# Africa Economic Policy Project

# Progress Report 1991


**David E. Sahn**

in collaboration with
**H. Alderman**
**J. Arulpragasam**
**N. Benjamin**
**C. del Ninno**
**P. Dorosh**
**C. Jabara**
**A. Sarris**
**E. Thorbecke**
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CORNELL FOOD AND NUTRITION POLICY PROGRAM

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December 31, 1991

The Cornell Food and Nutrition Policy Program (CFNPP) was created in 1988 within the Division of Nutritional Sciences, College of Human Ecology, to undertake research, training, and technical assistance in food and nutrition policy with emphasis on developing countries.

CFNPP is served by an advisory committee of faculty from the Division of Nutritional Sciences, College of Human Ecology, the Departments of City and Regional Planning and Rural Sociology; the Cornell Institute for International Food, Agriculture and Development; and the Department of Agricultural Economics and the International Agriculture Program. Graduate students and faculty from these units sometimes collaborate with CFNPP on specific projects. The CFNPP professional staff includes nutritionists, economists, and anthropologists.

CFNPP is funded by several donors including the Agency for International Development, the World Bank, UNICEF, the Pew Memorial Trust, the Rockefeller and Ford Foundations, The Carnegie Corporation, The Thrasher Research Fund, and individual country governments.

Preparation of this document was financed by the U.S. Agency for International Development under USAID Cooperative Agreement AFR-000-A-0-8045-00.

This document was word processed by Jools Proffitt. The manuscript was edited by Barbara B. Hart, Publications Professionals, Inc. The text was formatted by Gaudencio C. Dizon. The cover was produced by Jake Smith.

For information about requesting copies of this manuscript and others contact:

CFNPP Publications Department
1400 16th Street NW, Suite 420
Washington, DC 20036
202-822-6500

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## FOREWORD

This annual progress report summarizes the activities and findings of the Africa Economic Policy Project in 1991. The 10 country studies discussed in this report are all designed to examine the impact of economic reforms being undertaken in sub-Saharan Africa on growth, income distribution, and poverty and their consequences, including food insecurity and malnutrition. The nature of the specific questions being addressed and the research methods differ from one country study to the next, in response to the fact that the pressing policy issues, the available data, and the nature of the process of reform are different in each of the countries being examined.

In assembling this progress report, our objectives went beyond simply recapitulating activities undertaken and planned. Rather, the discussion for each country study in this progress report on integrative analysis is designed to summarize some of the salient findings of our research during the past year. In addition, the final section of this progress report presents a summary of the work being undertaken to synthesize the results of the case studies, and, as such, is a very general discussion of the overall findings of the Africa Economic Policy Project to date.

We also wish to acknowledge the importance of the overall guidance and financing for the research discussed in this report that is provided primarily by the Africa Bureau and country Missions of the Agency for International Development under a Cooperative Agreement with the Cornell Food and Nutrition Policy Program (CFNPP). Supplementary financial support for the research is provided by the countries in which we are working, as well as by the World Bank.

While the objectives and results of the work are discussed in some detail in the pages that follow, it is emphasized that the entire effort is part of, and consistent with, the broader goal of CFNPP, which strives to contribute to economic growth and poverty alleviation throughout the world through a combination of research, training, and technical cooperation – the means through which we endeavor to reach that goal. In particular, our efforts to analyze the effect of economic reform policies under the Africa Economic Policy Project represent a major component of CFNPP's overall work, and illustrates well the importance of rigorous policy analysis, training, and information exchange in fostering growth and contributing to reducing global poverty, food insecurity, and malnutrition.

Washington, DC
December 1991

David E. Sahn
Deputy Director, CFNPP

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# 1. INTRODUCTION

In sub-Saharan Africa the process of structural adjustment is well rooted in most countries. After a number of years of experience in attempting to reform African economies, we are beginning to learn more about the effectiveness and limitations of the process of adjustment. Among the limitations are weaknesses in the design of adjustment programs, factors that often impede the adoption of planned reforms, and constraints that limit the magnitude of the supply response to a new policy environment.

It is in response to the importance of making the reform process more sustainable and successful – as measured by macroeconomic aggregates and the prevalence of poverty – that CFNPP has been engaged in a five-year study in 10 sub-Saharan African countries (Cameroon, The Gambia, Ghana, Guinea, Madagascar, Malawi, Mozambique, Niger, Tanzania, and Zaire). We have organized our research in three phases:

A. The first phase develops a common conceptual framework that will serve as a flexible guideline for undertaking each country's case study. In addition, we are developing other methodological materials, which are concerned with creating appropriate models to simulate the impact of various reform measures.

B. The second phase applies the conceptual framework and related methodological materials for studies of the 10 African countries.

   (1) Individual studies seek to accomplish the following objectives:

   - Provide information that case-study countries can use in pursuing or modifying ongoing adjustment programs.
   - Demonstrate applicability of the common analytical framework.
   - Suggest modifications that must be made to establish a useful design and/or a monitoring and evaluating tool for the host countries and for the donor community.
   - Establish the utility of consumption/nutrition/poverty analyses as a means to improve the effectiveness of designing and implementing the structural adjustment program.

   (2) To achieve these objectives, each country's study begins with both a literature review and a desk study that analyze the following:

- The structure of the economy.
- The etiology of the economic crisis.
- The nature of the macroeconomic and sectoral policy reform measures being planned and implemented.
- The characterization of poverty.
- The identification of the most salient direct and indirect linkages between reforms and household incomes.
- Any preliminary insights into the actual or likely effects of reforms on the disparate objectives of macroeconomic performance and poverty alleviation.

(3) Then we follow this background study with the development and use of more formal economic models. Where data permit, we use general equilibrium models. However, in some cases both the questions to be answered and the data to be used suggest resorting to more-limited and less-ambitious partial equilibrium approaches.

C. The third phase undertakes a comparative analysis. This analysis synthesizes the findings of the individual country studies and presents generalizable knowledge concerning the process and implementation of adjustment in sub-Saharan Africa.

This progress report summarizes project activities and accomplishments from January 1, 1991 to December 31, 1991, along with related research results. While the report presents only a brief summary of the principal findings, it does list publications that contain more detailed presentations.

This progress report begins with a discussion of the work completed and planned for the 10 countries in our research program, because the work on developing a conceptual framework and theoretical models (discussed in last year's report) was completed before the beginning of the year. Following a discussion of each country's case study, we will present the work that has been done on integrating analysis. Although the country case studies are not complete, we have endeavored to continually prepare synthesis reports that provide generalizable knowledge that will assist policymakers and researchers in their continued search to improve the effectiveness of reform.

## 2. COUNTRY CASE STUDIES

The status of each country's case study is quite different and reflects each country's differing starting points and work plans. During the past year, we completed the studies in Cameroon and Malawi. Other studies, such as Guinea and Tanzania, which have been occupied with data collection, are still in their formative stages. The staggered start and completion dates of the projects present both opportunities (such as learning from previous research) and liabilities (such as having difficulty integrating the research findings). Nonetheless, the institutional challenges of performing collaborative empirical research in Africa often lead to a divergence between plans and practice, just as is the case with the process of policy reform.

For each country we will next present a brief description of the activities and results to date, planned activities (if any), and training and capacity-building efforts that are being undertaken as part of the research effort. While not originally intended to occupy a large role in the research effort, this latter aspect of our work has emerged as an important element. These efforts will undoubtedly form the basis for institutionalizing the process of rigorous policy analysis, which has been conspicuously scarce in sub-Saharan Africa.

### CAMEROON

#### Activities and Results to Date

The past year's activities have concentrated on completing the analysis of the Enquête Budget Consommation (EBC, Household Budget and Consumption Survey) and the development and use of the computable general equilibrium (CGE) model. Regarding the final results of the EBC analysis, the working paper, *Income Distribution, Poverty, and Consumer Preferences in Cameroon*, by Sarah G. Lynch provides extensive details on the socioeconomic characteristics of households by region in Cameroon. In addition, a poverty analysis discusses characteristics and determinants. Perhaps the most important finding – even accounting for education and other covariates – is the much lower level of poverty in the main cities, Yaoundé and Douala, and in semiurban regions, to a lesser extent. The poor people are primarily uneducated, are farmers, and till their own land. These results correspond to the analysis of income inequality that shows the importance of agroecological zone in the decomposition of Theil measures. Other related findings indicate that the educational level of the head of the household accounts for 14 to 18 percent of total inequality, while gender of the head of the household contributes little to income inequality.

The results of analyzing consumer demand, along with the elasticities generated, allow us to simulate the effects that income and price changes have on consumption. We found a similarity of consumer preferences among income classes. No category of goods was inferior, and luxury goods were luxury goods for all income classes. Also in keeping with the poor's spending a higher budget share on food, higher prices have a larger income effect on them than on richer households.

Nancy Benjamin presents the results of the policy analysis using the CGE in her working paper, *Income Distribution in an Agricultural Economy: A General Equilibrium Analysis of Cameroon*. The paper explores the distributional consequences of various tax, public investment, and exchange rate policies. One important finding of the research is that at the time the negative shocks hit Cameroon – as prices of oil and of major agricultural exports fell precipitously – poor farmers were already in a relatively disfavored position. Faced with a fall in terms of trade, it is better for farmers' relative income if Cameroon adjusts to the shock rather than if it copes with its account imbalances by increasing foreign borrowing.

In regard to actual adjustment mechanisms, real depreciation is a potentially useful adjustment tool with favorable distributional effects. This approach indicates that the real appreciation associated with the currency's fixed peg to the franc makes adjustment in Cameroon more difficult. While membership in the franc zone rules out unilateral currency devaluation, we felt it was nonetheless useful to look at a hypothetical change in the nominal exchange rate in order to see the distributive effects. The results showed that imposing a 10 percent real depreciation shifts income distribution in favor of poor households. However, since the exchange rate change also causes an increase in the current account surplus and, therefore, a substantial outflow of foreign exchange, real income falls for everyone.

When we consider other adjustment policies that most affect income distribution, solid evidence supports the importance of the agricultural terms of trade or the relative price of agricultural goods to manufactures. Since most of the poor in Cameroon are rural farmers, the question becomes, "What most affects the agricultural terms of trade?"

We must consider first a policy that could lower the price of manufactures, which are a significant intermediate, and investment goods for the agriculture sector. Since a large share of manufactures is imported, an effective instrument for reducing their cost is to cut in half the import tariff of 25 percent. The results show that this cut effectively improves the agricultural terms of trade and the relative income of poor farmers. However, the policy also leads to an overall decline in income.

Suppose instead that a subsidy was used to raise the net price or value-added price of agricultural goods. The subsidy could successfully improve the agricultural terms of trade and the relative income of poor farmers, while raising income overall. However, there are obvious problems with subsidizing domestic prices above world prices. As a practical matter, it is difficult to maintain such price wedges when there are porous borders with neighboring countries and those countries export and import the same commodities as Cameroon. Thus, Cameroon should improve the operation of domestic markets so that income can rise for the poor without using extensive trade taxes.

While reducing transport margins may be a productive way of raising the relative incomes of Cameroon's poor, the larger question is whether it is a good growth and adjustment strategy as well. By using the dynamic optimizing model, we can check the consistency of this policy with a growth-maximizing investment strategy. The results from this model showed that to maximize growth, Cameroon must increase the share of capital in sectors producing trade and transport services. Thus, the productivity of investing in these areas is made apparent. If the government adds its own purchases of capital to those made by the service supplying sectors, the added investment should bring down the cost of trade and transport services, though not as much as a direct subsidy. This approach has a more favorable outcome for total capital stock, but it is less effective on income distribution. If the directed investment expenditures could be targeted toward adding only trade and transport capital stock, the impact on margin service prices would be greater.

Thus, the results show the value of lowering the cost of marketing margin services while improving the relative income of the poorest households. Therefore, the adjustment strategies should examine the possibility of improving efficiency in sectors least pressured by world prices, because those sectors affect both the employment of poor people and the price of goods produced by the poor.

While we should consider the role of public expenditures in investment plans in the context of each expenditure's impact on income distribution, the model experiments, nonetheless, show that poor households are favored by a policy where the government allocates funds away from investment into current subsidies of marketing margin services. This finding indicates that poor households do not gain much directly from investment expenditures. Nor, after five years, are the benefits of a higher capital stock sufficient to outweigh the advantage of lower margin costs for farmers.

The research in Cameroon illustrated the possibilities of using a general equilibrium framework for analyzing the income redistribution and growth effects of adjustment. Detailed data, however, on the structure of the economy, including production, employment, trade, and factor payments to households, were a necessary starting point for building a Social Accounting Matrix (SAM) and the model itself.

## Training and Collaboration

While we collaborated with the Ministry of Plan to analyze the household budget survey and to construct the SAM, the CGE was constructed primarily in Washington, DC by Nancy Benjamin. Therefore, to facilitate use of the model by our counterparts in Cameroon, we are organizing a workshop in Cameroon to provide training for using the model on personal computers that we are giving the Ministry.

## THE GAMBIA

### Activities and Results to Date

The nucleus of CFNPP's work in The Gambia was a survey of household income and expenditure conducted from September 1989 to March 1990. The major findings of this survey are summarized in the report, "Incomes, Nutrition, and Poverty in The Gambia: Results from the CFNPP Household Survey," by Cathy Jabara, Marjatta Tolvanen, Mattias Lundberg, and Rohey Wadda. This report presents data on household incomes, income sources, expenditures, and nutrition in both urban and rural Gambia.

Rural incomes are derived primarily from agriculture, although a large number of rural households receive income from secondary off-farm sources. Ordinary least square regressions of income sources revealed that off-farm employment contributes as much to rural incomes, on the margin, as improved agricultural technology. The majority of urban incomes come from wage labor and own businesses. Gifts and remittances provide a significant portion of income for both urban and rural households, but they do not reduce income disparities: wealthier households in both areas receive three times as much as poorer households. Both urban and rural households are able to save. The rate of savings is obviously greatest in the wealthiest urban sample, but many households report saving to accumulate sufficient capital to start a business.

The CFNPP household survey collected data for the estimation of food and calorie intake. Rice, followed by fruits, vegetables, and roots, comprise the largest ingredients of the food basket by value for both urban and rural households. Urban households consume only imported rice, and rural households consume both imported and domestically-produced rice. Rice contributes nearly half of all calories to urban households, and nearly 40 percent to rural households. Rural households also receive more than 20 percent of their daily calories from the consumption of coarse grains (primarily millet and sorghum). Meat, fish, and sugar consumption are higher in the urban sample than in the rural sample. On average, calorie consumption is adequate – over 2,800 kilocalories per adult equivalent per day by urban households, and nearly 2,500 kilocalories per adult equivalent per day by rural households. The survey found some malnutrition, especially in the rural sample – one-third of children from poorer rural households are stunted.

In the urban sample, wealthy households are more likely to have fewer members and better educated household heads than poorer households. Wealthy household heads are also more likely to be self-employed or employed in skilled government jobs. In contrast, nearly half of the heads of the poorest urban households have unskilled government jobs. This is of interest because of the

3,850 government workers retrenched during the economic recovery program, nearly 70 percent were temporary or daily-wage workers.

Very few heads of the wealthiest rural households and none of the heads of the poorer households have any formal education. Although there are opportunities for education in the rural areas, education encourages migration. Data from the urban sample indicate that 44 percent of male household heads who had out-migrated from the rural sample areas within the three years preceding the survey date had some formal education, whereas fewer than 2 percent of all the household heads in the villages surveyed have any formal education.

The observations concerning rural off-farm income prompted further analysis and preparation of the paper, "Income Sources in Rural Gambia: The Role of Off-Farm Income," by Cathy Jabara and Mattias Lundberg. The paper analyzes household income data from the North Bank of rural Gambia. The major finding was that rural household income is determined by the availability of male labor and by access to improved farming technology; and income is significantly increased by off-farm work. In an area where most households have access to improved farming technology, a rural income strategy might concentrate on improving opportunities for off-farm employment.

In addition to analyzing the household data, this project constructed a Social Accounting Matrix (SAM) for The Gambia using the report and data described above. The SAM is detailed in a forthcoming CFNPP Working Paper No. 20, *A Social Accounting Matrix for The Gambia*, by Cathy Jabara, Mattias Lundberg, and Abdoulie Jallow. The SAM integrates all currently available information about the economic and social structure of The Gambia.

Unlike other SAMs that were constructed for Madagascar, Cameroon, and Niger under the Africa Economic Policy Project, this SAM was built largely from CFNPP's household income and expenditure survey of The Gambia. Thus, it was built from the "bottom up" rather than from the "top down." This method of construction freed us from previous conventions regarding the delineation of consumption shares, household income groups, and production accounts. At the same time, when we constructed The Gambia's SAM, we were able to use all of the detailed information on interhousehold financial flows, informal enterprise income, and household expenditure that the CFNPP survey elicited.

The base year for The Gambia's SAM is 1989/90, and The Gambia's Economic Recovery Program (ERP) started in 1985/86. The SAM cannot be used to analyze the effects of the ERP on household incomes because by 1989/90 most households had adjusted to the policies implemented under the ERP. The Gambia's SAM, however, can currently be used in a fixed-price, input-output type of framework to analyze the effects of certain types of exogenous changes on household income.

For instance, using the SAM, we found that an increase in groundnut production will benefit lower-income households in rural Gambia, but substantial benefits will also accrue to upper-income urban households as a result of the effects on interregional trade. Similarly, an exogenous increase in the government's recurrent spending will benefit urban households because most public spending is concentrated in urban areas. However, lower-income urban households will benefit the most from an increase in public spending, because many of these household members are employed as unskilled formal-sector workers. Wealthier rural households will also benefit from an increase in government spending, because most of these households have off-farm income and/or receive income transfers from households in urban areas.

## 1992 Work Plan

The Gambia project is currently scheduled to terminate at the end of February 1992. The project includes plans to use the SAM to analyze the impact of various growth and policy scenarios on household income and income distribution. The project also includes writing a manual for the Ministry of Finance to use The Gambia's SAM for policy analysis. We are experimenting with several changes to the model to allow the inclusion of price changes into the multiplier model.

## Training and Collaboration

The project undertook two collaborative training programs for two Gambian nationals. The first program, from October 1990 to January 1991, involved collaboration with a Gambian statistician, Ms. Rohey Wadda, from the Central Statistics Department of the Ministry of Finance and Economic Affairs. She worked with the project staff of the Africa Economic Policy Project (AEPP) analyzing CFNPP's household data set. During her training program, she used the CFNPP survey to prepare a number of analyses of the characteristics of Gambian households.

The second program, from April to mid-August 1991, involved collaboration with Abdoulie Jallow, an economist from the Ministry of Finance and Economic Affairs. He worked with the AEPP project staff in constructing The Gambia's SAM. He played an important role in cleaning certain parts of The Gambia's household survey, in constructing SAM accounts, and in helping to develop the assumptions that were used to link the data into a SAM. He was also instrumental in organizing the workshop that was held in The Gambia in November 1991, in which the SAM was presented to the Government of The Gambia. More than 40 officials from the government, parastatals, and the private sector attended the workshop.

# GHANA

## Activities and Results to Date

In 1991 we completed several aspects of our research on macroeconomic adjustment and poverty in Ghana and began three new projects. We continued the work that we began in 1990 on nutrition and agricultural markets, addressed some important issues on contemporary macroeconomic policies, and began our survey of laid-off (or "redeployed") civil servants.

In *Options for Public Intervention to Enhance Food Security in Ghana* (a forthcoming CFNPP Monograph), Alexander Sarris addresses one of the key agricultural policy issues in Ghana: public storage of grains to reduce transitory food insecurity of people at risk and to stabilize fluctuations of intra- and inter-year staple food prices. The analysis is based on stochastic simulations with an empirical, dynamic, quasi-general equilibrium model that distinguishes five different income groups. The analysis focuses on the ways in which alternative types of public interventions alter the distribution of market prices and food intake by vulnerable groups.

The results suggest that both domestic stockholding policies, as well as price stabilization operations, are not very effective at reducing the risks and magnitude of calorie deprivation among people who are most at risk. Food security operations carried out through imports rather than stocks are a cheaper means to achieve similar reductions in food insecurity. Direct income supplements that distribute food aid through, for instance, food-for-work programs are shown to be an effective means of reducing food insecurity of the vulnerable groups. Finally, the results show that targeted growth policies that favor the vulnerable groups, or at least general growth policies that do not discriminate against them, are the most effective means for reducing the food insecurity of those most at risk.

In *Food Security in Ghana: Selected Policy Issues* (a forthcoming CFNPP Monograph), Harold Alderman and Paul Higgins investigate the patterns of household-level food security and consumption. Using a nationwide household survey, the study challenges the prevailing notion that calorie consumption in Ghana is among the lowest in the world. Moreover, Ghana is fairly unusual in that roots and tubers are a major source of calories even for urban upper-income groups. The strong relationship between income and commodity consumption implies that aggregate demand will increase appreciably in the short run as incomes grow. The estimated level of price responsiveness implies that although there is considerable substitution between commodities, household calorie consumption declines in the regions with highest levels of malnutrition as prices increase for maize or sorghum.

We more fully analyzed the income dimension of food security with our own survey of households in two regions of the country, one being the most food deficit and the other being the main grain surplus region. We designed and analyzed the survey in collaboration with Fudtech Consult Limited, a Ghanaian research firm. The study confirms that households sell their grain throughout the year, thereby speculating on price movements. These households report storage losses much less than losses that are assumed in food balance sheets and used to justify the government's interventions in grain storage. These reported losses are, however, similar to those reported in other surveys in Ghana.

The role of household storage complements a study of trader operations in the same regions. Few traders report storing grain for more than a few days; the estimated profits from turnover exceed average returns on storage and are less risky. This information implies that regulating or supporting traders will have less impact on seasonal price volatility than addressing concerns of households that trade grain. The information also implies that it will be difficult, if not impossible, to design government storage and stabilization policies without considering the storage response of thousands of farm households to these policies. In the aggregate these household grain holdings dwarf those likely to be held by either traders or the government.

A third study of agricultural policy is nearly complete at the end of 1991. "Policy Reform and Agricultural Input Use" is by Charles Jebuni of the Department of Economics of the University of Ghana and Wayo Seini of the Institute for Statistical, Social, and Economic Research (ISSER). During the past several years, the government of Ghana has gradually removed almost all price subsidies on agricultural inputs such as fertilizer, pesticides, and improved seed varieties. In addition, the government is attempting to close parastatal enterprises that have been responsible for distribution of agricultural inputs and to turn that activity over to the private sector. While economists (and most donors) favor these policies on the grounds that prices should reflect the true scarcity value of the inputs, some analysts have expressed concern that eliminating agricultural subsidies might harm poor farmers and thus be undesirable on social welfare grounds. They are also concerned that the private sector may not provide effective distribution of inputs to farmers, especially those who are poor and in remote areas.

One of the most surprising results from this examination of agricultural households' use of fertilizer and improved seed varieties is that there is virtually no difference between the proportion of households that are in the lower, middle, and upper quartiles of the income distribution or size-of-farm distribution and that either used fertilizer or purchased seeds. Thus, the burden of removing subsidies on fertilizer may fall more evenly across the income distribution than one would have expected ex ante. For insecticides, on the other hand, better-off households do appear to use larger amounts than the poor. For all inputs except seeds, only a small proportion of farmers report that they use any of the input at all, suggesting that the absolute number of farmers who will suffer from price increases is small, probably around 10 to 15 percent for both fertilizers and insecticides.

At a more aggregated level, Seini and Jebuni interviewed farmers and field officers of the Ministry of Agriculture (MOA) and found that, contrary to the government's hopes, private agents have not come forth quickly to fill the void left by the withdrawal of parastatals from input supply activities. The key constraints seem to be (1) a lack of credit for both potential intermediaries and farmers; (2) uncertainty about future government policies, including how the MOA will rid itself of the considerable stocks of fertilizers it still holds; and (3) difficulty in competing with international nongovernmental organizations (NGOs) that continue to supply fertilizer and credit at subsidized rates. Another disappointment has been the closure of many of the most remote depots, which proved to be unprofitable in a competitive environment.

Next we turn to macroeconomic policies. In CFNPP Working Paper No. 18, *Aid and the Dutch Disease: Macroeconomic Management When Everybody Loves You*, Stephen Younger addresses a peculiar issue that is likely to affect African countries that undertake serious and sustained programs of stabilization and structural adjustment, including Ghana. Such countries often attract significant new inflows of capital from donor countries and international institutions (usually only two or three years after the reforms begin, however). While apparently beneficial, those flows can work at a cross-purpose with other goals of the policy reforms. In particular, abundant foreign exchange can force an appreciation of the real exchange rate (often through domestic inflation rather than a nominal appreciation), thus harming a group that is central to the long-run success of structural reforms: exporters. In addition, because the government is almost always the recipient of these loans, it can crowd out the private sector if it uses receipts from the loans to increase its demand for domestic goods and services. In Ghana, the effect has been even more nefarious, because the government has attempted to use tight monetary policy to offset its own increase in donor-financed demand. Thus, the government has crowded out private investment rather than increasing consumption.

These unexpected (and surely unintended) consequences of donor support for structural adjustment programs are avoidable if the government manages the capital inflows correctly. In particular, to avoid an appreciation of the real exchange rate, the government should look for ways to offset the extra supply of foreign exchange. Additional demand for foreign exchange could come from the government itself, by acquiring foreign assets (reserves) or by paying off foreign liabilities, or it could come from importers if the government relaxes quantitative import controls or reduces tariff rates. As for demand management, the government can attempt to save by running fiscal surpluses and depositing its savings in the banking system. This saving would make the funds available to private-sector investors (in the form of bank loans).

## 1992 Work Plan

During 1991, we began three new projects that will round out our research in Ghana. First, using data from the Ghana Living Standards Survey, we began work on a model of household production and consumption behavior. When completed, the model will allow us to determine how the changes in relative prices during the last decade (including those that accompanied the key economic reforms) have affected different kinds of households by altering their patterns of production and consumption, as well as their real incomes and the costs of different goods they consume. In 1992, we will link this model to a macroeconomic model that determines how macroeconomic policies have affected relative prices. Thus, we will understand some of the indirect links between macroeconomic reforms and poverty.

Our second work in progress is a survey of civil service employees who have been laid off (or "redeployed," as the government prefers to say). Many African governments have seriously over-staffed civil services and parastatal enterprises, and Ghana is no exception. As part of its general attempt to improve public finances, the government of Ghana has redeployed a considerable number of public employees, most of whom were low-skilled laborers with low salaries, which makes them vulnerable to increased poverty after being redeployed. Conscious of this risk, we decided to survey a sample of redeployed workers to determine the impact of redeployment on their earnings and economic status. In collaboration with Fudtech Consult of Accra, we began testing a pilot survey in February, and we sent a revised survey to the field in May. While we plan to interview only 600 redeployees, the work has proceeded slowly because many redeployees have migrated since they were laid off and are not always easy to find. Nevertheless, we expect to complete both the surveys and the data entry in Accra by the end of 1991. We should have our first descriptive results prepared early in 1992.

Finally, work began on a project that will determine the incidence of various taxes in Ghana, with special emphasis on the burden that poor households bear in financing the public sector. The government of Ghana has increased its tax revenues substantially as part of the ERP, thus eliminating the fiscal deficit. While this is a sound macroeconomic policy, some analysts are concerned that the burden of these extra taxes may fall heavily on the poor. We will estimate the tax payments of the households in Living Standards Survey, for income taxes, sales taxes, excise taxes, and export taxes on cocoa. This estimate will allow us to determine "who pays the taxes" in Ghana, especially how progressive or regressive the different taxes are that the government has used to balance its budget.

## Training and Collaboration

CFNPP continues to work extensively with Fudtech Consult, a Ghanaian agricultural consulting firm. An important proportion of our work on food security uses surveys of farmers and traders that CFNPP and Fudtech designed together. After Harold Alderman initially trained the consultant in survey techniques, Fudtech carried out the survey and data entry. Then Fudtech helped the CFNPP staff clean the data when the survey was completed. In 1991, CFNPP again teamed with Fudtech to design and administer our survey of redeployed civil servants. As 1991 ends, Fudtech is completing the data entry for this second survey and will continue to work on cleaning the data in the months ahead.

In 1991, CFNPP also signed a subcontract with Charles Jebuni and Wayo Seini of the University of Ghana and ISSER to carry out a study of the marketing and use of agricultural inputs in Ghana. Jebuni and Seini carried out the Ghana field work on their own, and Jebuni visited CFNPP's offices in Washington, DC, during December. During his stay, he worked with Stephen Younger on household-level data from the Living Standards Survey and analyzed patterns of input use across different types of households.

## GUINEA

### Activities and Results to Date

The Guinea case study focuses specifically on household-level data to analyze welfare and living standards in the context of the country's adjustment program. To this end, CFNPP's efforts in Guinea have centered on the collection and analysis of otherwise non-existent household-level survey data from Conakry.

CFNPP/ENCOMEC (Enquête de Consommation Auprès des Ménages à Conakry) coordinated and locally ran the survey. This working unit was supervised by Carlo del Ninno until June 1991, and since then by Bradford Mills. Successful completion of one year of data collection, coupled with the acknowledged need to better understand household welfare and behavior during a period of rapid economic change, led to an agreement to perform a second year of data collection commencing in May 1991. We have slightly modified the questionnaire and the sampling frame.

A basic picture of the typical Conakry household already emerges from our preliminary examination of the data. Females head only 7.2 percent of all households. The migration pattern shows that 46 percent of the population in Conakry comes from other regions. There is also an indication of an increase in the rate of migration, because about one-half of the migrants came to Conakry after 1980 and one-third after 1985.

Initial examination of employment data reveals a structural change in the economy. Whereas in 1983 and 1982 only about 62 percent of all new jobs were in the private sector, by 1988 and 1989 the share of new private-sector jobs was on the order of 90 percent, reflecting a scaling down of the public sector. Unemployment remained high over the survey period, however, at 12.3 percent. This figure does not include the large number of people who were nonparticipants in the wage labor market. Among men, the most important stated reason for not searching for a job was study (74.11 percent were students or apprentices); among women, homemaking was the most commonly cited reason for not participating in the labor market (72.23 percent).

Among the employed, initial analysis reveals large differences in wage rates between men and women per occupational category. For example, the average hourly wage for men is GF 643 for administrative jobs, whereas for women it is GF 364. As we continue, we will use a multivariate analysis to disaggregate occupational categories and control for human capital endowments in order to determine whether observed wage differences reflect actual gender discrimination.

Time allocation data show that men are much more likely than women to engage in market-oriented activity (wage and self-employment) and that, among participants, the average weekly labor supply of men exceeds that of women (49 hours versus 37 hours). This difference, however, is largely due to the competing claim of domestic labor on women's time, especially among mothers of young children. The analysis of anthropometric data shows a higher incidence of chronic rather than acute malnutrition. Stunting occurs in more than 16 percent of preschool children and wasting in more than 10 percent. Further analysis will help to explain the reasons for and determinants of these patterns.

Survey findings dovetail nicely into the second component of CFNPP's work on Guinea: analysis of how macroeconomic policy will affect the household-level outcome. In the forthcoming Monograph, *Economic Reform in Guinea: Adjusting for the Past*, Jehan Arulpragasam and David Sahn present the macroeconomic story as they trace the evolution of the Guinean economy from independence, through crisis, to reform.

The onset of economic crisis in Guinea, unlike in many other sub-Saharan countries, had little to do with exogenous factors and was primarily attributable to the policy failures of the First Republic. Guinea stood out also with regard to the severity of its economic distortions: the official monetized economy had virtually shut down before reform started in 1985. Guinea's case, moreover, is different with respect to the breadth of the reform program and the speed at which it was undertaken. Within a year the exchange rate was dramatically devalued. In that same year banking was privatized and a new currency was issued; credit has since been redirected, on net, to the private sector. Parastatals were shut down and civil servants were laid off. The government undertook budgetary and tax reform while instituting a public investment program.

In agriculture, the liberalization of producer prices and domestic marketing increased incentives to farmers. The nominal protection coefficient for cash crops such as coffee increased markedly with price adjustment, as did that of the main food crop, rice. At first production and exports responded strongly. In addressing the important repercussions of liberalization on the consumer market for rice, the study also points to positive effects of the liberalization of imports and domestic marketing for consumers in both urban and rural areas. Eliminating a subsidized rice ration system and liberalizing exchange and rice markets have actually increased the availability and decreased the price of rice relative to the c.i.f. price.

Despite rapid reforms and initial successes, however, the economy's speed at responding to the adjustment package has since slowed. Agricultural export growth has not lived up to expectations, and tax revenue from the enclave mining sector and from foreign aid continue to support the fiscal and foreign exchange budget.

*Adjusting for the Past* points to some current constraints on growth. Agricultural production is stunted by the lack of rural credit markets, by high transport costs, and by the non-existence or inaccessibility of agricultural technology and inputs. Banking and credit, in turn, are constrained by the lack of functioning legal structures that assign and enforce creditors' rights. The public investment program is undermined by a lack of investment planning expertise and management skill. Tax yields remain low as a result of weaknesses in the information, evaluation, and enforcement capabilities of the civil service. The study concludes that the agenda for future reform in Guinea will have to increasingly focus on the slow rebuilding of the nation's legal, institutional, infrastructural, and human capital stocks – all of which are fundamental to growth.

### 1992 Work Plan

Planned activities for 1992 include completing data collection and continuing and intensifying the analysis of survey data. The initial comprehensive report on the first year of data will be ready by March. This paper will outline and analyze the poverty profile and characteristics of the welfare of households in Conakry.

As soon as data for the second year are available, we will be able to compare the level of welfare and changes in the living standards of households between the two periods and across families.

### Training and Collaboration

During the first two years, ENCOMEC, a unit set up by CFNPP to administer the household data survey, proved to be well-trained and competent. ENCOMEC will serve as the basis for design and implementation of the surveillance system.

Several Guineans will be involved in analyzing the survey data, both in Conakry and in Washington, DC. They will add another dimension to the training received by the Guinean counterparts of the Ministry of Health and the Ministry of Plan and International Cooperation.

## MADAGASCAR

### Activities and Results to Date

During 1991 there were four major activities of the Cornell team studying the effects of structural adjustment policies on lower-income groups in Madagascar. First, using the Social Accounting Matrix (SAM) constructed during 1990, the team analyzed growth linkages in Malagasy agriculture as background for the World Bank's Agricultural Sector Memorandum for Madagascar. The study explored the linkage effects of alternative investment strategies in rice and export crop production.

Second, we completed two surveys in early 1991 and began the subsequent analysis. One was a survey of 400 export crop producers on Madagascar's east coast; the other was a survey of 800 rice farmers.

Third, we constructed a Computable General Equilibrium (CGE) model of Madagascar's economy during 1991 and ran initial simulations. We also completed documentation of the basic model.

CFNPP forthcoming working paper, *Agricultural Growth Linkages in Madagascar*, by Paul Dorosh, Steven Haggblade et al., reports the growth linkage analysis. The authors used the SAM to show that the value-added/output multipliers (the amount of value added generated from a one-unit increase in output by a given sector) were similar for both investments in production of coffee and rice. A 1 FMG increase in output generates about 2 FMG in GDP as farmers spend their additional agricultural incomes on other goods in the economy. Consumption and savings linkages account for most of the multiplier effects since neither coffee nor paddy production involves significant use of domestic inputs with elastic supply. Investment in rehabilitation of small irrigated rice perimeters appears to be the better option though, since increase in output per unit of investment is higher for rice (4.7) than for coffee plantation rehabilitation (3.2). The dominance of consumption and of savings linkages suggests the need for a greater effort to be placed on collecting data on rural household expenditures so that these demand-side multipliers may be more accurately assessed.

Results of the export crop survey showed that few farmers use fertilizer or other purchased inputs, yet only 12 percent of farmers considered the lack of funds to purchase inputs to be an important constraint on coffee production. The survey reported no clear trend in production of coffee, cloves, or litchis. The lack of supply response is not surprising given real price trends during the 1980s. From 1982 to 1985, producer prices (set by the government) for coffee were on average 36 percent lower in real terms than in the 1976-1981 period. Official prices were raised in 1986 and 1987 to approximately the level of real prices in the late 1970s, but liberalization of export crop markets in 1988 coincided with a sharp decline in world coffee prices. As a result and despite lower export taxes, survey results showed that average prices received by coffee farmers were 25 percent lower in real terms than the average during 1976-1981.

World prices for cloves fell 76 percent in dollar terms between 1983 and 1989, but Madagascar's exchange rate devaluations helped limit the decline in real domestic producer prices to only 36 percent in the same period. Despite market liberalization, high export taxes remain, and producer prices were still 75 percent below border prices in 1989.

Monitoring real prices and farmer incomes using the results from ongoing household surveys would be an important input into policy choices regarding export taxes. In particular, the relative price of export crops to rice is a major determinant of welfare for these export-crop producing households. Net rice purchases equaled 36 percent of total rice consumption for the sample as a whole.

As reported in *Constraints on Rice Production in Madagascar: The Farmers' Perspective*, a forthcoming CFNPP working paper by René Bernier and Paul Dorosh, data from the rice survey showed only small increases in rice production in recent years. Reported production by small farmers (those cultivating less than 1.5 hectares of their own land) was 2 percent lower in 1990 than in 1988, mainly a result of lower output from non-irrigated rice. Total production of irrigated rice by all farmers was 4 percent higher in 1990 than in 1988. Lack of inputs was cited as an important constraint on production by 59 percent of farmers with declining production, but by only 39 percent of farmers with increasing production. Chemical fertilizers were used by only 41 percent of small farmers and 44 percent of large farmers. In this survey of farmers in major rice-producing zones, only 46 percent of small farmers and 68 percent of large farmers were net sellers of rice, despite large increases in real rice prices in the mid-1980s. As a group, small farmers purchased 13 percent of the 767 kilograms of rice consumed per household, while large farmers' sales equaled 22 percent of their rice consumption (1,045 kilograms of rice consumption per household).

### 1992 Work Plan

Work in the first five months of 1992 will focus on analyzing structural adjustment policies and their impacts on various household groups using the CGE model. We also plan further analysis of the rice survey data.

### Training and Collaboration

Mainly because of an unstable political situation in Madagascar, the scheduled visit of two Malagasy counterparts from the Ministry of Plan to work on the CGE model did not take place this year. The remaining three month-long training and collaboration visits by Malagasy counterparts to CFNPP in Washington, DC, are now scheduled for 1992.

Linkages work involved collaboration of three Malagasy counterparts (one each from the Banque des Données de l'Etat, the Ministry of Plan, and the Ministry of Agriculture) who visited CFNPP in Washington, DC, for three weeks in May 1991. These counterparts participated in the specification of the model and the analysis, and they wrote a user's manual for the model.

In November, a Malagasy USAID economist worked with the Cornell team in Washington, DC, and received training in the use of the CGE model for Madagascar. Finally, both rice and export crops were surveyed with the collaboration of Malagasy consultants.

## MALAWI

### Activities and Results to Date

During the past year, the Malawi project concentrated on building an econometric model to examine the effect of alternative policies on growth and related macroeconomic and sectoral outcomes. The model also examined income distribution. The results of these efforts to construct a model to explore the counterfactual are found in CFNPP Working Paper No. 13, *An Econometric Model for Malawi: Measuring the Effects of External Shocks and Policies*, by Yves Van Frausum and David E. Sahn.

The prototype model is basically composed of five blocks (plus a few miscellaneous equations): the production block, balance-of-payment (BOP) block, government-finance block, prices block, and monetary-sector block. Within each block is a series of stochastic equations and/or identities.

The model was used to run a series of counterfactual simulations that represented either key policy decisions relating to the adjustment program or external shocks to which Malawi was trying to adjust. Summarizing the results of the policy analysis, Van Frausum and Sahn found that Malawi has indeed been hurt badly by the transport shock that buffeted the economy. The bottleneck cost Malawi, on the average, 1.5 percent in annual GDP growth during the 1980s. But while these external conditions have hurt, the response of the donor community has greatly mitigated the negative effects of external shocks. Much can be said for donors holding interest rates for loans to Malawi below market rates, although the model suggests some less promising effects of external borrowing in general. Specifically, the short-term effects of restricting imports to meet a lower current deficit target would adversely affect the levels of output. However, medium-term results indicate that the relative gap between the actual and counterfactual GDP levels stabilizes rapidly. This finding implies that long-term growth rates are not appreciably affected because, among other things, debt servicing will be lower in the future and thus more foreign exchange will be available for financing imports. What would invalidate our conclusion is some evidence that BOP support leads the economy to adjust structurally by speeding up technical change, management decisionmaking capability, and so forth.

Regarding the role of setting nominal prices for agricultural products, the authors found that the taxation of smallholder crops has reduced export earnings. This reduction has, in turn, filtered through the economy to reduce value added in the construction sector, industrial output (through dampening imports), and GDP. But perhaps of greater interest is that not only would GDP have been up 4.4 percent, on average, during the course of the 1980s if parity pricing cum removal of fertilizer subsidies had been adopted, but the smallholders' income share (net of depreciation) would have been 32.6 percent in 1980 to 1983 rather than the observed 28.1 percent.

Finally, higher nominal wages would result in lower output in the estate and smallholder export-crop sector. The deleterious effect of higher wages on output, furthermore, filters through the economy to reduce government revenues, savings, and expenditures. This observation, of course, points to the fact that it is important that any increases in the real minimum wage reflect productivity gains in order to avoid any medium- and long-term negative effects on output.

**1992 Work Plan**

With the completion of the prototype model and policy simulations, the work in Malawi is formally complete. However, our initial attempt at counterfactual analysis represents a starting point for using a model (despite the model's limitations) to gain insight into the pathways and linkages between policy, and economic growth and income distribution. In addition, the process of developing and using a model highlights deficiencies in data, which we hope will create a demand for data that future surveys will meet. For example, this exercise identified the need for developing and updating input-output relations in the economy, as well as generating household-level data that will allow researchers to better define functional groups of households and their behavior.

Much of the work on developing the Malawi model was performed in consultation with the Department of Economic Development and Planning of the Government of Malawi. Their cooperation in the construction of the model was important, as the research effort involved both Yves Van Frausum working in the Department providing technical assistance and training for one year, and a series of visits by David Sahn to assist in developing the model.

## MOZAMBIQUE

### Activities and Results to Date

Research in Mozambique focused on the effects that economic reforms in marketing, exchange rate, and trade policy have on urban areas. The research has a number of components, several of which have been completed and have generated some preliminary findings.

The first phase of the project was devoted to a review of the urban food ration system that exists in Maputo and Beira, the two largest cities in Mozambique. This review culminated in preparation of the paper, "Food Subsidies and Exchange Rate Distortions," by Harold Alderman, David E. Sahn, and Jehan Arulpragasam. Their basic findings suggest that the food rationing system, which was introduced in response to acute food shortages induced by civil war, drought, and policies favoring state farms and restricted private trade, is no longer serving the original purpose for which it was intended and is not an effective way of alleviating poverty and food insecurity. Initially, the primary function of the rationing system was to ensure the equitable distribution of a limited food supply. However, rationing has evolved into an income-support program that appears not to be serving the poorest segments of the population. Among the reasons that the poor appear not to be served well are that *deslocados* – those who have recently moved to Maputo to escape the war – are not being added to the program in proportion to their arrivals. In addition, the purchase requirement probably limits access to the system by poor people who have uncertain and irregular income. Furthermore, ration shops often run out of supplies early in the month, probably because a considerable amount of food that was officially destined for ration card holders has been diverted to the parallel market.

Furthermore, the ration system is financed through exchange rate distortions, which contribute to marketing inefficiencies and rent seeking. This implicit subsidy primarily benefits parastatals that would otherwise be obsolete and uncompetitive with private-sector agents that operate in parallel markets. In fact, parallel markets are becoming increasingly important, as the official food system becomes less important for the food it distributes and more important for the rents it distributes to the nonpoor. Estimates indicate that if marketing were liberalized and if private grain trade were sanctioned, parallel market prices would fall as the result of high costs that presently exist for illegal importers. In particular, illegal imports through South Africa and Swaziland go through a long marketing chain, often in small quantities, resulting in diseconomies of scale. Furthermore, transaction costs are high, including those associated with gaining foreign exchange on the parallel market, and the risk premium paid for illegal importing using dangerous roads.

A further implication of this inefficient and outdated system of food ration shops is that the Treasury is a major loser, along with the poor. Since food aid donors provide most of the food in the ration system, pricing the food at below border prices to the marketing parastatals reduces the Treasury's earnings. Facts indicate that the revenue officially due to the Treasury from food aid imports, after considering all marketing costs charged by parastatals, represents only 35 percent of the c.i.f. value. In practice, the amount actually received is even less than this expected 35 percent due to delinquencies in payment from the parastatals handling the food. Furthermore, because the marketing parastatals are inefficient, the price paid when the food reaches the households is close to import parity. Thus, consumers receive no explicit subsidy at all; the value of the implicit subsidy from the exchange rate distortions enters the coffers of rent-seeking, state-run enterprises engaged in marketing.

**1992 Work Plan**

While the first phase of the research yielded some important findings, it also left a number of questions unanswered on how to transform the obsolete ration system into a poverty alleviation program. Furthermore, various larger questions exist about the implications of food market liberalization, as well as related reforms of exchange rate and trade policies.

To answer these questions, we concentrated the second phase of the research on a survey of household consumption, expenditure, and living standards. The survey initially covered some 1,800 households in Maputo. This survey will be used to gain a better understanding of economic and social determinants of household food security, including a better knowledge of household consumption behavior with respect to changes in the incomes of, and prices faced by, the poor. Furthermore, the analysis will focus on understanding how the poor cope in a most hostile economic environment and how they are influenced by government policies. The analysis will also address a number of other micro issues, such as an examination of the determinants of health and nutritional status, the effectiveness of the health system in the delivery of services, and so forth.

Complementary to the above activities will be the construction of a model that examines how prices are determined in the parallel market. We will use the survey to map changes in import quotas, foreign exchange allocation mechanisms, exchange rates, tariffs, and so forth as we compare them to actual prices and subsequently to household welfare.

**Training and Collaboration**

We are working in Mozambique in collaboration with the Food Security Department of the Ministry of Commerce. We have trained local counterparts from the Ministry and the private sector to conduct the survey and the related data analysis. We have hired a Mozambican, Salamao Cumbane Duma, to be the survey manager who will be in charge of day-to-day operations. He will work under the close supervision of CFNPP and Ministry staff and he will assume major responsibility for carrying out the survey. Our plans also call for at least three persons from the Ministry to visit CFNPP for a few months in 1992 to be trained in the use of computers and economic analyses. Furthermore, CFNPP staff members are working regularly in Maputo so that a significant share of all data analysis is done in Mozambique.

**NIGER**

**Activities and Results to Date**

During 1991 there were three major activities of the Cornell team in the Niger project. First, CFNPP Monograph No. 11, *Structural Adjustment and Stabilization in Niger: Macroeconomic Consequences and Social Adjustment*, by Cathy Jabara was completed and published. This document reviewed the structural adjustment policies adopted in Niger and provided an initial assessment of the effects of these policies on lower-income groups.

Second, we constructed a Social Accounting Matrix (SAM). This consistent data base shows income and expenditure flows for various household groups, as well as inputs and outputs for the productive activities in the economy. The SAM was based on national accounts data, studies on various sectors of the economy, and results from several small household surveys. Details of the construction of the SAM were included in Working Paper No. 18, *A Social Accounting Matrix for Niger: Methodology and Results*, by Paul Dorosh and B. Essama Nssah.

Third, we constructed a computable general equilibrium (CGE) model of Niger's economy and began an initial policy analysis. The model, based on the SAM, will permit an analysis of impacts of various structural adjustment policies and external shocks on the level and distribution of incomes in Niger.

The findings suggest that in the 1980s the Nigérien economy underwent several adverse shocks that reduced real incomes and wealth. After a large surge in uranium revenues and foreign capital inflows in the late 1970s, uranium revenues fell 22 percent in real terms between 1981 and 1983, and Niger's ability to borrow in a market of increasingly tight world credit diminished as world uranium prices dropped. In response, the Niger government cut back its investment expenditures by 67 percent between 1981 and 1984. It began stabilization and structural adjustment programs in 1983 with the IMF and later with the World Bank. Government support for parastatals was greatly reduced, and both agricultural and industrial product markets were liberalized. Two other large adverse shocks struck the Nigérien economy at the same time. First, a severe drought in 1984 reduced cattle holdings by 59 percent, so that per capita cattle holdings in 1986 were 78 percent below those in 1972. Second, adjustment policies in Nigeria, Niger's neighbor to the south, resulted in decreased demand for Niger's exports and a 50 percent real appreciation of the CFA franc relative to the Nigerian naira (at parallel market rates) between 1985 and 1988. Overall economic performance in the 1980s was disheartening: real GDP per capita fell by 10.4 percent between 1980 and 1989.

Niger's difficulties in adjusting to adverse external shocks highlighted the limited policy tools available to the government. As a member of the CFA franc zone, Niger did not have the option to devalue its nominal exchange rate to reduce external imbalances. Instead the burden of adjustment fell to expenditure reduction (particularly cuts in government investment). Since previous efforts at market intervention had only limited effects, especially in rural coarse grain markets, liberalization of these markets had negligible impacts on the vast majority of Niger's rural population. Drought and economic conditions in Nigeria had much more impact on rural incomes. Finally, amid an effort to reduce government deficits, there was little scope for easing the difficulties of adjustment through government expenditures. However, government spending on personnel was protected through the adjustment process. Real expenditures on wages and salaries rose by 76 percent between 1981 and 1989, and the number of government employees increased by 36.7 percent. How best to increase government revenues through domestic taxation has thus become a major policy issue.

Work on the SAM highlighted major data gaps in Niger. Although a few small-scale, rural household surveys exist, countrywide data on income and expenditure patterns for rural households are still lacking. These data are especially important given the uncertainty of the estimates of unrecorded trade across Niger's border with Nigeria, because accurate income and expenditure data would provide a means of indirectly assessing the magnitudes of this trade. Nevertheless, the SAM did incorporate adjusted estimates of Niger's unrecorded trade on the basis of a number of sectoral studies. Estimates from the SAM indicate that per capita urban income is approximately three times per capita rural income in Niger.

### 1992 Work Plan

The Niger project is due to be completed by February 1992. Work in January and February will focus on policy simulations using the CGE model and on production of a final report for the project.

### Training and Collaboration

Considerable effort was put into training in 1991. Dr. Essama Nssah gave several seminars at the Ministry of Plan as part of a joint effort with a United Nations Development Programme (UNDP) project, and he produced three training documents for these sessions. The first, "A Probe into the Economy of Niger: An Input-Output Analysis," describes techniques of sectoral linkage analysis. The second paper, "Destabilization and Adjustment in a Small, Open, Developing Country: A Framework for Analysis," presents a theoretical framework for macroeconomic analysis. The third paper, "Introduction au Systême de Modélisation GAMS," is a tutorial on the programming language GAMS, which is a software package useful for economic analysis with CGE and other models.

In addition, two Nigérien counterparts, one from the Ministry and the other a faculty member from the University of Niamey, took part in a three-week training session on the Niger SAM and the CGE model in Washington, DC. This in-depth training was designed to ensure that Cornell's modeling work is understood and can be extended by Nigérien counterparts. We are planning a second training session on the CGE model for two more counterparts in mid-1992.

## TANZANIA

### Activities and Results to Date

Two major activities took most of our time in Tanzania during the past year. First, we completed a monograph (*Economic Policy and Household Welfare During Crisis and Adjustment in Tanzania*, by Alexander H. Sarris and Rogier van den Brink) that thoroughly reviews existing information on the Tanzanian economy in order to glean new insights into the genesis of the economic crisis and the efficacy and appropriateness of the evolving adjustment programs. Second, we designed, organized, and conducted three surveys in Tanzania. The first survey focused on rural and urban households, the second on grain traders, and the third on small-scale urban enterprises.

The review of past economic developments in Tanzania revealed that the external shocks, which hit the Tanzanian economy in the 1970s and which the government and some sympathetic analysts largely blamed on the Tanzanian crisis of the late 1970s and early 1980s, were only partly responsible for the decline of the economy. Nationalizations, the state's monopolization of agricultural and urban markets, production of non-agricultural goods, and centralized control of foreign trade led to both a stifling of the economy and a diversion of much private economic activity to parallel markets. The government ran up large domestic and external deficits that it financed largely through external aid and the creation of domestic money. The resistance to devaluation in the presence of accelerating inflation led to capital flight, diversion to parallel markets, and acrimonious conflicts with the International Monetary Fund (IMF), which refused to sanction the government's own early stabilization programs. However, this resistance dried up most sources of external funds and finally forced the government to accept successive stabilization and structural adjustment programs starting in 1986.

Apart from a detailed overview of the economy and the past official trends, the monograph undertakes an analysis of the hidden underground economy of Tanzania on the basis of two different approaches. It shows that the Tanzanian economy is large, accounting for between 30 and 50 percent of official GDP in real terms. It also shows that the total economy (official and parallel) has grown more than official statistics reveal and that, except for the severe crisis years of 1973, 1979, 1982-1983, and 1986, Tanzania has consistently exhibited positive growth rates.

A detailed analysis of agriculture, the most important sector in Tanzania, reveals that the trends exhibited by official agricultural statistics must be seriously questioned. In particular our analysis shows that the large increase in total and per capita food production during 1973-1987, as reported by official sources, is not warranted if one refers to other recent surveys. Examination of official and open-market prices of agricultural staples shows that, over the crisis period, open market prices rose much above official prices. In turn, this trend explains the sharp decline in official marketings over the same period. Comparison of agricultural structures and production patterns between 1971/72 and 1986/87 reveals that the distribution of farm size and the structure of agricultural production have not changed very much during the severe crisis, despite the severe dislocations caused by the forced villagization program of the early 1970s.

A detailed examination of the decline, which was previously hypothesized, in household incomes during 1969-1983 reveals that most of the decline is more apparent than real and can be explained by the increasing tendency of Tanzanian households to divert their income activities from official and "visible" sources to unofficial and, hence, unobservable ones. A model of the evolution of household incomes is posited on the basis of structure of incomes and consumption. The model applies to six representative household classes — three for rural and three for urban areas. Real incomes of low-income households in both rural and urban areas have not changed very much over the periods of both crisis and adjustment in Tanzania. On the other hand, people who seem to have experienced the largest income declines during the crisis and subsequent adjustment are urban middle-income households. High-income rural and urban households have profited somewhat from the crisis because of their large portions of income from parallel business activities. However, these households seem to have experienced a decline in real incomes during the adjustment period.

The initial results of the analysis of the monograph shaped the type of surveys planned and conducted in the second part of 1991. On the one hand, the objective of the surveys is to provide enough "before-after" information to understand the nature of adjustment and the impact of policy changes on the behavior of individual producing and consuming units. On the other hand, the objective is to elicit enough information on the structure of households and enterprises to facilitate the construction of a counterfactual model of the Tanzanian economy to be used in further analyzing policy issues. We have now completed the field work for all three surveys mentioned earlier. The surveys covered about 1,000 rural and urban households, about 80 grain traders, and 500 urban enterprises; all three surveys are representative of the nation.

## 1992 Work Plan

We plan two types of activities for the final phase of the project. First, we will analyze the surveys, which were conducted in 1991, and will write several papers concerning the results. It must be noted that since 1983, there have been no published surveys of households or enterprises in Tanzania. Hence, the results should shed considerable light on questions concerning the before- and after-adjustment debate.

The second major activity envisioned for 1992 concerns the construction of a counterfactual model for Tanzania. The idea of that model will be to link the macro-adjustment issues with the micro-household information, both from the surveys done under the auspices of the project and from previous information.

## Training and Collaboration

Since the beginning of the project, the CFNPP team has collaborated closely with senior and junior researchers from the Economic Research Bureau of the University of Dar es Salaam and the University's Department of Economics. During the first phase of the project, which ended in June 1991, three local research teams, each under direction of a local senior researcher wrote several papers (a total of six) on various aspects of the Tanzanian economy and the adjustment program. During the second phase involving the surveys, two teams of local researchers have been responsible for the field work as well as the data entry and the first tabulation of results. The teams have engaged approximately 10 to 15 university students and junior staff members. Many have been trained in survey techniques in the field and in data manipulation using computers. The project team has given two local seminars on the methods and initial results of the analysis. Cornell team members have spent extensive amounts of time training and working closely with various Tanzanian researchers during the surveys and have participated actively in some field work.

# ZAIRE

## Activities and Results to Date

We have completed several outputs during the period of the study through December 1991. They include a background paper that reviews both the evolution of Zaire's economic crisis and the nature and effectiveness of the policy response. In addition, we prepared several other reports that have a broader objective of being inputs into construction of a Social Accounting Matrix (SAM). Included were a report on transportation and marketing costs, an analysis of consumption in Kinshasa and urban Bandundu, an analysis of production in rural Bandundu, an analysis of the labor markets, and a preliminary input and output table. A brief description of these outputs follows.

The draft of the background paper, *Stabilization and Structural Adjustment in Zaire Since 1983*, by wa Bilenga Tshishimbi and Peter Glick indicates that the structure of the Zairian economy has not changed dramatically over the past 30 years. The mining sector is still important in Zaire, with the copper and cobalt contribution being by far the largest, followed by diamond production.

Agriculture is still the most promising source for future development in Zaire. The potential in this area remains largely unexploited. Aside from currently exported crops such as coffee, cocoa, tea, and rubber, Zaire could diversify its agriculture by expanding the variety of its crops through adoption of new cultures, including those from moderate climates. Zaire has essentially a land-surplus economy with the result that labor input rather than land determines output on traditional farms. Only in some areas has population density made access to land for cultivation a problem. Two-thirds of the country's people secure their livelihood directly or indirectly through agriculture, and most of the poor live in rural areas.

The two decades (1960-1980) following independence in Zaire were characterized by inappropriate agricultural policies and sectoral decline. This pattern is typical of many developing countries, but the case of Zaire stands out because of the tremendous unrealized potential for agricultural development owing to the country's favorable soil and climatic conditions and abundance of land.

Underlying many, if not most, of the problems of agriculture in Zaire is the paucity of resources made available to the agricultural sector. Government pronouncements on the importance of agriculture to national development such as *l'agriculture est désormais la priorités des priorités* (agriculture is henceforth a top priority) have not been matched by improved budgetary allocations to the sector.

Following the reforms of 1983-1986, agricultural reform has been limited, at least in the Bandundu region, which was surveyed. However, the effect of the removal of price and marketing controls during 1983-1986 was strongly positive: real producer prices increased substantially for all four major crops. This rise provided stronger incentives for increased production.

A good deal of evidence, much of it qualitative, suggests that a substantial portion of economic activity in Zaire is not captured by the official statistics. Activities in the "unrecorded" economy, also known as the "underground" or "parallel" economy, are, to varying degrees, illicit or illegal. They comprise production activities, particularly but not exclusively in the rural and urban informal sectors; commercial activities, including smuggling; and illicit transfers in the form of tribute, bribes, and theft.

Cathy Jabara prepared the report, "Zaire: Transport and Marketing Costs for Bandundu Subsector Model," which analyzed the transport and marketing costs. In reviewing all the relevant studies on the transport and wholesale margins for agricultural products produced in Bandundu and sold in Kinshasa, the report concluded, inter alia, that the wholesale margins constituted a major portion of the wholesale prices between Bandundu and Kinshasa. However, the margins were not very responsive to the costs of fuel, because fuel costs played a marginal role in determining the overall transport costs.

Mohamed Ben-Senia has produced an analytical report, "Agricultural Production, Poverty, and Consumption in Rural Bandundu," that discusses production of agricultural commodities in rural Bandundu and their exportation to Kinshasa. Results indicate that agriculture in Bandundu, as in all of Zaire, comprises a large traditional sector and a relatively small modern livestock and agroindustrial sector. The former is highly diversified and covers food crops such as manioc, maize, and peanuts; industrial and export crops such as coffee, tea, and tobacco; and animal husbandry and aquaculture activities. Off-farm traditional activities include hunting; fishing; gathering of palm nuts, insects, mushrooms, and wood; and processing activities. The modern sector is less diversified. It includes producing animals (mainly beef), producing oil, and cutting and processing palm and timber.

The traditional farmers use archaic production technologies. Their main input is labor. Other inputs include hand tools and implements, plus self-produced seeds. There is no private land ownership. In the modern sector, factors of production are highly diversified, including managerial, technical, skilled, and unskilled categories. They also include capital, such as buildings and road infrastructure, machinery, and equipment. Land is obtained in the form of concessions, with right of use but without any buying or selling price or any rental fee.

Production in Bandundu, particularly in the traditional sector, is mainly geared for autoconsumption. Autoconsumption and final sales within the Bandundu region account for nearly three-quarters of total output, illustrating the autarkic nature of agricultural production in Bandundu, both in the product and in the factor markets. However, with the presence of an asphalt road between Bandundu and Kinshasa, Bandundu is now the largest supplier of food commodities to Kinshasa, the two Kasai, Shaba, and the neighboring countries of Angola and the Congo.

Preliminary analysis of the expenditure pattern of Bandundu households reveals that food is 72 percent of total expenditures. This figure is consistent, not only with the low standard of life, but also it matches the analysis of the Bandundu urban households carried out by Blane Lewis and reported below.

Blane Lewis' paper, "Household Expenditure Behavior in Kinshasa and Bandundu Town," examines consumption behavior in both towns. He analyzes the expenditure behavior among households in the two sets of urban areas of the region as well as the structure of the household expenditure on goods and services. Finally, the report estimates the consumption parameters that will be useful in construction of a SAM and any resulting economic modeling. Among the salient findings are the following.

First, when we compare Kinshasa to the Bandundu urban areas, we note that the Kinshasa households are significantly better off than their counterparts in

Bandundu. Because the income data in the Kinshasa 1985/86 survey were not available, the Lewis study used total household expenditure as a proxy for household income. The study found that "the Kinshasa annual expenditure level exceeded the latter's by over a factor of four." This may also be true of Kinshasa – the rest of the country comparison. The reason may be because Kinshasa households are employed in the manufacturing and services industries, where average incomes are relatively high, while households in the rest of the country are employed mostly in agriculture. In addition, Kinshasa households are less likely to be unemployed than Bandundu households or households in the rest of the country.

Second, with respect to the households' behavior in the two regions, Lewis notes that households in both Kinshasa and Bandundu allocate the largest share of their budgets to food – 71.6 percent for Kinshasa and 78.1 percent for Bandundu. The marginal budget share for food and beverage is lower in Kinshasa (32.4 percent) than in Bandundu (74.4 percent). This share results in a lower expenditure elasticity for food and beverage in Kinshasa (0.45) than in Bandundu (0.97), which is consistent with an a priori expectation, given that the former are better off economically than the latter as indicated above.

Hamid Tabatabai's study of poverty in Zaire is in progress. Preliminary reports, however, are available. They consist of a review of literature on poverty in Zaire, a methodology of the concepts of poverty, and a preliminary analysis of poverty in Zaire on the basis of results from the 1985-1986 household survey. The results indicate that Zaire's per capita income (1989) is US$ 240. This revised figure takes into account, inter alia, the very important unrecorded activity that thrives in the Zairian hidden or parallel economy. The corresponding figure previously published was US$ 150. Both figures are low not only in relation to the rest of the developing world but even in comparison with other sub-Saharan countries. It is also obvious that Zaire's position near the bottom of the income ranking is unlikely to change no matter how national accounts are elaborated. Poverty seems to be an extremely serious problem in Zaire, particularly in the urban areas.

The preliminary analysis by Tabatabai indicates that about 60 percent of the Kinshasa population of about 3 million lives below the poverty line. However, the study found that total household expenditure, which is a proxy for household income, was positively associated with the household size and that both figures were negatively associated with the level of expenditure per consumption unit. This conclusion tends to confirm the theory that richer households provide for members of their extended families. The study also found no association between sex of the household head and expenditure per consumption unit; in particular, female-headed households did not appear to be poorer than male-headed ones. The study found that no less than 50 percent of the richest households live in extension areas, which tend to be the least attractive quarters of the city in Kinshasa. Residential areas, nevertheless, have a higher concentration of the richest households than the city as a whole.

Jeff Maton constructed a preliminary input and output (I-O) SAM that was based in part on the national economic accounts published by the Commission

Nationale des Comptes Nationaux and in part on the information provided by a Zairian research team that collaborated with the Cornell project. The SAM structure will show an interregional SAM consisting of three major components or sub-matrices: Kinshasa, Bandundu, and rest of Zaire. When the final reports of production, consumption, labor, and poverty are available, we can finalize the matrix by substituting the actual coefficients for those estimated by Jeff Maton.

## 1992 Work Plan

We expect to complete final reports on the individual studies described above, except for the I-O/SAM module, by the end of this year. The results of the I-O/SAM module will be available in early 1992. An overall report, integrating all the aforementioned studies, is expected at the end of spring 1992. It will focus on presentation of a formal model and on related policy simulations that establish linkages between the macroeconomic policies and the standards of living of the vulnerable population groups.

## Training and Collaboration

A key objective of the Cornell/AID project in Zaire has been to strengthen the domestic research capability of the country. This capability, perhaps more than for any other study within the Africa Economic Project, has been both an achievement and a major challenge to the Zaire study.

The concomitant funding of local research and the close collaboration between the local research group and the Cornell team were designed to contribute to this strengthening. Significant progress was achieved in this area during the first two years of the study. Despite logistical difficulties, the Cornell and local researchers teamed up to share the project design and to plan how to retrieve or collect data needed for the study. Under this collaboration scheme, a substantial portion of the research has, indeed, been carried out by local researchers and research institutions. Five to six college professors from the fields of economics, nutrition, biochemistry, and public health from the University of Kinshasa, as well as a few of their students, took part in the study.

## 3. INTEGRATIVE ANALYSES

A number of activities this year were completed in the synthesis work being done as part of our overall research program. Among the synthesis papers completed was a review, "Gender and Economic Reform in Africa," by David E. Sahn and Lawrence Haddad. This paper asks whether adjustment has had any differential effects on women and whether, conceptually, adjustment is expected to have particularly harmful consequences for women. The results indicate six points of concern.

First, before economic reform began, the living conditions for women were even worse than for the general population. The economic distortions, lack of incentives, and market failures caused and/or aggravated by state controls in the economy impeded growth and created scarcities that had especially harsh effects on the poor and vulnerable, particularly women and children. Second, many reform programs have dealt only peripherally with the fundamental structural distortions extant in the economic and institutional fabric of African countries that discriminate against women. This finding partially reflects a third point: political empowerment of the poor and disenfranchised, of which women represent one important group, has been slow in coming. Fourth, adjustment has focused on reforming markets for credit, inputs, land, food products, foreign exchange, and so forth. In some cases, progress has proven difficult because people who benefited from distortions were effective in protecting their interests. Higher concerns of policymakers over the plight of vulnerable individuals and households have often not been acted upon. Fifth, and on a related matter, a review of consumer food subsidies (both explicit and implicit) in sub-Saharan Africa once again indicates that, with few exceptions, government spending on these programs has not been targeted to the poor and vulnerable, especially women. Sixth, economic reforms have not had widespread deleterious effects on the poor and vulnerable, such as women and children, as mediated through changes in public spending. This lack of change is due to the fact that total expenditures in Africa, both in real terms and as a share of GDP, have not fallen. We found that before reforms, the intrasectoral allocation of health and education spending was incredibly skewed toward secondary and tertiary services in health and education, and was overtly biased against poor households that are headed by women or that have women in key roles as income earners and child-care providers.

Our conclusions are the following. First, it is important not to confuse the process of economic reform with the economic crisis and related distortions that discriminated against women and led to their low status. Second, perceived solutions to improve the plight of or protect women (such as the continuation or expansion of distortionary subsidies) may, in fact, simply promote rent seeking (an activity in which women have had little success). Third, removing various rules and regulations, often enforced by male-dominated parastatals, will present new opportunities for women to become engaged in markets that have long been under state control. Fourth, the government's key elements of reform should be promoting equal opportunity in education; promulgating antidiscrimination laws and rules; and facilitating participation by women in the political process, ownership of assets, and so forth.

A second paper prepared during this year, "Has Policy Reform Hurt the Poor in Africa?" by David E. Sahn reviews the state of knowledge about the effects of adjustment on the poor. He generally concludes that policy reform has not posed a serious and widespread threat to the incomes and living standards of the poor. More specifically, the starting point for the paper was an analysis of the extent and characteristics of poverty. Results showed that, despite the heterogeneity of poor people, they are heavily concentrated in rural areas. Those households with smaller landholdings tend to be more vulnerable, but the growing importance of off-farm incomes limits the usefulness of holding size as a poverty indicator. But of greatest interest to the issue of adjustment, results showed the poor have high subsistence ratios, with the value of home consumption tending to be between one-third and two-thirds of the value of food expenditures. Furthermore, the importance of tradable goods, both in the consumption bundle and as a share of income and expenditure, is considerably less than nontradables. On the income side, these data indicate there is only a limited scope for expenditure-switching policies to raise incomes of the poor in the short term. On the expenditure side, these data suggest that limited real income losses would be felt by net consumers of tradable food products if adjustment raised their price.

The paper goes on to show that, in practice, consumer prices have generally not risen in adjusting countries. In those few cases where liberalization of domestic food markets has raised prices, that rise affected primarily urban consumers. But more typically, the increased efficiency of markets has protected the consumer, while offering the possibility of greater incentives to farmers. With regard to export crops, while producer incentives have been restored in some cases, in others a combination of falling world prices coupled with a reluctance to liberalize export markets has limited the positive income shock that would be expected.

Among the other findings is that consumers and producers had already developed mechanisms to respond to the state's inept and corrupt intervention in markets. These coping mechanisms included resorting to parallel markets and increasing reliance on private-care providers, subsistence agriculture, on-farm storage, and production of local drought-resistant crops. While this finding suggests that the negative effects of adjustment were not extensively felt by the poor, conversely, we examined the question of who were the beneficiaries of distortions, and thus the losers, when the effects were (or in many cases, we hope they will be) reversed. The results suggest that subsidies and rent-seeking opportunities, rarely enjoyed by the poor, benefited the politically powerful urban elite. The shortages of goods and services and the high scarcity prices, coupled with the retarded pace of economic growth that followed from the distortions, harmed the poor.

In general, moving quickly to reform markets and institutions will not further hurt the poor. However, doing so will not always be a prescription for improving their welfare either, especially in the short term. Underdeveloped market infrastructure, including an entrepreneurial class without experience, may initially contribute a vacuum when state control recedes. The evidence seems to point to a robust private-sector response to reform in the areas of commercial and trading activity. It is much more difficult, however, to make the case that adjustment will encourage investment or that it will facilitate technological change, agricultural innovation, and greater access to export markets for smallholders and small-scale manufacturing. This finding suggests a new and vital role of government in terms of collecting and disseminating information, conducting agricultural research, instituting appropriate investment codes and regulatory framework, and developing and maintaining infrastructure with large externalities and social returns.

Using his paper on adjustment and the poor in Africa (just discussed) as a point of departure, David E. Sahn in "Economic Reform in Africa: Are There Similarities with Latin America?" addressed the issue of whether, and how, the process of adjustment in Africa and Latin America has been similar, especially in terms of implications for the poor. The results of this comparative analysis indicate that, unlike most of Latin America where adjustment was synonymous with demand restraint in response to severe account imbalances and debt problems, economic adjustment in Africa has been more closely associated with reforming institutions and reducing distortions in order to reverse the long period of pre-adjustment economic stagnation. Also unlike Latin America where economic adjustment has by and large been undertaken without any significant increase in the infusion of foreign financing, Africa's initial efforts at policy reform have been bolstered by significant increases in official development assistance. Another important difference between Latin America and Africa seems to be the much greater importance of parallel markets in the latter. One implication is that, unlike in Latin America, Africa's poor have not witnessed a decline in their living standards. Furthermore, unlike in Latin America, the possibilities are much more limited for redistributive programs in Africa to compensate for instances where adjustment has a deleterious effect on living standards. African indigenous institutions and personnel to design and deliver services are much less developed than in Latin America. Specifically, while targeted subsidies (such as Colombia's previous or Jamaica's present food stamp program), targeted health care delivery systems (such as in Chile and Costa Rica), and targeted employment schemes (in Peru and Bolivia) may serve as good models, we should not underestimate the challenge in transferring these experiences to Africa.

A final synthesis piece was the paper, "States, Markets, and the Emergence of New Civil Institutions in Rural Africa," by David E. Sahn and Alexander Sarris. This paper takes a historical view of how Africa's political economy has contributed to economic stagnation. While limiting the scope for recovery, the paper begins by showing that market structures that were in place at independence were not perceived by the emergent states as an adequate basis to build a strong economy and to achieve espoused objectives of growth with equity. This perception led to the state's emergence in all aspects of production and marketing. In turn, the nature of the involvement contributed to a virtual collapse of the formal sector of the economy.

In practice, rent seeking and corruption became the clearest manifestation of the interventionist policies of the post-independence governments. These manifestations contributed to economic inefficiencies and technological stagnation, which on balance were not very detrimental to the elite who were the beneficiaries of rationing systems, untargeted subsidies, privileged access to foreign exchange, and so forth. Instead, the poor, especially in rural areas, paid the highest price for state intervention.

As we examine the behavior of the predatory state in Africa, we should not rush to suggest that the unfettered free market contains all the solutions to Africa's developmental disasters. Rather, we must move synchronously to enhance the capacity of the state, recognizing the complementarities, for example, between private and public investment. The purpose of state intervention then must be transformed to facilitate the efficient functioning of private markets and to guard against their exploitation by rent seekers and interest groups. In practice, however, this approach may involve an increase in the size of government in many areas, particularly in agriculture and human resource development.

The most difficult challenge facing both governments and donors in Africa is how to foster and build on indigenous institutions that have evolved mostly in response to local market failures and conditions. Structural adjustment has made only tentative steps in legitimizing and supporting traditional institutions alongside formal ones. This progress has by and large been in response to the recognition that the pre-adjustment era of economic crisis was basically a consequence of forced institutional change, which is now widely recognized to be wrong. It also demonstrated that top down, state-sponsored development cannot succeed at least without strengthening local and civil institutions. Considering the disastrous experience of the past, we see that creating the conditions for speedier evolution of indigenous institutions needs to be paramount on the agenda of both a newly framed government mandate and the international organizations and donors that legitimize and support their action.

In addition to the papers completed this year, a final activity undertaken was preparation of a synthesis volume containing the country case-study background papers that have been discussed in this and the previous progress report. The book, *Economic Crisis and Reform in Africa*, was edited by David E. Sahn and is under review by Cornell University Press. It contains 12 chapters: one for each of the 10 countries included in our research, plus an introductory and a concluding chapter that integrates the findings into a series of salient policy-relevant conclusions. The book focuses on the genesis of Africa's economic crisis and on the adequacy of the response. It explores in some detail the external and domestic factors that precipitated Africa's economic problems, and then it discusses the measures adopted to cope with the problems. The book examines the role of donors and international financial institutions in responding to the economic disequilibrium and then explores the outcomes as measured in terms of macroeconomic and sectoral aggregates. The emphasis is on examining to what extent markets were restored and how markets responded to policies designed to increase their competitiveness and efficiency. Next year's progress report will discuss the nature and findings of the book in greater detail.

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