Structural Adjustment."

The Shadow Price of a Tax Inspector

The aim of the study is to present a simple model for the efficiency of a tax administration agency. The main idea is to present the process of income assessment as a decision tree. A decision to continue the process should be taken whenever the taxpayer arrives with new information. If the administration is an efficient one, the expected return per time invested in the process should be equal across taxpayers and across decision. The model can be used by the tax administration for allocation of resources in the agency.

The methodology is illustrated by examining the return per one unit of inspector's time in one tax district in Israel. It is found that the tax administration could collect more tax revenue without an increase in its budget. This can be done by increasing the number of self-employed tax returns using double entry bookkeeping, decreasing the number of self-employed tax returns using single-sided bookkeeping, and decreasing the number of tax returns filed by corporations.

Responsibility: Country Economics Department, Public Economics Division—Shlomo Yitzhaki and Yitzhak Vakeen (consultant).
Report:
Welfare Dominance and Excise Tax

There is a compelling fiscal rational for encouraging greater reliance on taxing the consumption of electricity and telephone services.

Electricity and telephone taxes are easy to administer. Enforcement and collection of the tax is relatively inexpensive, since the tax can be added to commercial charges, and the services quickly turned off for nonpayment. It is not difficult to distinguish in most cases between business and personal use of these services. Electricity and telephone taxes avoid the problems of smuggling and evasion commonly associated with taxing the production or use of commodities than can be imported.

On equity grounds, in Côte d'Ivoire at least, electricity and telephone taxes are clearly the most desirable excise taxes. Ranking alternative commodity taxes with high income elasticity, telephone services clearly dominated—and electricity consumption nearly dominates—the taxation of alcoholic beverages and public transportation.

These conclusions on the distributive impact of alternative indirect tax measures are reached through the application of the relatively new concept of marginal conditional welfare dominance. A commodity tax dominates others on social welfare grounds when a marginal shift in the balance of commodity taxation toward that particular commodity enhances social welfare.

Using household budget data, such dominance can be established statistically and shown graphically without resort to normative considerations. This approach suggests that electricity and telephone services can be an underexploited tax base in many developing countries.

Electricity and telephone taxes may also meet the test of relatively high efficiency if they can be implemented through a two-part pricing schedule that charges a flat fee for access to service and an additional escalating fee for marginal use.

Responsibility: Country Economics Department, Public Economics Division—Shlomo Yitzhaki and Wayne Thirsk.


Earmarking

A preliminary study on earmarking finds that the theoretical literature on earmarking ignores the efficiency aspects of pricing and output/capacity decisions and that, in reality, there are numerous possibilities for conflict between full cost recovery and efficiency objectives arising because of returns to scale, indivisibilities, and externalities.

Decisions about the direction of further work will be made after review of the study. The issues that need to be addressed are whether rules can be developed that reconcile earmarking practices with efficiency considerations and whether these rules can be extended to cases whether beneficiaries and taxpayers are not the same. Empirical applications to pricing/financing of selected government expenditures in developing countries will probably be called for.

Responsibility: Country Economics Department, Public Economics Division.

Fiscal Impulse

The study examines Malaysian experience in order to relate public sector revenue, expenditure, and deficit financing to broad macroeconomic aggregates.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Gerardo Sicat.


Financial Institutions and Fiscal Deficits

Budgetary transfers to financial institutions through subsidized credit programs and other government guarantee programs are common in developing countries. One major source of loss by financial institutions is related to the exchange risk guarantees that may be undertaken by public financial institutions, as a result of the volatility of exchange rates and the collapse of the economies of highly indebted developing countries. Some estimates of the fiscal deficits due to budgetary transfers to the financial sector are made for the Philippines to illustrate this issue.

Responsibility: Country Economics Department, Macroeconomics Adjustment and Growth Division—Gerardo Sicat.


Savings Performance

This study focuses on the determination of sectoral savings and the interaction among sectors as a result of taxation, dividend payments, and other factors. It discusses and estimates, for Korea and the Philippines, how sectoral savings rations are determined, given interest rate and tax policies and the state of the macroeconomy. A model is then used to run simulations to evaluate its predictive capability to decompose past savings performance by major factors and to assess the savings effect of policy changes and other exogenous shocks.
Responsibility: Asia Country Department II, Country Economics Division—Saang-Woo Nam.

Supply Side Adjustment Issues
This study discusses the analytical framework of adjustment and focuses on supply-side issues, as distinct from demand-management issues.
Responsibility: Country Economics Department, Macroeconomics Adjustment and Growth Division—Eduardo Somensatto.

Trends in Real Exchange Rates
This study examines quarterly and annual data over 1960-86, for fifty-one developing countries, showing nominal and real (purchasing power parity) exchange rate indices on bilateral and multilateral (trade weights, ten main trading partners) bases. The annual data will be distributed to country economists with quarterly data available on request to support econometric analysis.
Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Gary Hyde.

Banking/Financial Sector Restructuring Study
This study is aimed at empirical and conceptual assessment of approaches to reform and restructuring of Africa’s banking sectors, and financial deepening for longer term capital market development.
Responsibility: Africa Technical Department, Industry and Energy Department.

The Regional Work Program on Entrepreneurship/Private Sector Development
With particular focus on the informal sector, this project is aimed at undertaking empirical research to assess the structure of entrepreneurship in Africa: policy, regulations, and other factors constraining its development; and approaches to provision of technical support services and financing, including the role of nongovernmental and private voluntary organizations and the informal financial mechanisms.
Responsibility: Africa Technical Department, Industry and Energy Division.

Inflation, Relative Prices, and Fiscal Policy: Zimbabwe and Ghana
This study develops a framework to analyze the relationship between nominal price changes, inflation, and fiscal adjustment. The initial work has involved an empirical analysis of prices and inflation in Zimbabwe and Ghana, and the development of model for Zimbabwe. This model incorporates monetary and cost-push influences on inflation and endogenizes the fiscal deficit. It allows the systematic examination of the influence of policy choices over the exchange rate, controlled prices, wage policy, and discretionary aspects of fiscal policy on inflation, selected relative prices, real wages, and the deficit. A final report on Zimbabwe has been completed.

Fiscal Stabilization and Exchange Rate Instability
A perfect foresight, intertemporal general equilibrium model can be used to analyze the fiscal impact of reductions in public spending. The model permits a consistent analysis of government spending deficit financing, and exchange rate behavior.
It incorporates features important to analyzing public policy in Mexico, including the cost of producing government infrastructure, a tax system, and government exchange rate policy similar to those in Mexico, and the estimated savings behavior of domestic consumers.
Mexican public spending increased from 25.6 percent of GDP in 1973 to 46.5 percent in 1982. This rise was accomplished by dramatic increases in inflation, the government deficit, and external debt.
Policymakers look at such a situation and automatically conclude that stabilization depends on reduced public spending. But when applied to Mexican data for 1983-85, the model shows that public spending cuts alone may be inflationary if they cause a reduction in the productivity of private capital.
The model does not estimate the elasticity of private output to public infrastructure. But even if low elasticity is assumed, spending cuts may product a reduction in private productivity that will have an undesirable effect.
A decline in productivity may outweigh the impact of falling monetary growth rates and reduced budget deficits. If it does, the benefit of spending on infrastructure outweighs its costs. If, however, government spending produces no useful infrastructure, a reduction in spending will have the
desired result of reducing inflation. Various simulations with the model indicate that dogmatic recommendations for spending cuts can at times be counterproductive.

Responsibility: Country Economics Department, Public Economics Division—Andrew Feltenstein and Stephen Morris (consultant).


Private Investment and Public Sector Expenditure in the Philippines

This study provides evidence on the relationship of private investment and public expenditure as well as on other macroeconomic determinants of investment in the Philippines.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Gerardo Sicat.

Wage and Price Flexibility in the Franc Zone

This study analyzes the role of price and wage rigidities in the adjustment process in the Côte d'Ivoire, a franc zone country.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Leonardo Leiderman.


Low-Income Sub-Saharan Africa

This research addresses the adjustment experience of thirty-three low-income Sub-Saharan African countries during the 1980s.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Gary Hyde.


INTERNATIONAL TRADE AND FINANCE

Costs of Trade Liberalization

This study is examining the income distribution costs and the appropriate speed of trade liberalization, focusing on how distortions in relative prices are likely to occur as the real exchange rate jumps in response to expectations of real depreciation. If policymakers attach a cost to shifts in income distribution due to changes in relative prices, two implications become clear: (1) adjustment costs are significantly affected by capital mobility, and (2) when the latter changes, the optimal speed of liberalization may change as well. The study results will be presented in an analytical paper directed to Bank staff.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Joaquín Cottani (consultant).

Completion date: September 1987.

Export Trends and Labor Market Behavior

This study examines the impact of labor costs on the exports of developing countries. Export supply functions are estimated for twenty countries to measure the impact of labor costs on exports. The study distinguishes the effects of wage and nonwage costs. Most of the data are obtained from the Bank’s centralized data bases. The primary audience comprises the academic community and Bank staff. This project is funded in part by the Research Committee.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Luis Riveros.

Completion date: June 1988.

Financial Markets and Corporate Investment

Identifying the determinants of private investment in developing countries is an important issue, not least because of the critical nature of the investment response in permitting growth with stabilization. In developed countries, financial market conditions are an important determinant of investment, but there has been little research on the interaction in developing countries of financial market conditions and policies with growth and corporate investment.

The objective of this research is to examine this interaction in several countries; the individual country studies will then be synthesized in a comparative review. The approach relies heavily on
econometric analysis and Q-theory determination of investment. The study covers a set of activities addressing the links between the real and financial sectors, notably (1) the relationship between financial markets (notably the equity market) and the level of real investment, and (2) the patterns of corporate finance in developing and developed countries.

**Responsibility:** Country Economics Department, Financial Policy and Systems Division—Mansoor Dailami.

**Completion date:** October 1988.

**Reports:**


**Export Response**

While there is agreement on the importance of export policies, there is little agreement on the magnitude of the supply response of exports to changing incentives for export promotion and import substitution. For example, while it is agreed that long- and short-run responses differ significantly, models of export behavior have yet to convincingly incorporate the underlying reasons for these differences. This project attempts to quantify some of the nonprice and institutional influences on exports.

The study focuses on modeling a firm’s behavior in terms of its production and its allocations to domestic and foreign markets. One focus of the model is the interaction between investment and export decisions, including the issue of when investments are made specifically for exports. The export behavior for a given level of capacity is termed the short-run response while capacity varies endogenously as part of the long-run response. Particular attention is devoted to the credibility of policymakers with respect to the foreign exchange regime, taking into account the implications of reneging on foreign trade policy commitments. The initial focus is on Morocco and Turkey, where recent trade reforms have resulted in strong export responses. An attempt is made to allow for the impact on exports of import restrictions and of real exchange rate overvaluation and variability. This emphasis on the supply side and on policy effects is intended to redress the imbalance in the empirical literature which has concentrated on export demand.

**Responsibility:** Country Economics Department, Trade Policy Division—Riccardo Faini.

**Completion date:** December 1988.

**Fiscal Aspects of External Debt**

This research includes the fiscal causes of external debt buildup and the consequences of debt overhang on government finances. Regarding the latter, a typical less developed country generates foreign exchange largely through private exporters, yet its debt service obligations belong to or have been taken over by the government—and, specifically, by the government budget. To accommodate the locus of the debt burden, a transfer of domestic resources must be made from the private sector to the public sector through formal fiscal measures of the inflation tax. At the same time, the trade and exchange rate measures required to generate the foreign exchange counterpart for debt servicing also have fiscal ramifications. These issues are addressed in a case study of Tunisia.

To put the Tunisia case study in perspective, the size of the debt burden is defined by various criteria for heavily indebted countries and the reasons for the variations in burden explored. The case study consists of two parts. The first part provides a descriptive view of the budgetary and other macroeconomic developments associated with debt accumulation and with the government’s efforts in recent years to service the debt overhang. The level and trend of wages, interest rates, the exchange rate, the international terms of trade, and oil production are taken into account along with fiscal variables and institutional arrangements that may affect the debt profile. The second part of the case study uses a macro model, developed for Tunisia during the fiscal year 1988 structural adjustment loan to explore the effects of alternative strategies for debt servicing and reduction. The effects explored include alternative revenue generation and expenditure reduction programs, exchange rate policies, incomes policies, and debt reduction strategies.

**Responsibility:** Country Economics Department, Public Economics Division.

**Completion date:** December 1988.

**Interregional Trade**

This study analyzes the current status of regional integration initiatives in Sub-Saharan Africa. The study covers: (1) trade policy reform in the member countries of trading areas, (2) prospects for increasing exports of these member countries, (3) identification of trade barriers facing exports, (4) ways of promoting more rapid growth of efficient regional trade, and (5) the establishment of a medium-term framework for regional trade policies.

**Responsibility:** African Technical Department, Trade and Finance Division.

**Completion date:** early 1989.
Tariff Reform for Protection and Revenue-Raising

The Bank's advice on trade policy reform is typically driven by the imperative of rationalizing the protective structure from the point of view of incentives and administrative simplicity, but without a clear articulation of the impact of such changes on public revenues. In turn, its recommendations on tax policy urge a movement towards a manufacturing-cum-import level value-added tax without due consideration for the effects of such reform on protection to domestic producers. This non-congruence of perspective potentially limits the effectiveness of policy advice, given the acute fiscal position and the pervasive nature of protectionist objectives in many developing countries.

A central objective of this task, which is being done collaboratively with the Economic Advisory Staff is to examine efficient ways of defraying the costs of protection, given a host of other competing demands on government revenue. The first step undertakes a selective review of trade and tax policy conditionality imposed in Bank lending. While this draws on recent surveys, it focuses on what attention, if any, is actually paid to protection issues in tax policy advice. The second step will produce an analytical framework capable of guiding operational work on tax-cum-tariff reform in the light of the above concerns. The technical work that would underpin such a framework capable of guiding operational work has already been done; this will be developed in a relatively nontechnical way both to enhance its accessibility to country economists and to facilitate implementability. The third step will be the implementation of the framework in a country where the Bank has been involved in tax reform work and where economic work on a proposed trade-cum-industrial policy loan, which usually serves a vehicle for tariff conditionality, is to be done. Finally, the results from this theoretical-cum-empirical approach will be used to produce a synthesis paper directed at country trade and fiscal economists.

Responsibility: Country Economics Department, Public Economics Division.
Completion date: First two steps, March 1989.

Trade Reforms and the Macroeconomic Balance

Recent trade liberalization attempts in the Southern Cone countries of Latin America have shown that major macroeconomic imbalances need to be properly addressed if trade reforms are to succeed. This issue, which also arises in country-Bank dialogue, is often difficult to address in the course of typical economic and sector work program. The Bank relies on the Revised Minimum Standard Model, and sometimes on simple computable general equilibrium models, both of which require estimates of a few key parameters that often are not readily available. The regional departments have expressed a strong interest in obtaining estimates of these parameters, which, with some empirical underpinning, could then be used to determine the likely response of an economy to domestic and external factors. This led, as a first step, to the Critical Policy Parameters project, which focused on import elasticities, export elasticities, and factor productivities. An attempt was made to estimate these key parameters for a large number of countries and to investigate their structural determinants. A summary study is now being written to integrate the findings and to examine the implications of the various elasticities under alternative policy changes. A special study is also under way on the issue of imports and growth, with particular attention to Africa.

As a natural extension of this effort, this project is attempting to incorporate these estimates in a small prototype macroeconomic model that captures the interplay of demand management, exchange rate, and trade policies on the internal balance. The model will be used to study the effects of trade policies—including exchange rate changes—on the level of output and on the dynamics of adjustment toward a sustainable, long-term path. This application is envisaged for Morocco.

Responsibility: Country Economics Department, Trade Policy Division—Fernando Clavijo.
Completion date: June 1989.

Risk Management

The current volatility in world commodity and foreign exchange markets is creating difficult risk management problems for developing countries, especially for countries that depend on only one or two primary commodities for the bulk of their foreign exchange earnings. The Bank does not consider risk in its policy and investment analysis work, and this may be inconsistent with the goals of many governments.

The objective of this study is to develop practical methods of incorporating risk management considerations into the design and appraisal of Bank projects and structural adjustment loans. Greater weight needs to be given to investments that have less risky benefit streams, or that contribute to the flexibility of an economy in adjusting to adverse events. Instruments for sharing risks more efficient-
ly across countries, such as commodity futures markets, commodity bonds, and forward contracting will be also evaluated.


Completion date: June 1990.

Report:

Hazell, P.B.R., "Risk, Market Failure, and Agricultural Policy."

The Effects of Voluntary Export Constraints

Countries facing voluntary export restraints often adopt a two-tier allocation system for export licenses to the restricted market, consisting of: (1) a "basic" allocation based on export shares to the restricted market, and (2) an "open" allocation based on export shares to the non-restricted market. This allocation system—which increases exports to the non-restricted market beyond levels with a single quota allocation system—has an efficiency cost as it results in extra sales at below marginal cost. Analytically, the two-tier quota allocation scheme is identical to a linking scheme where subsidies to sales in one market are financed from sales in another market.

Responsibility: Country Economics Department, Trade Policy Division.

Report:

Bark, Taeho, and Jaime de Melo. "Export Quota Allocations, Export Earnings, and Market Diversifications."

The Costs of Quantitative Restrictions on Trade

Nontariff barriers prevent a transition to the realities of international competition, and their welfare costs are huge. Estimates of the costs of quantitative restrictions in textiles, steel, and autos in the US economy suggest that the United States loses an estimated $14 billion a year in revenues through rents lost to exporting countries. Add another $7 billion for distortionary costs. Removing the remaining tariffs (an average of 3.5 percent in 1984) would produce a welfare gain of about $0.9 billion. The welfare gains of removing all these restrictions add up to a net benefit of $105 billion, measured in terms of the discounted value of displaced workers' lost earnings over a lifetime.

Responsibility: Country Economics Department, Trade Policy Division.


Export Revenue Effects from Increased External Demand

In order to capture the full effects of external economic activity on export revenues, both volume and price effects need to be included. Because of the lagged adjustment of export supply, the response of export volumes to an increase in world income is likely to be smaller in the short run but to increase in the long run. Export prices, however, would be expected to change quickly, but to level off soon thereafter as resources are shifted to increase production. The total long run effect of a one percent change in external economic activity on export revenues is estimated at 1.5 percent—a result which is remarkably robust to the alternative specifications adopted, and is generally smaller than the estimates in previous studies (which range from 1.3 to 4.7 percent). This result implies that domestic economic policies—particularly those encouraging investment in export oriented activities, and exchange rate policies—will need to play a key role in the strategy of developing countries to increase their foreign exchange earnings.

Responsibility: Country Economics Department, Trade Policy Division—Christian Moran.


Debt Accumulation, Resource Transfers, and External Shocks to Developing Countries

This study gathers statistical evidence on the magnitude of lending and repayment and on the question of whether the repayment reduced the resources available in the 1980s for development.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Steve Webb.


Financial Crises

Work continues on the causes of financial crises and their resolution. This work has laid the basis for an expanded comparative project to be undertaken.

Responsibility: Country Economics Depart-
Departmentally Funded Studies

Reports:

Financial Policies and Growth
This study estimates the relationship between interest rates, financial deepening, efficiency, investment, and growth, testing the McKinnon-Shaw model of the impact of financial system. A background paper has been produced for the World Development Report.
Responsibility: Country Economics Department, Financial Policy and Systems Division—A. Gelb.

AGRICULTURE AND RURAL DEVELOPMENT

Sociological Variables in Development Projects
The study develops models of social analysis tailored to each agricultural sector for incorporating sociocultural variables and local participation in project design and strategies.
Responsibility: Agriculture and Rural Development Department, Agricultural Policies Division—Michael Cernea and Scott Guggenheim (consultant).
Completion date: February 1989.

Economic Implications of Land Registration and Ownership Security
Legal ownership of land by cultivators is characteristic of countries with limited cadastral survey records. It is also quite common in countries that have only recently moved from communal land ownership to de facto private ownership. The Bank promotes land registration and titling in quite a few countries involving cadastral survey. While there are many descriptive discussions of the various aspects of title insecurity, the implications of upgrading the land registration system have not been rigorously examined. The objective of this project is to study, in quantitative terms, the links between an upgraded land registration system and farm productivity. These links are primarily through and access to credit the incentive for onfarm investment. Microdata will be used in descriptive and econometric analysis that will provide quantitative assessment of the implications of titling. Agricultural policies will be undertaken in collaboration with a team of local consultants in Thailand who are conducting a study of the socioeconomic impact of land titling as part of a Bank-sponsored titling project.
Responsibility: Agricultural and Rural Development Department, Agricultural Policies Division—Gershon Feder.
Completion date: March 1989.

Report:

Cocoa Pricing and Taxing Policy in Ghana
In Ghana cocoa farming and processing provide over 60 percent of foreign exchange earnings, over 20 percent of tax revenues, and about 30 percent of agricultural GDP and employment. Previous policy has been for the government to assume international price and foreign exchange risk by means of a marketing parastatal, the Ghana Cocoa Board, which offers to cocoa producers annually varying nominal buying prices in domestic currency. A combination of excessive nominal taxes and marketing costs and a grossly overvalued foreign exchange rate over several decades virtually destroyed cocoa investment incentives and reduced the country's position as dominant exporter to one as minor supplier to the international cocoa market.

The study: (1) analyzes dynamic producer investment response to price incentives over a fifty year horizon, (2) analyzes fiscal alternatives to cocoa taxation, and (3) analyzes long-term price determination in the international market in order to assess the policy alternatives at the macro, sectoral, and subsectoral levels.

The study concludes that Ghanaian farmers are highly responsive to investment incentives, feasible fiscal alternatives to cocoa taxation do exist (although sensible taxation of cocoa that does not destroy producer incentives is also possible), and the likely path of world cocoa prices will be at present levels through the early 1990s, then rising to a peak around the year 2000. Given the gestation lag in cocoa production and the existing disincentive of low prices to producers in other countries, a strategy of enhanced cocoa investment incentives would seem attractive to Ghana. But such a strategy is dependent for effectiveness on a macroeconomic adaptation.
policy which avoids fiscal irresponsibility and hence the temptation to overvalue the cedi.

Responsibility: Agriculture and Rural Development Department, Agricultural Policy Division—Gerald O'Mara. With Dr. W. A. Okyere, University of Ghana; Professor Newbery, Cambridge University; Dr. Merrill Bateman, Commodity Information, Inc.; Jean Munoz, Sistemas Integrales SA; Alexander Meerais of GAMS Development Corporation in collaboration with Ghana Cocoa Board.

Completion date: April 1989.

Irrigation Research

The aim of this project is to assist developing countries in improving irrigation drainage technology to bring it more in line with modern crop technology. The project will focus on stimulating adaptive research on irrigation systems and their physical interfaces with both management and agriculture.

Responsibility: Agriculture and Rural Development Department, Agricultural Policies Division—Herve Plusquellec and Guy Le Moigne.

Completion date: June 1989.

Farm/Nonfarm Linkages in Rural Sub-Saharan Africa and Other Regions

The rural nonfarm economy is an important source of income and employment in most developing countries, especially for the poor. Although variously defined, for this study the rural nonfarm economy includes not only all nonfarm activities undertaken in the villages, but also the wide range of marketing, agroprocessing, input supply, and consumer-oriented services undertaken in rural market towns. The latter activities can account for as much as one-third to two-thirds of reported urban non-agricultural employment in many countries, yet it is directly or indirectly dependent on local agriculture for its prosperity.

Based largely on evidence from Asia, there is a growing consensus that, because of various demand linkages between agriculture and the rural nonfarm economy, agricultural growth generates important income and employment multipliers within the rural nonfarm economy that contribute to national economic growth and poverty alleviation. The size of these multipliers may also be influenced by government policy. Public investments in rural infrastructure and government policies toward small businesses appear to be of particular significance.

A wealth of information has been gathered in recent years (including case studies, small business surveys, and censuses) that has yet to be compiled and synthesized. The objective of this research is to analyze and synthesize this information in order to consolidate our knowledge of the rural nonfarm economy and appropriate government policies.

Work has focused on Sub-Saharan Africa. A report was completed in May 1987. Work is now under way to extend the analysis to include Asia and South America.

Responsibility: Agriculture and Rural Development Department, Agricultural Policies Division—Peter Hazell.

Completion date: June 1989.

Report:

Haggblade, Steve, Peter Hazel, and James Brown.

Multimarket Research Dissemination

The multimarket approach has become an important part of the Agricultural Policy Division's operational support program for the regions. Given the large demand and the variety of economic questions to which it has been applied, two main tasks need to be accomplished. First, the details of the method need to be presented so that modelling can be done by others (consultants, regional staff, and borrowers). Second, extensions must be developed to cover commonly encountered problems that are not currently handled by the models.

Extensions to the method that are suggested by regional support activities will be examined. These will likely include problems of macroeconomic linkages (with a first application to Turkey) and problems of uncertainty.

Dissemination of the results is planned to government officials and academicians in Bangladesh, Burundi, Chile, Costa Rica, Kenya, Malaysia, Nigeria, Pakistan, Philippines, Sudan, Syria, Uruguay, Yugoslavia. The countries to be examined are: Argentina, Brazil, Cameroon, Côte d'Ivoire, Cyprus, Hungary, Indonesia, Sierra Leone, Tunisia, and Turkey; work on Morocco is already underway. User-friendly software for Hungary, Brazil, Korea, Indonesia, Argentina, Turkey, Tunisia, Cyprus, and Senegal will be developed.

Responsibility: Agricultural and Rural Development Department, Agricultural Policies Division—Jeffrey Hammer and Jean-Jacques Dethier, and Alexandra Tan, Ravi Kanbur, and Benjamin Eden (consultants).

Completion date: June 1989.

Reports:


______, "Multimarket Analysis of Agricultural Pricing
Agricultural Taxation in Less Developed Countries

Land taxes are often viewed as a less distorting source of revenue generation in less developed countries. But, little is known of the practicalities of land taxation in less developed countries and more rigorous research is needed on intersectoral efficiency implications. The objective is to clarify efficiency implications and allocational effects related to the implementation of land taxes. A theoretical and empirical analysis of Argentina, based on farm survey data, will be undertaken.


Completion date: June 1989.

Comparative Study of Credit Cooperatives

The massive failure of subsidized credit and formal credit institutions has highlighted the need to identify formal institutions that work and the reasons for their success. Small farmers have little access to the massive formal credit market; credit cooperatives were created to enable small farmers access to credit to pool risk, and to generate a better monetary and enforcement scheme. The results are a mixed bag of successes and failures.

The objective is to study this mixed bag of successful, ascertain lessons from their performance, and package them for dissemination to developing countries to assist them in institutional reform. The countries studied are Kenya, Korea, and Israel.

Responsibility: Agricultural and Rural Development Department, Agricultural Policies Division—Avishay Braverman and Jacob Yaron. With Pinhas, Zusman, Zvi Lerman, Yoav Kislev, Luis Guasch, Choong Yong Anh, and George Ruigu (consultants).

Completion date: June 1989.

Land Tenure in Sub-Saharan Africa

Rapid population growth and the liquidity requirements of a more input-intensive agriculture will necessitate important adaptations in existing land rights systems in Sub-Saharan Africa. But, while there is widespread belief that customary tenure arrangements tend to be insecure and to discourage long-term investments and increased farm productivity, there is little agreement on the effectiveness of alternative institutional and legal systems in promoting more efficient use of land in Africa.

This study seeks to establish the links between security of land tenure and on-farm investment, access to credit, and land productivity. A literature review has been completed.

Responsibility: Agriculture and Rural Development Department, Agricultural Policies Division—Shem Migot-Adholla and Peter Hazell.

Completion date: August 1989.

Report:

Modernization of Agriculture in SADCC Countries

The project reviews and assesses the agricultural contributions of Zambia, Malawi, Zimbabwe, and Tanzania. It focuses on research, extension, credit, materials, and input supply. The project is being funded by the Canadian International Development Agency.


Completion date: 1990

Sub-Saharan Africa Hydrological Assessment

The project evaluates the status of existing hydrological data (precipitation, surface and groundwater), networks, and collection systems and makes recommendations for the filling of gaps, upgrading of quality data collection and enhancement of the capability to measure, retrieve, process, and publish hydrological data and information. Algeria was recently added to the countries specified in the original project. The ultimate aim is to assist countries in the improvement of hydrometric work for planning and evaluating water resource develop-
ment programs and projects. The project is cofunded by the UNDP and the Fond d'Aide et de Coopération.

Responsibility: Agriculture and Rural Development Department, Agricultural Policies Division—Ulrich Kuffner.
Completion date: mid 1990.

Biotechnology Study

This study will annotate recent achievements in biotechnology, report on research underway, and highlight potential applications to agricultural and livestock production in developing countries. It will specifically seek ways in which biotechnology can be used to help improve production in developing countries and identify a Bank strategy to support this application. This study is supported by funds from the Australian government.

Responsibility: Agriculture and Rural Development Department, Agricultural Policies Division—Peter Brumby and Anthony Pritchard.
Completion date: mid 1990.

National Agricultural Research Project

The project's objective is to strengthen (1) agricultural research, in particular on food crop and livestock production, by improving research and management methods and planning and training activities, and (2) farming systems research, by supporting ongoing programs. The goal of this improved research capability is to enable the identification of suitable technical packages that can be adapted and transferred to producers of food crops and livestock to assist them in increasing their productivity and income.

Collaborative institutions are the Ministry of Higher Education and Scientific Research, which is responsible for the policy direction of agricultural research; the Ministry of Finance, which, in consultation with the Ministry of Planning, is responsible for the financial management and control of the agricultural research budget; the Institute of Agronomic Research; and the Institute of Animal Research.

Responsibility: Agriculture and Rural Development Department, Agriculture Production and Services Division—Anthony Pritchard.
Completion date: December 1992.

The Regional Livestock Study

This research focuses on the analysis of existing mixed farming systems in Mali, Niger, Senegal, and Burkina Faso with a view to deriving lessons from successful examples of livestock management.

Responsibility: Africa Technical Department, Agriculture Division.

The Impact of South African Pricing Policy on Agricultural Incentives in Southern Africa

The objective of this study is to determine the extent to which South Africa's agricultural pricing and subsidy policies affect agriculture pricing and the structure of output in some of the surrounding countries of Southern Africa, such as Botswana, Lesotho, Swaziland, Malawi, and Zimbabwe. For Botswana, Lesotho, and Swaziland, South African prices have a predominant influence on domestic prices, but farmers do not have access to agricultural input subsidies provided by the South African Government. For other countries, domestic prices are more independent, but South African prices still influence the short-run border price and the pattern of regional trade. The work will document South African policies and their influence on price structure and trade in the region.


The Availability and Viability of Technology for Extension in the Different Ecological Zones of Sub-Saharan Africa

This study is confined to nine major annual food crops that provide the basis for much of the Bank's agricultural lending in the non-tree crop sector in Africa. The availability of technology is reviewed for the following regions: (1) the humid tropics of west and central Africa, (2) the sub-humid zone of west Africa, (3) the sorghum and millet belt of west Africa, (4) the savannah of east Africa, and (5) the highland zones of east and southern Africa. For each zone, the technology recommendations of five recent agricultural projects are identified and reviewed in the light of current price relationships and available information on farm family constraints. The study provides concrete examples of available technology for each of the major crops occurring in the zones covered. It indicates the general economic viability of proposals that include purchased inputs, and compares this with projected price relationships. The study also provides indicators on the evaluation of the appropriateness of technical recommendations to different farming systems, demographic factors, and farm family resource endowments.

Responsibility: Africa Technical Department, Agriculture Division.
Departmentally Funded Studies

Rural Organizations Providing Agricultural Support Services

This study reviews agricultural support services, especially agricultural marketing. While studying issues related to agricultural support services and their interdependence, the study concentrates on the institutions providing these services. Special attention is given to farmers' organizations, such as cooperatives and informal farmers and women's groups, as one of the most promising options for increasing the role of the private sector in providing agricultural support services. A major benefit of the study is the development of a hierarchy of constraints on the various agricultural services and support services, and a priority list of suggested improvements. Some of the major policy issues identified could be addressed in structural adjustment programs. Other donors are interested in this study, and provide substantial resources complementing the Bank's own resources.

Responsibility: Africa Technical Department, Agricultural Division.

Methods for Estimating Cereal Crop Production in Africa

This study aims to improve the quality and timeliness of crop production data in African countries at the project level and at the central level (national agricultural statistics offices). Recent tests have identified ways to make data collection more efficient. The study will disseminate these findings and develop guidelines to help Bank staff and borrower agencies to integrate them into their operations. The work is being closely coordinated with related activities in the international development community.

Responsibility: Africa Technical Department, Agriculture Division.

Cost of US Agriculture Subsidies

The aim of this study is to analyze the effects of agricultural policies, in particular subsidies, on the macroeconomy in the United States. Subsidies have not only direct budgetary implications, in that they represent expenditures of the government, but they also distort the relative price structure and, thereby the allocation of scarce factors. A reduction in subsidies will, through its impact on domestic interest and inflation rates, have implications for private savings and investment that can cause major changes in both real income and the trade balance.

A qualified conclusion is that a reduction, or perhaps elimination, of agricultural subsidies would have a major impact in reducing the current budgetary and trade imbalances. In particular, an elimination of subsidies would bring about an almost 30 percent improvement in the trade balance, and would go far towards lessening pressure on the dollar. The results may be overly conservative, since efficiency gains in agriculture are not incorporated. Many other studies have indicated that there would be substantial efficiency gains, and if these gains were incorporated in this study, the predicted results of subsidy elimination would be yet greater improvements in trade, budget, and price variables.

Responsibility: Country Economics Department, Public Economics Division—Andrew Feltenstein.

Report:

INDUSTRY AND ENERGY

Recent Developments in the US Power Sector and Their Relevance for Developing Countries

This review of US experience and emerging trends in the power sector identifies their implications for power sector efficiency and restructuring initiatives in developing countries. No country-specific prescriptions are developed, however, because these will vary according to each country’s specific circumstances.

Responsibility: Latin America and the Caribbean Country Department I–Mohan Munasinghe and A. Sanghvi.
Completion date: September 1987.

Power Retrospective Review

The Bank has been lending for power projects for almost 40 years. In the early years, the Bank frequently was the only lender to the power sector and the projects typically were large hydroplants, so the Bank had high leverage. More recently, Bank power
lending on average represents less than 10 percent of a country's total power investment. Leverage is therefore less, even though projects are broader, embracing all areas of the power sector. The study aims to determine the effectiveness of Bank power lending and the status of the technical, financial, and economic performance of the power sectors.

Responsibility: Industry and Energy Department, Energy Development Division.
Completion date: March 1988.

Petroleum Price Forecasting

Predicting future oil prices is one of the most difficult and controversial subjects within the Bank. Nevertheless, the Energy Development Division must give some guidance to Bank energy staff in this area, by making them aware of various viewpoints on the subject. This study presents the results of a Energy Development Division research study conducted by a consultant who uses a rather novel empirical approach to examine past/future activity end use levels in the petroleum sector together with general economic indicators in order to predict future oil price movements.

Responsibility: Industry and Energy Department, Energy Development Division.
Completion date: May 1988.

Energy Performance Contracting

The operational efficiency in most borrowing electric utilities is unacceptably low. Mechanisms must therefore be developed to introduce the incentive structures into energy operations in order to motivate governments, utilities, and their staffs to improve efficiency. In the United States, experience has shown that energy contracting has been successful in improving efficiency in energy utilities. For example, contracts between entrepreneurs and owners have resulted in savings in energy use for building owners when contractors are offered a share of any savings that result from operational changes they are putting into effect. Similarly, performance contracts between electric utilities and governments, whereby utilities improve their operations in return for more autonomy, and greater freedom to reward superior performance may increase the operational efficiency of the latter.

Responsibility: Industry and Energy Department, Energy Development Division.
Completion date: May 1988.

Performance Monitoring of Electric Utilities

Inefficiency, low staff productivity, high heat rates, low plant utilization are aggravating the financial position of most electric utilities supported by the Bank. The project reports on the use of performance indicators to improve the efficiency of electric utilities. The concept is based on using performance indicators such as thermal unit heat rates and generating unit availability factors to measure plant and utility effectiveness, determining the economic benefit of step improvements in the various indicators selected, developing plans to monitor the established indicators, and finally implementing related efficiency improvement programs.

Responsibility: Industry and Energy Department, Energy Development Division.
Completion date: May 1988.

The Value of Natural Gas for Gas Power

This task will provide a key input to a broader research exercise on the economics of natural gas use by the Bank's borrowers. Power often constitutes a key base load market for the justification of developing natural gas resources. The approach is to update development work on this subject undertaken in 1982. An interesting additional benefit will be an illustration of the great variability over time in gas value for power under the vastly different scenarios for oil and coal prices and power plant costs in 1982 and 1988, thus providing a direct indication of the sensitivity of the derived economic demand and value for gas as a competitive primary energy source for electric power.

The analysis will be carried out by the same firm that did the original work, using the same power system models but with updated input values. Their report may be used as the basis for preparing a new energy note during fiscal year 1989.

Responsibility: Industry and Energy Department, Energy Development Division.
Completion date: June 1988.

Review of Power Rehabilitation Projects

Rehabilitation and upgrading of existing facilities is becoming increasingly important in light of the deteriorating financial condition of electric utilities in many developing countries, and the general shortage of investment funds. The study reviews Bank staff experience on twenty-seven ongoing power rehabilitation projects, analyzes the lessons learned so far, and develops guidelines for preparing and implementing power rehabilitation projects.

Responsibility: Industry and Energy Department, Energy Development Division.
Completion date: August 1988.
Debt Implications of Power Sector Investment

This study assesses the macroeconomic impact of power sector investment for a selected group of countries, and in particular, the consequences of large debt obligations associated with power sector investments.

Pursuing economic development objectives, most developing countries embarked on an ambitious power investment program during the last decade. These high investments in power had an important macroeconomic impact. While they absorbed a considerable amount of national savings due to their capital-intensive nature and the high component of imported capital goods, they led most countries to heavy external borrowing. As a result, the debt of the power sector accounts for an important part of total external debt placing an increased pressure on the balance of payments.

Another macroeconomic dimension of the impact of the power sector on the economy is seen in public finances. High investments, usually complemented by subsidized tariffs that are lower than economic costs, led to a poor financial performance in most power utilities. The increasing impact of power investment on the economy shows that power lending should be placed in a macroeconomic context in which supply and demand constraints are adequately considered.

Responsibility: Industry and Energy Department, Energy Development Division.
Completion date: September 1988.

State-of-the-Art in Power Technology

Power technology is an ever-changing field where new development can present opportunities for novel solutions to energy problems. For example, ongoing pilot projects show that direct current transmission line tapping is technically and economically feasible to supply regional loads along the route of a long, partially loaded, direct current transmission line in Zaire.

To serve Bank borrowers, the staff in the energy divisions must be aware of new developments and applications in power technology that could improve or modify project selection and preparation. A report will give a summary picture of the state-of-the-art in various areas of power technology including: high temperature gas turbines, combined cycle units, coal gasification, coal-water slurry systems, fuel cells, coal fuels of gas turbines, coal thermal scrubbers, high voltage transmission, direct current transmission, direct current line tapping, insulated substations, superconductivity potential, power pooling, load dispatch, load frequency control, communications, distribution simplification, electricity theft reduction measures, system loss reduction methodology, digital consumer metering, and other areas of power system facilities and power operations. The report would explain the state of technology of each field, related capital and operating cost information, implications for developing country electricity costs, any expected future developments in the field, and present examples of ongoing projects based on the technology.

The study is entrusted to a consulting firm that is already involved in power system planning for several utilities and therefore has access to all new developments and related costs in power technology. The output will be a summary report explaining the state-of-the-art in each field of power technology and suggesting applications for the developing world. The audience will be the energy staff and our borrowers.

Responsibility: Industry and Energy Department, Energy Development Division.
Completion date: October 1988.

Optimal Timing of Power Transmission Line Investments

An important issue in the least-cost expansion of electric power supplies in developing nations is the question whether local supplies in specific, outlying areas should be served from an integrated power generation/transmission network, based on optimally-sized, lowest-cost generating plants, or from isolated plants, designed to serve only the local area. Conventional, least-cost analysis consists of a comparison of the present values of the respective alternatives, or an either/or basis, that is, the present value costs of building and operating a transmission line plus the marginal cost of centrally generated electricity, versus the present-value capital plus operating costs of a local generation alternative, both equalized over the expected lifetime of the longer-life alternative.

Such a methodology is appropriate only in cases where the load to be served remains roughly constant over the lifetime of the alternatives. But the more common situation is that local consumption in the respective region will increase over time. This makes it necessary to convert the analysis into one of the optimal timing that determines the point in time at which decreasing unit costs of transmission plus lower marginal generating costs become less than the unit costs of isolated generation. The optimal, least-cost sequence then contains as a possible solution an initial, autonomous diesel sequence, followed by a transmission interconnection later.
The objective of the study is to develop a least-cost optimization model that identifies the optimal year in which a switch-over from isolated to network supply brings about the least-cost solution of supplying electricity to a specific region.

Responsibility: Industry and Energy Department, Energy Development Division.
Completion date: October 1988.

Improved Methodology for Incorporating Risk and Uncertainty in Power System Planning

Power system planners face the challenge of determining the type and timing of major investments under conditions of great uncertainty in predicting the future trends of major planning parameters such as power demand, capital costs, international fuel prices, and foreign exchange rates. Failure to closely match the ex ante selected development programs with ex post desirable least-cost expansion program for meeting demand can impose a substantial cost penalty on the host economy. This cost could disrupt the implementation of macro-economics policies for public investment, pricing, balance of payments, and growth of the productive sectors.

The traditional deterministic approaches to power planning advocated by the Bank, which fail in addressing the significant differences in the uncertainties attached to alternative projects, often lead to inflexible least-cost programs that typically include large generating plants (particularly large hydropower where hydropower is an important resource) in spite of their inherently higher risks compared to other alternatives. This approach does not explicitly evaluate the risks of failure to achieve macroeconomic objectives and the consequences of sub-optimal power investments. Although such constraints do not invalidate the basic principle of least-cost, long-term programming, they do cast doubt on the present methodology and call for improvements to the treatment and explicit evaluation of differential of risk and uncertainty in the planning power investments.

A viable strategy for power system development has to satisfy the overall objective of meeting power demand at least economic costs, subject to being consistent with a sound policy on risk assessment both for the economy as a whole and the power sector.

The main objective of this research is to develop and assess the policy implications of a practical methodology that would allow for the assessment of uncertainty in the forecasting of trends of the planning parameters and for the incorporation of risk parameters in system planning. This research effort includes the following steps: (1) review of the existing state of the art of risk and decision theory and of analytical techniques, (2) identification of suitable approaches and preliminary design of a suitable methodology, (3) final development of a practical methodology suited to deal with risk and uncertainty problems affecting power sector developments in developing countries, (4) test proposed methodology for effectiveness and policy impact in case studies of historic power investment decisions, (5) test proposed methodology for acceptability and policy implications in case studies of upcoming power investment decisions, and (6) development of guidelines on the treatment of risk and uncertainty in power planning.

In order to design a focused and efficient research program the task will be done in two phases. Phase I will consist of steps (1) and (2) while Phase II would include the remaining activities. The final output of this research project will be a new set of analytical tools for incorporating risk and uncertainty in power system planning to Bank staff and our borrowers. A seminar will be held for Bank staff.

Responsibility: Industry and Energy Department, Energy Development Division.
Completion date: February 1989.

Analysis of Implementation Record of Large Power Projects

Several studies indicate that large Bank-financed power projects usually experience time and cost overruns and do not fully achieve targeted objectives. This study examines the experience pattern on large hydro, thermal, and transmission projects to compare the implementation record with appraisal expectations. It focuses on institutional issues that may affect the effectiveness of the implementation program. The study will be conducted in two phases: Phase I will review available Bank project data for twenty-five projects of reasonably uniform characteristics (such as hydro generating plants) together with an analysis of the data and evaluation of the results; Phase II will analyze a much larger sample of 75 to 100 projects.

Responsibility: Industry and Energy Department, Energy Development Division.
Completion date: March 1989.

Power Lending Policy Paper

Despite major assistance from the World Bank and other international development agencies, the performance of the power sectors in many developing countries has deteriorated markedly since the early 1970s.
This study recommends modifications to Bank policies for its power sector lending operations. It encourages the Bank to incorporate the lessons of the Bank's experience in promoting sound development of its borrowers power sectors. The study is based on the results of a number of past and ongoing research and review activities, and develops the conclusions resulting from these efforts. One of the main sources is the recent document "A Review of World Bank Lending for Electric Power," which recommends that the Bank improve productive and allocative efficiency, increase incentives for enhanced utility efficiency, systematically evaluate power-energy-macroeconomic linkages, improve investment planning to achieve a better balance between generation and distribution, and give much greater emphasis to rehabilitation and maintenance.

The study also addresses the need for sector restructuring and institutional reform to improve the social compact between government, consumers, and the power utility. The study will draw on other Energy Development Division activities for the treatment of risk and uncertainty in power system planning, reviews of the Bank's energy lending operations, and environmental issues for energy development. The output will be a paper with proposals for modifications to the Bank's power lending policy, and, where appropriate, additional research on specific policy issues.

**Responsibility:** Industry and Energy Department, Energy Development Division.

**Completion date:** March 1989.

**Electric Power Utility Efficiency Study**

As the recent Energy Development Division Power Retrospective Study has shown, the overall performance of publicly-owned, electric utility companies has steadily worsened. Frequent power outages and voltage fluctuations are very costly to power users, as well as to the utilities themselves. Key elements causing this deterioration are poor management, poor operational procedures, and a pervasive lack of maintenance. The objective of this project is to develop appropriate and workable solutions that will result in permanent improvements.

By far the worst performers of the publicly-owned electric utilities are diesel power plants, even though the very same diesel engines operate reliably in thousands of ships worldwide. While diesel technology is well known and quite reliable, it is more sensitive to careless operation and poor maintenance. This leads to frequent and often enduring service interruptions that are very costly to power users, because of lack of service, and to utilities and their financing agencies, because of frequent and heavy rehabilitation costs.

The specific and most immediate objective of the project is to find workable and enduring solutions to the poor operating performance of publicly-owned diesel electric power stations in developing countries. The underlying thesis is that this poor performance (as that of power utilities in general) is essentially an institutional, human management, and performance problem. The focus of the research will be on analyzing not only the technical parameters of diesel plant performance, but the whole range of issues related to management, supervision, staff motivation and capabilities and so on. Solutions will be sought to overcome these problems including institutional change, training of staff, performance based bonus payments, maintenance contracts, leasing, privatization, including substantial changes in donor lending policies to support sound operating practices. Among the other results, the study will provide authoritative information about the actual cost of operating and maintaining diesel power plants in developing countries. It is also expected that the results will be directly applicable to the management and operation of other public sector enterprises such as water supply, telecommunications, and road maintenance.

Detailed field investigations will be carried out by participating Bank divisions and outside agencies in twenty-five countries. It is expected that in each of these countries four to twelve stations will be evaluated. These field investigations will establish a comprehensive, worldwide data base about operational, financial, management, and staff performance. Once these baselines have been established, monthly performance reports will be filed. Overall evaluation of these data on a comparative basis will be undertaken by the central management of the research project. On the basis of the findings, comprehensive policies and reform packages will be developed that are considered to be suitable for general application as well as to the specific utility in question.

The output will comprise: (1) a set of recommendations, tailored to some extent to specific country situations, of how to improve the operating performance of public utilities, through institutional change, training, choice of appropriate staff performance incentives, technical assistance, changes in donor/lending agencies assistance packages; (2) a large statistical data base covering and evaluating the performance of diesel power plants in some 20 countries; (3) a realistic analysis and data base calculating the lifetime costs of operating and maintaining diesel power plants in developing countries at satisfactory levels of performance, providing an ap-
propriate basis for comparing diesel powered plant investment with other alternatives; (4) detailed guidelines for reorganizing and managing such plants under a variety of external conditions; (5) agreed-upon guidelines for international lending and donor agencies on support strategies to the sector; and (6) a series of papers, reports, and publications detailing the findings of the study, and the lessons learned with respect to the management of public enterprises in developing countries in general.

_Responsibility:_ Industry and Energy Department, Energy Development Division.
_Completion date:_ December 1989.

**Natural Gas Strategy Study**

Oil exploration in developing countries increasingly results in finds of natural gas rather than oil. In addition, the seismic work in many areas indicates that they may be gas prone. Gas projects involve large front-end investments; long-term commitments by governments, development of new, long-term, dedicated markets; and problems of repatriation of profits in hard currency. Private companies are usually reluctant to develop natural gas reserves in developing countries. Nonetheless, gas can substitute for imported fuels or for domestically produced oil to free it up for export.

The purpose of the study will be to review the status of natural gas developments in developing countries, the past role of the Bank, and the marketing opportunities for gas on a local or regional basis including an examination of multi-sector gas use. The objective is to analyze the problems and potential associated with natural gas, with a view towards facilitating the development of indigenous natural gas reserves in Third World countries.

The study will look at economic, financial, institutional, and technical issues to define the constraints and potential for developing natural gas. The results will be published in several parts or combined into a more comprehensive report with these components: (1) importance of natural gas in developing countries, including gas reserves, production and consumption, the location and potential of undeveloped reserves; (2) the potential impact of natural gas use on developing countries' demand for imported or domestically produced oil; (3) the status of gas commercialization/utilization projects in developing countries, examination of why some have been postponed or cancelled and why others have gone forward, conclusions to be drawn from these experiences; and (4) financial and institutional/political constraints determining the attitudes by private companies towards investments in local gas projects, characteristics of gas projects (as opposed to oil) that result in these attitudes.

_Responsibility:_ Industry and Energy Department, Energy Development Division.
_Completion date:_ December 1989.

**Power Demand Forecasting Record**

The correlation between power demand forecasts and actual demand has been poor and deteriorating over the past two decades, resulting in uneconomic investments in generation capacity in the form of excess capacity, under capacity, or suboptimal generation plant type.

The study will determine the historic relationships between forecasts and actual demand to guide planners on the nature of uncertainty in demand forecasting in the preparation of power development programs. This task will also provide an essential input to the ongoing work on developing a practicable methodology for incorporation risk and uncertainty in power system planning. The main issues to be investigated are: (1) what has been the statistical characteristics of the distribution of deviations between actual and forecast demand; (2) has this distribution been significantly different over the medium and long term; (3) is this distribution significantly different for different levels of power system development; (4) is there any general bias in the relationship between overall trends in the differences between actual and forecast power demands and trends in overall economic conditions, particularly growth in GDP; (5) are there systematic relationships between trends in major demand categories and corresponding sector GDPs; and (6) is there a significant difference in the forecasting accuracy between the major forecasting methodologies applies.

_Responsibility:_ Industry and Energy Department, Energy Development Division.
_Completion date:_ December 1989.

**Comprehensive Energy Planning Strategies**

Traditionally, Bank lending operations in the energy sector have focused on specific projects or interrelated components of projects. However, both the energy crisis of the past decade and the various energy assessments undertaken jointly by the UNDP and the Bank have shown that specific projects have to be evaluated within the context of integrated sector policies and development programs. This is particularly true in Sub-Saharan Africa, given the high costs of, and limited resources available for, energy projects. So far, no comprehensive planning frameworks have been developed that could be used as a guideline for developing appropriate and comprehensive policies.
The objective of the study is to use the experiences gained from the Energy Assessment Program and a number of planning studies, as well as ongoing, multipurpose energy development projects, to develop a systematic energy strategy and planning framework particularly designed to address the current conditions, problems, and potential opportunities for energy development in Sub-Saharan Africa.

Using case studies and examples, the importance of potential advantages of comprehensive energy planning within an African context will be demonstrated. Issues to be addressed include the evaluation of appropriate investment strategies based on least-cost supply principles and appropriate demand management measures, fuel substitutions, interregional cooperation in supply and distribution, institutional development and training, and appropriate pricing.

Responsibility: Industry and Energy Department, Energy Development Division.

Energy Studies

A number of energy studies are being undertaken in the African Technical Department. A series of sub-regional geological studies focusing on major hydrocarbon deposit basins (starting with the Red Sea) provide information and a framework for the countries concerned to collaborate on their more effective commercial exploitation. The Petroleum Supply Rationalization Study aims to reduce the cost and increase the reliability of supply and distribution of petroleum products. The West Africa Energy Supply Study evaluates the feasibility of exporting surplus Nigerian natural gas to neighboring countries in the form of electric power.

Responsibility: Africa Technical Department, Industry and Energy Division.

Mining

The Africa Technical Department is conducting two studies in the area of mining. The first study is the Global And Africa Mining Study. It will survey recent mining industry performance in major countries in Africa and other developing regions and draw conclusions about appropriate and inappropriate policies, including the role of private and public companies. The second study is the SAOCC Mining Study, which will be undertaken jointly with SADCC and focus on the SAOCC member states. It aims to identify action programs to support the development of mining operations in the various member countries with emphasis on the production of higher unit value minerals and small-scale mining operations.

Responsibility: Africa Technical Department, Industry and Energy Division.

INFRASTRUCTURE

Dynamics of Public Infrastructure, Industrial Productivity and Profitability: Macroeconometric Evidence From Mexico

The role of public infrastructure in stimulating economic growth and influencing productivity of private business is well recognized in economic theory and has formed the genesis of the World Bank lending policies. The empirical literature addressing this question, however, has limited policy relevance as it does not yield parameters of interest to public officials, for example, the impact of public investment on private sector profitability, desired level of public infrastructure from the private sector's perspective, the limits of output expansion, the elasticities, the return to public and private investment, and relative contribution of various factors to overall economic growth. Empirical evidence on the above questions is helpful in carrying out both a review of existing public programs for deficit reduction as well as ranking potential investment opportunities. Unfortunately, these questions could not be handled in an investment equation framework and require precise description of production structure of the industrial sector in the jurisdiction to be studied. This study examines the above questions in an implicit dynamic production structure framework using Mexican data.

A restricted cost function in translog form which treats labor and materials as variable inputs and private capital and public sector capital stock in transport, communications, and electricity as quasi-fixed inputs is specified. This function is estimated using data from 1970 to 1983 for thirty-four Mexican industries. The divergence of private and public capital stock from their static equilibrium levels will be investigated. The net rate of return to fixed factors is also calculated. Estimates of allocative efficiency are derived. The study provides estimates of short-run and long-run scale economies, output elasticities of factors, and total and partial measures of productivity growth and technical changes. If the
results of the study appear promising, further application of this methodology to other countries could be considered.

**Responsibility:** Country Economics Department, Public Economics Division.
**Completion date:** August 1988.

### Sahel Corridors Study

This study aims to identify the main bottlenecks to a cost-efficient transport of goods to and from Mali, Niger, and Burkina Faso; to develop an agenda for action to eliminate impediments to efficiency, in particular the non-physical obstacles; to assess the determinants of route selection by shippers; and to evaluate the potential economic impact of improvement in transit management.

**Responsibility:** Africa Technical Department, Infrastructure Division.
**Completion date:** October 1988.

### Great Lakes Corridor Study

The objectives of the study are to update Bank knowledge on basic data such as infrastructure conditions and traffic flows, to better understand bottlenecks affecting transport in landlocked and transit countries and assess ongoing efforts by various regional or international organizations to improve the transport system, and to prepare a five-year program for Bank actions through its ongoing and planned transport projects to assist in the improvement of international transport in the area.

**Responsibility:** Africa Technical Department, Infrastructure Division.
**Completion date:** December 1988.

### Trade Logistics Management and Related Transport Infrastructure and Services, Phase I

In collaboration with the UN, this project aims to: (1) review ongoing changes in production and distribution logistics in industry and trade world wide and to determine technological developments that drive these changes, (2) assess the effects of changing shipper demands for freight transport and physical distribution management of traded commodities and of corresponding restructuring in the international transport industries, and (3) evaluate trends in transport cost structures and levels resulting from the changing trade logistics management and freight transport service arrangements.

**Responsibility:** Infrastructure and Urban Development Department, Transport Division--Hans Peters. With Honore Paelinck, Van Ommeren NV; Volker Speidel, Bremen Institute for Shipping Economics and Logistics; and Hansperer Stabenau, German School for Foreign Trade and Transport.
**Completion date:** February 1989

### Deregulation of Ocean Transport

Through a case study in Chile, this study assesses the effects on trade performance and shipping industry organization and management of deregulatory measures applied to the regime that covers the conduct of ocean transport. It is conducted in collaboration with local authorities and enterprises.

**Responsibility:** Infrastructure and Urban Development Department, Transport Division -- Esra Bennathan (consultant).
**Completion date:** March 1989.

### Enterprise Reform Series

A number of investigations are scheduled to deal with the various aspects of managing transport services through public and private enterprises in developing countries. The key criterion is to determine means of improving market response, operational efficiency and financial viability of these enterprises. In fiscal year 1988 one such investigation was initiated.

The first study looked at the institutional and management practices of national railway in developing countries and strategies for improving services and corporate performance. The overall study is in collaboration with British Rail (Transmark), Japan Ministry of Transport, and Swedish State Railways (Swedeconsult).

**Responsibility:** Infrastructure and Urban Development Department, Transport Division--Louis Thompson and Eric Beshers (consultant).
**Completion date:** May 1989

### Rural Water Supply and Sanitation Strategy Review

The study aims to develop an action oriented strategy focussing on the policy options (institutional, technological, and financial) needed for accelerated rural water supply and sanitation coverage in Sub-Saharan Africa. The study will: (1) assess project implementation experiences and implications of results from the UNDP-Bank research program, (2) reevaluate the health benefits and their impact on project designs, (3) discuss and disseminate findings among a broad audience in Sub-Saharan Africa, and (4) lay a better defined framework for the World Bank operation in the subsector in Sub-Saharan Africa.

**Responsibility:** Africa Technical Department, Infrastructure Division.
**Completion date:** September 1989.
Departmentally Funded Studies

Pricing Transport Infrastructure in Developing Countries

This research project reviews practices among developing countries in the context of charging for the use of transport infrastructure for different modes to determine the fiscal, efficiency, and equity implications of such practices.

It assesses the effects of different strategies for pricing of transport infrastructure in the context of shortages in fiscal resources -- including public revenue generation, management of traffic flows, furtherance of economic growth, control of spatial development, and general welfare maximization.

General guidelines for dealing with transport infrastructure pricing reforms in developing countries will be prepared.

Responsibility: Infrastructure and Urban Development Department, Transport Division -- Ian Hepgie, Robin Carruthers, Michael Quick, Sheila Sangwan, and David Walker (consultant).

Completion date: April 1990.

Labor Redundancy in Public Sector Transport Enterprises

This study reviews the experience with labor redundancy schemes resulting from public transport enterprise improvement measures in OECD countries.

It assesses the employment and other social implications of transport enterprise reform programs or plans in developing countries.

The main output will be prepared strategies for redeploying redundant transport sector labor in developing countries.

Responsibility: Infrastructure and Urban Development Department, Transport Division -- Alice Galenson and Jan Svejanar With Katherine Terrell, University of Pittsburgh.

Completion date: July 1990.

Report:

"Experience with Labor Redundancy Schemes in the Transport Sector in Western Europe, the United States and Japan."

Productivity and Sector Assets

This project undertakes preparation of guidelines to be used by staff and borrowers on means of improving operational management and maintenance. It will be followed by a policy brief on asset management in the sector and interim papers on diagnostic measures of managerial performance and causal factors explaining variations in performance.

Responsibility: Infrastructure and Urban Development Department, Water and Sanitation Division--Alfonzo Zavala, Harvey A. Garn, and Dennis Warner.

Completion date: September 1990.

Transport and Agriculture in Sub-Saharan Africa

This study examines how shortcomings in the transport sector constrains agricultural development in Africa by looking at the transport sector policy and management options in support of agricultural development and evaluating how the potential benefits of different transport sector strategies are dependent on current or prospective agricultural policies and institutions.


Completion date: February 1991.

Sub-Saharan Africa Transport Program

The Sub-Saharan African Transport program is a broad collaborative effort between the Bank, the UNDP, the Economic Commission for Africa, various bilateral donors, and African institutions. The program was initiated to address key issues in transport policies affecting efficiency of transport services and sustainability of transport infrastructure. Its primary objectives are: (1) to help governments improve sector policies and policymaking in Sub-Saharan African by improving the factual basis for policy decisions, (2) to disseminate findings to African policymakers and sector managers and generate commitment for actions in policy reforms, (3) to deepen knowledge in specific areas, and (4) to promote institutional strengthening and human resource development programs.

Responsibility: Africa Technical Department, Infrastructure Division.

Completion date: December 1991.

Financial Issues in Water Supply Sector

This study analyzes causal factors that influence the choice of financing instruments and financial performance of sector institutions.

The study's output will include issues paper on sector financing, guidelines on finance, and an initiating brief for more complete policy research.

Responsibility: Infrastructure and Urban Development Department, Water and Sanitation Division -- H. A. Garn.

Completion date: June 1990.
Investment Choices in the Water Supply Sector

This project will conduct data analysis and model development on design horizons, when to invest, choice of components, and size of new capacity taking into account inter-related engineering, economic, and financial inputs.

A set of guidelines on analysis of demand for services, costs and economies of scale in systems, and analysis of optimal multi-period investment paths will be written.

Responsibility: Industry and Energy Department, Water and Sanitation Division--A. Zavala and H. A. Garn.

Completion date: June 1991.

Transport and Invisible Trade

This research project has two objectives: (1) to determine the incidence of transport in invisible trade performance within different country groupings and among selected developing countries; and (2) to assess the effects on invisible trade performance and the economic cost of protectionist measures related to international transport of traded commodities and, more generally, of non-tariff barriers in selected countries.

Responsibility: Industry and Energy Department, Transport Division--Frida Johansen and George Panagakos (consultant).

Telecommunications

The African Technical Department has undertaken several studies in the area of telecommunications. The program falls under four categories: (1) global policy work, (2) development of analytic tools, (3) sector knowledge update, and (4) dissemination. It includes work in the following areas: Telecommunications Policy and Strategy, World Trends in Communications and Information, Telecommunications Pricing and Tariffs Handbook, Trends and Issues in International Communication, and Telecommunications Sector Restructuring and Management.

Responsibility: Africa Technical Department, Industry and Energy Division.

ENVIRONMENT

Environmental Issues in Economic Development

Environmental degradation plays an increasingly important role in destroying the fragile ecological resource base of Sub-Saharan Africa. Many of the practices are directly or indirectly linked to the need for, and use of, energy. Measures are urgently needed to measure the real costs of such environmental destruction and to develop policies that can reverse this trend at economically acceptable costs.

The study consists of nine already completed papers on the above subject. These papers, originally published in the November 1987 issue of the Annals of Regional Science, are now being revised by the authors for publication by the Bank in book form.

Responsibility: Industry and Energy Department, Energy Development Division.

Completion date: June 1988.

Environmental Status Report

At present, there is no operational report that summarizes the effectiveness of environmental actions the Bank has initiated in its ongoing energy lending. The objective of this study is to prepare, with the assistance of regional project officers, a report summarizing the environmental status of the energy projects approved for lending between fiscal year 1978 and fiscal year 1987 and for projects planned for fiscal year 1988. The study will examine the following: (1) the resettlement impact, implementation problems, and population affected for ongoing hydro projects; (2) the resettlement aspects and project impact on coal workers for ongoing coal thermal projects involving mines; (3) the quantities of fuel consumed, stack emission control measures planned for thermal projects, and any general environmental issues for all projects planned for fiscal year 1988.

Responsibility: Infrastructure and Urban Development Department, Energy Development Division.

Completion date: December 1988.

Improved Biomass Resource Management

Many of the activities in the area of biomass resource use lack a broader economic perspective. The scope for action so far, has been restricted to single sectors, technological problems, data collection, and institution building, while little attention is paid to the resource allocation problems involved in the supply and use of biomass fuels.

The study provides a conceptual economic
framework and methodology for the assessment of biomass resource costs (relative to substitutes in consumption or foregone opportunities of alternative uses) and the evaluation of policy options aimed at improvements in the efficiency of woodfuel resource production and consumption. The tasks include: (1) the development of socially optimal harvesting rules for different biomass resources, (2) the establishment of practical decision criteria and incentives for biomass resource extraction under uncertainty (long lead times with supply risks and the risk of variations in prices) for woodfuels as well as alternative fuels, (3) the valuation of (non-marketed) non-fuel services provided by some types of wood resources, and (4) the layout of policy tools suited to remove distortions in biomass production and consumption. In addition, the study establishes guidelines for the design and implementation of least cost strategies for the supply of both woodfuel and conventional energy resources differing in terms of locational features, fuel properties, their intertemporal availability, and estimated changes in income elasticities. The final objective is to lay the groundwork for an improved economic integration of the biomass sector into overall energy development policies.

The study will focus on additional research on the economics of biomass resource management and its application in the context of policy making, with emphasis given to empirically relevant decision problems.

Responsibility: Industry and Energy Department, Energy Development Division.
Completion date: March 1989.

The Natural Forest Protection and Management Study

This study looks at the technical and economic analysis of the status of knowledge of natural forest management protection including: identification of critical areas which should be protected, alternative mechanisms for successful protection, ongoing research, and economic and policy reforms that can help take pressure off natural forests.

Responsibility: Africa Technical Department, Agriculture Division.

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Responsibility: Africa Technical Department, Agriculture Division.

Completion date: October 1988.

**URBANIZATION AND REGIONAL DEVELOPMENT**

**Housing and the Macroeconomy: Housing and Labor Market Distortions in Poland**

The objective of this project is twofold: (1) to analyze the source and magnitude of one of the major macroeconomic distortions created by inappropriate housing sector policies in centrally planned economies, namely, the disruption of labor mobility and the subsequent disruption of urban labor markets; and (2) to evaluate the stakes of housing policy reform in Poland, and to suggest priorities for policy change.

Responsibility: Infrastructure and Urban Development Department, Urban Development Division.
Completion date: July 1988.

**Urban Service Finance and Spatial Allocations Issues in Latin America**

Urban service delivery in the Latin America is hampered by severe fiscal constraints, rapid urbanization, rising expectations, and democratization of administrative systems. This study assesses the relative importance of subnational revenues/expenditures in a wide sample of countries of by tabulating country specific and regional information over a significant time series and presenting comparisons with industrial market economies.

In addition, the study will examine a few cases of innovative Bank projects as well as topical discussions of a more normative character (decentralization, revenue-sharing, institutional credit).

The research project will identify key issues and recommendations according to three main groups of concerns: (1) those frequently voiced by our Latin American borrowers (country concerns), (2) those stemming from economic and fiscal principles (theoretical concerns), and (3) those emerging from Bank lending activities (operational concerns).

The results will be comparative and general conclusions for reference by Bank task managers in the design of new operations. This study stresses the main theme that the Bank’s urban loans ought to achieve a less incidental character and relate more directly to the existing systems of intergovernmental fiscal flows. Improvement of the present revenue sharing systems appears as a promising and fruitful area for country dialogue, upon which the effectiveness of our urban operations critically depends.

Responsibility: Infrastructure and Rural Development Department, Urban Development Division—Gian Carlo and Betty Alvarado (consultant).
Completion date: October 1988.
A Study of the Impacts of Infrastructural Deficiencies on the Nigerian Industrial Sector and Their Policy Implications

This research seeks to produce a framework that will enable better understanding of the causes of infrastructural deficiencies in urban areas and their impacts on the performance of industries. The study will identify a set of viable options for more efficient maintenance and delivery of services and will measure potential cost savings from improved services.

Responsibility: Infrastructure and Urban Development Department, Urban Development Division--Kyu Sik Lee.
Completion date: June 1989

Urban Rural Linkages: Macroeconomic and Regional Implications

The study aims to improve the Bank's understanding of the nature and importance of urban-rural linkages in Sub-Saharan African countries, to draw the consequences of these linkages on macroeconomic and sector work, to prepare a framework for a forecast of demand for regional infrastructure and urban services needed to support improvement in the efficiency of agriculture, and to identify policies to strengthen territorial administration and to improve resource mobilization at the regional level.

Responsibility: Africa Technical Department, Infrastructure Division.
Completion date: October 1989.

Urban Development

The overall objective of this UNDP-funded project is to improve urban policies, programs, and practices in providing shelter and infrastructure services. The study has four components: (1) land management including land tenure, registration, information systems, land markets, land development and policies; (2) municipal finance issues including municipal recurrent expenditures, mobilization and allocation of resources for investment, local government tax administration and intergovernmental relations; (3) infrastructure issues focusing on operations and maintenance (implemented by the United Nations Council for Human Settlements (UNCHS)); and (4) dissemination of research results through seminars, existing networks, education and training, and project involvement.

Responsibility: Infrastructure and Urban Development Department, Urban Development Division--William Dillinger, Ricardo Silveira, Lynn Holstein. With C. Farvacque, the UNCHS.
Completion date: May 1990.
Reports:

Urban Environment

The study examines the problems of the urban environment, particularly those that affect human health and the quality of life. The principal focus is on the management of urban wastes, liquid and solid. The study will provide a comprehensive framework for a better understanding of the problems of the urban environment in developing countries and propose Bank policies and actions to help countries resolve the identified waste management issues. It will also assist those responsible for the planning, design, and appraisal of urban projects to deal with priority waste management, health and environmental issues, and identify areas for further research. The study will result in an Infrastructure and Urban Development Department policy paper.

Responsibility: Infrastructure and Urban Development Department, Urban Development Division--Carl Bartone.
Completion date: 1990.

POPULATION AND HUMAN RESOURCES

Peru: Women's Productivity and Family Welfare

This study focuses on the economic productivity of women in Peru and its impact on family welfare. Based on economic analysis to be carried out with the Living Standard Measurement Study (LSMS) household survey data from Peru, the study aims to quantify the impact of an improvement in women's socioeconomic status on household-level outcomes for market and nonmarket production, and to contribute to policy guidelines that can increase women's productivity and contribution to the family's investment in children, health, and education. Moreover, to help those who formulate Bank projects, the study aims to identify possible project interventions that would address the key constraints...
Departmentally Funded Studies

affecting women's economic contribution.

The Women in Development Division will collaborate with the Education and Employment Division on the issue of male and female differentials in human capital investment. The study is designed to produce a book covering different issues concerning women in development.


Women's Economic Productivity

This task covers a program of work, the main component of which is the study on Peru (see above). Other components have focused on developing a conceptual framework for analyzing women's issues and on developing a research agenda.


Reports:
Blumberg, Rae Lesser. "Income under Female vs. Male Control: Differential Spending Patterns and the Consequences when Women Lose Control of Returns to Labor."
Chen, Martha. "Women and Household Livelihood Systems in Rural India."

Application of the Training and Visit System to Nonagricultural Sectors

The training and visit system is basically a management approach that happened to have been applied first to agricultural extension. It is particularly suitable for service delivery, especially in rural areas where agents operate individually. Its potential for other areas has been well established. A paper on its application to health services has already been produced and a background paper on its application to education is under way. Another background paper on the accumulated experience in selected operational applications will provide the basis for a policy paper and staff guidelines on this subject.

Responsibility: Country Economics Department, Public Sector Management and Private Sector Development.

Completion date: September 1989.

Education

Determinants of Primary School Participation, with Emphasis on Women and the Poor

In many developing countries, female school attendance lags behind that of males and the poor have limited access to education. Previous research had identified several important determinants of child primary school participation: household economic factors (child schooling costs versus expected household returns to investments), sociocultural factors, and poor health and nutrition.

Interventions designed to increase participation have typically concentrated on reducing costs to families rather than on changing families' expectations for returns to investments, dealing with sociocultural barriers, or improving child nutritional status. To increase the participation of women and the poor, however, it may be necessary to address these determinants.

The objective of this project is to identify school-related factors that affect primary school participation, particularly of female students and the poor. The major findings of two studies under this project are that: single-sex schools in Thailand are relatively cost-effective in providing education to girls, and single-sex schools in Nigeria are more effective for girls than are coeducational schools.


Completion date: June 1988.

The Determinants of Educational Achievement: International Comparisons

Cross-national analyses of student achievement provide ample evidence that students in developing countries are less literate and numerate than students of the same age in industrialized countries. Although research has shown that school resources in developing countries are correlated
with higher student achievement, it has provided little comparative evidence regarding the magnitude of the effect of school resources on student achievement or the degree to which school resources affect changes in student achievement.

This project is using recent International Association for the Evaluation of Education Achievement data on mathematics and science to analyze these issues. Specifically, longitudinal data from eight countries will be analyzed to determine the effects of school resources and teaching processes on student achievement in mathematics; an initial emphasis will be placed on data from Thailand. Cross-sectional data from twenty countries will then be used to compare the effects of school resources and processes on student achievement in these countries. This study will be extended to science data, which will be examined for thirteen low- and middle-income countries.

Preliminary results indicate that school characteristics and teacher practices and use of material inputs play a role in explaining the math achievement of eighth grade students in Swaziland and Nigeria.

Responsibility: Population and Human Resources Department, Education and Employment Division--Marlaine Lockheed and Andre Komenan.
Completion date: June 1989.

The Role of Decentralized Education in Educational Expansion—the Economics of Private and Local Public Schools in Developing Countries

Educational systems in developing countries are owned, administered, and funded predominantly by central government authorities. In view of recent budgetary crises, one policy response has been to decentralize the provision of education, by easing restrictions on private schools, channeling subsidies to them, or devolving authority over public schools to lower tiers of government or to local communities. However, there has been very little empirical research on the effectiveness, efficiency, and equity effects of such a policy in developing countries.

The main purpose of this project is to analyze the efficiency and equity effects of greater decentralization in the provision of education. The research results are to be used to derive policy recommendations on (1) the regulation and/or subsidization of private schools, colleges, and universities; (2) the administration and financing of schools in federal systems; and, possibly, (3) the operation of nongovernmental community schools.

Among the key findings are that: (1) private schools tend to generate higher academic achievement at much lower unit costs; (2) financial decentralization in the Philippines is associated with lower unit costs, even when learning achievement is held constant; (3) lifting of prohibitions on private schools in Pakistan has led to dramatic increases in enrollment and, probably, improvements in average quality of schooling; and (4) easing the economic constraints barring access of bright students from poor families to higher education in Colombia could change the student composition of universities at the expense of students from wealthier backgrounds.

Completion date: December 1987.

Implementing Change in Education

Many programs aiming at policy reform and qualitative change have failed at the implementation stage. Little is known about what happens between the moment a program is adopted—often with a great deal of fanfare—and the moment that the effort at change is quietly abandoned. This research program is designed to identify and to investigate the elements common to the implementation strategies of successful programs of educational change. The research design has three parts: (1) a survey of the Bank education project portfolio to identify the characteristics of projects supporting major change programs, (2) a detailed comparative analysis of a sample of twenty-one educational change programs supported by the Bank to identify the characteristics of successful implementation strategies, and (3) field research of three major change programs to test the hypothesis developed in the preceding exploratory work.

Work under parts 1 and 2, which has been completed, found that successful programs aiming at broadly applied, ambitious change (1) adopted incremental and flexible strategies; (2) were implemented under conditions of reasonable environmental stability; (3) emphasized administrative development initially, followed by in-service teacher training and sustained efforts directed at building and maintaining the commitment of parents and students, teachers and local administrators, and central ministry officials; (4) established effective feedback mechanisms for implementation experience from the school level;
and (5) divided program management responsibilities among various functional agencies. A research grant of $350,000 has been obtained from the Norwegian Ministry of Development Cooperation to undertake part 3 of the study.

Responsibility: Population and Human Resources Department, Education and Employment Division--Adrian Verspoor.

Completion date: June 1990.

Quality and Efficiency of Primary and General Secondary Education

Continuing budget constraints in nearly all developing countries make issues of financing and efficiency of critical importance. Cost containment and improved student achievement are the two factors central to increased efficiency. A review of the cost-effectiveness of a range of educational interventions shows that textbooks, interactive radio, peer tutoring, and cooperative learning all increase school efficiency. Research evidence from Thailand expanded understanding of well-known positive effects of textbooks on achievement, showing that these effects result from substituting for teacher post-graduate education and by presenting a more comprehensive curriculum than is possible through teachers alone.

At the same time, the quality of teaching has an important effect on achievement, but the patterns of good teaching vary across countries, as demonstrated by evidence from Nigeria and Swaziland. These data suggest that the design of teacher training and supervision programs should incorporate the analysis of the best teaching practices in the country's schools. Previous research has shown that the impact of schools on student achievement is greater in developing than developed countries, as compared with family background factors. Evidence from Thailand and Malawi shows that family circumstances also affect student achievement. In Thailand, family circumstances directly affect student aspirations and attitudes, and these in turn have impact on achievement. In Malawi, children from poorer homes with household obligations do less well in school. Such factors should be taken into account in investment design through improved involvement of parents in schools, preschool programs, or changing school schedules to adjust to household labor requirements.

Responsibility: Population and Human Resources Department, Education and Employment Division.

Reports:
"Demand for School Quality: The Effects of Income, Ethnicity, and Differential Access."
"How Textbooks Affect Achievement in Developing Countries, Evidence from Thailand." World Bank Reprint Series, No. 425.
"Improving Educational Efficiency in Developing Countries. What Do We Know?" World Bank Reprint Series, No. 435.

Vocational Education and Training

The efficiency of alternative forms of vocational education and training is a crucial policy and investment issue. Macroeconomic policies (income, wage, capital, and trade) have important effects on labor markets, and hence on the external efficiency of training institutions. A broad approach to the economic analysis of training investments, one that pays particular attention to labor markets, is thus required. A case study of vocational schools in China demonstrated how administered wage structures that underpriced skilled labor and job assignments for graduates artificially increased demand for skilled labor and lead to inefficient skills use. A seven year longitudinal analysis of the returns to vocational schooling in Israel indicates that these vocational secondary schools are not cost-effective in terms of labor market outcomes in comparison with alternative training arrangements. The wider social goals of vocational schooling in Israel, however, must also be weighed on the benefits side.

Responsibility: Population and Human Resources Department, Education and Employment Division.

Reports:

Sector Management

The efficiency and quality of schooling can be positively affected by managerial and structural policies. Analysis of teacher wages in Côte d'Ivoire shows that when total compensation is considered, teachers are not overpaid in comparison to employees with similar education. Caution is needed when considering budget cuts that would
reduce teacher compensation, and thus possibly lead to loss of teachers from the profession.

The organizational structure of schooling can have important effects on outcomes and efficiency. Single-sex schools were found to be more effective for girls, and coeducational schools for boys, in raising student achievement in Thailand. The largest factor in these differences was the student's peer group, consistent with studies in developed countries that suggest that class participation and leadership opportunities are suppressed for girls in coeducational settings and for boys in single-sex settings. Evidence from Thailand, Tanzania, Columbia, and the Philippines shows that private secondary schools are less costly and lead to higher student achievement than public schools, principally because relatively higher levels of institutional autonomy permit better use of staff. The importance of decentralized authority in school efficiency is supported by findings in the Philippines that schools that rely more heavily on local financing, and that are thus more accountable to the community, are more efficient.

The ability of schools and school systems to improve depends in large part on the use of monitoring and evaluating information to assess progress, and to identify both problems and solutions. A comparative analysis of the Bank's largely disappointing experience in establishing sustained government capacity for monitoring and evaluation, and of the process through which monitoring and evaluation became an integral part of education management in the United States, indicated the importance of policy and incentive support in establishing monitoring and evaluation capacity and systems.

Responsibility: Population and Human Resources Department, Education and Employment Division.

Reports:
"Monitoring and Evaluation in Education Projects: Lessons from US Experience."

Universities and Development

The high costs and uneven quality of higher education in developing countries are important issues, given the strong social demand and the significant multiple roles that universities perform in development. This policy program was initiated this year in cooperation with the Regions. Initial research focussed on higher education in Arab countries, finding that rapid enrollment expansion has negatively affected quality. With slowed economic growth, many countries are moving to control and, in some instances, reduce enrollments.

Responsibility: Population and Human Resources Department, Education and Employment Division.

Reports:
"Efficiency and Equity in Latin American Higher Education."

Teacher's Pay

This study is reviewing available data and information on teacher pay scales, policies, and practices in Sub-Saharan Africa. The study uses the International Labor Organization conferences and databases as information sources.

Responsibility: Africa Technical Department, Education Division.

Book Sector

A series of studies in seven countries in the Sub-Saharan region assesses the following elements of the book subsector: (1) publishing, printing, and raw materials; (2) book-selling and distribution; (3) libraries and information provision; (4) government policy requirements and restraints; (5) literacy and reading programs; and (6) national language policies.

Responsibility: Africa Technical Department, Education Division.
Departmentally Funded Studies

Labor and Employment

Job Security Regulations in Manufacturing

Changes in job security regulations in recent years may have made employment adjustment more difficult. Such regulations may hamper efforts to shift resources in response to changes in relative prices, discourage the hiring of new workers, and encourage the adoption of overly capital-intensive techniques of production. Job security regulations also may have an adverse impact on productivity, by removing incentives and encouraging greater reliance on temporary help. This study will investigate the impact of such regulations on the manufacturing sectors of India and Zimbabwe, using time-series data at the three-digit level of the International Standard Industrial Classification of all Economic Activities (available from census data). The intended audience is government officials in developing countries, Bank staff, and the academic community. (See also research project entitled "Impact of Changes in Job Security Regulation", Ref. No. 674-23.)

Completion date: April 1988.

Wage and Labor Market Flexibility in the Franc Zone

This project is examining wages and employment in the context of the limited monetary contraction in the early 1980s, with an emphasis on identifying the extent to which wage inflexibility is due to government policies rather than market rigidities. The work is also examining changes in government labor market and public sector wage policy to enhance flexibility. Simple modeling is being used; other types of analysis will be determined by data available. A paper presenting the findings will be directed to Bank country economists and senior management.

Completion date: June 1988.

Endogenous Wage Rigidity

This study is investigating sources of wage rigidity that are endogenous to a firm's decision-making process. Several hypotheses have been advanced to explain why it may be in a firm's interest to slow adjustments in wages in response to changes in market conditions. For example, it has been argued that offering a lower wage may attract less productive workers, particularly when the firm is not well-equipped to distinguish between low- and high-productivity workers. The study will produce a theoretical framework for discussing these issues. There will be a second part of this study to include empirical work. The intended audience includes the academic community, Bank staff, and government officials in developing countries.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division–Luis Riveros.
Completion date: June 1988.

Labor Market Studies

This project is examining the effect of the structural adjustment process on labor markets in Latin American countries from 1970 to 1985. These country studies are in part based on the results of a conference held in 1986. The project is investigating whether structural change has led to an increase in unemployment and the reasons for any increase. Policy recommendations will be made for alleviating the adverse employment effects of adjustment programs. While much of the work on this project has been done, studies on Argentina, Colombia, Bolivia, and Brazil, as well as an overview, have yet to be completed. The studies will be collected in a book.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division–Luis Riveros.
Completion date: June 1988.

Public Sector Employment and Pay Reform

The study consists of a detailed evaluation of public sector employment and pay policy reform in Sub-Saharan Africa. It looks into employment censuses, recruitment, curtailment, mandatory and involuntary redundancy programs, pay and grading reform attempts. It expects to provide lessons for structural adjustment operations and public sector management projects.

Responsibility: Africa Technical Department, Public Sector Management and Private Sector Development Division.
Completion date: June 1989.
Exchange Rate Policy and Labor Markets in Latin America

This project is investigating the effectiveness of nominal exchange rate policy in the presence of segmented labor markets. Because regulations on hiring, firing, and compensation tend to retard the transfer of workers across sectors, a devaluation that succeeds in changing relative prices (for example, by increasing the price of nontradables) might not succeed in moving resources toward the tradable sector. One study will investigate the effectiveness of exchange rate policy in reallocating resources in Argentina, Chile, and Colombia. A second study will apply the same theoretical structure to Brazil, Mexico, and the Philippines—countries in which agriculture's share in production is larger. The work is preliminary and is intended to be the basis of a research proposal for Research Support Budget funds. The audience includes the academic community, Bank staff, and government officials in developing countries.

Responsibility: Country Economics Department, Macroeconomic Adjustment and Growth Division—Luis Riveros.
Completion date: September 1989.

Employment and Labor Supply

Given the Welfare and Human Resources Division's focus on the causes and consequences of poverty, employment and labor supply are important issues in the division's research program. The Employment and Wage Changes during Recession study focuses on the demand side of the market. The 1979-84 recession in Côte d'Ivoire during which one third of modern sector employment was lost, is analyzed to answer the following: (1) how did (sector specific) wages respond to this recession? (2) what are the determinants of firm survival/closure? (3) which workers were laid-off, kept their jobs, were rehired?

Preliminary results show no evidence of "wage stickiness". Though aggregate data for this period indicate that real wages rose 17 percent, the micro data show a real wage decline of about 20 percent.

A second task, Multiple Workers/Multiple Jobs Labor Supply Models, looks at labor supply responses of rural households to changes in their economic environment (prices, infrastructure). A methodology is being developed to deal with the labor supply responses of an often large number of individuals per household, each of which may have multiple activities (farmwork, off-farm own account work, wage employment, school enrollment, home production).


Structural Adjustment and Labor Mobility

Rigidities in wage structure may hamper intersectoral labor reallocation and limit the success of adjustment programs. This study identifies the institutional and policy reforms needed to enhance the employment-generating impact of adjustment programs.

Responsibility: Country Economics Department, Macroeconomics Adjustment and Growth Division—Luis Riveros.

Population, Health, and Nutrition

New Approaches to Contraceptive Services: Public and Private Programs

The objective of this research is to analyze factors affecting contraceptive choice, promotion, and delivery. The research includes (1) study of determinants of individual choice among contraceptive methods; (2) analysis of the effect of contraceptive marketing on patterns of contraceptive purchase across risk classes; (3) testing and documentation of the use of a reproductive risk checklist in promoting contraceptive use; (4) study of the cost-effectiveness of variations in contraceptive delivery systems; (5) support for the development of institutional capacity for such cost-effectiveness studies; (6) review of the experience of nongovernmental organizations within the context of family planning programs; (7) development and maintenance of a data base on contraceptive use and choice and delivery system dimensions; and (8) the role of the husband in contraceptive decision-making. Some general findings of the research to date indicate that the type of contraceptive method used is relatively price inelastic and influenced primarily by age, marital status, and the actual purchaser. Studies in Thailand and Jamaica show that
once the desired family size has been attained, couples shift from temporary contraceptive methods, such as condoms and pills, to more long-term methods, such as injectables and IUDs. The studies also show that under some circumstances, the husband is an important actor in the decision-making process.

**Responsibility:** Population and Human Resources Department, Population, Health, and Nutrition Division—Rodolfo A. Bulatao, John Akin, Dov Chernichovsky, Lauren Chester, and Susan Cochrane.

**Completion date:** June 1988.

### Maternal and Child Health Care: Costs and Utilization Patterns

The objectives of this task are (1) to gain a better understanding of the factors affecting choice of prenatal and delivery care by women, (2) to collect evidence on the income groups served by each type of public and private health care, and (3) to establish guidelines for improved delivery of prenatal, delivery, and maternal care services.

The research has shown that price has virtually no effect on the choice of delivery method, although price elasticity was found to be slightly higher than that for outpatient care. Distance and time costs have a greater impact on choice of provider than price, but the effects are very small. Perceived quality has the largest impact on choice of provider. In urban areas, the absence of a physician on the clinic staff has a negative effect; in rural areas, staffing clinics with midwives has a positive effect. Education affects the choice of modern versus traditional care. Finally, the severity of illness is a strong factor in the decision-making process and tends to bias people toward private facilities.

**Responsibility:** Population and Human Resources Department, Population, Health, and Nutrition Division—John Akin and Charles Griffin.

**Completion date:** June 1989.

### Service Delivery and Use at the Periphery

The primary objective of this research is to assess service delivery at the periphery and to develop improved alternatives. Among the recommendations resulting from this research are increased sensitivity to client needs, establishment of simplified management information systems, systematic monitoring of the implementation process, improved congruence between the intervention strategy and the structure of the delivery agency, and increased emphasis on cost recovery, private sector participation in service delivery, and appropriate worker incentives.

**Responsibility:** Population and Human Resources Department, Population, Health, and Nutrition Division—Rodolfo A. Bulatao, Anthony Measham, Richard Heaver, and Nancy Birdsell.

**Completion date:** June 1988.

### Demographic and Economic Impact of AIDS

This project seeks to develop models for assessing the demographic impact and economic costs of AIDS, to assist countries in conducting realistic appraisals of the costs, and to explore the consequences of AIDS for health service delivery and social structure and functioning as they affect development and development projects.

A projection model has been developed, and its application has suggested that the demographic implications of AIDS are mixed. A paper describing the application of the model to Zaire concludes that overall population size has not been greatly affected, although mortality could rise significantly in the future.

**Responsibility:** Population and Human Resources Department, Population, Health, and Nutrition Division—R. A. Bulatao, E. Bos, and M. Over.

**Completion date:** June 1989.

### Cost Recovery in the Health Care Sector

The study addresses the need to safeguard funding for public health services through the mobilization and efficient allocation of resources. Policies for achieving both of these objectives are considered, including policies to encourage the expansion of quality private health services, particularly within the non-profit segment of the private sector, and policies to implement equitable cost recovery.

Recommendations that flow from the study findings include: (1) Some financial autonomy, through cost-recovery, should accompany programs to decentralize government health care systems. In all four countries studied, it appears that without this financial autonomy, administrative autonomy is difficult to achieve. (2) As illustrated in the experiences of the church missions, cost-recovery must be preceded by improvement in the perceived quality of services. (3) Experience in the countries studied reveals that to ensure equitable and efficient allocation of services, cost-recovery programs should be phased, beginning first with charges for drugs and tertiary level care.

Further research needs to be done in Africa on
many of the issues uncovered by this study, for example the demand for the different kinds of health care services by different income groups, cost-effective administrative methods for screening the poor in cost-recovery systems, design issues for health insurance in Africa. These are to be pursued in a follow-up study in fiscal year 1989.


AIDS Strategy

The Africa Technical Department is undertaking, jointly with the World Health Organization's Global Programme on AIDS (WHO/GPA), a series of studies aimed at improving the planning and effectiveness of AIDS prevention and control programs. They include:

1. Estimate of resources needed and available to implement five-year national AIDS control programs in Sub-Saharan Africa. This study estimates the financial resources needed and available to implement five-year national AIDS prevention and control programs in forty-one Sub-Saharan Africa countries. After estimating the demand and supply of funds, the study will quantify any resource gaps according to possible financing scenarios.

2. Patient Management. The purpose of this study is to develop (1) decision criteria for the allocation of resources to AIDS prevention, control, and treatment; and (2) review of experience in counselling AIDS patients and families. WHO/GPA will concurrently be developing guidelines designed for clinicians to improve the clinical management of AIDS patients.

3. Information, Education and Communication. This study examines existing experience in the fields of communication for AIDS prevention and control. It involves influencing attitudes and achieving behavior change on a large scale in a cross-section of adult and adolescent populations. An information, education, and communication strategy for AIDS prevention and control will be developed on the basis of this analysis.


Clients’ Perceptions of Health and Family Planning Services in Lesotho

This study assesses beneficiaries’ views of health and family planning services being provided by the government, nongovernmental organizations, and private channels, in order to improve policies and programs (including those supported by the Bank) for service delivery. Key questions include: How do beneficiaries see clinic-based health services as compared to those provided by traditional healers? How do men and women feel about various family planning methods? How much are they willing to pay for health care in rural clinics and urban hospitals? Data has been gathered from three selected Lesotho communities by trained field workers mainly using conversational interviews that yield both quantitative and qualitative data.


Health and Nutrition in Latin America.

This study examines the experience of six Latin American countries in targeting health and nutrition programs to protect the poor during the economic crisis of the late 1970s and early 1980s.

