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AGRICULTURAL POLICY ANALYSIS PROJECT, PHASE II

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EXPORT CROP COMPETITIVENESS: STRATEGIES FOR SUB-SAHARAN AFRICA

July 1990

APAP Technical Report No. 109

Final Report of the African Cash Crop Competitiveness Strategy Study

Prepared for:

U.S. Agency for International Development
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PREFACE

This report is presented to the U.S. Agency for International Development Bureau for Africa (AFR/DP/PAR) in fulfillment of terms of reference for the African Cash Crop Competitiveness Study. The study, part of the Applied Trade Research Agenda, was conducted under a buy-in to the Agricultural Policy Analysis Project II (APAP II).

Results draw heavily on secondary analysis of country and commodity markets supplemented by personal interviews. In preparing the final report and appendices, the authors received research assistance from Colleen Cavanagh, Kathleen Poer, and David Deal. Editorial contribution was from Paula Hirschoff, and assistance was received in typing from Margie Washington and Marsha Strother.

In identification and review of existing studies, numerous people assisted in the U.S., France, and the case study countries - Cameroon, Gambia, Kenya, Senegal, Tanzania and Zimbabwe. USAID country missions were especially helpful in arranging contacts and appointments and sharing interest and insights.

Special thanks to the staff of AFR/DP/PAR under the guidance of Jerry Wolgin, especially Raghawendra Dwivedy, who served as our Project Officer, and reviewers who provided helpful comments on earlier drafts.

Mark D. Newman
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July 1990

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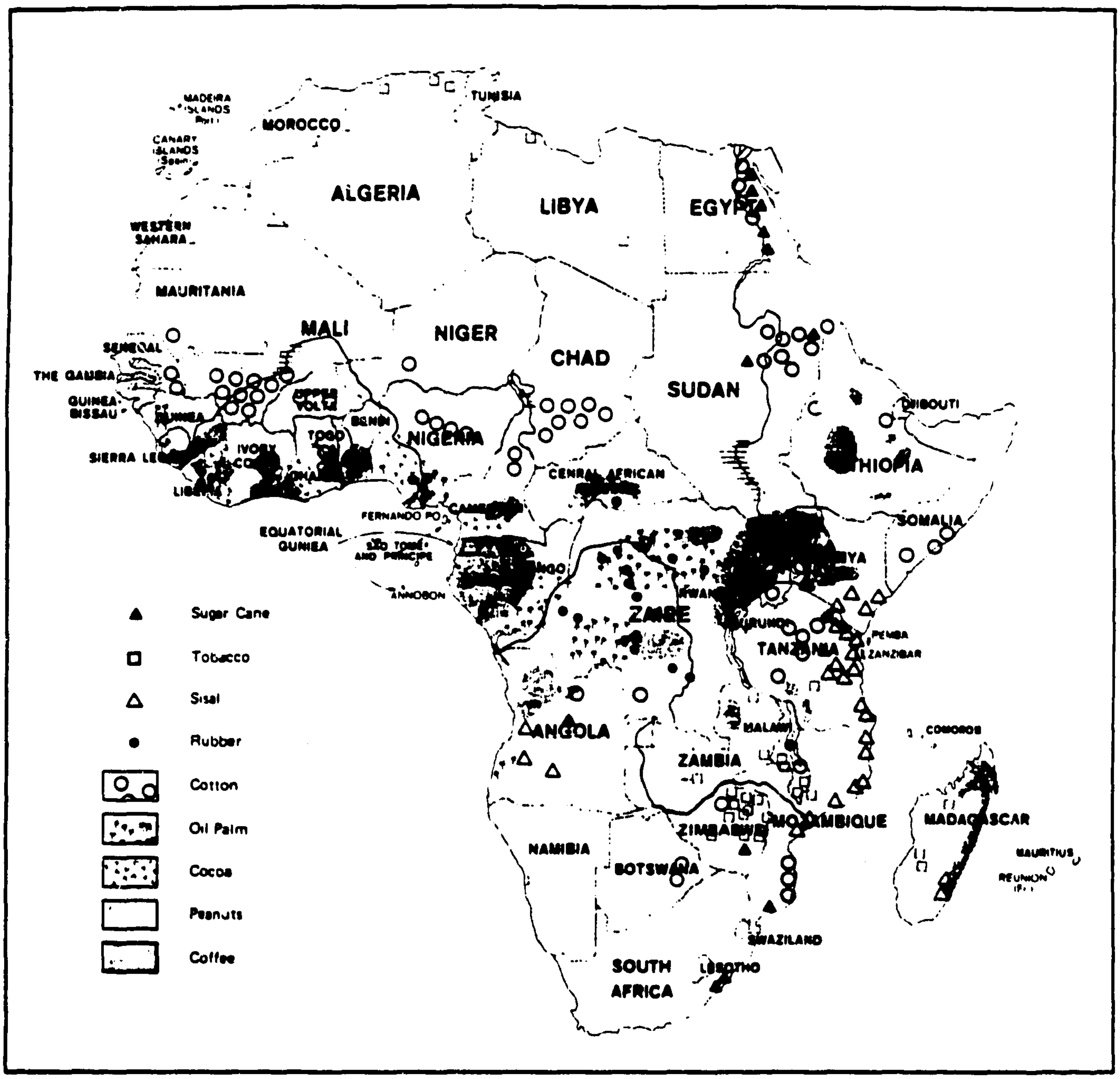
LIST OF ACRONYMS

AMIS	Agricultural Marketing Improvement Strategies Project
APAP II	Agricultural Policy Analysis and Planning Project
ADB	African Development Bank
CFA	Caisse Francaise Africaine - Central and West Africa Monetary Union
CFDT	La Compagnie Francaise pour le Developpement des Textiles
DRC	Domestic Resource Cost ratio
EC	European Economic Community
ICA	International Coffee Agreement
MADIA	Managing Agricultural Development in Africa - World Bank Study
NPC	Nominal Protection Coefficient
LSC	Large-Scale Commercial Sector
SC	Small-Scale Communal Sector
PAM	Policy Analysis Matrix
STABEX	Stabex Fund- commodity price stabilization fund (EC)
IBRD/BIRD	International Bank for Reconstruction and Development (World Bank)
PNUD/UNDP	United Nations Development Program

L OF ANT COMMERCIAL CROPS



Upper Volta now Burkina Faso
Ivory Coast now Côte d'Ivoire

Source: U.S. Department of State. 1980. Latest map available, as of December 13, 1989.

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EXECUTIVE SUMMARY

The cash crops of Sub-Saharan Africa can be competitive in world markets with sufficient attention to policy reform and marketing principles. Country specific strategies must pay attention to international market prospects, national policies, and production and marketing costs. These are findings of the African Cash Crop Competitiveness Strategy Study conducted under the Agricultural Policy Analysis Project II (APAP II). The study examines competitiveness of traditional export crops in sub-Saharan Africa through case studies of three important cash crops: cotton, coffee and groundnuts (peanuts). Evidence from six countries--Cameroon, Kenya, The Gambia, Senegal, Tanzania and Zimbabwe--is used to evaluate factors influencing competitiveness. Factors likely to influence the decisions of African policymakers and the donor agencies seeking to assist them are identified and evaluated. An important objective is to draw lessons from the case studies that can be more broadly applicable in evaluating development strategy options and priorities for donor assistance.

The approach of the study complements examination of traditional measures of comparative advantage with analysis of: 1) developments in international commodity markets that are likely to affect future market opportunities and competition, 2) national macroeconomic and agricultural sector policies affecting competitiveness, and 3) the underlying production and marketing cost structure and microeconomic environment in which production decisions occur.

Issues addressed include the following: 1) the conditions necessary for export production in Africa to be profitable and competitive, given a range of future world commodity prices and competitive pressures; 2) the degree to which the policy environment, including price policy, exchange rates and other factors that affect potential competitiveness, may distort patterns of production away from crops that exploit comparative advantage; and 3) the comparative advantage of these export crops vis a vis food crops. The findings clearly demonstrate the importance of understanding international market conditions and prospects, policy impacts and microeconomics in establishing priorities.

International Markets

The three commodities examined clearly differ in market prospects, as indicated by contrasting forecasts for 1995. Continued growth in the market for natural fibers is expected to contribute to bright prospects for cotton exporters, after a serious slump in the mid-1980s. Despite the breakup of the International Coffee Agreement (ICA), our commodity market forecast anticipates a stronger market for robusta and arabica coffee, with overall prices increasing from levels that prevailed before the ICA broke down. By contrast, rapid growth in production of lower cost competitive vegetable oils makes the outlook less promising for groundnuts. If current returns are to be maintained, exporters will have to devote new attention to marketing their products, rather than merely selling them to international purchasers.

In all three commodity markets, opportunities for product differentiation were identified. Zimbabwe has increased returns to coffee by selling a deluxe product to niche markets despite the breakup of the ICA. In a few cases, producing extra long staple cotton and adding value to cotton through traditional weaving and sales are promising options. Sales of confectionary peanuts and deluxe oil are also being pursued. Thus, in all cases, there are opportunities for "export optimism" with sufficient attention to factors that influence the product being sold and the cost at which it can be delivered.

Policies

At the national macro and sectoral policy levels, exchange rates, interest rates, price policies for inputs, labor and products were examined. Despite assertions in the literature that African wage rates are overvalued, our analysis failed to confirm that wage rates alone are a major barrier to competitiveness. Prevailing wage rates were found to deviate widely from official wages in rural areas, suggesting that labor markets in agriculture may adjust to economic forces better than those in industrial and government sectors. Rigidities in the latter can detract from competitiveness in countries where overvalued exchange rates prevail, as in the CFA zone. The combination of input subsidy reduction and exchange rate adjustment has led to decreased input use in a number of case study countries, with potentially longer term negative consequences for sustainability of production and competitiveness.

Production and Marketing Costs

At the microeconomic level, analysis of production and marketing costs is made difficult by limited data availability and noncomparability of estimates. Nonetheless, analysis of cost of production and marketing data provides some clear insights into constraints to competitiveness. These range from high cost parastatal marketing services to producer price levels that approach or exceed the value of the product on international markets. In some cases, disadvantages of high cost marketing and input distribution make small producers less competitive than their larger competitors. Since this may encourage rural-urban migration and result in other social costs, investments in infrastructure and other efforts to make smallholders more competitive merit consideration.

Where possible, analysis is conducted on an economic and financial basis, so that costs associated with policy-induced distortions are considered as well as actual costs faced by producers and other market participants. In terms of financial costs, the ability of smallholders to use family labor that is remunerated at less than prevailing wage rates permits high cost producers to remain competitive. Sensitivity analysis is used to simulate impacts of changes in policy and factor prices on competitiveness.

Summary of Findings

Our conclusions on the combined impacts of microeconomics of production, policies and market forecasts are summarized in Table 1. The six countries and three export crops are categorized according to a competitiveness indicator, along with an indication of which factors affecting competitiveness were found to be constraints in each particular case. To indicate the degree of competitiveness, a numbering system was used, where a 3 indicates strong competitiveness given current policies and market prospects, a 2 signifies weak competitiveness given the current situation, and a 1 indicates a situation where

Table 1

Summary Table of Findings

Country & Commodity	Competitiveness Indicator	Constraints to Future Competitiveness: Int'l Markets	Macro Policies	Production Costs	Marketing Costs	Productivity	Exchange Rate	Labor Costs	Infra-Structur	Instit-utions	Quality
Cameroon											
Coffee	1	x	x		x	x	x		x	x	x
Cotton	1		x		x		x			x	
Kenya											
Coffee	2				x		x	x			
Cotton	2				x	x	x		x	x	
Tanzania											
Coffee	1		x		x	x	x		x	x	x
Cotton	1		x		x	x	x		x	x	
Zimbabwe											
Coffee	3										
Cotton:LS*	2			x			x	x			
Cotton:SS**	3						x		x		
Senegal											
Groundnuts	1	x	x		x		x		x	x	
Cotton	1		x		x		x		x	x	
The Gambia											
Groundnuts	1	x			x				x	x	x

Abt Associates Table

Competitiveness Indicator:
3 – strong competitiveness
2 – weak competitiveness
1 – competitiveness in future will require policy changes
*LS – Large-Scale Commercial Farms
**SS – Small-Scale Communal Farms

market prospects and the domestic situation are such that being competitive in the future will depend on major changes occurring in domestic policies and institutions. This categorization is necessarily a simplification, however, the reader is directed to the case studies found in chapters 5-7 for a more thorough examination of factors affecting competitiveness.

The countries that have been most successful in staying competitive in world markets are the ones that have paid the most attention to basic marketing principles. Their agricultural and other policies have not heavily taxed the producer, nor have they greatly distorted patterns of production away from those that exploit comparative advantage. For example, Kenya and Zimbabwe are successfully marketing high-quality arabica coffee and receiving price premiums above average world market price levels.

Another factor contributing to competitiveness is the degree of political power wielded by agricultural producers. Where farmers have political power, they have influenced investments in infrastructure and marketing board management, so policies have been less successful in distorting competitive position. For example, in the relatively unique case of Zimbabwe, large-scale producers have historically had strong political influence, which recently appears to have positively influenced the small-scale sector as well. The fact that both small-scale and large-scale producers are represented by farmers unions and on the marketing boards is one measure of their influence. Zimbabwe was the only study country where farmers had a strong voice in policy decisions affecting them, however.

Success also has been achieved where considerable investment has been made in improving productivity, as with cotton in the francophone countries. The CFDT, working with parastatals in francophone Africa, put heavy emphasis on improving technology and productivity (research and development) and maintaining quality through extension support. A systems approach integrated the production and marketing stages from the farm-level through processing and export. A suitable technological package is available to farmers, necessary inputs are delivered on credit, the cotton is assembled and farmers are paid at harvest, alleviating much of the risk to the farmer.

In countries which have had little success competing in world markets with traditional agricultural exports, major policy distortions have occurred. Producers have been heavily taxed and typically have faced inefficient top-heavy parastatal organizations that have failed to market the commodity well. Examples are coffee in Cameroon and coffee and cotton in Tanzania.

Policy distortions in these countries led producers to grow crops for which they had no comparative advantage (e.g. rice in Senegal and Cameroon), or to increase production of a commodity for which world demand was declining (e.g. robusta coffee in Cameroon). The current liberalization of food crop marketing in Tanzania and Cameroon is leading to a reallocation of resources to food crops from cash crops, which still have to go through inefficient and costly (controlled) marketing channels. While some policymakers believe the shift to food crops increases food self-sufficiency, cash crops play an important role in the diversification strategies of producers in all these countries.

While price incentives (i.e. percent of export price received by producers) were found to contribute significantly to competitiveness, the timing and reliability of producer payment was equally important. In Cameroon and Tanzania producers are finding immediate payment for food crops on the open market to be an attractive option compared to uncertain and delayed payments from their coffee marketing board.

Comparative Advantage Versus Competitiveness

Traditional analyses of comparative advantage, while providing important insights, often fail to address issues which are critical to an evaluation of the role of African countries in traditional commodity markets. Traditional static analyses fail to consider the sensitivity of most measures to dynamic factors related to change in international markets, policies and production technologies. In addition, the approach generally fails to come to terms with the practical aspects of international markets, which are often critical determinants of international performance.

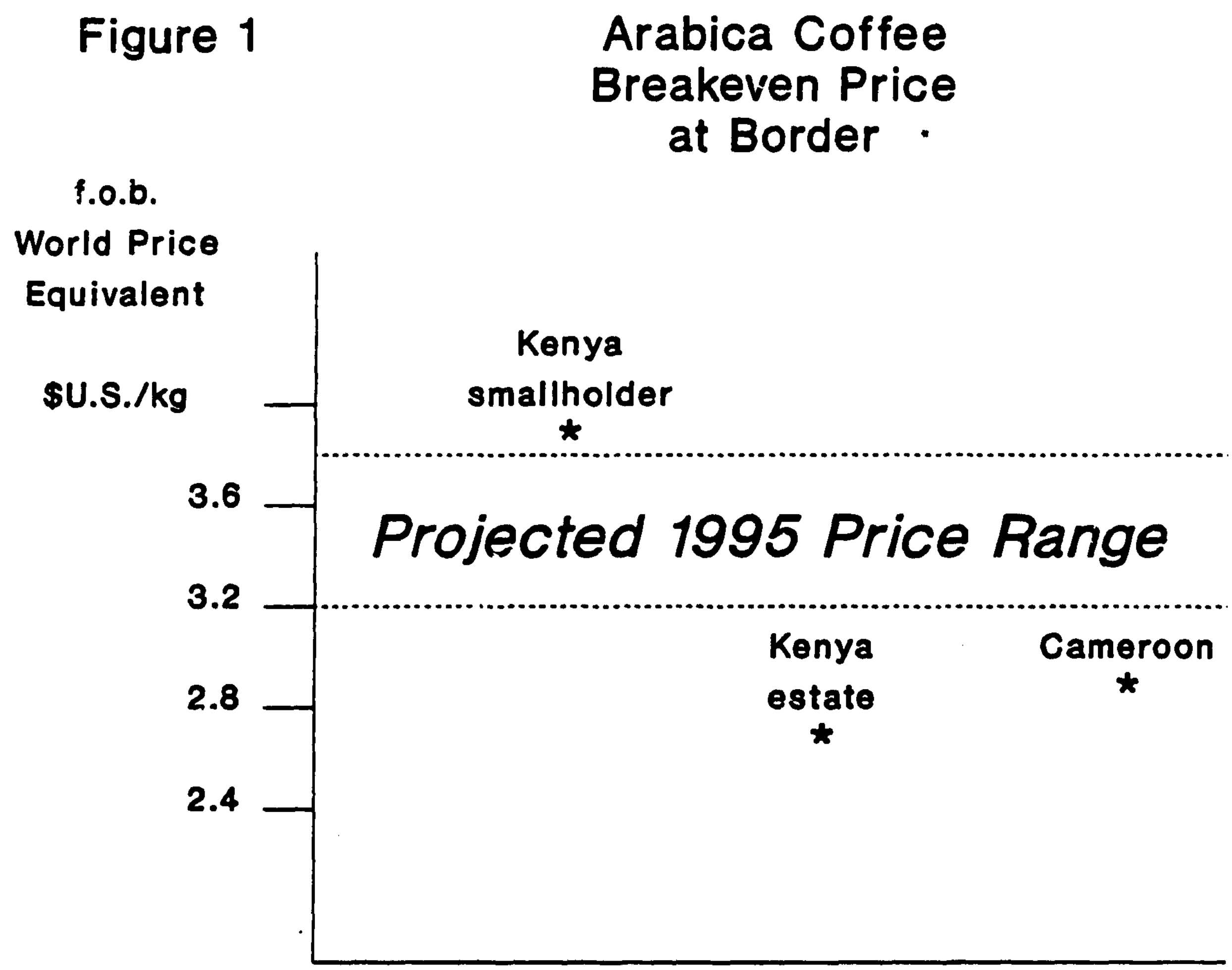
The Policy Analysis Matrix (PAM) framework, a tool to evaluate competitiveness, presents the profitability of a commodity system measured in both financial and economic prices. Policy distortions account for the difference between the two. For example, producers in a particular country may face strong incentives to produce commodity X simply because they are being heavily subsidized. Even though the producer may have a comparative advantage in commodity X compared to commodity Y given the incentives he faces, unless we account for the cost of those subsidies, we cannot say whether this country has a comparative advantage in X.

Comparative advantage is not a static concept. By definition, changes in any of the numerous supply and demand factors affecting competitiveness alter the degree of comparative advantage of a country's commodity system. While the domestic resource cost (DRC) measure of comparative advantage is only a "snapshot" measurement (i.e. it measures the degree of comparative advantage at a particular point in time) it is still a useful tool since it allows the analyst to undertake sensitivity analysis. Sensitivity analysis entails changing some of the underlying assumptions and observing how these changes affect the competitiveness of the commodity system. Our analyses addressed the sensitivity of comparative advantage to changes in such factors as output price (i.e. world price levels), input costs, and policy distortions.

Coffee. Sensitivity analysis was performed using the PAM information on arabica coffee in Kenya and Cameroon. We compared the producer price at which the DRC falls below one (a comparative advantage exists) to the projected 1995 world price range. Both these prices were converted to a border-equivalent price to make them directly comparable. Figure 1 shows the results of this analysis.

The break-even world price for arabica coffee (i.e. the f.o.b. equivalent) is below the projected prices received by Cameroonian arabica coffee producers, and Kenyan estate producers. This means that these producers should be competitive in 1995, assuming costs do not change substantially and our projections are valid. For Cameroon, however, these results are based on an

Figure 1



* World price level at which DRC becomes one, i.e. value of domestic resources used < value of foreign exchange earned Breakeven producer prices (BEP) are calculated from PAM's; marketing margins were added to get fob equivalent BEP

Source: Country PAM Analyses

assumed yield that is higher than current productivity levels[1]. This result, therefore, is expected to hold only if productivity can be increased over the next five years.

Arabica coffee did not have a comparative advantage in Cameroon at 1988 world price levels. Our analysis would become competitive when world prices increased by 5%, labor costs declined 20%, or establishment costs were assumed to be zero. Farmers in Cameroon received less than 50% of the export price of arabica for many years, seriously eroding incentives to increase productivity. Increasing productivity is clearly a priority if Cameroon wishes to remain competitive in the future.

The analysis indicates the possibility of small farmers in Kenya not remaining competitive in the future. One difference between smallholders and estates results from the higher marketing costs borne by smallholders who receive 70% of the world price compared to 85% for estate producers. Policies and programs directed at reducing marketing costs are clearly important to future improvements in Kenyan smallholder's competitive position.

The competitiveness of coffee in Kenya was not sensitive to labor costs on either smallholdings or estates. Agricultural labor markets were reported to be highly competitive, giving little reason to believe that private and social wages differ because of labor market imperfections. Sensitivity analysis showed that even with a substantial increase in labor costs, Kenyan producers would maintain a comparative advantage in arabica production. Sensitivity to the cost of capital, however, was found to be much stronger for coffee than for annual crops, due to high establishment costs and the time lag before production. When the economic rate of interest was increased from 15 to 25% coffee went from one of the most profitable crops in Kenya to one of the least profitable.

A comparison of coffee cost of production and marketing data for the study countries led to the following conclusions:

- o The coffee producer in Tanzania received only 60% of the export price in 1988, indicating large marketing margins and inefficiencies in the marketing chain from producer to export sale.

- o Labor costs are not higher in Africa than in the competing coffee producing countries of Brazil, Colombia, and Costa Rica. In fact, low labor costs appear to be a major factor in making African countries competitive in world markets, given generally low levels of productivity.

- o Per kilogram costs of production are reasonable where high yields are obtained, such as in Zimbabwe which has the highest per hectare production costs in the world but also the highest productivity.

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[1] The analysis used a yield level of 750 kg/ha, which is obtainable under good management practices. In recent years, however, farmers have had little incentive to invest in productivity due to poor policies, and therefore average yields are in fact much lower.

- o In Cameroon and Tanzania, where the farmer was receiving less than 50% of the world price of coffee due to poor price policies and inefficient marketing, the impact on long-run competitiveness has obviously been detrimental.

- o Producer price incentives are particularly important for coffee producers who need to make a substantial investment four to five years before earning any revenue. In this case some protection may be needed in years of extremely low world prices in order to maintain producer incentives to investt and improve productivity.

<u>Cotton</u>. The results of sensitivity analysis using the PAM framework (available only for Kenya and Zimbabwe) showed that the projected 1995 price range for cotton is substantially above the level at which it has a comparative advantage (Figure 2). The implication is that cotton producers in these countries will be competitive in the future if the underlying cost structure does not change substantially. Policy distortions are relatively minor in Kenya and Zimbabwe, so economic prices do not diverge significantly from financial prices.

In 1988, the exchange rate in Zimbabwe was estimated to be overvalued.[2] Sensitivity analysis suggested that producers would benefit substantially from a devaluation, especially small farmers who use relatively more labor and less imported inputs. The minimum wage rate taxes large-scale commercial farmers in Zimbabwe, who had no comparative advantage at 1988 cotton price levels. Their competitiveness would improve with a removal of this distortion. This did not affect the small communal farmers who were competitive even when world cotton prices were relatively low.

In Kenya, however, labor costs would have to increase substantially before cotton lost its competitiveness, particularly at projected future world prices. A more significant impact on competitiveness was demonstrated in the simulation of the effect of an improvement in the efficiency of the processing of cotton into lint. Although this is a post-farm cost, increases in ginning efficiency, which are passed on to the farmer through a higher producer price, were found to strongly influence competitiveness.

The importance of marketing efficiency and costs was also apparent in Tanzania, where crop budgets and marketing cost information were analyzed. The private cost ratio (measured in financial prices rather than economic prices as is the DRC ratio) was significantly above one, and marketing costs would have to decrease by at least 75% to make cotton competitive.

Cost of production and marketing data were used to compare competitiveness of cotton in the francophone countries. Farm-level production costs were relatively low in Cameroon and Senegal, and labor costs were not a constraint. When the marketing margin (processing, transportation, and marketing costs) was

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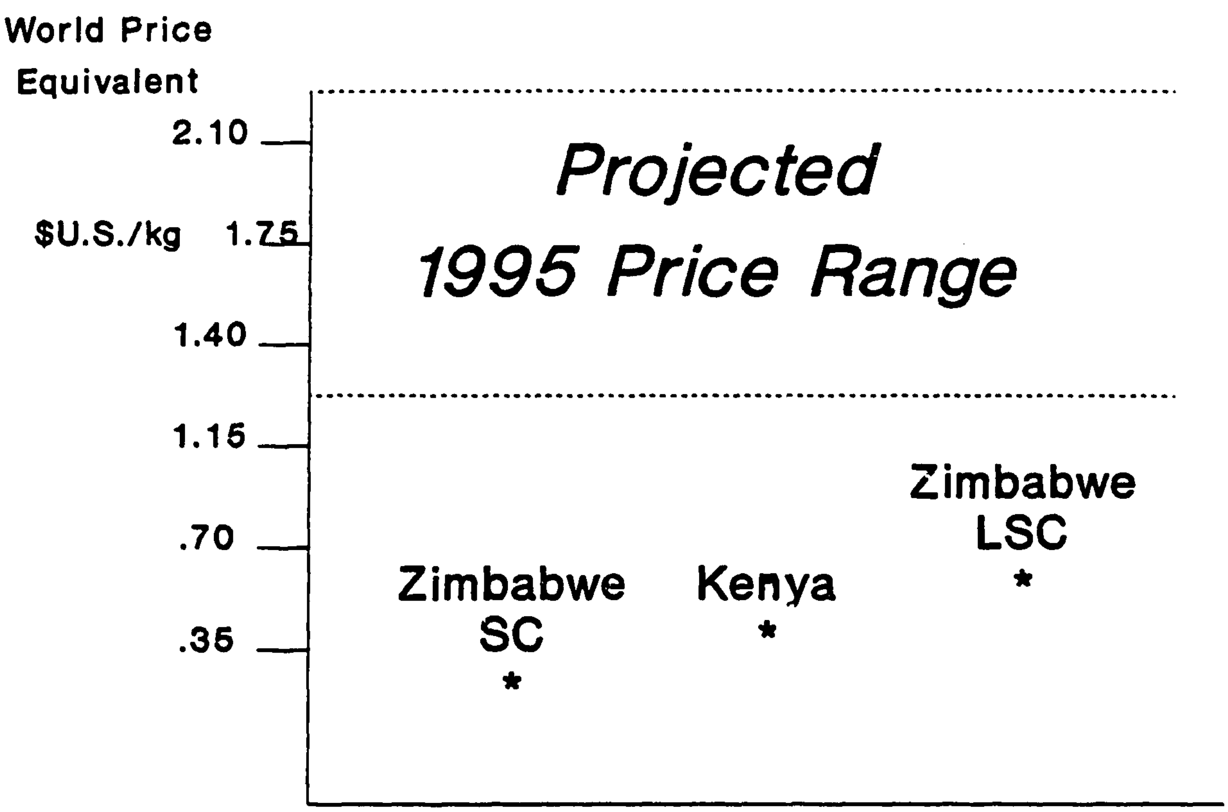
[2] Throughout 1989 and early 1990, Zimbabwe, Kenya, and Tanzania all experienced a steady and substantial devaluation of their currencies, which has helped make them more competitive in world markets.

Figure 2

Cotton
Breakeven Price
at Border *



* World price level at which DRC becomes one, i.e. value of domestic resources used < value of foreign exchange earned

Breakeven producer prices (BEP) are calculated from PAM's

Marketing margins were added to get fob equiv. BEP

Source: Country PAM Analyses

added to farm-level costs, the costs in Cameroon and Senegal were substantially higher than those in Cote d'Ivoire, Mali, and Burkina Faso (also CFA zone countries). Again, this indicates the importance of reducing marketing costs. This reduction may be accomplished through a combination of improved incentives to private investment, regulatory incentives, and public investment in infrastructure.

In comparison with the anglophone countries, costs of producing cotton lint are significantly higher in Cameroon and Senegal. There may be some quality differences that narrow the gap, however. This difference further narrows if the estimated degree of overvaluation of the CFA is taken into account. In both Cameroon and Senegal, problems in allocating the costs attributable to rural development activities of parastatals complicates the analysis.

Groundnuts. Results for the two case study countries, Senegal and Gambia, clearly demonstrate the critical importance of macro and sectoral policies in maintaining competitiveness in the face of static or declining demand. With major international price increases in early 1990, The Gambia and Senegal may be able to market groundnuts and their products competitively. However, the outlook for 1995 is unclear. Gambian competitiveness has benefitted from a devaluation of the Dalasi in terms of marketing and processing costs, although producer price increases have more than compensated for the devaluation. At the same time, despite a price cut, Senegalese producers receive higher prices than Gambian producers, so cross-border sales to Senegal have been a recurrent problem.

Labor costs deviate from official wage rates in both Senegal and The Gambia. In Senegal, reported agricultural wage rates are below the official minimum, while in The Gambia, they are above the minimum. This indicates that official wage rates are not a binding constraint on competitiveness. At the same time, exchange rate variability means that agricultural wage rates in Senegal have increased 80 percent in U.S. dollars, while staying constant in local currency. Thus, exchange rate overvaluation has had a deleterious impact on competitiveness.

Conclusion

As African nations and international financial and foreign assistance communities work together in the pursuit of national policy goals and investment priorities that will contribute to income and employment growth, the case studies examined clearly demonstrate the importance of international markets, macro and sectoral polices, and microeconomics in influencing competitiveness. The study has demonstrated that the practical requirements of competitiveness on international markets require that countries go beyond static assessments of comparative advantage in defining appropriate roles for traditional expert crops in national development strategies.

Examination of world market conditions provides insights into market potential and competition, even if price projections are not regularly on target. The analysis showed that although most African nations are not large enough producers of specific cash crops to influence world prices, many can do a better job of analyzing market opportunities and conditions in order to increase returns to the products they sell. Where market prospects point to strong and increasing competition, product differentiation and pursuit of market niches can increase returns.

At the macro and sectoral policy levels, the critical importance of exchange rates was underscored by the study findings. Overvalued exchange rates have made some countries noncompetitive, and others less competitive. Further analysis of potential impacts of changes in the franc zone are clearly warranted. Agricultural policies affecting prices received by farmers, the margins received by marketing organizations, and the speed at which payment for crops is received, all affect incentives to produce and competitiveness of cash crops relative to competing local alternatives and on international markets.

At the microeconomic level, despite difficulties in comparing production and marketing cost data, it is clear that producers receive widely varying shares of export prices in different countries. The shares also vary according to size of farm in individual countries. Policies toward infrastructure and marketing system operations affect marketing and distribution costs and the relative returns to large and smallholders in a number of cases. Official wage rates are often imperfect reflections of actual wages paid in agricultural production, and wage rate flexibility would seem to indicate that labor costs are not a major impediment to competitiveness.

The case study evidence presented here clearly demonstrates that "export pessimism" espoused by some leaders and observers of Sub-Saharan Africa often stems from a failure to understand the dimensions of the problem of export competitiveness. Narrow comparative advantage studies also miss some important aspects of the problem. International market prospects, macro and sector policy, and micro-economics for specific countries, commodities and products are all shown to play an important role in the options and tradeoffs in an export oriented marketing strategy.

African policy makers, international donors, and the research community continue to debate the most appropriate paths to food security. Export crop production offers the promise of foreign exchange to pay for food crops that can sometimes be more cheaply imported than domestically produced. Some charge that export crops are being promoted to assure loan reimbursement to international financial institutions at the expense of national welfare and development. Their argument concludes that food self-sufficiency and import substitution are preferable to export crop development.

The study results show that export crops and food crops do not necessarily compete with each other, and often are complementary in terms of farmers' strategies. Furthermore, many African countries can compete in international markets for traditional export crops, even under circumstances of adverse policy and institutional environments.

This study has brought together a wealth of secondary data and source material, supplemented with personal interviews in the case study countries. The comparisons made, and conclusions drawn, have used available data sources, while indicating limitations in the data themselves and comparability issues where possible. It is important to underline that detailed analysis has been possible in a number of cases because of major investments in data collection in individual case study countries.

As case study countries and other countries in Africa seek to evaluate their competitiveness, additional analysis will be required. Improved data and on-going monitoring of marketing, processing and production costs will clearly facilitate analysis and permit policy makers to focus on cost elements that deviate significantly from those of competitors. Potential impacts of infrastructure and training investments on financial and economic costs, returns, and incentives merit further examination in order to identify priority investments.

At the macro and sectoral policy level, A.I.D. and other donors and financial institutions are already providing considerable technical assistance. Nonetheless, the sensitivity analysis conducted here indicates that further attention to the broader consequences of exchange rates in general and the CFA zone in particular is necessary. Continued assistance in development of price and institutional policies and the definition of appropriate roles for private business and government are also essential.

Improved monitoring of international markets will also be important for staying competitive in increasingly aggressive world markets. In bulk commodity markets, it appears that parastatals often sell products at prices that diverge from those reported for a number of reasons - including quality differences, services provided that differentiate suppliers, and other factors. As governments in Sub-Saharan Africa consider appropriate public and private sector roles in commodity markets, an improved understanding of factors affecting prices received would be valuable from both marketing and regulatory perspectives.

Follow-up case studies could also usefully examine niche marketing opportunities for traditional cash crops. As noted above, a number of cases were identified in which possibilities exist for increasing returns through value added processing, promotion, and targeting of specialty markets. These should be examined in further detail to determine the product characteristics required, the potential volumes that could be sold into such markets, and marketing requirements and returns.

EXPORT CROP COMPETITIVENESS: STRATEGIES FOR SUB-SAHARAN AFRICA

1.0 INTRODUCTION

African policymakers and the donor community that assists them must address a wide range of development strategy issues related to agricultural production and marketing priorities. Over the last several decades, strategies have shifted from a focus on export crops to community development; to integrated rural development strategies; to food self-sufficiency strategies; to food security; to privatization and agribusiness development; followed by a return to traditional export crop promotion. However, the new focus is more comprehensive than the old one. It examines traditional and non-traditional trade opportunities, regional trade promotion possibilities, distributional implications for small and large farmers, implications for urban and rural consumers, and public and private costs and returns.

This report presents results of the African Cash Crop Competitiveness Strategy Study conducted under the Agricultural Policy Analysis Project II (APAP II). The study examines competitiveness of traditional export crops in Sub-Saharan Africa through case studies of three important cash crops: cotton, coffee and peanuts. Evidence from six countries--Cameroon, Kenya, Gambia, Senegal, Tanzania and Zimbabwe--is used to evaluate factors influencing competitiveness. Factors likely to influence the decisions of African policymakers and the donor agencies seeking to assist them are identified and evaluated. An important objective is to draw lessons from the case studies that can be more broadly applicable in evaluating development strategy options and priorities for donor assistance.

The approach of the study complements examination of traditional measures of comparative advantage with analysis of: 1) developments in international commodity markets that are likely to affect future market opportunities and competition, 2) national macroeconomic and agricultural sector policies affecting competitiveness, and 3) the underlying production and marketing cost structure and microeconomic environment in which production decisions occur.

Issues addressed include: 1) the conditions necessary for export production in Africa to be profitable and competitive, given a range of future world commodity prices and competitive pressures; 2) the degree to which the policy environment, including price policy, exchange rates and other factors that affect potential competitiveness, may distort patterns of production away from those crops that exploit comparative advantage; and 3) the comparative advantage of these export crops vis a vis food crops.

The main text presents the conceptual approach, a summary of commodity market forecasts, an overview of the policy environment affecting competitiveness, three chapters presenting country case studies of coffee, cotton, and groundnuts, and a chapter presenting conclusions. An appendix volume presents detailed analysis of commodity markets and country policy situations.

2.0 CONCEPTUAL APPROACH TO DETERMINING COMPETITIVENESS

Traditional analyses of comparative advantage, while providing important insights, often fail to address issues which are critical to an evaluation of the role of African countries in traditional commodity markets. Traditional static analyses fail to consider the sensitivity of most measures to dynamic factors related to change in international markets, policies and production technologies. In addition, the approach generally fails to come to terms with the practical aspects of international markets, which are often critical determinants of international performance.

2.1 Analytic Framework

This paper's analytic framework builds on assessments of comparative advantage while expanding its scope to cover some areas that are often neglected. The framework is based on three principal components: analysis of international commodity markets; identification and analysis of national policies (sectoral and macroeconomic) which influence competitiveness; and a firm grasp of the microeconomic conditions in which production decisions occur. A diagram of this framework is presented in Figure 2.1.

The analysis of international commodity markets presented in Chapter 3 focuses on international market conditions, the nature of competition within these markets, the international policies that shape markets, and supply and demand patterns.

The analysis in Chapter 4 draws on established literature on the impacts of macroeconomic policies on sectoral performance and policy changes associated with structural adjustment. It complements two methodologies that are part of the APAP II research agenda: the Policy Analysis Matrix (Scott Pearson, Stanford University) and the "Rules of Thumb" approach to macroeconomic policy changes (Shanta Devarajan and Dani Rodrick, Harvard University).

The analysis of microeconomic factors in Chapters 5 - 7 examines costs of production in the context of a range of possible production patterns available to producers. Production costs for coffee, cotton and peanuts are analyzed. The institutional structure affecting producer's production and marketing decisions is incorporated in the analysis.

The paper's methodology has three central components: synthetic analysis, market forecasting and sensitivity testing.

(1) **Synthetic Analysis.** Using a synthetic approach, we assess comparative and competitive advantage of the study countries for coffee, cotton and groundnuts. This assessment involves both the use of previously calculated measures of comparative advantage and analyses of available cost of production and marketing data. From this material, we identify the major components of commodity production and marketing costs and establish linkages between these components and national policies affecting competitiveness.

Figure 2.1

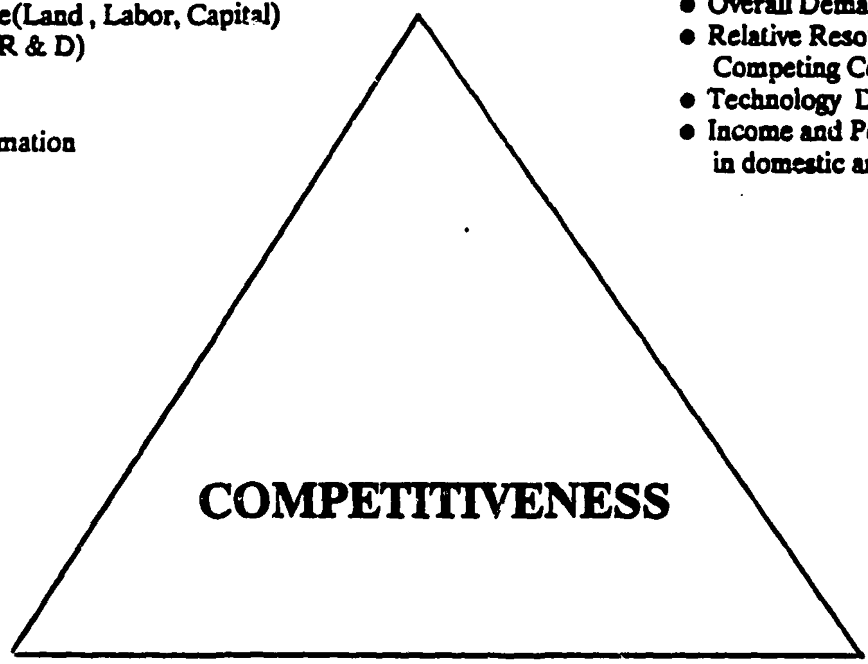
DETERMINANTS OF COMPETITIVENESS

Microeconomic Factors (Structural / Institutional)

- Cost of Production/Efficiency
- Marketing Cost/Efficiency
- Quality/Product Differentiation
- Resource Base(Land, Labor, Capital)
- Technology (R & D)
- Extension
- Infrastructure
- Market Information
- Alternatives

International Commodity Markets

- World Markets (Structure, Conduct, Performance)
- Market Shares
- Overall Demand; Changes in Tastes
- Relative Resource Endowments in Competing Countries
- Technology Development
- Income and Population Growth in domestic and foreign markets



Domestic Policies

Macroeconomic
Agricultural Sector

- Fiscal and Monetary Policy
- Exchange Rates Policy
- Trade Policy
- Price Policies
- Marketing Policies

(2) **Market Forecasts.** We identify a range of possible future international market environments for coffee, cotton and peanuts, and the international prices and competitive pressures associated with each. We then analyze the position of study countries in these markets, compare their production costs required to be competitive in each environment, and assess the implications for their future competitiveness.

(3) **Sensitivity Testing.** A range of alternative policy variables is used to evaluate the extent to which different policies could significantly affect countries' competitiveness. A similar analysis is conducted for key factors of production, including wage rates and levels of productivity (associated with alternative technological packages). The outcome is an assessment of the relative importance of these variables to competitiveness, and the degree of change which would be needed to establish a competitive position in alternative international market environments.

2.2 Factors Influencing Competitiveness

Both supply and demand factors influence the competitiveness of a given commodity in the world market. On the supply side, these factors include:

- o Costs of production
- o Costs of marketing
- o Quality (and sometimes reputation for level of quality)
- o Product differentiation (e.g. being identified as Kenyan coffee, not just as coffee)
- o Resource base (land, capital, labor availability, productivity, and prices or costs).
- o Macroeconomic policies, both monetary (e.g. exchange rate) and fiscal (taxes and subsidies); sectoral or commodity-specific policies; trade policies (e.g. import tariffs, export subsidies)
- o Technological development (R&D); varietal as well as packaging, processing, and grading technologies
- o Diffusion of technology (i.e. extension)
- o Infrastructure, especially marketing infrastructure (e.g. transportation and marketing facilities)
- o Dissemination of market information

On the demand side, important factors influencing competitiveness are:

- o Developments in world commodity markets
- o Market shares
- o Market structure
- o Overall demand and changes in tastes and preferences particularly demand factors in target markets
- o Relative resource endowments and factor prices and productivity in competing producing countries
- o Policies in competitive producing countries
- o Technology/development of new substitutes
- o Tastes and preferences
- o Population growth
- o Income growth in domestic and foreign markets

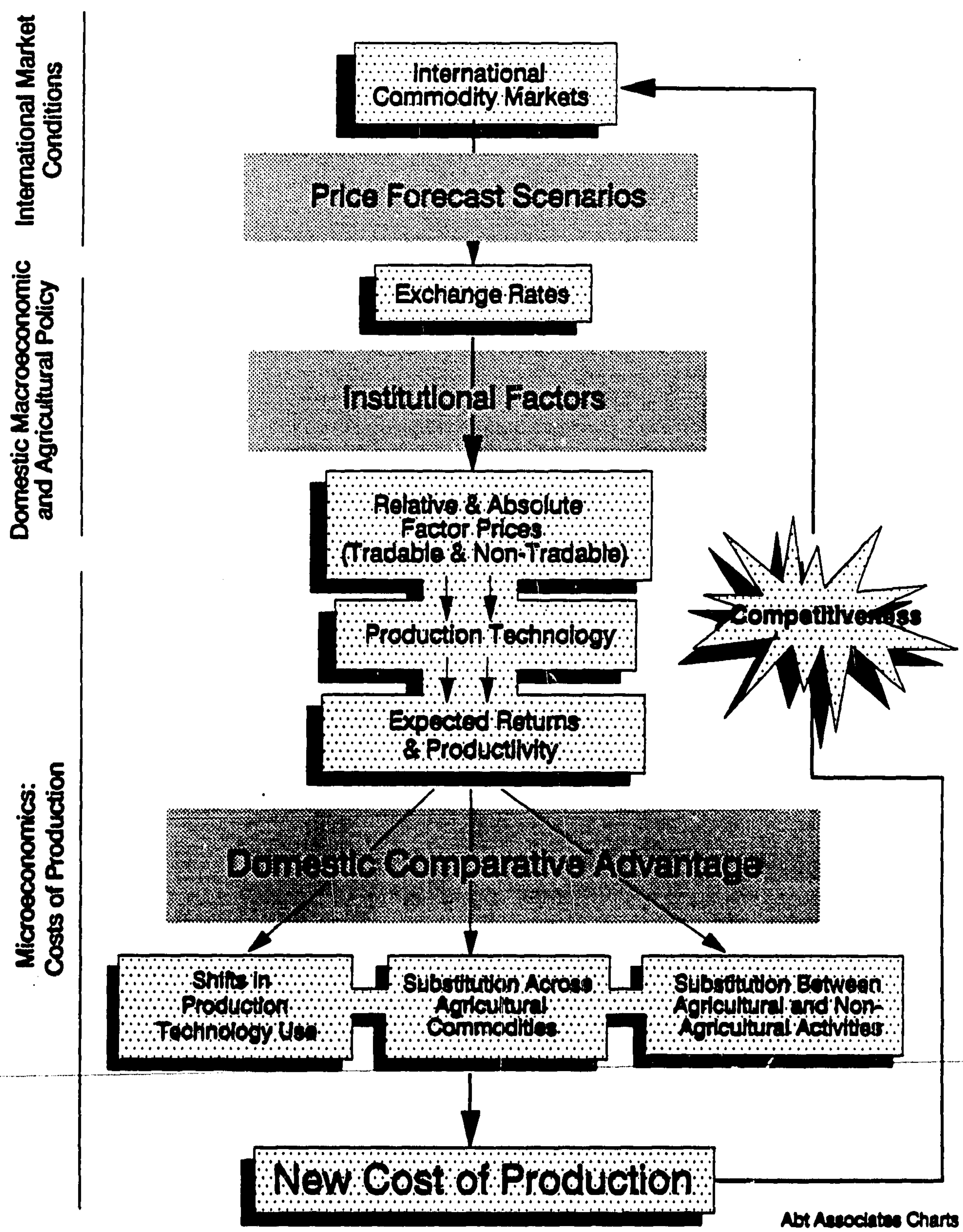
These factors and the relationship among them are summarized in Figure 2.2. Given a world that is increasingly interdependent, each day, our point of departure is the international market conditions for the commodity in question. Both the supply and the demand situation are analyzed (i.e. who are the main producers and consumers, and the main factors influencing world prices, trends, market shares, costs of production and marketing costs). This analysis leads to price forecasts based on current market conditions and expectations for the future. The forecasting involves several scenarios, including an optimistic, a "best guess," and a pessimistic outlook. An analysis of international cotton, coffee and groundnut markets and price forecasts for each are found in Chapter 3.

The world market price forecast is made for a central world location, usually Europe. If we are interested in competitiveness of Tanzanian cotton, for example, this price must be translated to an f.o.b. equivalent price for Tanzania. For cotton, the world price used is a cotton index price (representing an average quality) in London.

This f.o.b. equivalent world price (or border price) is calculated by deducting the freight and any related costs of getting it to the domestic market (i.e. port) of interest. In our example, the transportation costs of shipping cotton from Tanzania to London are deducted. Since the world price is quoted in U.S. dollars, it must be converted to the local currency.

Figure 2.2

Determinants of Competitiveness



Abt Associates Charts

To compare this price to that actually received by the Tanzanian farmer, it is necessary to back up from the export location to the farm level to derive the world price equivalent at the farm gate. This is calculated by subtracting the "marketing margin" (any transport or related costs from the farm-gate to the export location), and adding any processing costs incurred if the product was transformed during this time (e.g. seed cotton is ginned into cotton lint before being exported).

When the f.o.b. equivalent world price (at the farm level) is compared to the price the Tanzanian farmer receives, the number of factors affecting the difference becomes apparent. At this point the importance of policy distortions and institutional factors is clear.

The interactions of the various domestic institutional and policy factors in turn determine the degree of comparative advantage of Tanzanian cotton. The level of profitability and degree of comparative advantage determine which technologies and economic activities are pursued (and how they are pursued). Farmers are very rational individuals who respond to the incentives they face.

The Policy Analysis Matrix (described below) is a framework that allows the analyst to examine the effects of these policy and institutional distortions on competitiveness. Various policy changes can be simulated; for example, an input subsidy can be removed to determine the sensitivity of profitability and competitiveness to such a policy change. The PAM framework can also be used in conjunction with price forecasts coming out of the analysis of world markets. For example, the competitiveness of Tanzanian cotton, given projected future world market prices, can be determined.

2.3 Measuring Competitiveness

2.3.1 Cost of Production. A farmer's profits from growing a given crop depend upon the price he receives for his output, the level of output he is able to produce, and the costs he incurs in producing it. One way of judging competitiveness is to compare those production costs across countries. However, caution must be used in these comparisons. Few national agencies collect farm account-based cost data. As a result, cost estimates are derived from either parastatal agency cost estimates, often based on recommended practices, or empirical work conducted by researchers.

Methods for measuring cost of production vary considerably across both countries and commodities. In some countries, they are reported in terms of specific input categories. In others, costs are reported in terms of a mix of inputs and activities, where the latter might be described as land preparation or harvesting using a combination of inputs. Typically, costs of production are calculated on a per hectare basis.[1] They are then converted to a per unit of output basis by dividing per hectare costs by yield. Yield variations due to

[1] Measuring cost of production and yield data for particular crops in Africa poses difficulties not found in other regions due to the prevalence of intercropping and diversification strategies for dealing with extremely high environmental risk.

weather, insects, and diseases can cause costs per unit of output to vary considerably from one crop season to the next. Very good yields reduce per unit output costs and poor yields increase them. It is important, therefore, to have some notion of "normal" yields in judging the representativeness of production costs per unit of output in any particular growing season. Given the variability of yields, production costs are likely to vary significantly across seasons.

Costs also vary among farms and over time as a result of different intensities of input use, effectiveness in use of inputs, changes in prices of inputs, and cultural and management practices. Variation in input prices affects profits to the extent that these fluctuations are not fully offset by compensating changes in output prices. In practice, production cost data do not always indicate separately the price and quantity of each input, which makes comparisons impossible.

It is common in many developing countries to subsidize the prices of some inputs, especially fertilizers and agrochemicals. Sometimes the subsidies are reflected in the market price of these inputs. In cases where parastatals control the marketing and processing of crops, the cost of inputs is deducted from the prices paid to producers. Structural adjustment programs in most countries include major reductions in input subsidies. Thus, large differences in input prices occur as subsidies are reduced. For purposes of examining international competitiveness, it is often desirable to adjust production costs for these subsidies and add them to variable costs.

In most cases, variable cash costs are the only available information, since fixed costs have not been allocated to each commodity. In general, data on depreciation and imputed capital, land, and labor costs are also not available. This is not a serious problem, however. These costs do not affect short-run production decisions or allocation of resources among commodities, since they are return measures for the whole farm and affect long-term profitability.

2.3.2 Domestic Resource Costs and the PAM Framework. A comparative advantage analysis essentially seeks to answer the following question: for a given country, which alternative production activity is relatively most efficient, ignoring the effects of distortions in the economy resulting from government policies and market failures? Relative efficiency in production (i.e. comparative advantage) depends on three factors: 1) technology which determines production possibilities and influences rates of product transformation; 2) the resource endowment which determines the value of land, labor, capital; and 3) international prices, which determine the value of all other inputs and outputs. (Morris, 1989).

Domestic resource costs (DRCs) are calculated to measure the degree of comparative advantage that a particular production activity gives a country. The DRC ratio is calculated as the ratio between the value added to primary or non-tradable factors of production and the value added to tradable factors.[2]

[2] DRC = net cost (value) of non-tradable factors/value of production (revenues) - cost of tradable inputs.

Primary factors include those inputs that are not usually traded internationally, such as land, labor, water, and capital. Tradables are goods that are or could be traded internationally, including fuel, machinery, chemical fertilizers and pesticides, and spare parts.

DRCs > 1 indicate an inefficient use of resources, since the value of domestic resources used in production exceeds the value of foreign exchange earned (in the case of export crops) or saved (in the case of import-substitution crops). In such cases, the country does not have a comparative advantage in production.

DRC analysis begins with the development of a crop budget for each production alternative being compared (and where relevant, includes production systems using different techniques, e.g. hand-tool vs. animal traction). The determination of profit actually received by farmers (i.e. financial profitability) is a straightforward and important initial result of the analysis. It shows which farmers are competitive currently and how their profits might change if price policies were changed.

Beyond financial profitability is the issue of economic efficiency or comparative advantage of the commodity system. One of the advantages of the DRC methodology is that it requires opportunity costing of primary factors of production: land, labor, and capital. The opportunity cost of inputs and outputs in the production process are represented by economic or shadow prices (also called social prices). These prices are intended to reflect the true economic value of goods and services in the absence of government policies such as taxes, subsidies, import tariffs, quotas, and price controls. When output, inputs, and factors of production are valued at their shadow prices, the profitability figure calculated is said to be that of economic profitability, reflecting the real economic returns to a given production activity, as opposed to financial returns.

2.3.3 The Policy Analysis Matrix (PAM). The Policy Analysis Matrix allows analysts to incorporate all this information on financial and economic prices, costs, and profitability into a relatively simple framework for each agricultural commodity system being analyzed. The PAM methodology is described in detail in Pearson and Monke, 1987 and 1989. The matrix includes data from budgets that reflect farming enterprises, farm-to-processor marketing, processing and processor-to-wholesaler transportation, which are organized to present a comprehensive picture of the policy environment. In the word of Pearson and Monke:

"PAM is a product of two accounting identities - one defining profitability as the difference between revenues and costs, and the other measuring the effects of divergences (distorting policies and market failures) as the difference between observed parameters and parameter levels that might exist if the divergences were removed. By completing a PAM for an agricultural system, an analyst can simultaneously measure both the extent of the transfers occasioned by the entire set of policies acting on the system and the degree of economic efficiency of the system." (Pearson and Monke, 1987).

2.3.4 Use of the PAM to Determine Competitiveness. The PAM has been used in this study to answer the following questions:

- o Does Country X currently have a comparative advantage in producing Commodity Y?

- o Given expected future world market prices (in increasingly competitive world markets), should Country X be expected to have a comparative advantage in producing Commodity Y in the future?

- o If Country X does not have a comparative advantage in producing Commodity Y, what would costs and prices have to be to make it competitive?

- o How would removal of a particular policy distortion affect competitiveness?

Unfortunately, the data requirements to develop a PAM for each commodity system in a given country are quite extensive. We have used existing PAM analyses where possible. In other cases we have used existing cost of production and cost of marketing data in order to make the cross-country comparisons. Since cost of production data (from crop budgets) include financial prices but not economic prices, it is possible to determine whether comparative advantage exists if present policy distortions continue, but not possible to determine if a comparative advantage would exist if those policy distortions were removed.

2.4 Advantages of the Selected Conceptual Approach

The approach we have selected to measure competitiveness of traditional export crops in Africa has two significant advantages. First, it incorporates international market factors. Second, it permits a dynamic analysis in that we can alter either some underlying assumptions that were made to determine whether comparative advantage exists, or the output price and factor cost levels, observing the effect on measures of comparative advantage. By putting a country's commodity system into a global perspective, we have also been able to analyze the degree of competitiveness in world markets, not just comparative advantage.

3.0 WORLD MARKETS: SITUATION AND FORECASTS

INTRODUCTION

The nature of world markets for coffee, cotton and groundnuts and projected prices to 1995 for these commodities are discussed briefly in this section. For those interested in exactly how these price projections were arrived at, more detailed discussions are presented in Appendices A, B, and C available in a separate volume.

3.1 Coffee

World coffee production increased at an average annual rate of 2.7 percent in the 1975/76-1988/89 period. The annual growth rates for arabica and robusta coffee were 2.4 and 3.7 percent, respectively. Africa is a significant producing region and accounted for nearly 22 percent of world output in the 1986/87-1988/89 period. However, production in Africa has grown more slowly than in the rest of the world and its share of world output declined from nearly 27 percent in the 1975/76-1977/78 period. Africa produces both arabica and robusta coffee. In the 1986/87-1988/89 period production of arabica and robusta coffee averaged 11.8 and 12.0 million bags (60 kg) a year accounting for 18 and 48 percent of world output, respectively. Clearly, Africa is a more important player in the world market for robusta coffee.

World coffee consumption has increased at about the same rate as production. Stocks have fluctuated annually and have been rising over time, but have remained relatively steady as a percent of world production and consumption. Consumption growth in developed countries has been modest and most of the growth in consumption has occurred in the developing and centrally planned countries.

More rapid consumption growth in developing countries (where coffee is produced) compared to developed countries has resulted in a slower rate of growth in trade compared to production. During the 1975/76-1988/89 period, world coffee trade increased at an average annual rate of 1.9 percent compare to production growth of 2.7 percent.

For many years, the world coffee market was dominated by the International Coffee Agreement (ICA) operated by the International Coffee Organization (ICO). That arrangement covered 85-90 percent of world trade in coffee and attempted to support world coffee prices through the use of export quotas. When quotas were in effect, exporting member countries were forced to maintain stocks in years when their production exceeded domestic use and permitted exports.

Growing discontent with the ICA in some member countries caused its collapse in July of 1989. Because of large stocks, prices declined sharply in the absence of an agreement and it is not clear if and when a new agreement might be negotiated. This means coffee prices will recover fairly quickly from the oversupply situation created by the collapse of the ICA, and in fact that process is currently underway. Lower prices will retard growth in output through discouraging planting of new trees and encouraging the use of less intensive production practices. Still, coffee prices are expected to be 10-15 percent lower by 1995 without an ICA than with one.

Historic world coffee prices and projected price ranges for 1995 are shown in Figures 3.1 and 3.2 for arabica and robusta coffee. The upper end of the price ranges correspond to a new ICA coming into force and the lower and of the ranges assume there will not be an ICA between now and 1995. In any event, coffee prices are expected to increase from levels that prevailed before the ICA collapsed and they will increase sharply from the low prices that prevailed after the ICA broke down.[1]

In recent years, robusta coffee has sold for about 30 percent less than arabica. This differential has increased over time as, relative to arabica, robusta supplies outpaced demand. Most robusta coffee is consumed in developed countries, particularly in Europe, where coffee demand has been increasing at a relatively slow rate. By 1995, we expect the recent price imbalances between robusta and arabica to be corrected and robusta coffee will sell at a more normal 10-15 percent discount to arabica in the future.

3.2 Cotton

World production increased by 3.2 percent a year over the 1976/77-1988/89 period. Most of this growth was due to increases in yield, with area having increased only 0.3 percent a year. Cotton consumption increased by 2.8 percent a year with the difference in growth rates reflected in rising stock levels. World cotton trade increased at an average annual rate of 2.9 percent.

The United States, China, the USSR, India, and Pakistan together account for nearly 75 percent of world production. Africa is a relatively small player with North Africa accounting for 2 percent of world output and the rest of Africa accounting for less than 6 percent. In recent years, all of Africa has produced the same amount of cotton as India. In terms of both yield levels and production growth rates, francophone Africa has generally done better than the anglophone countries.

Manmade fibers are an important source of competition for cotton lint. Cotton, however, has maintained a strong competitive position with respect to manmade fibers and cotton prices have declined relative to both polyester and rayon prices since the early 1970s.

World cotton production is expected to keep pace with growth in world demand and growth in output will continue to be based primarily on increases in yields. We expect cotton prices to increase in nominal terms due mainly to inflationary factors, but prices will also remain volatile in response to fluctuations in weather and crop conditions.

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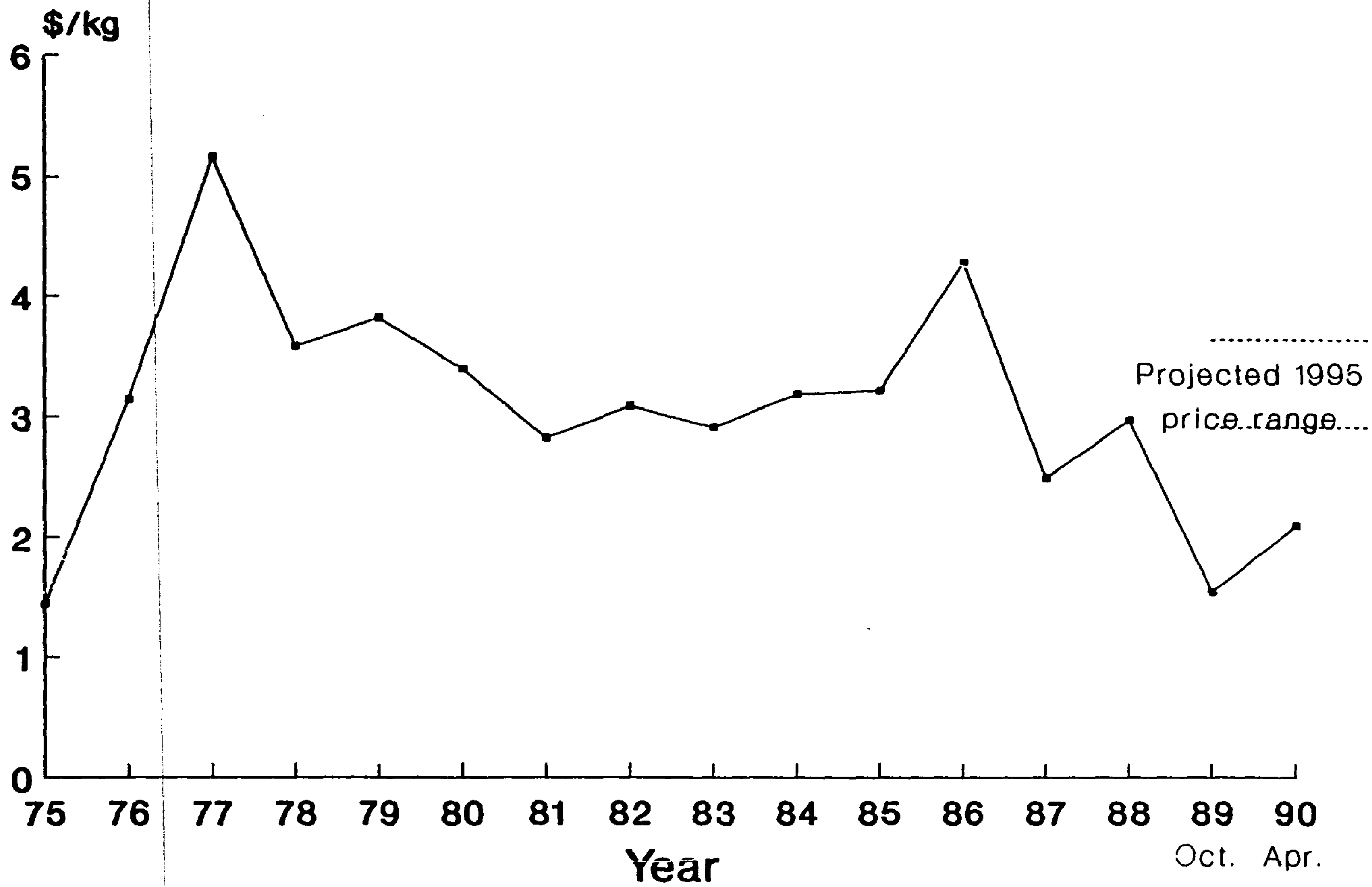
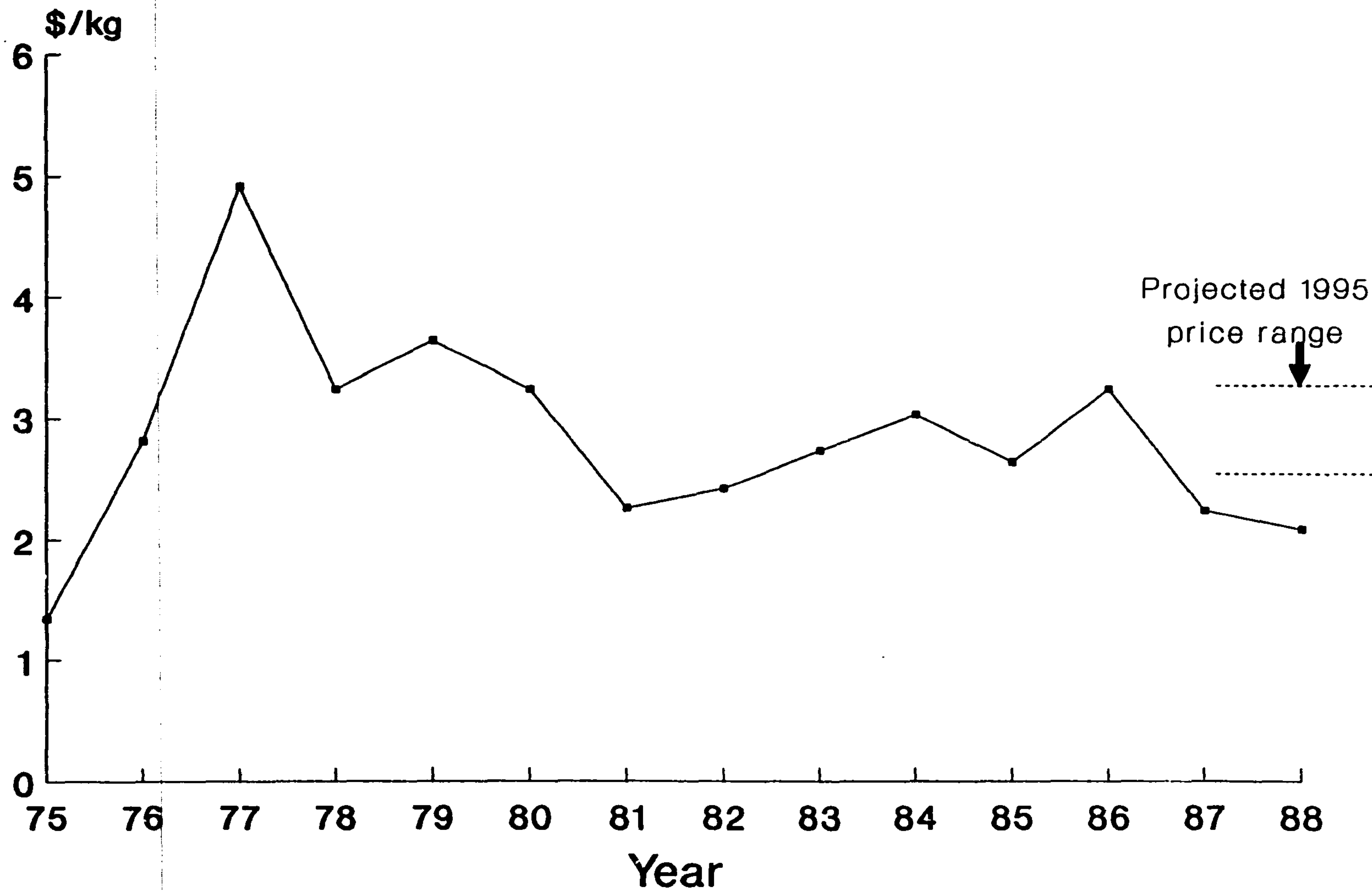
[1] New York coffee futures prices bottomed out in October 1989 at $1.63/kg. and had recovered to $2.16/kg. by mid April, 1990.

Figure 3.1 Arabica Coffee World Price Trend and Projected 1995 Price Range



Indicator Prices at New York & Bremen/Hamburg

Figure 3.2 **Robusta Coffee World Price Trend and Projected 1995 Price Range**



Indicator prices at New York & Le Havre/Marseilles

During the 1976/77-1988/89 period world cotton prices (A-Index, London) averaged about $1.65/kg. Prices in 1995 are projected to be in a range of $1.50-$2.45/kg. with a mid-point of nearly $2.00/kg. Historic and projected cotton prices are shown in Figure 3.3.

3.3 Groundnuts

Groundnuts are a relatively minor oilseed in the world accounting for about 7 percent of total world oilseed production. Unlike most other oilseeds, groundnuts are consumed both directly for food and crushed for oil and meal. With respect to crushings, groundnut meal faces competition from other oilseed meals and groundnut oil must compete with both oils from other oilseeds and palm oil which does not have a significant meal component and whose production has been growing rapidly.

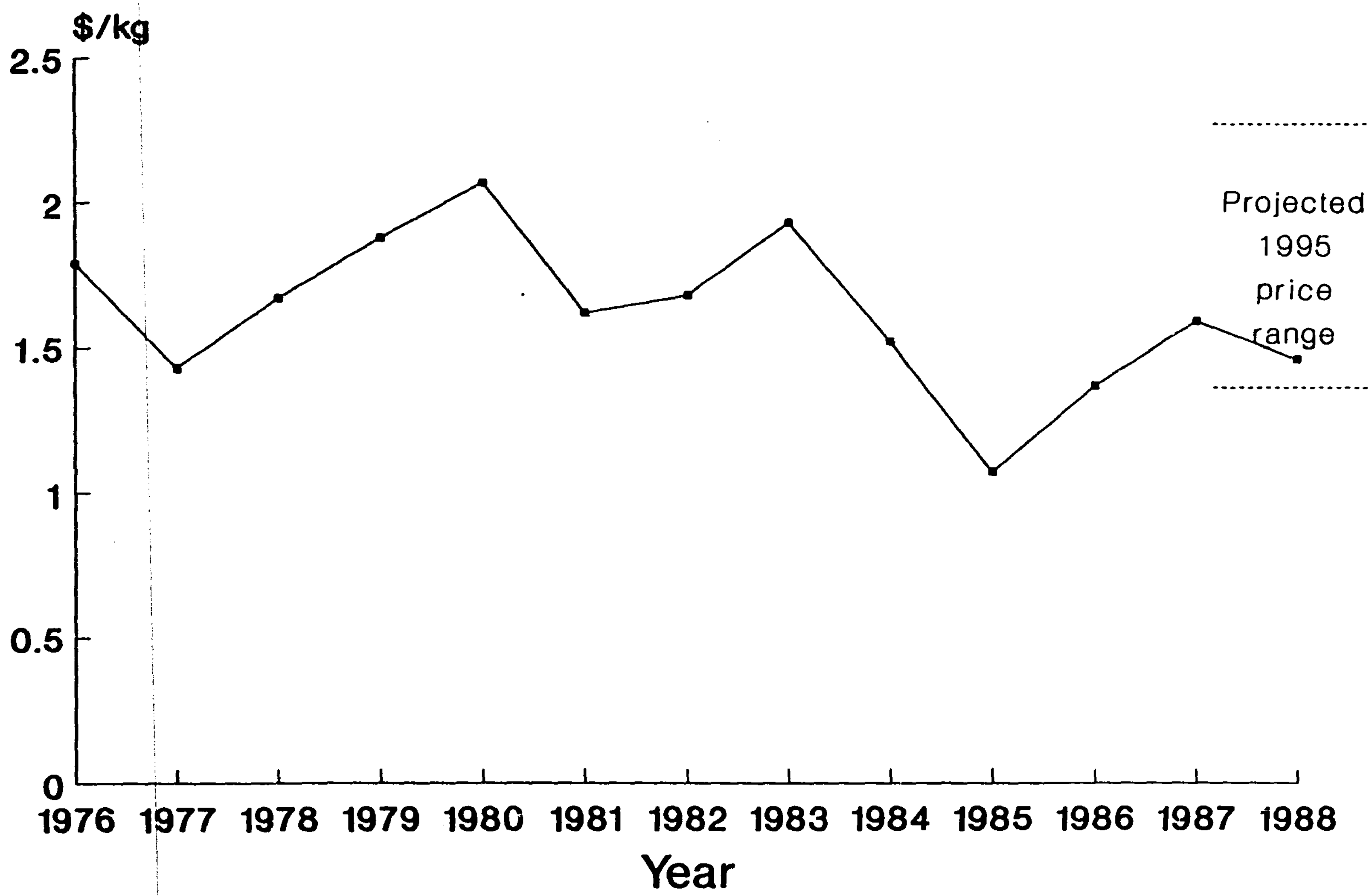
Africa is a relatively small producer of groundnuts with Senegal and Sudan being the largest producers in the region. India, China, and the United States are major producers and their combined output in recent years has represented 65 percent of total world output.

Groundnuts used for crushing into oil and meal represent about 60 percent of total use and we don't expect this share to change very much. As a consequence, groundnut prices will be driven primarily by oil and meal prices. Groundnut meal sells at a discount to soybean meal because of its inferior qualities--protein characteristics and problems with aflotoxin. The EC has been the main market for meal. On the other hand, groundnut oil has preferred quality characteristics and sells at a significant premium to soybean oil. However, competition from other preferred oils (rapeseed and sunflowerseed), especially in the EC, will limit the size of the market for groundnut oil.

Projected groundnut prices are derived by first projecting the price of meal and oil and then subtracting a projected crush margin. Historic and projected groundnut prices are shown in Figure 3.4. By historic standards, groundnuts and oilseed prices in general were low in the mid-to-late 1980s. We expect prices of all oilseeds including groundnuts to recover in the 1990s and by 1995 to be near the average prices that prevailed in the 1976-88 period. The latter averaged $443/mt. The mid-point of our projected range is $400/mt with a possible high of $500/mt and a possible low of $300/mt.

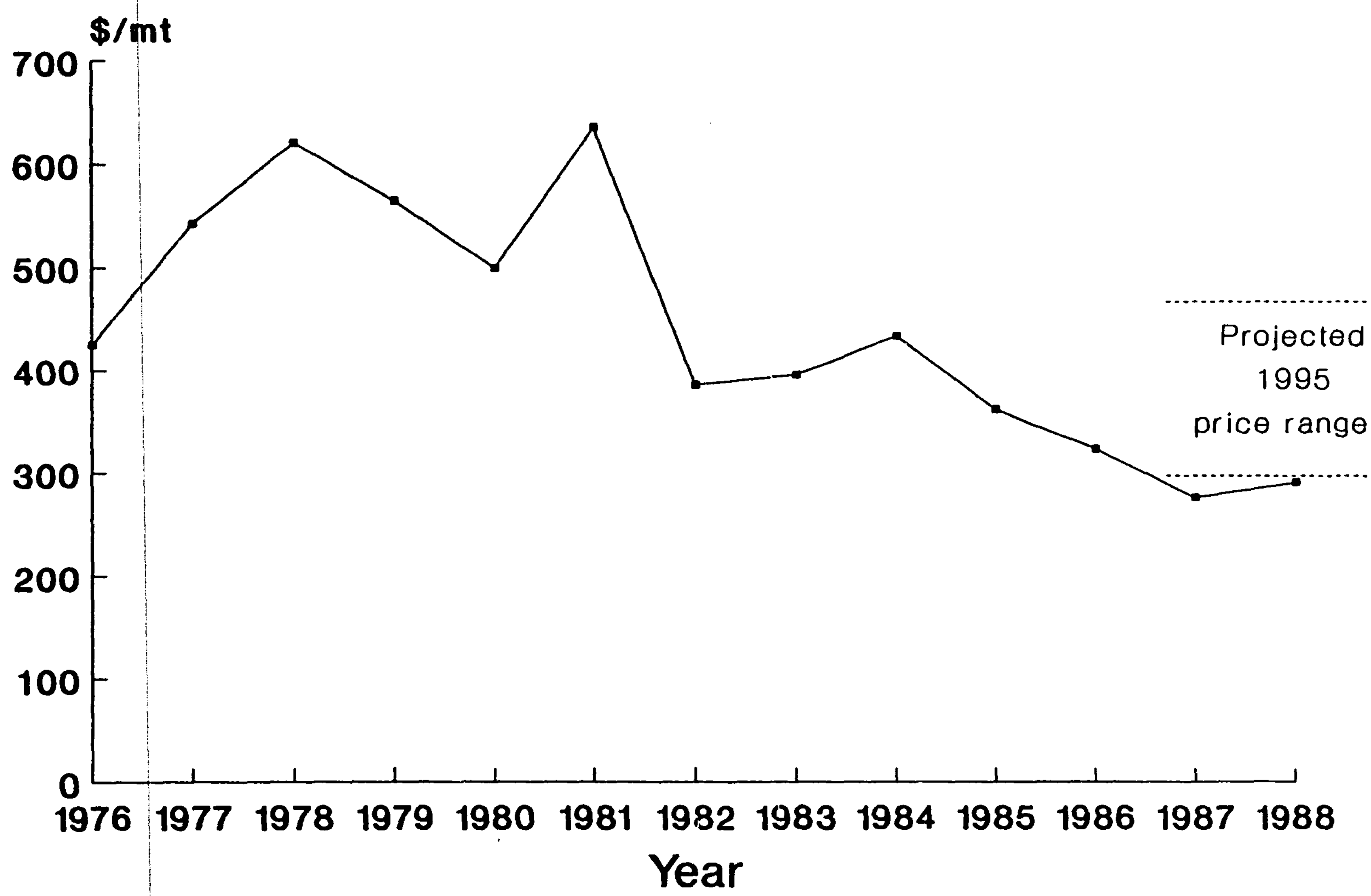
Figure 3.3

Cotton World Price Trend and Projected 1995 Price Range



Cotton A index Price: London

Figure 3.4 **Groundnuts World Price Trend and Projected 1995 Price Trend**



African Groundnuts, shelled Prices in Europe

4.0 THE POLICY ENVIRONMENT

INTRODUCTION

A variety of national policies affect competitiveness, either directly or indirectly. This chapter discusses the major impacts of both macroeconomic and agricultural policies from a theoretical perspective, as well as summarizing the policy experience for each study country. The major policy variables and their effect on competitiveness are summarized in Tables 4.1 through 4.4.

4.1 Macroeconomic Policies

4.1.1 Exchange Rates. Exchange rate policy has a powerful impact on export competitiveness. Overvalued exchange rates, common among many African countries during the 1970s and early 1980s, were a major factor behind the loss of export market share in countries such as Tanzania. During the 1980s a significant number of African countries, including Kenya, Tanzania, Zimbabwe, and The Gambia devalued their currencies as part of their broader economic adjustment programs. Overvalued exchange rates, linked to the overvaluation of the CFA, remain a problem in Cameroon and Senegal.

Devaluation (in nominal terms) is commonly recommended as a vehicle for reducing a trade or current account deficit. Its effectiveness in doing so, however, depends on several factors. If the export demand curve for the country's export commodity is inelastic, devaluation shifts the export supply curve outwards. As a result, increases in quantities sold are not sufficient to offset the reduced prices at which they are sold. Revenue (for a given quantity supplied) then falls.[1]

"Elasticity pessimists," as well as economists from the structuralist school, therefore have argued that devaluation may be an ineffective means of responding to a trade or current account deficit, given the low demand elasticities estimated for many traditional export commodities. However, other analysts argue that econometric estimates of the elasticities are biased downward, and hence, do not reflect the real situation.

In addition, the nature of trade contracts can complicate the impacts of a nominal devaluation. Import contracts are often written in dollars, while export contracts are frequently written in nominal currencies. Thus, a devaluation can temporarily worsen a current account or trade imbalance, as the import bill does not change, while the export bill declines in foreign currency terms. Such lags in adjustment to devaluation (the J curve phenomenon) have been observed and/or hypothesized in a variety of devaluation experiences.

Nominal devaluation also affects the cost of imported production inputs. In cases where production depends heavily on imported intermediate goods for

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[1] Devarajan and Rodrick (1990) contains a fuller discussion of the assumptions embodied in alternative models of exchange rate impacts.

which domestic substitutes are not available (e.g. agrochemicals used on export commodities), the associated increases in cost of production may significantly reduce the gain in competitiveness which would otherwise be associated with a devaluation.

In addition to the impact of the nominal exchange rate impact on competitiveness, the real exchange rate also affects competitiveness. The real exchange rate is defined as the ratio of the price of tradable to non-tradable commodities. An increase in the real exchange rate should promote a shift to the production of tradables, as the price of tradables increases relative to non-tradables. Again, however, the results are conditioned on the indirect impacts of devaluation on the price of nontradables. The demand for nontradable commodities can rise following a devaluation, if they are effective substitutes for more costly imports or if income increases associated with the effects of devaluation lead to increased demand for such commodities. The prices of nontradable factors (such as labor) are also components of the real exchange rate, which can directly affect competitiveness.

In this study we used the Policy Analysis Matrix (PAM) framework to examine the sensitivity of competitiveness to the exchange rate. When secondary PAM analyses were not available, production, marketing, and transformation budgets were used. To maintain consistency, cross-country comparisons of cost of production used nominal average "official" exchange rates. The sensitivity of cost of production estimates to assumptions about exchange rate levels was also tested. For example, for the CFA zone countries a 40% devaluation was simulated to examine the effects on competitiveness. (See Chapters 5-7 for the results of the sensitivity analysis).

Labor markets. The theoretical assumptions about domestic labor markets are important in tracing the potential impacts of devaluation. If we assume full employment, perfect labor mobility across sectors (implying that all workers face the same wage rate) and an inelastic labor supply, then a devaluation which initially raises the price of tradables (imports and exports) will shift their labor demand curves outward. This will bid up the wage rate in the labor market, and shift the supply curves inward as labor becomes more costly. The result is that some or all of the initial increase in exports and decrease in imports is neutralized. In this framework, the only way to get a lasting increase in exports is to lower the wage rate (or some other nontradable factor).

On the other hand, if we assume that there is unemployment and a fixed nominal wage (approximating conditions in the formal/government sector of at least some African countries), then a devaluation will shift the labor demand curves of tradables outwards without creating pressure on wages. However, increased employment will increase demand for non-tradables, raising their prices. This in turn may increase costs in the traded goods sectors, dampening the initial impact of the devaluation.

The more realistic situation an imperfect labor market, with wage rigidities in some sectors (e.g. the public sector, formal economy) while in other sectors (e.g. the informal sector) wages are more market determined. In addition, unemployment as well as underemployment exist. Under these conditions, linkages between competitiveness and wage rates are considerably more difficult to assess--both conceptually and empirically.

Sensitivity analysis was also used within the PAM and budget frameworks to examine how wage rates affect competitiveness.

Interest Rates. Interest rate policy has a dual impact on competitiveness. At the macroeconomic level, interest rates affect the incentives for national entrepreneurs to hold and invest their resources in the country. They also affect the allocation of investment resources, and the economic efficiency of those investments. At the sectoral level, subsidized interest rates may directly affect the economic or financial profitability of particular enterprises.

Negative real interest rates are prevalent in many developing countries, in part because of government policies which establish interest rate ceilings. These policies are generally regarded as having negative consequences on both savings and investment in those countries.

The impact of interest rate ceilings on total savings is hard to assess where financial markets are fragmented, either geographically or vertically (e.g. where there are informal as well as formal markets). It is clear that interest rate ceilings which translate into negative real interest rates, or even positive rates which are substantially below equilibrium, will move savings out of the banking system and into channels offering better returns. To the extent that savings are allocated into informal markets, which are relatively efficient, the negative impact is muted. Fragmented informal markets, however, will generally perform less well than an integrated financial system free of major distortions. Where other alternatives are not available, savings may simply decrease (in favor of consumption), or individuals will export their savings (capital flight) or save for self-investment projects. A variety of studies undertaken to estimate empirically the relationship between interest rates and savings have produced generally ambiguous results (see Polak, 1989).

The interest rate will also have a major impact on investment (i.e. the allocation of savings to productive activities). One major impact of interest rate ceilings is the "iron law of interest rate restrictions"--lenders restrict lending to borrowers whom they perceive to be low risk (generally wealthier, larger borrowers), and will lend for activities which will be profitable at the interest rate ceiling. This practice may exclude lending for many potentially higher return activities. Polak's analysis suggests that with negative real interest rates, a country's entire stock of savings could be allocated unproductively (to investments with negative real returns), while a substantial portion of the savings could be misallocated when interest rates are positive, but substantially below equilibrium.

In addition, interest rate distortions may lead to investments which support inappropriate technologies, as capital is made "artificially" cheap and more capital-intensive technologies are therefore adopted.

Because returns on investment in Sub-Saharan Africa are generally perceived to be lower than in other developing regions (such as Asia), it is important to examine the impact of macroeconomic policies on investment allocations. While some of the higher investment costs, as well as lower returns, reflect physical constraints and infrastructural weaknesses, the impact of these policies on the allocation of investments is also likely to play a significant role (World Bank, 1989).

Although the impact of policies affecting the interest rate on competitiveness may be substantial, we did not specifically address this issue. Where the information was available, however, we did analyze the sensitivity of competitiveness to changes in the cost of capital.

4.2 Agricultural Sector Policies

As the summary of government policies affecting competitiveness indicates (Tables 4.1-4.4), government intervention in the agricultural sector has been significant in most of the countries in this study. Interventions include policies affecting input and output prices, credit, investment, marketing, agricultural institutions, extension and research. Losses on programs targeted to the agricultural sector are significant elements of the budget deficit in Tanzania, Kenya and Cameroon. In several instances--parastatal operations (except SODECOTON in Cameroon), parastatals in Tanzania, the groundnut marketing parastatal in Gambia--the consensus is that the expenditures are counterproductive because they fund public sector institutions whose inefficiency and intervention reduces the competitiveness of the export crops they regulate.

In other instances (e.g. the provision of marketing services for coffee in Kenya, the provision of marketing and quality control for cotton in Zimbabwe, the dissemination of new technologies in northern Cameroon by SODECOTON) public sector programs appear to work reasonably well. Finally, there are instances in which public sector expenditures for other components of the agricultural sector may distort the calculations of comparative advantage by providing subsidies and/or price regimes which may allocate resources away from crops in which countries have a comparative advantage. Examples include rice price support programs in Cameroon and Senegal and grain stabilization programs in Tanzania.

We examined the impacts of various agricultural policies and the efficiency of the institutions involved (e.g. marketing boards) on competitiveness in our comparisons of cost of production and marketing data and the PAMs as well.

Table 4.1

Macroec[illegible]c Policy Variables Affecting Competitiveness

	Cameroon	+/- Effect	Kenya	+/- Effect	Tanzania	+/- Effect	Zimbabwe	+/- Effect
Macro Policies								
Exchange Rate	Tied to CFA, overvalued (30 - 55%)	-	Floating exchange rate--good pass through to cotton producers; may not be as good as for coffee. Steady devaluation recently.	+	Devaluation improved export crop prices; currency still overvalued versus informal market rate; inflation >30%.	?	Significant overvaluation during 1970's and 1980's. Recentlu have undertaken a series of devaluations.	+
			Possible increase in production costs via higher input prices	-/?	Poor passthrough of exchange rate changes to producers of export crops.	-		
Interest Rate	Administered rates; financing of government deficit crowds out other borrowers; government withdrawls of cash triggered liquidity crisis.	-			Interest rates have risen as part of policy reform to achieve positive real interest rates. This has raised parastatal costs.	-/?		
Financial System	Administered interest rates	-	Banking system relatively well developed; new reforms need to be monitored to assure future soundness	+/?	No private banks; constraints on effective provision of credit and financial services.	-	Well developed; lending to large scale commercial farms through commercial lenders; lending to small scale communal and resettlement farms through AFC.	+
	Poor system for developing or supporting private lending	-			Heavy lending to government crowds out other lending	-		
					Inflation a problem in recent years	-		
Wage Rates	High -have been inflated in recent years due to "Dutch Disease".	-					Government establishes minimum wages. Real average non-agricultural wage below level in 1980.	-/?
	Labor shortages have also been a problem.	-						
Fiscal Policies								
Government deficit	High deficit; having trouble financing domestic programs.	-	Large deficit--borrowing from local banking system has led to expansion of money supply, crowding out of private borrowers and inflationary pressure	-	Large government deficit; macro impacts from government borrowing to cover deficit.	-	Balance of payments problems recently due to large outflow in the capital account, mainly for debt repayment and remittance of profits and dividends.	-
	Deficit reduction entails contraction of ag services	-						
Public Sector Employment	Large expansion of public sector; employment created by bloated parastatals	-			Large public sector employment in inefficient parastatals contribute to government deficit.	-		
	Generally improving with structural adjustment reforms	+						

Table 4.2

Policy Variables Affecting Competitiveness in Coffee Production

	Cameroon	+/- Effect	Kenya	+/- Effect	Tanzania	+/- Effect	Zimbabwe	+/- Effect
Trade Policies								
Export	Taxation of coffee exports via ONCPB levies.	-	Moderate taxation of coffee exports; tax pegged to auction prices	+	Policy changes allow more trade and permit exporters to retain a % of foreign exchange for imports.	+/?	Government began Export Promotion in 1989. No agricultural export taxes.	+
	Policy changes will allow N.W. coffee co-op to export directly, bypassing inefficient ONCPB	+						
Import			Import restrictions being liberalized; does it help coffee producers?	+	Government liberalizing import policy; those with access to their own foreign exchange can import permissible goods. Should lead to increased availability of necessary goods such as transportation and agricultural inputs.	?	Tight control of imports; average contraction of 3% per year during the 1982-87 period; has allowed deterioration of farm equipment.	-
Sectoral Policies								
Institutions	Complex and inefficient marketing and input supply parastatals	-	Efficient coffee marketing system (via parastatal)	+	Large number of parastatals intervene in agricultural sector; large deficits to National Milling Corporation (NMC) creates serious budget problems	-	Grain Marketing Board (GMB) accepts delivery of coffee; establishes seperate coffee trading account.	
	Liberalizing input supply and allowing N.W. co-op to export directly should improve input availability and increase price recieved by farmers.	+	Some co-ops inefficient/ more costly than others.	-	Co-ops are heavily indebted to Central bank; can't borrow.	-	At the end of each year, GMB ensures that producers recieve net realisations from coffee sales; efficient marketing system.	+
					Internal trade liberalization in food crops (reduced role of NMC, greater cooperative role) along with delayed coffee producer payments has led to re-allocation from coffee to food crops.	+/?	Producer interests are represented by the Coffee Producers Association; Association actively promoting and marketing Zimbabwean coffee and searching for new niche markets.	+
					Cooperatives are assuming a greater role in marketing and input supply; may be a problem in their ability to perform in short term.	+/?		

(cont'd)

Policy Va[illegible]es Affecting Competitiveness in Coffee Production

	Cameroon	+/- Effect	Kenya	+/- Effect	Tanzania	+/- Effect	Zimbabwe	+/- Effect
Sectoral Policies (Continued)								
Investment	Inadequate investment in ag; renewal of coffee plantations fallen behind replacement rates leading to lower productivity and contributing to higher costs.	-			Tremendous institutional changes over the last 10 years have led to uncertainty and lower investment in coffee.	-	Strong investment in coffee sector.	+
Price	Low producer prices (about half world price levels) taxed producers for last 20 years. In 1988/89, producer price has been set above very low world price, subsidizing producers.	-	World market price transmitted to farmers; no administered price	+	Substantial increases in official producer prices for all major commodities offset somewhat by an inflation rate of 30% per year.	-	Coffee producers are paid net realisable value of coffee sold on the international and local market.	+
			Delayed producer payments -in 1987/88 CBK had to borrow $62 million to make farmer payments.	-	Real producer price for coffee static over the period 1962-88; Some improvement in nominal prices recently due to devaluation but not sufficient to create incentives for additional investment in coffee.	-	Price differentials encourage production of highest quality coffee which recieves at least 10% premium over world price.	+
Inputs	Privatization of fertilizer market (a step in direction of eliminating subsidies). Fertilizer is distributed through coffee channels, also being used on other crops. Indications that avail-	+/?	Fertilizer market reform under way--more competition and increased availability reported but parastatal still primary distributor	+/?	Farm chemicals and other basic inputs all supplied by TCMB through central bulk procurement and cost deducted from payments recieved by farmers. High degree of inef-ficiency with unreliable, untimely delivery; farmer has had no choice as to type level of input use. In future, costs of inputs will no longer be deducted from payments recieved by coffee producers.	+/-	Coffee is irrigated and input intensive in Zimbabwe; farmers replace trees after 7-10 years. Input availability doesn't appear to be a problem.	+
	Timing and delivery during transition may be problems.	-	Significant price increases for agro-chemicals (appears to be primarily due to devaluation). Donor supplied fertilizer no longer significant.	-/?				
Credit	Old system of subsidized credit being disbanded; new system being set up (CCA); has led to severe shortage of credit. This will continue to be a constraint.	-					Credit readily available for Large Scale Communal (LSC) farmers.	+
Marketing	Complex administered marketing system--inefficient and source of higher costs	-	Effective marketing system which reaches small and large farmers	+	Long marketing chain; lack of grading and price differentials which provide incentives to produce high quality coffee; extremely high interest and transport costs.	-	Effective marketing system and producer representation.	+
			Stock levels have been high and costly.	-				
Extension	Fragmented, inefficient system	-					Effective	+
Research					Inadequate coffee research; no introduction of disease resistant varieties.	-	Effective	+

Table 4.3

Policy Variables Affecting Competitiveness in Cotton Production

	Cameroon	+/- Effect	Kenya	+/- Effect	Tanzania	+/- Effect	Zimbabwe	+/- Effect
Trade Policies								
Export	Little taxation of cotton exports; unclear if proposed changes will impact producers	+/?	Moderate taxation of other export crops; status of cotton unclear.	+	Policy changes allow more trade and permit exporters to retain a percentage of foreign exchange for imports -unclear if this applies to cotton.	+/?	Government began Export Promotion Program in 1987; no agricultural export taxes.	+
					Coops and large-scale producers of non traditional export crops are allowed to sell abroad directly.			
Import	Tariff schedule provides for an "across-the-board surcharge (fertilizer is an exception).	-	Import restrictions being liberalized; does it help cotton producers?	+/?	Government liberalizing import policy; those with access to their own foreign exchange can import permissible goods. Producers not forced to supply 100% of the cost of imports anymore.	?	Tight control of imports; average contraction of 3% per year during 1982-87 period. This has allowed for deterioration in farm equipment.	-
Sectoral Policies								
Institutions	SODECOTON regarded as an efficient and effective para-statal; this has has positive effects of the region in terms of increased yields of cotton & food crops.	+	Performance of Cotton Seed and Lint Marketing Board unclear.	?	Large number of parastatals intervene in agricultural sector; large deficits to National Milling Corporation (NMC) due to high interest costs due to debts.	-	All produce must register with the Cotton Marketing Board (CMB); large producers must adhere to delivery quota system to facilitate orderly ginnery throughput.	
	High defecits/financial difficulties	-			Market liberalization in food crops (reduced role of NMC, greater cooperative role) has provided incentives to produce food crops instead of export crops.	+/?	CMB has established a good quality control system.	+
					The roles of the Tanzania Cotton Marketing Board and cooperatives are in transition.	+/?	Producer interests are represented on the CMB (LSC and SC*) and by Producer Associations.	+
					Cooperatives are assuming a greater role in marketing and input supply; this will likely inhibit their ability to perform in the short term.	+	Grading and selling functions contracted to private industry.	
					Parastatal are not meeting their financial obligations to farmers because of their high indebtedness	-	CMB defecits due to subsidization of domestic textile industry.	-

*LSC = Large Scale Communal
SC = Small Communal

Table 4.3 (cont'd)

Policy Variables Affecting Competitiveness in Cotton Production

	Cameroon	+/- Effect	Kenya	+/- Effect	Tanzania	+/- Effect	Zimbabwe	+/- Effect
Sectoral Policies (Continued)								
Investment	Question whether more cotton should be grown in the North.	?			Ag sector is starved for investment capital.	-	Government sets most producer prices; has been relatively efficient and successful.	+
Price	Administered prices for cotton were generally higher than for other crops. Effect of recently announced price decreases unclear.	-	Administered prices; in past apparently below world market price.	-	Substantial increases in official producer prices for all major commodities offset somewhat by an inflation rate of 30% per year.	-	LSC cotton farmers have recently complained about low producer prices; have been shifting out of cotton.	-
	High rice price supporting self-sufficiency misallocates resources.	?						
Inputs	Have moved towards a gradual reduction of fertilizer subsidies.	+/?	Fertilizer market reform under way—more competition and increased availability reported but parastatal still primary distributor.	+/?	Cooperatives now responsible for input delivery, but timing and availability are still an issue. Recent policy changes have required farmers to pay for actual chemicals used.	+/?	Government sets fertilizer prices; has increased them significantly every few years; farmers would prefer small annual charges	-
	Timing and delivery during transition may be problems.	-	Significant price increases for agro-chemicals (appears to be primarily due to devaluation).	-/?	Costs have risen due to devaluation; donor supplies have decreased since the early 1980's.	-	Availability of foreign exchange for imported agricultural inputs has been a constraint.	-
Credit					Lack of credit is a major constraint throughout the agricultural sector.	-	No problem for LSC producers; government is attempting to increase available subsidized credit to SC farmers.	+
Marketing	Administered monopoly marketing system appears relatively efficient.	+	Effectiveness of Cotton Seed and Lint Marketing Board unclear.	?	Long marketing chain; lack of grading and price differentials which provide incentives to produce high quality coffee; extremely high interest and transport costs.	-	CMB has been an effective marketing board for producers.	+
	Deals with world market on a spot market basis; very little value-added.	-					Entire production/marketing/extension system geared to producing high quality, uniform lint used to produce high quality yarn.	+
	Marketing system not exploiting all the opportunities.	-						
Extension	Fragmented, inefficient system nationally, but SODECOTON seems effective for cotton.	-					Effective extension system; attempting to provide better services to small-scale and resettled farmers.	+
	SODECOTON cutting back its role in extension.	-						
	If area is not expanded or technology improved, there is little role for extension.	-						

Table 4.4
Policy Variables Affecting Competitiveness in Groundnut Production

	The Gambia	+/- Effect	Senegal	+/- Effect
Macro Policies				
Exchange Rate	Dalasi has been a floating currency since Jan, 1986.	+	Senegal is a CFA country, so currency follows the franc.	
	Thin market, some overvaluation	-		
Interest Rate	Flexible, market influenced interest rate policy adopted in 86/87.	+	Lending rate 7-10%	+
	Current lending rate 25-30%	-		
Financial System	GCDB, the largest bank and sole source of term lending, is currently under reform.	-	Member of BCEAO; free convertability	+
			Bank credit heavily concentrated in short-term financing.	-
Wage Rates	Rural wages reported above official minimum.	-	Rural wages reported below official minimum.	+
Fiscal Policies				
Government deficit	Current account deficit roughly 20% of GDP.	-	Persistant balance of trade deficit despite a significant reduction in imports since 1981.	-
	Fiscal deficit 7% GDP	-		
	Official loans account for 80% of external debt	-	Senegal has a large external debt, which reached $2.4 in 1986.	-
Public Sector Employment	Highly concentrated community, social, and personal services (51%) and in transport, stroage and communications (19%)	?		
Trade Policies				
Export	Relatively free; re-exports make up large share of merchandise exports (over 70%	+	Foreign exchange earnings from peanut production have declined since 1979.	-
Import	Relatively free; imports half of all food supplies, and most manufactured goods.	+	Senegal's most important agricultural imports are cereals, particularly broken rice and wheat. GOS trying to reduce food imports.	?
Sectoral Policies				
Institutions	Gambia Produce Marketing Board (GPMB) and GCU as its agent have been sole legal buyer.	-	State historically very involved in the distribution of inputs and the marketing of peanuts. Abolition of ONCAD in 1980 and SONAR in 1985 marked the beginning of market reform. Groundnut sector now controlled through SONOCOS, which monopolizes crushing and marketing of oilseed products and government sets producer prices.	?
	System of target volume purchases encourages Gambian farmers to sell elsewhere (Senegal) when targets are reached.	-		

Table 4.4 (Cont.)
Policy Variables Affecting Competitiveness in Groundnut Production

Sectoral Policies	The Gambia	+/- Effect	Senegal	+/- Effect
Institutions (continued)	Liquidity problems have encouraged parallel market sales	-	GOS recently encouraging private assembly on a trial basis.	?
	GOTG recently instituted a program for recovery of outstanding debt owed by farmers to the GCU, and new credit eligibility rules for cooperative members.	+		
Investment	Extent to which agricultural investment has been promoted unclear due to the temporary nature of groundnut price increases.	?	Investment heavily biased towards irrigated agriculture.	-
Price	Producer prices fixed by GPMB; typically set lower than in Senegal, providing incentives for cross-border trade. price incentives.	-	SONOCOS supports artificually high prices, which results in large defecits.	-
			Producer price declined by 22% in May, 1988	-
	Recent reductions in producer prices has caused a decline in area planted to groundnuts.	-		
Inputs	GOTG reduction in input subsidies has led to increases in the price of fertilizer and seed and dramatic reductions in fertilizer use. GCU still provides inputs on credit.	-	Withholding system (retenue) which tied seed and fertilizer distribution to the amount of peanuts marketed the previous year has been eliminated	+
Credit	Interest rates charged to farmers were raised to a 24% annual rate in 86/87. In 87/88 commercial sources of funding to the GCU were discontinued.	-	No national credit program since 1980; credit virtually unavailable form banking sector; CNCN set up to remedy this	-/+
	Avalability of credit has declined annually since 1986	-		
	Rates charged for GCU credit are below commercial rates charged by banks for loans to individuals in other sectors.	+		
Marketing	GPMB is the sole legal buyer of groundnuts for processing and export.	?	Oil-crushing parastatal has monopoly on legal purchase of groundnuts; export predominantly oils and meal rather than the whole peanut.	?
Extension				
Research	Very little agricultural research in last 20 years.	-	Research linkages with French (IRHO) and U.S. universities	+
			Significant progress on treatment of aflotoxin.	+

5.0 COFFEE - COUNTRY CASE STUDIES

INTRODUCTION

This chapter examines the competitiveness of coffee in Cameroon, Kenya, Tanzania, and to a lesser extent Zimbabwe (since cost of production data was scarce and comparative advantage studies were unavailable for coffee production in Zimbabwe). It includes a description of the farming systems in which arabica and robusta coffee are grown and an analysis of production and marketing costs for each country. Policy analysis matrices were available for Kenya and Cameroon. This framework was used to examine the sensitivity of measures of comparative advantage to changes in selected input costs, projected 1995 world prices and certain policies.

A comparison of the results of analyses of the PAMs and cost of production is made across the study countries as well as the competing coffee producing countries of Brazil, Colombia, and Costa Rica.

5.1 Coffee in Cameroon

5.1.1 Export Markets and Trends

Coffee has been an important foreign exchange earner for Cameroon for a long time. From 1987-1988, coffee earned on average 30% of the non-oil foreign exchange (IMF, 1988). As oil exports increased substantially in the early 1980s, coffee earnings declined as a percentage of total export earnings. In 1985 and 1986, however, oil revenues dropped sharply along with falling world commodity prices, leading to a decrease in export earnings and precipitating an economic crisis in Cameroon that is still being felt.

ONCPB is the government parastatal or marketing board that has in the past been responsible for exporting all coffee with the exception of arabica sold through the major arabica cooperative, UCCAO (located in Western Province). Recent policy changes are allowing the other major coffee cooperative, NWCA (located in Northwest Province), to also export directly, without going through ONCPB. For robusta coffee, most of the actual purchasing and transport is handled by the exporters and by buying agents licensed by ONCPB.

Cameroon sells most (>90%) of its coffee to ICA member countries. The Netherlands, Italy, W. Germany, and France are the largest buyers, accounting for 77% of sales volume in 1987/88. A substantial amount of Cameroonian coffee is not of the highest quality, and thus has not been able to capture price premiums or a good reputation internationally.

5.1.2 Description of Production System

West Province produces two-thirds of the arabica coffee in the country and more than one-quarter of the national robusta. It is one of the few places in the world where robusta and arabica coffee are grown adjacent to one another, allowing a comparison of their costs of production under similar circumstances.[1] In the densely populated coffee growing regions of Cameroon, new areas for arabica cultivation are becoming increasingly scarce.

For arabica coffee, yields are very low (around 250 kg/ha of green coffee) due to intensive intercropping of food crops and the age of the trees. Twenty-two percent of arabica trees are over 25 years old, and only 9% under 4 years of age. Almost half of Cameroon's robusta plantations, on the other hand, are under 12 years old, with only 20% over 25 years old (World Bank, Nov. 1988). The yields of robusta are therefore higher than those of arabica, varying from 425 kg/ha under traditional techniques to 625 kg/ha under improved cultivation practices. These higher yields are also due to the relative absence of intercropping with food crops.

Planting density for arabica coffee varies from 1,000-1,500 trees per hectare, depending on the extent of intercropping with food crops (maize, beans, banana/plantains, vegetables) and the type of soil. Weeding is usually undertaken because of the food crops planted around the coffee plants. Along with crop residues and manure, chemical fertilizers are applied. A recent survey carried out in Northwest Province (which accounts for 45% of national arabica coffee production), suggested farmers apply around 200 kg/ha. of the compound fertilizer NPK 20-10-10, and approximately 27 kg/ha of ammonium sulfate (although these averages included non-users), which is much lower than recommended doses[2] (MINDENO, 1989). Approximately 30% of the farmers also spray against pests and diseases (de Graaf, 1986).

Robusta coffee is planted at a density of 1,200 to 1,500 trees per hectare, and is sometimes intercropped with cocoa and other trees. Less weeding and fertilization occur in general on robusta trees as opposed to arabica trees, although this appears to vary by province. Pesticides are used extensively, and are mainly aimed at protection against coffee berry borers and other insects and caterpillars.

5.1.3 Costs of Production

A comparative economic analysis of coffee production across eight countries was one of the sources of information regarding cost of production and marketing costs of coffee in Cameroon (de Graaf, 1986) and Kenya. This study compared coffee production systems in Brazil, Colombia, Costa Rica, Rwanda, Cote d'Ivoire, and Indonesia as well. More recent information on marketing costs for Cameroon was obtained from an African Development Bank sponsored study of the coffee subsector (Scott and Wilson, 1988).

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[1] The ecological conditions are different, however, with arabica being grown generally above 1,000 m altitude, and robusta below 1,000 m. The processing techniques are different also: wet processing for arabica and dry processing for robusta.

[2] Recommended doses of NPK are 300 kg/ha for the first application and an equal dose for the second application.

When estimating costs of production for coffee, the initial establishment costs should be taken into account in determining subsequent annual returns. The establishment phase of a coffee tree is generally thought to be four years, followed by anywhere from 25 to 45 years of productive life. Peak productivity is achieved at around 15 to 20 years in Cameroon. Thus, total establishment costs (including labor inputs) were amortized over 20 years assuming an interest rate of 10%. Total establishment costs for Cameroon were around 235,200 CFA/ha. or $650/ha. (see Table 5.1), with labor being the major cost. Compared to other coffee-producing countries, Cameroon has relatively low establishment costs. This is especially true when they are compared to costs where modern plantations are more common, for example, Colombia at $3,400/ha. and Costa Rica at $3,000/ha (de Graaf, 1986). Even Kenya had much higher establishment costs at $1,200/ha.

Table 5.1 gives production costs of both arabica and robusta coffee under traditional and improved practices in the West Province of Cameroon. Costs of production were lower in Cameroon for robusta coffee than for arabica coffee in 1982/83, and the returns to labor were higher. In fact, the costs of production of arabica (around 450 CFA/kg for both traditional and improved husbandry practices) were unprofitably above the producer price of 370 CFA/kg. At the same time, the cost of producing robusta coffee was much lower, ranging from 260 to 275 CFA/kg., resulting in a profit to the producer who received a payment of 350 CFA/kg.

A more recent coffee sector study using 1987 cost of production figures found the same relationship holding, which explains the decline in arabica production and the increase in robusta output (ADB, 1988). This study found that at extremely low input levels, arabica yields decline, but so do costs, to the point that it makes sense for farmers to keep harvesting coffee, although no incentive exists for planting new coffee trees. It also concluded that costs per kilogram of arabica decline dramatically as yields increase, with 1987 costs of production of 837 CFA/kg when yields are 300 kg/ha, dropping to 321 CFA/kg when yields reach a level of 1,000 kg/ha. Since farmers in Cameroon are not applying sufficient inputs to achieve such high yields, their costs per kilogram of coffee produced are very high.

From Table 5.1, it can be seen that returns to producers are positive if labor costs are assumed to be zero. Although most of the labor inputs are family labor, when these total labor hours (including family labor hours) were valued at the average agricultural wage rate (700 CFA/man-day in 1982/83), these gross margins became negative for arabica coffee and very small (70-90 CFA/kg) for robusta coffee production. In fact, labor costs comprise 50% of total costs for arabica production and 60% of total costs for robusta production when its value is imputed in this manner.

Chemical fertilizers and pesticides generally made up from 30-50% of total costs (assuming zero labor costs) in 1982/83. The government of Cameroon has heavily subsidized imported fertilizer in the last decade. Fertilizer consumption rose three-fold from the mid-1970s to the mid 1980s to over 100,000 metric tons. Sixty percent of this was subsidized. Total quantities of subsidized fertilizer increased from around 65,000 mt in 1984/85 to 115,000 mt in 1987/88, with the 1987/88 subsidy varying by type of fertilizer and ranging

Table 5.1 **CAMEROON: West Province 1982/83**

Production Costs of Green Coffee – per hectare and per kilogram

	ARABICA		ROBUSTA	
	Trad-itional	Improved	Trad-itional	Improved
Yield (kg/ha)	250	325	425	625
Plant density (no. trees/ha)	1250	1250	1300	1300
Area in coffee (ha)	104000	104000	41000	41000
Productive Period (years)	20	20	25	25
Producer Price Received – CFA/kg	410	410	350	350
RECEIPTS – CFA/ha	102500	133250	148750	218750
VARIABLE COSTS – '000 CFA/ha				
Wage rate (CFA/man-day)	700	700	700	700
Hired Labor – no. of man-days	85	101	100	138
Hired Labor costs ('000 CFA/ha)	59.5	70.7	70	96.6
Material Input Costs:				
fertilizers & herbicides	7.0	14.0	3.5	14.0
insecticides & fungicides	4.0	10.0	2.8	3.6
processing & irrigation	6.0	8.0	2.0	3.0
Subtotal – material input costs	17.0	32.0	8.3	20.6
TOTAL VARIABLE COSTS	76.5	102.7	78.3	117.2
FIXED COSTS – '000 CFA/ha				
depreciation & interest – equip.	7.0	10.0	7.0	10.0
management fees & staff salaries	-	-	-	-
administration	-	-	-	-
transport & infrastructure	2.0	6.0	-	-
other (interest)	-	-	6.0	9.0
Subtotal	9.0	16.0	13.0	19.0
Total Establishment Costs	235.2	235.2	235.2	235.2
Annuity of establishment costs	27.5	27.5	25.8	25.8
TOTAL FIXED COSTS	36.5	43.5	38.8	44.8
TOTAL COSTS PER HA ('000 CFA)	113.0	146.2	117.1	162.0
Conversion factor (ha/kg)	0.0040	0.0031	0.0024	0.0016
TOTAL COSTS PER KG (CFA)	452.00	449.85	275.53	259.20
GROSS MARGIN (CFA/ha)	-10500	-12950	31650	56750
GROSS MARGIN (CFA/kg)	-42.0	-39.8	74.5	90.8
Exchange Rate (CFA/$U.S.)	358.7	358.7	358.7	358.7
COSTS PER HA ($U.S.)	315.03	407.58	326.46	451.63
COSTS PER KG ($U.S.)	1.26	1.25	0.77	0.72
Family and hired labor (man-days/ha):	85	101	100	138
Return to family labor (CFA/man-day):	900	844	1275	1298

Source: de Graaf, 1986.

from 59% to 101% (USDA, 1989). In 1985 and 1986, around 50,000 mt was delivered to coffee cooperatives, with a subsidy of around 110 CFA/kg (PNUD, 1989). This growth in demand for subsidized fertilizer, combined with fiscal constraints of recent years, made it impossible for the GOC to maintain the fertilizer subsidies. Compounding this was fiscal and administrative constraints which led to delays of up to 10 months in the delivery of fertilizer.

The 1984 Agriculture Survey showed that 53% of coffee growers in Cameroon fertilize their crop. Since arabica coffee has a higher value and is grown in more densely populated areas, one would expect to see higher fertilizer rates applied to arabica coffee. However, this was found to be true in West Province (which has 42% of total arabica production), where 80% of farmers fertilize their coffee, but not in Northwest Province (45% of total arabica production). Robusta fertilization rates are high in Littoral Province (the major robusta producing province), but low in the east (1984 Agriculture Survey).

Returns to fertilizer use for arabica coffee were found to be significantly positive even at unsubsidized fertilizer prices in West Province (Sama, no date). This same survey asked farmers why yields were so low, and almost half of the respondents blamed an inadequate fertilizer supply (Minot and Johnson, 1989). Producers in the northwest apparently have been pleased with an increased availability resulting from the recent removal of subsidies (P. Wyeth, personal communication).

Comparative Returns to Coffee versus Food Crops. Measured in constant CFA, real prices paid to producers for both robusta and arabica coffee declined from 1960-1987. Over the period 1975-1987, nominal prices increased at an average annual rate of 5.8% for arabica and 9.1% for robusta; however, urban inflation (which is likely greater than rural inflation) grew at a rate of 11% (Scott and Wilson, 1988). This means that real prices have been declining faster for arabica than for robusta coffee.

Declining real prices have reduced the attractiveness of arabica coffee relative to food crops, and of robusta relative to both food crops and cocoa. Table 5.2 shows comparative returns in different regions for food crops and cash crops. Returns to cocoa are generally much higher than returns to robusta production. In the West and Northwest Provinces, food crops compete with coffee. The roads are quite good in these areas, reducing transport costs to urban markets. High yielding arabica coffee (1200 kg/ha) has relatively high returns in these areas. Unfortunately, yields as high as this are seldom achieved. Horticultural crops show the highest cash returns per hectare.

5.1.4 Marketing Costs

Marketing channels of coffee vary considerably in Cameroon by region and by type of coffee produced. For arabica two marketing systems exist: the production of West Province is handled and exported by the Cooperative Union (UCCAO), and in Northwest Province it is handled by a similar organization, NWCA, on behalf of ONCPB, the government coffee board. ONCPB takes care of

Table 5.2

Cameroon: Producer Prices and Export Unit Values

	1980/81	81/82	82/83	83/84	84/85	85/86	86/87	87/88
Producer Prices: (plus bonus)								
Robusta Coffee	320	330	350	390	460	470	470	470
Arabica Coffee	350	360	370	430	495	520	520	520
Export Unit Values:								
Robusta Coffee	532	593	679	1109	1147	1143	992	573
Arabica Coffee	532	740	945	1078	1271	1288	515	683
Producer Price as % of Export Value:								
Robusta Coffee	60.2%	55.6%	51.5%	35.2%	40.1%	41.1%	47.4%	82.0%
Arabica Coffee	65.8%	48.6%	39.2%	39.9%	38.9%	40.4%	101.0%	76.1%

COMPARATIVE RETURNS: FOOD CROPS VERSUS CASH CROPS

PROVINCE	CROP	CROP YIELD (kg/ha)	CASH RETURN (CFA/ha)
East, Central, South	Robusta	1000	28190
	Cocoa	900	118850
		1500	240465
Littoral, Southwest	Robusta	1000	25042
		1500	124076
	Cocoa	900	84080
		1500	184795
	Root Crops	-	178130
West,	Sweet Potato	-	150000
	Tomatoes	-	522330
	Arabica	1200	262000

Source: African Development Bank, Cameroon Coffee Subsector Study, 1988.

the export of all the coffee from Northwest and Southwest Provinces (anglophone Cameroon). ONCPB establishes a list of exporters each year with the proportion of expected production these exporters are entitled to purchase.

The major marketing functions consist of collection, storage, processing, transport and export arrangements. Storage and transportation costs are both very high, due to storage capacity problems, lack of storage information systems, and long distances between points of production and the major export port. Arabica coffee is transported by road only, whereas a large proportion of robusta coffee is transported by rail. The cost of transporting robusta coffee by rail is established each year by ONCPB, and the established transport rates range from about 5,000 CFA/ton from Littoral Province (SW) to Douala to not less than 50,000 CFA/ton from coffee areas in East Province (at the official exchange rate in 1989, this implies transport costs ranging from around $17 to $170/ton).

Cooperatives play a major role in the marketing of coffee in Cameroon, and the six large cooperatives in West Province and their union, the UCCAO, are involved in all marketing operations, including export (whereas co-ops in Central South Province are only involved in the collection of robusta coffee on behalf of exporters).

Prices, marketing costs, and marketing margins for robusta coffee from 1981/82 to 1987/88 are shown in Table 5.3. The amount paid to farmers is fixed by the producer price, and the amount paid to processors is fixed by the "bareme" (the marketing margin established before every season by ONCPB). The government heavily taxes the coffee sector through the collection of export taxes,[3] a "prelevement" (the part of the export earnings from coffee that is reserved for price stabilization policies, as well as used to finance development projects), as well as the residual between the export earnings and the price paid to the producers plus the bareme. Out of the "prelevement ONCPB," ONCPB has in the past provided subsidies to the respective development organizations (SOCAPALM, SODECOTON, etc.) that are responsible for diversification programs, as well as to financial and other institutions (FONADER, Cocoa Roads, etc.) that are engaged in the improvement of rural infrastructure. How much of this "prelevement" actually benefits coffee producers is thus difficult to estimate.

From Table 5.3, it is possible to look at the distribution of gross export earnings among the various participants in production and trade. On average over the period 1980-87, robusta producers received 51.6% of the f.o.b. price; marketing and processing agents (exporters or co-ops), 14.2%; and the government,

[3] Export taxes are 32% of the "Valeur Mercuriale," which in 1981/82 was 205 CFA for robusta and 240 CFA for arabica.

Table 5.3 CAMEROON: ROBUSTA COFFEE MARKETING MARGINS

Distribution of f.o.b. Value

	81/82	82/83	83/84	84/85 CFA/kg	85/86	86/87	87/88	Average 80-87
f.o.b. Price: Douala	593	679	1109	1147	1144	992	573	891.0
	Percent of f.o.b. Price							
Total taxes & fees (to gov't & ONCPB)	14.1	12.6	7.8	7.6	7.7	9	15.6	10.6
Exporter Profit	0.6	0.6	0.4	0.4	0.4	0.4	0.7	0.5
Marketing Charges	14	14.6	10.9	11.7	12.2	13.8	22.2	14.2
Producer Price (plus bonus)	55.7	51.5	35.2	40.1	41.1	47.4	82	50.4
Margin to Reserves (price stab:ONCPB)	15.6	20.7	45.8	40.1	38.6	29.4	-20.4	24.3

Source: Scott and Wilson, 1988.

11.2% in the form of taxes and fees, while the margin going to the stabilization fund averaged 22%.[4]

Figure 5.1 shows that throughout the 1980s coffee producers in Cameroon received less than 50% of the export value. The producer price was increased substantially in 1987/88, from 47 to 84 CFA/kg. Unfortunately, the timing corresponded to the drastic fall in world coffee prices due to the collapse of ICA. As can be seen in Table 5.3, this meant a reversal in the amount going to the stabilization fund (ONCPB) from a value representing 40% of the f.o.b. value of coffee to a negative value of 20% of the f.o.b. value in 1987/88. While the farmer was being taxed throughout the 1970s and 1980s, he became subsidized in 1987 and 1988 through the maintenance of a high producer price. In fact, however, it is not clear that all farmers actually received this high a producer price, due to delayed final producer payments in the last two years due to financial difficulties faced by the ONCPB.

In theory, the money that had gone into the price stabilization fund throughout the 1980s should have been available to maintain this higher producer price when the world price fell. However, due to institutional problems with ONCPB, this stabilization fund has not benefitted the coffee producer, as funds collected in years of high world prices were not invested back into the coffee sector.

Thus, coffee producers in Cameroon have been facing declining real farmgate prices, recent problems with delayed payments, and the collapse of several production programs such as the young farmer program and the coffee regeneration program, and are reportedly losing interest in coffee production (MIDENO, 1989). The most serious consequence is the declining care of the trees and lack of replanting. Several studies of the costs of production have confirmed the declining profitability of arabica coffee production relative to food production (Agland, 1988; Elliot Berg Assoc., 1983, MIDENO, 1989). Delayed payments are a particularly serious blow to incentives for coffee producers, making the actual price received much less important than the fact that producers don't know when they'll get paid.

5.1.5 Domestic Resource Costs and the Policy Analysis Matrix

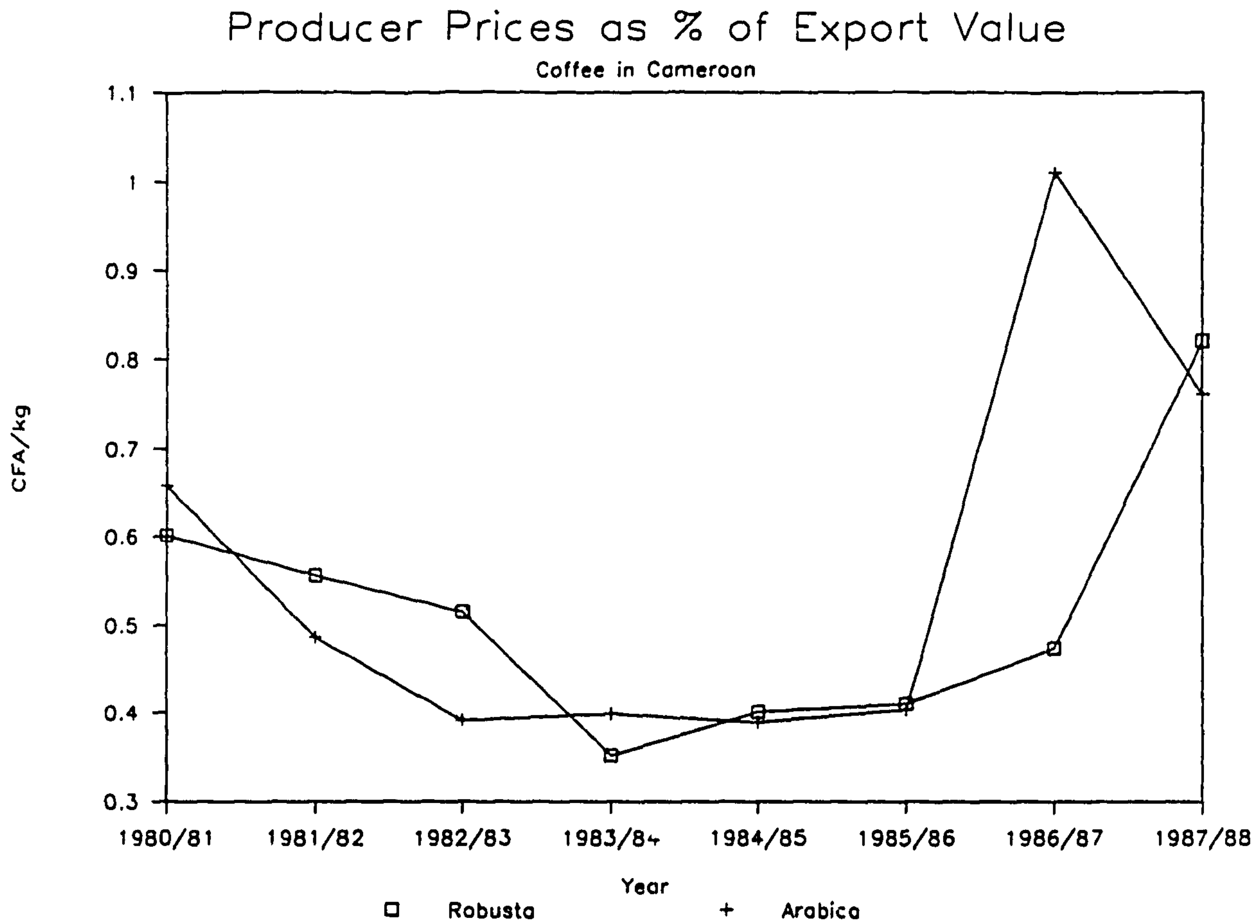
DRCs measure the value of domestic resources needed to obtain one unit of foreign exchange through sales of export crops such as coffee.

The DRC ratio is defined as: cost of primary (non-tradable) factors: land, labor, water, and capital, divided by the value of production minus tradable input costs (chemical inputs, fuels, seed, machinery, etc.).

A DRC coefficient of less than one implies that Cameroon does have a comparative advantage in coffee production since the value of domestic

[4] These percentages are derived from the cost schedules (bareme) published by ONCPB and represent the figures arrived at in negotiations with various agents, not necessarily their actual costs.

5.1



Producer Prices as % of Export Value
Coffee in Cameroon
CFA/kg
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
1980/81
1981/82
1982/83
1983/84
1984/85
1985/86
1986/87
1987/88
Year
Robusta
Arabica

resources used in coffee production is less than the value of foreign exchange earned through coffee exports.

A DRC analysis was undertaken in 1988/89 for arabica coffee with the use of the policy analysis matrix (PAM) approach (Wyeth, 1990). The PAM approach allows an examination of farmers' incentives to produce, whether they have a comparative advantage in producing a particular crop, and the effect of government policy on both incentives and competitiveness (see Pearson and Monke, 1987, for a description of PAM). Wyeth's PAM tables are included here, and further analysis is performed to determine the sensitivity of the results to changes in selected parameters (along with sensitivity analysis undertaken by Wyeth).[5]

<u>Differences in Financial and Economic Prices</u>. The PAM uses the concept of financial versus economic prices to explore distortions caused by policies. Financial prices (also called private prices) are those which the farmers pay, while economic (also called shadow or social prices) are those which reflect the cost to the economy.[6] The Private Cost Ratio measures the degree of comparative advantage given the current policy distortions in place. The Domestic Cost Resource ratio, since it is measured in economic prices, shows whether the commodity system would have a comparative advantage if all the policy distortions were removed.

A. <u>Output Prices</u>. In 1988, producer prices were above the export parity (economic) price, implying a price subsidy to farmers. The economic price was 457 CFA/kg and the official producer price was 520 CFA/kg, so farmers received a subsidy of 63 CFA/kg (approximately $.21/kg. at the official exchange rate).

This output price subsidy reversed the trend of the 1970s and 1980s when farmers received less than 50% of the f.o.b. price for their coffee. The average f.o.b. price from 1981-87 was 665 CFA/kg, while the producer price did not go above 520 CFA/kg, implying an average tax on farmers of 145 CFA/kg. of coffee (around $.48/kg. at the 1988 exchange rate) over this period.

B. <u>Input Costs</u>. Subsidies on inputs reduce financial prices below the true economic value of the input. The largest divergence in financial and economic prices on the input side were due to subsidies on fertilizers and pesticides, which are currently being phased out.

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[5] In the future, Wyeth's PAM analysis will include other crops and allow a comparison of comparative advantage of food crops vs. export crops. The results reported here are preliminary and subject to verification. However, while specific numbers may change, overall conclusions are felt to be robust.

[6] For example, the official producer price is the financial price received by the farmer for his crop, whereas the economic price is found by taking the f.o.b. price at Douala and subtracting from it the economic cost of handling, transporting, and processing that takes place between when the farmers sell the beans and when they are loaded onto the ship.

Subsidies on output prices and input prices raised financial profits above economic profits from a discounted economic loss of 360,000 CFA to a small discounted financial profit of 40,000 CFA (see Tables 5.4 and 5.5). The PAM shows that producer revenue in 1988 increased by 22% as a result of government intervention (i.e. the subsidy rate to producers was .22). In 1988, the nominal protection coefficient was greater than one, which means the farmer was receiving a price higher than the world market price, whereas before 1988 the NPC would have been less than one.

Sensitivity Analysis. Sensitivity analysis undertaken within the PAM framework allows the analyst to explore the effects of changes in certain policy or cost parameters. Wyeth found that the results of the PAM were most sensitive to assumptions about the levels of the following parameters: interest rate, output price, and establishment costs. Included here are the results of his sensitivity analysis on output price and establishment costs. We also included an analysis of the sensitivity of the results to a change in labor costs.

A. Output Price and Input Costs. Sensitivity analysis showed that the price received by the farmer for coffee had a far greater impact on farm profits than the cost of a single input. Table 5.4 shows the discounted revenues and costs used in the derivation of the PAM tables. From this table, it can be shown that a 10% increase in the price of coffee would raise profits by 349,232 CFA. Wyeth calculates that the effect of removing the fertilizer subsidy would have reduced profits by 84,196 CFA. He argues that this is not an insignificant amount, but that an increase of less than 3% in the producer price would make up for this difference (Wyeth, p.9).

Table 5.5 shows the PAM under the baseline assumptions--a financial price of 520 CFA/kg (1988 official producer price), and an economic price of 457 CFA/kg (1988 border price). Table 5.6 shows the sensitivity of the PAM to changes in the output price. Our projected prices for 1995 are used in this analysis. These predicted prices ranged from $1.60/lb. (assuming no ICA) to $1.80/lb. (assuming a new ICA), so both the lower and upper ends of this range are used.

In moving from the projected European prices to the equivalent producer price in Cameroon, first the costs of transportation from Cameroon to Europe must be deducted. These are assumed to be 50 CFA/kg (PNUD, 1988). At an exchange rate of 300 CFA/$, the projected world prices are in the range of 1,056-1,188 CFA/kg. Minus international transport costs, this gives us a f.o.b. price at Douala of 1006-1138 CFA/kg. Subtracting marketing and internal transport costs of 310 CFA/kg (Wyeth, 1990) to reach an equivalent farm-level price implies a producer price of 696-828 CFA/kg.

At the lower end of projected 1995 prices, profitability sharply increases, and the DRC falls from 1.24 to .75. To find out at what price level Cameroon begins to have a comparative advantage, Wyeth calculated the break-even producer price (the price at which the DRC falls below one). This economic price was calculated to be 544 CFA/kg (i.e. an f.o.b. price of 854 CFA/kg.).

								Totals
REVENUE (discounted)								
Coffee	kg	520	3,492,322	112.9	457	1,852,255	84.2	1,640,067
	Unit							
Clearing	FCFA	20,000	19,048	0.6	20,000	18,182	0.8	866
Staking	person day	800	20,571	0.7	800	19,636	0.9	935
Holing	hole	105	200,000	6.5	105	190,909	8.7	9,091
Plants	plant	10	19,048	0.6	10	18,182	0.8	866
Transplant	FCFA	11,970	11,400	0.4	11,970	10,882	0.5	518
Planting	person day	800	20,571	0.7	800	19,636	0.9	935
	Life (years)							
Machete	2	2,040	13,673	0.4	2,040	10,007	0.5	3,665
File	1	960	12,562	0.4	960	8,990	0.4	3,572
Hoe	2	1,680	11,260	0.4	1,680	8,241	0.4	3,019
Secateur	3	2,400	10,983	0.4	2,400	8,218	0.4	2,767
Spade	2	2,800	18,766	0.6	2,800	13,735	0.6	5,031
Pick	3	2,100	9,610	0.3	2,100	7,189	0.3	2,421
Wh'barrow	5	17,000	48,934	1.6	17,000	38,180	1.7	10,754
	Unit							
Weeding	person day	800	383,563	12.4	800	257,899	11.7	125,664
Pruning	2/yr/tree	7	272,691	8.8	7	168,748	7.7	103,943
Spread fert	application	10,000	249,244	8.1	10,000	170,271	7.7	78,973
Spraying	person day	1,200	427,980	13.8	1,200	256,498	11.7	171,483
Fertilizer	kg	58	257,020	8.3	77	222,705	10.1	34,315
Duroben	liter	0	0	0.0	4,800	51,300	2.3	(51,300)
Ortho.	sachet	0	0	0.0	145	38,742	1.8	(38,742)
Org. fert	FCFA	11,000	118,163	3.8	11,000	76,095	3.5	42,068
Spray rent	day	400	142,660	4.6	400	85,499	3.9	57,161
Subtotal, Production Costs			2,267,737	73		1,699,732	77	568,005
Jute sacks	unit	380	40,296	1.3	380	24,318	1.1	15,978
Baskets	"	240	13,432	0.4	240	8,106	0.4	5,326
Harv. Lab.	kg cherry	6.5	240,097	7.8	6.5	144,897	6.6	95,200
Drying	kg cherry	0.25	9,235	0.3	0.25	5,573	0.3	3,662
Transport	kg cherry	3.5	129,283	4.2	3.5	78,022	3.5	51,261
Subtotal, Harvest			432,343	14		260,917	12	171,426
Total Costs less Washing			2,700,080	87		1,960,649	89	739,431
Pulper	10	57,500	78,954	2.6	57,500	50,473	2.3	28,481
Pulping	kg cherry	7	258,566	8.4	7	156,043	7.1	102,523
Ferment.	kg cherry	1.5	55,407	1.8	1.5	33,438	1.5	21,969
Subtotal, Washing			392,927	13		239,954	11	152,973
TOTAL COSTS (discounted)			3,093,007	100		2,200,603	100	892,404
PROFIT/LOSS (discounted)			399,315			(348,348)		747,663
Breakeven Price: w/o washing			403			495		
with washing			462			544		
Interest Rate (inflation adjusted)			5.0%			10.0%		
Internal Rate of Return			11.4%			-1.1%		

Source: Wyeth, 1990.

Table 5.5 Policy Analysis Matrix

Cameroon - Smallholder Arabica Coffee

1. BASELINE CASE

ASSUMPTIONS: With Establishment Costs
Output Price: Financial - 520 CFA/kg
Economic - 457 CFA/kg
Discount Rate: Financial - 10%
Economic - 10%
Yield: 750 kg/ha

		COSTS				
				CFA		
	REVENUE	Tradables	Labor	Capital	Total Cost	PROFIT
Financial	2107599	226840	1563467	278256	2068563	39036
Economic	1852255	371835	1563467	278256	2213558	-361303
Difference	255344	-144995	0	0	-144995	400339
	subsidy	subsidy			subsidy	subsidy

Value Added (financial) Rf-Tf	1880759
Value Added (Economic) Re-Te	1480420
Profitability Coefficient Pf/Pe	-0.11
Subsidy Rate to Producers (Pf-Pe)/Re	0.22
Nominal Protection Coefficients	
a) Outputs Rf/Re	1.14
b) Tradable Inputs Tf/Te	0.61
Effective Protection Coefficient (Rf-Tf)/(Re-Te)	1.27
Private Cost Ratio (Cf+Lf)/(Rf-Tf)	0.98
Domestic Resource Cost Ratio (Ce+Le)/(Re-Te)	**1.24**

Source: Wyeth, 1990.

Table 5.6 Policy Analysis Matrix

Cameroon - Smallholder Arabica Coffee

2. SENSITIVITY ANALYSIS - PROJECTED 1995 OUTPUT PRICE: LOWER END OF PREDICTED RANGE

ASSUMPTIONS: With Establishment Costs
Output Price: Financial - 520 CFA/kg
Economic - 696 CFA/kg
Discount Rate: Financial - 10%
Economic - 10%
Yield: 750 kg/ha

	REVENUE	COSTS CFA Tradables	Labor	Capital	Total Cost	PROFIT
Financial	2107599	226840	1563467	278256	2068563	39036
Economic	2820888	371835	1563467	278256	2213558	607330
Difference	-713289	-144995	0	0	-144995	-568294
	tax	subsidy			subsidy	tax

Value Added (financial) Rf-Tf	1880759
Value Added (Economic) Re-Te	2449053
Profitability Coefficient Pf/Pe	0.06
Subsidy Rate to Producers (Pf-Pe)/Re	-0.20
Nominal Protection Coefficients	
a) Outputs Rf/Re	0.75
b) Tradable Inputs Tf/Te	0.61
Effective Protection Coefficient (Rf-Tf)/(Re-Te)	0.77
Private Cost Ratio (Cf+Lf)/(Rf-Tf)	0.98
Domestic Resource Cost Ratio (Ce+Le)/(Re-Te)	**0.75**
BREAKEVEN PRODUCER PRICE in Economic Terms	544 CFA/kg

Table 5.6 cont'd on next page

Table 5.6 cont'd.

SENSITIVITY ANALYSIS – PROJECTED 1995 OUTPUT PRICE: UPPER END OF PREDICTED RANGE

ASSUMPTIONS: With Establishment Costs
Output Price: Financial – 520 CFA/kg
Economic – 828 CFA/kg
Discount Rate: Financial – 10%
Economic – 10%
Yield: 750 kg/ha

	REVENUE	COSTS CFA Tradables	Labor	Capital	Total Cost	PROFIT
Financial	2107599	226840	1563467	278256	2068563	39036
Economic	3355884	371835	1563467	278256	2213558	1142326
Difference	−1248285	−144995	0	0	−144995	−1103290
	tax	subsidy			subsidy	tax

Value Added (financial) Rf−Tf	1880759
Value Added (Economic) Re−Te	2984049
Profitability Coefficient Pf/Pe	0.03
Subsidy Rate to Producers (Pf−Pe)/Re	−0.33
Nominal Protection Coefficients	
a) Outputs Rf/Re	0.63
b) Tradable Inputs Tf/Te	0.61
Effective Protection Coefficient (Rf−Tf)/(Re−Te)	0.63
Private Cost Ratio (Cf+Lf)/(Rf−Tf)	0.98
Domestic Resource Cost Ratio (Ce+Le)/(Re−Te)	**0.62**

Source: Wyeth, 1990.

The projected 1995 f.o.b. price equivalent range of 1006-1138 cfa/ky is significantly higher than the estimated break-even f.o.b. price of 854 cfa/ky. This suggests that although Cameroon did not have a comparative advantage in arabica production in 1988/89, it will have a comparative advantage at predicted future world prices if the underlying cost structure does not change substantially. It should be noted that this PAM used a yield assumption of 750 kg/ha, which is higher than average yields currently being achieved. For Cameroon producers to have a comparative advantage in future world markets, it is clear that arabica coffee yields will have to increase.

B. Labor Costs. No divergence between the private and economic price of labor was assumed in the original analysis. Although there is a minimum wage for agricultural laborers, it is not a factor in determining wages in the coffee sector since only part-time labor is typically used, and these wage rates do not apply to such workers (the wage laws would be considered a distortion for the plantation sector--i.e. primarily rubber). General inflation, a problem in Cameroon in recent years, has driven up wages, but there was little evidence that the cost of labor was a major constraint to coffee producers, although labor availability was cited as a possible constraint (i.e. at particular bottleneck times). Labor costs in Cameroon were approximately 750 CFA/person-day in 1987, which appear high in comparison with the other countries (see Table 5.21), but are similar if the degree of overvaluation (estimated at 30-50%) is considered.

It has been suggested that labor costs are high in Africa compared to Asia. A recent World Bank report discussed differences in costs between low-income Asian countries and Sub-Saharan Africa. (World Bank, 1989) Although an agricultural wage comparison was not given, they estimated that unskilled construction worker wages were 40% lower in Asia than in Africa. For lack of a better proxy, this figure was used in our sensitivity analysis.

Sensitivity to labor costs was examined by decreasing the cost of labor by 40% (see Table 5.7). The DRC ratio fell from 1.24 to .82, implying a comparative advantage when labor costs are lowered by this amount. The DRC ratio in fact becomes less than one at a wage level 20% lower than the baseline labor costs reported in Table 5.5.

C. Establishment Costs. Establishment costs account for a significant proportion of total costs, and farmers deciding whether or not to plant trees face a different decision from those deciding whether to keep harvesting established trees. Thus, a sensitivity analysis was included for established plantations, excluding establishment costs.

Table 5.8, therefore, assumes the only costs incurred are those related to maintaining production levels from established trees. Capital costs become a much smaller proportion of total costs. Production becomes profitable at both economic and financial 1988 prices. The DRC falls below one, implying Cameroon does have a comparative advantage with respect to coffee for established plantations.

Table 5.7

Policy Analysis Matrix

Cameroon - Smallholder Arabica Coffee

3. SENSITIVITY ANALYSIS - DECREASE LABOR COSTS BY 40%

ASSUMPTIONS: With Establishment Costs
Output Price: Financial - 520 CFA/kg
Economic - 457 CFA/kg
Discount Rate: Financial - 10%
Economic - 10%
Yield: 750 kg/ha

		COSTS CFA				
	REVENUE	Tradables	Labor	Capital	Total Cost	PROFIT
Financial	2107599	226840	938080	278256	1443176	664423
Economic	1852255	371835	938080	278256	1588171	264084
Difference	255344 subsidy	-144995 subsidy	0	0	-144995 subsidy	400339 subsidy

Value Added (financial) Rf-Tf	1880759
Value Added (Economic) Re-Te	1480420
Profitability Coefficient Pf/Pe	2.52
Subsidy Rate to Producers (Pf-Pe)/Re	0.22
Nominal Protection Coefficients	
a) Outputs Rf/Re	1.14
b) Tradable Inputs Tf/Te	0.61
Effective Protection Coefficient (Rf-Tf)/(Re-Te)	1.27
Private Cost Ratio (Cf+Lf)/(Rf-Tf)	0.65
Domestic Resource Cost Ratio (Ce+Le)/(Re-Te)	**0.82**

Source: Wyeth, 1990.

Table 5.8 Policy Analysis Matrix

Cameroon - Smallholder Arabica Coffee

4. SENSITIVITY ANALYSIS - WITHOUT ESTABLISHMENT COSTS

ASSUMPTIONS: No Establishment Costs
Output Price: Financial - 520 CFA/kg
Economic - 457 CFA/kg
Discount Rate: Financial - 10%
Economic - 10%
Yield: 750 kg/ha

		COSTS CFA				
	REVENUE	Tradables	Labor	Capital	Total Cost	PROFIT
Financial	390000	26813	207219	41777	275809	114191
Economic	342750	54663	207219	41777	303659	39091
Difference	47250 subsidy	-27850 subsidy	0	0	-27850 subsidy	75100 subsidy

Value Added (financial) Rf-Tf	363187
Value Added (Economic) Re-Te	288087
Profitability Coefficient Pf/Pe	2.92
Subsidy Rate to Producers (Pf-Pe)/Re	0.22
Nominal Protection Coefficients	
a) Outputs Rf/Re	1.14
b) Tradable Inputs Tf/Te	0.49
Effective Protection Coefficient (Rf-Tf)/(Re-Te)	1.26
Private Cost Ratio (Cf+Lf)/(Rf-Tf)	0.69
Domestic Resource Cost Ratio (Ce+Le)/(Re-Te)	**0.86**

Source: Wyeth, 1990.

This implies that at the 1988 price levels and cost structure, farmers in Cameroon had no incentive to plant new trees. In terms of improving the quality of the coffee and their husbandry practices, it is obvious that the incentives were just not there. The consequences have been that the quality of Cameroon's coffee has been deteriorating and costs have been increasing (due to declining yields) as the average age of trees increases.

5.2 Coffee in Kenya

5.2.1 Kenya's Markets and Export Trends

Earnings from coffee, the most important agricultural foreign exchange earner, contribute about a quarter of Kenya's total export revenue. Following the lifting of the quotas in July 1989 (marketing year 1989), coffee exports increased by 39% to 1.84 million bags. At 4.68 billion Shs ($2.3 million), earnings increased 11% in shilling terms, but only 5% in dollar terms due to devaluation. Increased exports have decreased the stocks which had reached extremely high levels (and led to financial difficulties for the Kenya Coffee Board).

The level of Kenyan coffee exports has been constrained over the last few years by the quota, and declined by 25% to 1.3 million bags in 1987/88 (which was the lowest level since the 1981/82 season). In the quota-free 1985/86 season, Kenya exported a record 2.1 million bags. Trends in coffee exports by destination are shown in Table 5.9. Germany, the Netherlands, the U.S., Sweden, and Belgium are Kenya's most important customers among ICO member-countries. The share of total exports by non-ICO member-countries declined from 14% to 7% from 1986/87 to 1987/88 due to a drastic reduction in the Saudi Arabia market.

In 1988/89, exports to all destinations rose significantly, with the market shares between quota and non-quota segments accounting for 87% and 13% respectively. Most significantly, exports to quota markets (especially Denmark, Spain, Austria, France, Japan, Canada, and Belgium) increased by 11% to a level well above Kenya's annual allocation.

Most of the highest quality coffee exports from Kenya go to Germany. Exports to the U.S. have declined over the 1980's, and have been restricted by the quotas. Only a small amount of coffee sold to the U.S. is high quality, destined for specialty stores, since American consumers normally buy blends of lower quality coffee. The Kenya Coffee Board does not have a large marketing budget for promotional activities, and does not appear to be doing much active searching for new niche markets, or promoting high quality Kenyan coffee.

5.2.2 Production Costs

Coffee is grown across agro-ecological zones in Kenya (varying in temperature, altitude, and rainfall characteristics), and on smallholder farms (which contribute around 70% of total production) as well as large estates. Coffee is Kenya's major export crop (26% of total exports in 1987, although

Table 5.9

KENYA: OVERALL TRADE TRENDS AND COMPARATIVE MARKET SHARES 1982/83 - 1987/88

(PERCENT)

DESTINATION	82/83	83/84	84/85	85/86	86/87	87/88
TOTAL TRADE						
QUOTA	92	92	83	89	86	93
NON-QUOTA	8	8	17	11	14	7
QUOTA SEGMENT						
West Germany	36	39	33	32	29	39
United States	22	12	16	20	22	12
Netherlands	9	19	19	22	21	10
United Kingdom	7	7	7	8	7	7
Sweden	6	7	8	6	6	3
Belgium	4	4	4	3	4	9
Italy	4	3	3	2	2	4
Finland	5	3	4	2	3	4
Canada	1	1	1	1	1	1
All Others	7	5	5	4	4	4
NON-QUOTA SEGMENT						
Saudi Arabia	9	14	26	33	55	56
Sudan	24	34	13	13	8	13
U.A.E.	3	2	7	9	7	5
Czechoslovakia	0	0	3	8	0	1
Jordan	19	17	8	6	7	10
Poland	0	0	4	5	1	0
Tunisia	0	0	6	5	1	0
E. Germany	7	2	3	5	3	0
All Others	39	25	33	17	17	14

Source: Coffee Board of Kenya

tea reached a high of 22% in the same year), and the quality of its coffee (Colombian mild arabica) is one of the highest in the world.

Table 5.10 shows cost of production of arabica coffee in 1981/82 for smallholdings across three zones: the coffee-tea zone (highest rainfall), the main coffee zone (medium rainfall), and the marginal coffee zone (low rainfall). It also gives costs of production for irrigated and non-irrigated coffee estates.

A. Estates. Table 5.10 illustrates that costs per kilogram of producing green coffee are generally higher for estates than for smallholdings, despite the higher yields. However, the costs for estates also include the processing into parchment coffee, which for smallholders is carried out by the cooperatives. Total costs (variable, fixed and amortized establishment costs) were $2.14/kg for non-irrigated estates, and $1.99 for irrigated estates in 1981/82. Total costs for smallholdings ranged from $1.22/kg to $1.55/kg. Smallholder costs in Kenya thus were in the same range as costs of arabica production in Cameroon at around $1.25/kg in 1982 (see Table 5.1).

In 1981/82, chemical fertilizer and pesticide costs made up 25% of total production costs for estates. Hired labor costs were 24% of total costs for non-irrigated estates, and 21% for irrigated estates. Fixed costs (e.g. management, administration expenses) were much higher on estates than on smallholdings, comprising 23-28% of total costs.

Returns to labor were calculated as a residual, or gross receipts minus non-labor costs divided by the number of person-days of labor per hectare. They were just as high or higher for smallholders as for the estates. Returns to labor on smallholdings ranged from 25 to 47 KShs per person-day, and on estates were 32 Kshs and 42 Kshs per person-day, respectively, on non-irrigated and irrigated estates.

A 1987 coffee study (Ministry of Cooperative Development and Ministry of Agriculture, 1987) discussed production costs for 1986. It attributed 38% of production costs to labor, with fertilizer and chemical costs accounting for 35% of total costs in the estate sector. A more recent USDA report gave the following cost breakdown:

- permanent labor: 22%
- maintenance and repairs: 5%
- fuels and oils: 3%
- fertilizers and manures: 9%
- fungicides: 12%
- herbicides: 2%
- picking: 14%
- milling: 2%
- KPCU commission: .75%
- CBK levy: 1.4%
- County Council Cess: 1.4%
- export tax: 18.6% (this was removed in early 1990 and replaced by a 5% "presumptive" tax on gross farmer price)(USDA, 1989).

Table 5.10 KENYA

Production Costs of Green Coffee - per hectare and per kilogram: 1981/82

	Smallholdings high rainfall	Smallholdings medium rainfall	Smallholdings low rainfall	Estates Non-Irrigated	Estates Irr-igated
Yield (kg/ha)	700	600	400	950	1250
Plant density (no. trees/ha)	1200	1300	1300	1300	1700
Area in coffee (ha)	0	0	0	90	110
Productive Period (years)	20	20	20	20	20
Value of Coffee ('000 KShs)	Average to Co-op members: 19.95 Sh/kg			Net Receipts to Estates 25.9 Sh/kg	
RECEIPTS (KShs/ha)	13965	11970	7980	24605	32375
Wage rate (KShs/man-day)	12	12	12	12	12
Hired Labor - no. of man-days	212	330	241	396	421
CASH COSTS ('000 KShs/ha):					
Hired Labor costs	2.5	3.8	2.2	4.6	4.9
Percent of total costs	30.9%	51.4%	37.3%	23.8%	20.8%
Material Input Costs:					
fertilizers & herbicides	0.5	0.4	0.5	2.4	3.3
insecticides & fungicides	1.2	0.7	0.6	2.9	2.6
Percent of total costs	0.2	0.1	0.2	0.3	0.3
processing & irrigation	0.0	0.0	0.0	0.8	1.2
tractor	0.5	-	0.2	0.7	1.1
other	0.7	0.2	-	0.3	0.2
Subtotal - material input costs	2.9	1.3	1.3	7.1	8.4
TOTAL VARIABLE COSTS	5.4	5.1	3.5	11.7	13.3
Fixed Costs:					
depreciation & interest - equip.	0.4	0.2	0.3	1.0	1.3
management fees & staff salaries	-	-	-	1.0	2.5
administration	-	-	-	0.5	0.4
transport & infrastructure	0.2	0.2	0.2	0.5	0.7
other (interest)	0.4	0.2	0.2	1.5	1.8
Subtotal	1.0	0.6	0.7	4.5	6.7
Total Establishment Costs per ha 1-4 years ('000 KShs)	Average smallholder:14.3			Average estate:25.6	
Annuity of establishment costs ('000 KShs): 10%	1.7	1.7	1.7	3.1	3.6
TOTAL FIXED COSTS	2.7	2.3	2.4	7.6	10.3

Table 5.10 cont'd on next page

Table 5.10 cont'd.

KENYA

Production Costs of Green Coffee - per hectare and per kilogram: 1981/82

	Smallholdings			Estates	
	high rainfall	medium rainfall	low rainfall	Non-Irrigated	Irr-igated
TOTAL COSTS PER HA ('000 KShs) (not incl. family labor costs)	8.1	7.4	5.9	19.3	23.6
Conversion factor (ha/kg)	0.0014	0.0017	0.0025	0.0011	0.0008
Total costs per kg (KShs)	11.6	12.3	[illegible]	20.3	18.9
GROSS MARGIN (Sh/kg)	8.4	7.6	5.[illegible]	5.6	7.0
Cost of Primary Factors	3.5	4.4	2.9	9.9	12.8
Value of prodn-tradable input costs	11.1	10.7	6.7	18.3	25.2
PRIVATE RESOURCE COST RATIO	31.6%	41.2%	43.4%	54.1%	50.8%
Exchange Rate (KShs/$U.S.)	9.5	9.5	9.5	9.5	10
Costs per hectare ($U.S.)	852.6	778.9	621.1	2031.6	2484.2
Costs per kg ($U.S.)	1.2	1.3	1.6	2.1	2.0
Family & Hired Labor Inputs (man-days):					
weeding	19	50	20	90	24
fertilizing	10	10	6	20	17
disease control	4	30	4	12	34
mulching & soil conservation	22	20	40	21	10
pruning	10	20	12	70	40
irrigation	-	-	-	-	56
harvesting	147	170	80	117	172
processing	-	-	62	50	55
other (transport)	-	30	17	16	13
Total man-days family & hired labor	212	330	241	396	421
RETURNS TO LABOR (KShs/man-day)	47	30	25	32	41
Total Costs - 1986* (KShs/kg)	25	29	35	41	28
Percent of total costs from:					
labor	55% for smallholders			38% for estates	
chemicals & fertilizers	20% for smallholders			35% for estates	

Source: de Graaf, 1986; Table 6.10

* Source of 1986 data: Gov't of Kenya, Coffee Subsector Study, 1987

B. Smallholders. In 1981/82, labor costs comprised 30-50% of total costs on smallholdings, and chemical and fertilizer inputs made up 15-21% of total input costs (Table 5.10). By 1987, labor costs had risen to 55% of total costs in the co-operative sector, and chemical fertilizers and pesticides made up 20% of total production costs (Ministry of Cooperative Development and Ministry of Agriculture, 1987).

More recent costs of production are shown for smallholder coffee in Table 5.11. Not including a cost for labor, production costs in 1987 averaged around 35 Kshs/kg (around $1.60/kg). This represents a 170% increase from 1981/82 when average production costs were 13 Kshs/kg (Table 5.10). This rise in costs is primarily due to increased agro-chemical costs (primarily due to devaluation).

Labor Costs. The higher productivity on estates in Kenya stems in a large part from greater input use. Kenyan smallholders use only one-fourth to one-fifth as much fertilizer and pesticide as estate producers on coffee and tea (Lele and Agarwal, 1989, p.13). Kenyan smallholdings also use considerably less labor for weeding and pruning, as can be seen in Table 5.10. Smallholders use 200-300 person-days of labor per hectare of coffee (depending on the region), whereas estates use around 400 person-days.

Labor shortages, especially during the peak labor demand time of the coffee harvest, can be a problem faced by smallholders in certain regions. This is due to both a shortage of workers and a lack of sufficient cash to hire labor. Coffee estate operators have indicated that the supply of labor decreases substantially in years with a good maize harvest. The MADIA report suggests that the relatively lower use of labor per hectare in cash crop production on small farms than on large farms may reflect the fact that formal credit programs offer in-kind credit in the form of seed and fertilizers, but farmers have a difficult time getting cash for the purchase of labor (Lele and Agarwal, 1989). We will return to this issue in the next section on the PAM analysis.

5.2.3 Returns

Figure 5.2 shows that coffee producers have received a high proportion of the world coffee prices since 1970, ranging around 90% in the 1970s to around 80% in the 1980s. Producer price incentives to coffee growers have thus been much greater in Kenya than in Tanzania or Cameroon, and returns higher. The Government of Kenya interferes little in the export and pricing of coffee, and the taxation of the coffee sector is insignificant in comparison with other coffee-exporting countries. This has contributed considerably to the competitiveness of Kenyan coffee.

In 1981/82, net receipts to the estate producers were 25.90 Kshs/kg. The final payment to smallholders was around 19.95 Kshs/kg. Smallholders receive their final payment through their cooperative society, often with considerable delay, since the funds are channelled from the Coffee Board through the Cooperative Bank, the unions and the societies. Gross margins (receipts - costs) received by producers averaged 7 Kshs/kg. for smallholders

Table 5.11 KENYA

1987 Cost of Production for Smallholder Coffee Producers

Cost Category	high rainfall UM1	medium rainfall UM2	low rainfall UM3	Machakos	Kisii	Overall
			KShs/kg			
Fertilizers	3.55	3.65	3.00	4.05	2.80	3.50
Fungicides	4.40	4.10	2.55	2.75	2.10	3.85
Insecticides & Herbicides	0.40	0.40	0.30	0.20	0.20	0.35
Equipment	1.60	1.70	1.70	1.50	1.75	1.75
Factory Machinery & Buildings	5.40	5.60	6.35	9.00	14.15	6.70
Misc. Overhead	3.95	4.50	4.60	6.50	7.50	4.60
Other Costs	13.95	13.50	14.90	16.80	17.90	15.05
Total Cost per kg	33.25	33.45	33.40	40.80	46.40	35.80
Average Yields (kg/ha)	780	660	640	420	360	640

(Agroecological Zone: high rainfall UM1, medium rainfall UM2, low rainfall UM3)

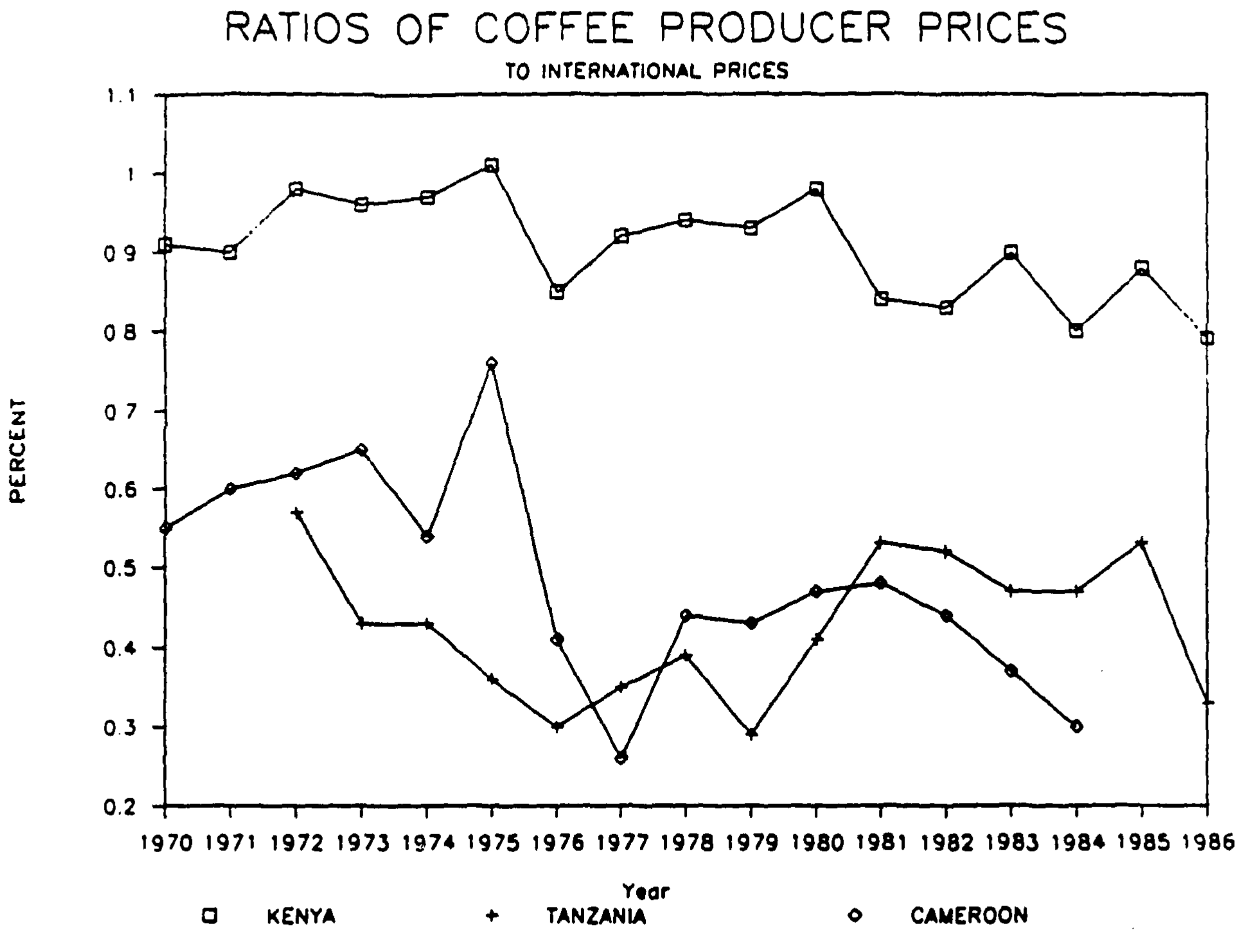
Table 5.12

Smallholder Gross Margins for Coffee and Competing Crops
(KShs/ha)

Aver. Yield and Size of Farm:	Coffee	Maize & Beans	Potatoes	Dairy
1. Low Yields				
.9 ha	12510	3475	486	4223
1.6 ha	11866	6594	973	6312
3.0 ha	9307	11921	1946	8985
2. Medium Yields				
.9 ha	20331	6436	945	4677
1.6 ha	19408	8299	1899	6794
3.0 ha	15514	13774	3259	10767
3. High Yields				
.9 ha	32280	6638	1241	5564
1.6 ha	30818	8708	2306	7753
3.0 ha	26280	15105	4522	11825

Source: African Development Bank, Kenya Coffee Subsector Study, 1989.

Figure 5.2



NOTE: Evaluated using nominal exchanges rates.

Source: World Bank
MADIA Study, 1989.

(when labor was valued at the average agricultural wage rate), and 6 Kshs/kg. for estates in 1981/82 (see Table 5.10).

Comparative Returns--Coffee versus Food Crops. Coffee and tea continue to be the cash crops with the highest returns for the farmer (ADB, 1989). Table 5.12 shows gross margins for the principal alternative crops grown in the tea and coffee regions. On small farms (.9 ha.) which achieve medium yields, gross margins for coffee average over 20,000 Kshs/ha. compared to 12,000 Kshs/ha for maize and beans, and 2,000 Kshs/ha. for potatoes. Although not included in this table, the returns to tea are as high or higher than those of coffee. DRCs reported in Table 5.13 show that tea is as efficient a foreign exchange earner as coffee. There is only a small area in which both tea and coffee can be produced due to the climate and soil requirements of these crops. Potatoes, maize, beans, and dairy are important food crops produced along with cash crops in Kenyan farming systems. It is only on larger farms which achieve high yields that the returns from food crops or dairy approach those for coffee.

Industry officials expressed concerns about escalating costs of production in the last few years, including fertilizer and other agrochemicals (which a Monsanto official in Nairobi attributed solely to devaluation), labor, machinery, maintenance and repairs, fuels and oils. While the official rate of inflation was reported to be 11% in 1989, it is generally acknowledged to be closer to the 20% range in urban areas.

In the smallholder sector, farmers have been reported to be using lower levels of inputs due to long delays in receiving their payments from the cooperatives (in some areas up to a year later), leaving some of them with severe liquidity problems. Farmers prefer growing tea if possible, since harvest and payment occurs in each of 8 to 9 months per year. A November 1989 article in Kenya's Daily Nation newspaper, headlined "Coffee Farming on the Verge of Collapse," reported that hundreds and possibly thousands of small coffee producers in the Kirinyaga district were interplanting their coffee with horticultural crops such as tomatoes, resulting in substantially lower yields and poorer quality coffee. (It is illegal for a farmer to cut down a coffee tree in Kenya.) These farmers apparently preferred to grow tomatoes which have higher returns per hectare, are collected on the farm when harvested, and yield cash at the time of the sale.

5.2.4 Marketing Costs

The marketing of coffee in Kenya is fairly straightforward. Immediately after harvest smallholders bring their cherry coffee to the cooperative factory, where the coffee is pulped, fermented, washed and dried. The cooperative unions send the parchment coffee to the curing mills of KPCU (Kenya Planters Cooperative Society) in Nairobi. The estates transport their parchment coffee directly to KPCU. The Coffee Board of Kenya (CBK), a parastatal organization controlled by the Ministry of Agriculture, has a monopoly over the purchase of the coffee crop. The CBK buys the coffee from the KPCU once it is hulled and graded. It then bags and stores the lots until they are sold at weekly auctions to many independent coffee dealers. The cooperative sector plays an important role in the assembling stage.

Table 5.13

KENYA

Domestic Resource Cost Ratios: Coffee and Tea

	DRC	DRC (.75*wage)	DRC (.50*wage)
Coffee: 1981/82			
Smallholders			
high rainfall	0.39	0.33	0.27
medium rainfall	0.33	0.29	0.26
low rainfall	0.45	0.39	0.34
Estates			
irrigated	0.57	0.53	0.48
non-irrigated	0.93	0.85	0.77
Tea: 1987			
Smallholder			
low yield	0.39	0.32	0.25
medium yield	0.34	0.28	0.22
high yield	0.30	0.25	0.20

Note: DRC = net cost of domestic factors/(value of prod'n - tradable input costs)

Source: Lele and Agarwal, W.B. MADIA study, 1989.
Calculated from budgets from de Graaf, 1986 for coffee;
C. Warnaars, Kenya Regional Office for tea.

A recent coffee subsector study (ADB, 1989) concluded that these institutions are well organized, and that marketing services such as transportation, storage, and processing facilities were adequate.

Table 5.14 breaks down the export unit value, obtained by the Coffee Board of Kenya in the crop years 1980/81 and 1981/82, into the different margins, taxes, costs and payments to estates, co-ops, and co-op members. It shows that estates and co-ops received 87.5% of the total sales value, after deducting charges including milling and transportation. The cooperative members in turn received 77% of this sum or approximately 67% of the total sales value. The Government received only about 8% of the sales value in the form of export duties and charges. By 1986/87, the percentage breakdown of the gross auction price received by the various marketing participants was much the same as in the early 1980s, with the government receiving 10%, the estate producers 83%, and the smallholders 68% of the sales price (ADB, 1989).

Quality. Kenya has established a good reputation for high quality coffee. Most of the crop is wet processed and the CBK applies a differential scale of payments which rewards good quality and penalizes poor quality coffee (unlike in Tanzania or Cameroon). The smallholder producers bring their coffee to central pulping and washing stations where quality is easier to control than if these procedures are carried out on the farm (as is the case Tanzania and Cameroon). The co-operative sector has experienced some problems due to congestion in the processing factories during the main harvesting period in recent years, however, which has led to a decline in the overall quality (ADB, 1989). Premiums of up to 25% over the ICO indicator price for Colombian Milds have been received for the highest quality Kenyan coffee (Classes 1-3) in recent years.

5.2.5 Domestic Resource Costs and the Policy Analysis Matrix

The 1989 World Bank MADIA study calculated DRC's for coffee and tea in Kenya in order to examine the relative efficiency of small producers versus the large estate producers (Table 5.13). Since the estates achieve higher productivity due to the higher use of inputs, it is necessary to calculate DRCs to determine if they are more efficient in terms of output per unit input use.

DRCs were found to be lower for smallholders than for the estates for coffee, and they compared favorably to the DRC ratios for smallholder tea. In other words, small producers are more efficient coffee producers than the large estates, even when family labor is valued at the going agricultural wage level. Even though household members will work on the family farm for less than market wages to meet subsistence needs, it is assumed that they take into account alternative opportunities when producing for the market.

The very low DRCs for smallholder coffee and tea demonstrate strong comparative advantage in production of these crops. DRCs were even more favorable when the appropriate shadow wage rate was assumed to be three-quarters of the market wage rate, and even lower at half the market wage rate.

Table 5.14

KENYA
Prices, Marketing Costs and Margins for Coffee

	1980/81	1981/82
	KShs/kg	
Total Sales to Coffee Board of Kenya (mt)	97717	87436
Average Sales Value (CBK)	22	30
Board Expenses		
marketing costs, overhead, levies	1	1
Export Duty	1	1
Average pool payments to estates & co-ops	21	28
Deductions		
agency fees & milling charges	1	1
County Council cess	1	1
average transportation costs	0	0
Total	1	2
Average (net) receipts by estates & co-ops	20	26
Deductions by co-ops		
processing, marketing & admin	4	5
interest on delayed part of payment	1	1
Total	5	6
Average final payment to co-op members	15	20
Final payment as % of sales value	67.6%	67.2%

Source: de Graaf, "Economics of Coffee", 1986.
From Coffee Board of Kenya, 1982.

For the estate sector, the effect of lower wages is more pronounced, and non-irrigated estates show only a slight comparative advantage at the market wage rate.

Policy Analysis Matrix. Tables 5.15 and 5.16 show the results of a recent PAM analysis currently underway in Kenya (Pearson, et al. 1990). An extensive study, it includes analysis of the economic and financial costs and returns to both smallholder and estate coffee in southwestern Kenya, as well as all the alternative food and cash crops.

The results are very similar for both the smallholder and estate sectors, with a DRC of .63 estimated for small producers and a ratio of .57 for estate producers. This implies that both types of producers have a comparative advantage in coffee production, which supports the results of the 1982 DRC analysis.

The degree of difference between economic and financial prices is relatively small in Kenya compared to Cameroon (or Tanzania). This can be seen in the low subsidy rate to producers, which implies that smallholder producers revenues were increased by only 2% in 1989 as a result of government interventions. Coffee was subjected to an export tax of 18%, although this was removed and replaced with a smaller "presumptive" tax in 1989. Credit has been subsidized for coffee producers, who receive credit at a subsidized interest rate of 5%.

Production is profitable at both economic and financial prices. The Effective Protection Coefficient, which accounts for the level of distortion on both output and input prices, is less than one, indicating an overall policy effect that implies the farmer was not receiving favorable treatment relative to world price conditions. Compared to the case in many African countries, however, policy distortions in Kenya do not heavily tax coffee producers.

Sensitivity Analysis. The costs of capital and foreign exchange were determined to be the most influential and uncertain parameters in the PAM, and sensitivity analysis examined the effects of changes in these parameters in the original analysis. Since the original analysis did not include an examination of the sensitivity of the results to changes in labor costs and the output price, these were also undertaken and are included in Tables 5.15 and 5.16.

A. Labor Costs. Pearson et al. found the agricultural labor market in the regions studied to be highly competitive, and little reason to assume that private and social wages differ because of labor market imperfections (Pearson et al., 1990, p.16). We therefore increased both the financial and economic cost of domestic factors (of which labor costs are approximately half) by 50% to determine the effect on the PAM. The results of this sensitivity analysis show that both financial and economic profits decline, by 65% and 75% respectively, when domestic factors costs are assumed to increase by 50%. The DRC increases from .63 to .94. This implies that even with a large increase in labor costs, coffee would maintain its comparative advantage, given this cost structure.

Table 5.15 KENYA

Smallholder Arabica Coffee: Molo and Bahati Divisions, 1988

	REVENUE	COSTS (Shillings per Acre) Tradables	Domestic Factors	Total Costs	PROFIT
Financial	24790	4170	11670	15840	8950
Economic	26350	3840	14160	18000	8350
Difference	-1560	330	-2490	-2160	600
	tax	tax	subsidy	subsidy	subsidy

Value Added (financial) Rf-Tf	20620
Value Added (Economic) Re-Te	22510
Profitability Coefficient Pf/Pe	1.07
Subsidy Rate to Producers (Pf-Pe)/Re	0.02
Nominal Protection Coefficients	
a) Outputs Rf/Re	0.94
b) Tradable Inputs Tf/Te	1.09
Effective Protection Coefficient (Rf-Tf)/(Re-Te)	0.92
Private Cost Ratio Df/(Rf-Tf)	0.57
Domestic Resource Cost Ratio De/(Re-Te)	0.63
Breakeven Producer Price (KShs/kg)	59.3

SENSITIVITY ANALYSIS

Assumption: Domestic Factor costs increase 50%

	Revenue	Tradables	Domestic Factors	Total Costs	Profit
Financial	24790	4170	17500	21670	3120
Economic	26350	3840	21240	25080	1270
Difference	-1560	330	-3740	-3410	1850
	tax	tax	subsidy	subsidy	subsidy

Profitability Coefficient Pf/Pe	2.46
Subsidy Rate to Producers (Pf-Pe)/Re	0.07
Domestic Resource Cost Ratio De/(Re-Te)	0.94

SENSITIVITY ANALYSIS

Assumption: Financial and Econ. cost of capital increases 25%

	Revenue	Tradables	Domestic Factors	Total Costs	Profit
Financial	14460	2690	13540	16230	-1770
Economic	15320	2640	13750	16390	-1070
Difference	-860	50	-210	-160	-700
	tax	tax	subsidy	subsidy	subsidy

Profitability Coefficient Pf/Pe	1.65
Subsidy Rate to Producers (Pf-Pe)/Re	-0.05
Domestic Resource Cost Ratio De/(Re-Te)	1.08

Source: "Increasing Kenyan Agricultural Productivity: Applications of the PAM, Interim Project Report, Project Team, Egerton Univ., FRI, Stanford Univ., Dept of Ag. Econ., University of Arizona, 1990.

Table 5.16 KENYA

Estate Production Arabica Coffee: Molo and Bahati Divisions: 1988

COSTS
(Shillings per Acre)

	REVENUE	Tradables	Domestic Factors	Total Costs	PROFIT
Financial	27670	7770	10050	17820	9850
Economic	29630	7330	12770	20100	9530
Difference	-1960	440	-2720	-2280	320
	tax	tax	subsidy	subsidy	subsidy

Value Added (financial) Rf-Tf	19900
Value Added (Economic) Re-Te	22300
Profitability Coefficient Pf/Pe	1.03
Subsidy Rate to Producers (Pf-Pe)/Re	0.01
Nominal Protection Coefficients	
a) Outputs Rf/Re	0.93
b) Tradable Inputs Tf/Te	1.06
Effective Protection Coefficient (Rf-Tf)/(Re-Te)	0.89
Private Cost Ratio Df/(Rf-Tf)	0.51
Domestic Resource Cost Ratio De/(Re-Te)	0.57
Breakeven Producer Price (Sh/kg)	49.7

SENSITIVITY ANALYSIS

Assumption: Domestic Factor costs increase 50%

	Revenue	Tradables	Domestic Factors	Total Costs	Profit
Financial	27670	7770	15075	22845	4825
Economic	29630	7330	19155	26485	3145
Difference	-1960	440	-4080	-3640	1680
	tax	tax	subsidy	subsidy	subsidy

Profitability Coefficient Pf/Pe	1.53
Subsidy Rate to Producers (Pf-Pe)/Re	0.06
Domestic Resource Cost Ratio De/(Re-Te)	0.86

Source: "Increasing Kenyan Agricultural Productivity: Applications of the PAM, Interim Project Report, Project Team, Egerton Univ., FRI, Stanford Univ., Dept of Ag. Econ., University of Arizona, 1990.

B. Interest Rate. Capital markets are highly imperfect in Kenya, due to government policies that distort the cost and availability of credit through formal channels. Interest rates are controlled, limiting the incentive to use the formal capital market. As a result, only the largest farmers typically rely on the formal market for credit, while small farmers rely on informal credit markets or on non-farm income.

Changes in the cost of capital affect the domestic factor cost category of the PAM. The cost of capital is subsidized for coffee producers who receive loans at a rate of 5%. Since coffee is a relatively capital intensive crop (compared to annual food crops), a simulation involving higher costs of capital was undertaken. In the baseline case, the financial cost of capital was assumed to be 5% and the economic cost to be 15%. Both rates were increased to 25% to reflect the higher true economic cost of credit.

The effect on coffee production was found to be more substantial than the effect on the production of annual crops, due to the prominence of establishment costs and the long interval between planting and the initial harvest. Total private factor costs nearly doubled when the interest rate was increased from the subsidized rate of 5% to 25%. Coffee changed from being one of the most profitable systems to the least profitable in the region examined, with both financial profits becoming negative. The DRC ratio increased from .63 to 1.08, implying coffee no longer would have a comparative advantage (Pearson et al. 1990, p.45).

C. Exchange Rate. Protective trade policy and the rationing of foreign exchange in Kenya indicate that the exchange rate is overvalued. A devaluation will affect both output revenues and tradable input costs proportionally, so the net effect will depend on the difference between the two. The sensitivity analysis simulates the effects of a 25% devaluation in the economic exchange rate. Since foreign buyers have to pay a lower per unit dollar price after devaluation, the quantity purchased should increase, leading to higher revenues (although this will depend on how elastic the demand is). Tradable input costs will increase as well, offsetting to some degree the increase in profitability incentives.

However, tradable input costs were found to be a relatively small proportion of total costs. The results showed that an output price increase of 25% leads to a substantial increase in social profits. Pearson et. al conclude that the maintenance of an overvalued exchange rate imposes a tax of 45% or more relative to private profits (Pearson et al. 1990, p.47). In other words, the benefits from a devaluation would more than offset the costs to producers.

D. Output Price. Our projected world arabica coffee price ranges from \$1.60/lb. (assuming no ICA) to \$1.80/lb. (assuming a new ICA). At a 1990 exchange rate level of 22 KShs/\$, this implies a range of 77.4 to 87.12 KSh/kg. Subtracting international transport costs of 6.4 KShs/kg (ADB, 1989) leaves a f.o.b. equivalent at Nairobi in the range of 71 to 80.7 KShs/kg. The smallholder in Kenya typically receives around 70% of the f.o.b. price, and therefore would be expected to receive a price of around 49.7-56.5 KSh/kg in 1995.

Smallholder Sector. From Table 5.15, we can determine the level of the output price at which Kenya loses its comparative advantage (i.e. the DRC becomes greater than one). Economic revenues would have to fall to 18,000 KSh/acre (59.3 KSh/kg) from the 1988 baseline case of 24,790 KSh/acre (81.64 KSh/kg[7]) for the DRC ratio to become greater than one. This implies that the world price would have to fall by 27% from the 1988 level before Kenyan smallholders lose their comparative advantage in arabica coffee production.

Since our 1995 projected world prices are more than 27% lower than the historical prices used in the analysis[8], this implies that Kenyan smallholder coffee will not remain competitive, unless producers receive a higher percentage of the world price (i.e. greater than 70%), or they can reduce their costs. This result shows the importance of keeping marketing costs as low as possible. For Kenyan smallholders, the efficiency of the cooperative sector must be improved in order for the proper price incentives to be maintained and to remain competitive in world markets.

In fact, in 1989 smallholder producers did not have a comparative advantage in Arabica production. During 1989, producer prices fell lower than the break-even price (59.3 Ksh/kg) calculated from Table 5.15. The f.o.b. price in Mombasa for Class 4 arabica coffee (average quality) was 66.09 Ksh/kg. The smallholder producer received a price of 49.74 Ksh/kg upon delivery of his coffee (ADB, annex II, Table 13).

Estate Sector. The estate producers typically receive a much higher proportion of the f.o.b. price (around 85%) than the smallholder producers. This implies a 1995 predicted price range for estate producers of 60.4 to 68.6 Kshs/kg. The break-even output price is 49,647 Ksh/ha, or 49.67 Ksh/kg. Thus at 1995 prices, the estate sector will still have a comparative advantage in coffee production.

5.3 Coffee in Tanzania

Coffee is produced in 12 out of 20 regions in Tanzania. The major regions are Arusha (N), Kilimanjaro (N), Mbeya (S), Ruvuma (S), and Kagera. These major production areas are located at long distances from the export point. Tanzania produces about 1% of total world coffee output. Coffee is Tanzania's most important foreign exchange earner, accounting for 25-40% of the total.

The total area under coffee cultivation is about 234,000 ha., of which 95% is smallholder and 5% is estate production. The area of production has doubled over the last 15 years, but production has remained static at around 50,000 tons of clean coffee. Arabica coffee accounts for 75% of total production, with

[7] Assuming a yield of 750 kg/ha.

[8] The prices used in this analysis were from 1985/86, when coffee prices reached a peak.

robusta (produced mainly in Kagera), comprising 25%. Production of the estate sector has declined considerably in recent years.

Yields range from 150-250 kg. of clean coffee (188-313 kg. parchment, or 333-556 kg. dry cherry) for smallholder arabica, to 250-300 kg/ha for smallholder robusta. Yields on estates have declined from over 1000 kg/ha. to an average of 600 kg. of clean coffee per hectare.

5.3.1 Exports and Export Markets for Tanzania Coffee

The real value of coffee exports from Tanzania has fallen from 4,078 million Tanzanian shillings in 1976 to 2,753 million TShs in 1986 (MDB, 1988). Export volumes by destination country are shown in Table 5.17. West Germany is Tanzania's most important market, purchasing 31% of its coffee exports. Finland has increased imports from Tanzania considerably in recent years, taking 23% of total coffee exports. The Netherlands takes 12%.

Almost all Tanzania's coffee goes to ICO member countries. A substantial proportion of Tanzania's coffee (the MDB estimates 60%) is traded directly for oil from W. Germany (referred to as "syndicated" sales). Scott and Finney (ADB, 1989) examined the average Tanzanian f.o.b. prices as a percent of the Colombian Mild indicator price, and found that over the last 10 years, Tanzanian arabica coffee has sold at an average 11 percent discount, despite the fact that its quality compares favorably with other Colombian Milds.

5.3.2 Costs of Production

Costs of production in 1989 for both arabica and robusta coffee are shown in Table 5.18. Production costs for arabica coffee are given for five regions, where it is grown under pure stand conditions and where it is intercropped with banana. Very low yields are assumed in this table, reflecting the declining yields and quality of coffee produced in Tanzania in recent years. Yields are very low when coffee is intercropped, at 75 kg/ha as opposed to 180 kg/ha for pure stand arabica coffee trees. Hired labor is used only in Mbinga and Arusha regions, where total costs per hectare are higher than in the other zones, although wage rates are low in Tanzania compared to the other study countries (see Table 5.21). Costs per hectare are around 14,000 Shs/ha ($70/ha) where only family labor is used, and around 17,000 Shs/ha ($90/ha) on farms where hired labor is employed. Production costs on a per kilogram basis are much higher than they should be due to extremely low yields.

Fertilizer and herbicide costs make up less than 10% of total production costs, reflecting a low use of these inputs. Chemicals and insecticides are provided "free" to farmers, with the cost deducted from the payments they receive for their coffee. This means that these costs are reflected in the marketing costs rather than in the production cost estimates.

Returns to labor are calculated as total receipts minus non-labor costs divided by the total number of labor hours. Under the pure stand Arabica

Table 5.17

TANZANIAN COFFEE EXPORTS BY DESTINATION

Destination	80/81	81/82	82/83	83/84	84/85	85/86	86/87	Percent of total Exports in 86/87
				Year				
			Volume '000 bags					
W. Germany	431.6	370.2	294.2	382.1	249.2	271.4	254.2	30.7%
U.S.	21.8	50.4	13.3	4.6	8.4	18.4	16.7	2.0%
Italy	85.9	75.8	22.0	80.0	71.6	72.7	26.0	3.1%
Netherlands	45.1	88.3	165.7	108.7	110.7	76.5	97.0	11.7%
Japan	44.8	56.4	80.1	48.1	45.3	54.5	48.4	5.8%
Algeria	217.1	120.3	150.9	101.6	0.0	0.0	49.9	6.0%
Finland	22.8	29.6	60.4	29.6	109.1	154.9	188.6	22.8%
United Kingdom	20.9	10.4	17.4	75.9	81.8	73.7	68.5	8.3%
Others	118.2	182.3	63.8	34.3	54.0	95.4	79.6	9.6%
Total Volume	1008.2	983.7	867.8	864.9	730.1	817.5	828.9	100.0%
			Value '000 $US, fob					
Export Value	158974	150262	133208	150492	123982	122522	126153	

Source: African Development Bank, Tanzania Coffee Subsector Study, 1989.

Table 5.18

TANZANIA

Production Costs of Green Coffee – per hectare and per kilogram: 1989

	ARABICA					ROBUSTA
	PURE STAND			COFFEE-BANANA		COFFEE-BANANA
	Mbeya Mbozi	Ruvuma	Mbinga	Kiliman-jaro	Arusha	Kagera
	Family Labor	Family Labor	Family & Hired Labor	Family Labor	Family & Hired Labor	Family Labor
Yield (kg/ha)	180	180	180	75	75	75
Plant density (no.trees/ha)	2000	1350	1350	1000	1000	500
Area in coffee (ha)						
Productive Period (years)	45	45	45	45	45	45
Producer Price (Sh/kg)	126	126	126	126	126	103
Revenues from Bananas				40000	40000	48000
RECEIPTS (Shs/ha)	22680	22680	22680	49450	49450	55725
VARIABLE COSTS (Shs/ha)						
Hired Labor costs:						
Wage rate (KShs/man-day)	-	-	80	-	80	-
Hired Labor (no.man-days)	0	0	49	0	27	0
Total Labor costs (Shs/ha)	0	0	3880	0	2160	0
Material input costs:						
fertilizers & herbicides	810	900	1800	1800	1800	0
insecticides & fungicides	0	0	0	0	0	0
equipment	4700	4700	4700	4700	4700	3275
Total material input costs	5510	5600	6500	6500	6500	3275
TOTAL VARIABLE COSTS(Shs/ha)	5510	5600	10380	6500	8660	3275
FIXED COSTS (Shs/ha)						
transport & infrastructure	1000	1500	1500	1000	1000	2250
Dep'n of Establishment						
Costs over 50 yrs	6818	6818	6818	6818	6818	5289
TOTAL FIXED COSTS	7818	8318	8318	7818	7818	7539
TOTAL COSTS PER HA (Shs)	13328	13918	18698	14318	16478	10814
Conversion factor (ha/kg)	0.0056	0.0056	0.0056	0.0133	0.0133	0.0133
TOTAL COSTS PER KG (Shs)	74.04	77.32	103.88	190.91	219.71	144.19
Cost of Domestic Factors (including marketing costs)	16510	17100	18000	11676	11676	5525
Tradable Input Costs	6818	6818	10698	6818	8978	5289
Private Cost Ratio*	1.04	1.08	1.50	0.27	0.29	0.11
Exchange Rate (Shs/$U.S.)	195	195	195	195	195	195
Costs per hectare ($U.S.)	68.35	71.37	95.89	73.43	84.50	55.46
Costs per kg ($U.S.)	0.38	0.40	0.53	0.98	1.13	0.74
Gross Margin (Sh/ha)	9352	8762	3982	75132	72972	44911
Total man-days labor	144	134	68	133	98	102
Returns to Labor(Sh/man-day)	64.94	65.39	119.12	564.90	782.63	440.30

* Domestic Factor Costs+Marketing Costs/Value of Prodn-tradable input costs: in financial prices

Source: Ministry of Ag. & Livestock Development, MDB, Tanzania, 1987.

cultivation, returns to labor ranged from 60 to 65 shillings per person-day in 1989 (approximately $.33/day). In Kilimanjaro, where coffee is interplanted with banana, returns to labor were 203 to 242 shillings per person-day ($1.24/day). Intercropped coffee achieves higher returns to labor due to the fact that the farmer gets revenues from banana as well as coffee and in general uses less labor.

Production costs per hectare were lower for robusta coffee at 10,814 Shs/ha., although extremely low yields result in higher per kilogram costs for robusta than for pure stand arabica. No fertilizer or herbicides are applied in the case of robusta, which contributes to lower production costs. Farmers will favor robusta production when price incentives are low due to the fact that robusta trees require fewer inputs and attention, and less labor for processing after harvest than do arabica trees (this was also found to be the case in Cameroon).

Returns to labor for various crops in Tanzania in 1986/87 are shown in Table 5.19. Returns to labor for both arabica and robusta coffee are much higher than the returns estimated for tobacco, groundnuts, cotton, and maize, and comparable to returns in tea and cocoa. Returns to labor are more than three times higher for intercropped arabica and robusta systems than for pure stand arabica.

Producer Prices. Producer prices for coffee in Tanzania have been maintained at very low levels until only recently, with producers receiving less than 50% of the world price of coffee from 1970-1986 (see Figure 5.1). Real producer prices declined over the period 1962-88 (Scott and Finney, 1989). In 1986/87, the final arabica producer price was increased to 61 Sh/kg from 46 Sh/kg (parchment), and further increased to 82 Sh/kg in 1987/88. For the 1987/88 marketing year, the final payment was 16 Shs/kg, but it was not received until March 1989 due to the financial difficulties of TCMB. From 1984 to 1988, the percentage of the sales price that the producer received declined from 71% to 59% (Table 5.20). A recent coffee sector study in Tanzania concluded that real producer prices can increase only if there is a fundamental change in the input supply system (Pearson et al. 1990, p.30). This point is returned to below.

5.3.3 Marketing Costs

Marketing costs are broken down in Table 5.20. Both the cooperative union costs and parastatal costs (TCMB) have escalated in recent years. As a percentage of clean coffee costs, parastatal and cooperative costs were estimated to be 40% in 1987/88. In the early 1980s, the co-ops didn't exist, and the parastatal percentage of clean coffee costs averaged 32%, indicating that TCMB and the co-ops working together are more expensive than TCMB (formerly called CAT) working alone.

The major cost items for the co-ops have been interest payments, input transport, crop transport, and the coffee development levy. For the parastatal, bank interest charges and variable costs have increased seven-fold since 1984/85. The indebtedness of both the parastatals and the co-ops has

Table 5.19

TANZANIA

COMPARISON OF RETURNS TO LABOR FOR VARIOUS CROPS 1986/87

Shs/man-day

Arabica Coffee	Robusta Coffee	Tea	Tobacco	Cocoa	roundnut	Cotton	Maize
172-225	275	121-184	10-31	198	38-74	34	43-96

Source: Ministry of Ag. & Livestock Development, MDB, Tanzania, 1987.

Table 5.20

SUMMARY OF MARKETING COSTS: ARABICA COFFEE

Shs/kg clean coffee

	83/84	84/85	85/86	86/87	87/88
Producer Price	28.6	37.1	57.3	75.9	102.3
Coop Union Costs	0.0	5.6	5.7	9.3	26.2
Parastatal Costs	12.2	9.2	12.3	26.2	43.5
Of which:					
Variable Costs	8.1	7.4	10.4	22.9	35.4
Bank Interest	1.2	0.8	1.2	1.2	5.7
Fixed Costs	2.9	1.1	0.8	2.1	2.3
TOTAL COST	40.8	51.9	75.2	111.4	171.9
Aver. Export Price	39.2	55.6	72.4	150.0	172.0
Net Profit/Loss to TCMB	-1.6	3.7	-2.9	38.6	0.1
Producer Price as a Percentage of Export Price	73%	67%	79%	51%	59%

Source: Ministry of Ag. & Livestock Development, MDB, Tanzania, 1989.

been increasing at an alarming rate, resulting in escalating interest charges. The accounting systems of both the parastatals and the co-operatives have been found to be very inefficient, and in need of management training. These organizations also lack accountability or incentive to reduce costs, since any costs incurred are passed on to the grower. A recent task force report on export crop marketing efficiency pointed out these deficiencies, and the proper role of these institutions is currently being debated in Tanzania.

A recent coffee subsector study for Tanzania compared the costs of TCMB and the Coffee Board of Kenya, concluding that the costs of TCMB and the cooperatives together accounted for some 22% of costs in Tanzania, compared to 17% for similar marketing services in Kenya (Scott and Finney, 1989).

Since the marketing board deducts the cost of chemical inputs from the final payment, that cost should be added back in order to compare the percent of the f.o.b. price actually received by the farmer with the amount received by producers in other countries. The Ministry of Agriculture estimated that in 1987/88 this cost was around 40 Sh/kg. Adding this back to the final payment, we see that if input costs had not been deducted, the farmer would have received 88% of the f.o.b. sales price of coffee (which may be even higher than the share of export price currently received by farmers in Kenya). This large deduction for chemical inputs is unfortunately not reflected in an actual input use that is anywhere near optimal, since Tanzania producers probably have the lowest yields in the world. The policy of automatically deducting input costs from payments is being changed, and in the future farmers will be allowed to purchase inputs freely. Unfortunately, there is still no move toward allowing private firms to import agrochemicals and distribute them to farmers, as has occurred in Cameroon.

Coffee Quality in Tanzania. The quality of Tanzanian coffee has seriously declined over the last 20 years. Poor standards of processing, a lack of real grading differentials, and the lack of realistic price differentials based on coffee quality are the main causes of this problem. The present scale of price differentials offers very little incentive to undertake the extra effort required in careful harvesting, processing and drying.

5.4 Cross-Country Comparison

Comparing costs of production and costs of marketing across countries is problematic, as described in Chapter 2.0. One of the most important issues involved in cross-country comparisons is the exchange rate chosen. Even in countries such as Tanzania, Zimbabwe, and Kenya that have progressively devalued their currencies, foreign exchange rationing and flourishing black markets suggest that some overvaluation still exists. Using the official exchange rate to convert the local currency to dollar terms for comparative reasons does not represent the true opportunity costs to countries in which the official rate is over- or undervalued.

Table 5.21 compares production costs for Kenya, Tanzania, and Cameroon in 1982 and 1987, and Tanzania and Zimbabwe in 1989. It also includes

Table 5.21 ARABICA COFFEE

COMPARISON OF COSTS OF PRODUCTION, LABOR COSTS, AND DRC'S

	Yield	Cost of Production		DRC	Cost of Labor: No. of man-days	Cost of Labor: Wage per worker
	kg/ha	$/ha	$/kg	%		$U.S./day
1982						
KENYA						
Estate	1103	2150	1.95	0.52	400	1.5
Smallholder	592	770	1.30	0.38	220	1.2
CAMEROON						
Arabica	250	315	1.26	-	85	2.0
Robusta	425	326	0.77	-	100	2.0
BRAZIL	600	720	1.20	0.42	75	3.0
COLOMBIA	788	1340	1.70	0.59	150	4.0
COSTA RICA	1200	1320	1.10	0.47	150	2.4
1987						
TANZANIA						
Pure stand	640	186	0.29	-	200	1.6
Coffee-Banana	293	223	0.76	-	100	1.5
KENYA						
Smallholder (1)	660	1003	1.52	-	175	1.6
Smallholder (2)	500	1178	2.37	0.63	-	1.1
Estate (2)	1000	2000	2.00	0.57	-	-
CAMEROON						
Arabica	1000	1070	1.07	-	-	2.5
	300	837	2.79	-	-	2.5
Robusta	1200	991	0.83	-	-	2.5
	550	850	1.55	-	-	2.5
1989						
TANZANIA						
Pure stand	180	96	0.53	-	66	0.4
Coffee-Banana	75	85	1.13	-	96	0.4
ZIMBABWE						
Irrigated	2300	2053	1.33	-	-	2.2

Sources:
1982 DATA: de Graaf, 1986.
1987 DATA: Kenya: (1) ADB, Coffee Subsector Study: Kenya, 1989.
(2) Pearson et. al, 1990.
Tanzania: MDB, Ministry of Agriculture, Annual Review of Coffee 1988, 1989.
Cameroon: ADB, Coffee Subsector Study: Cameroon, 1988.

comparative costs in 1982 for the major Latin American coffee producers, Costa Rica, Brazil, and Colombia.

The exchange rate used in these calculations is the average official rate for the year. In Cameroon, for example, it cost a farmer $1.26 to produce one kilogram of arabica coffee in 1982, assuming a yield of 250 kg/ha. In 1987, it cost that farmer $2.79, assuming a yield of 300 kg/ha. If we assume the CFA was overvalued by 30% in 1987, this cost estimate drops to $2.14/kg. The implication is that if the CFA rate were closer to the actual economic rate, the costs of coffee production in Cameroon would be much more competitive in world markets. Also, if yields are at a level of 1000 kg/ha, costs fall to $1.07/kg., showing the sensitivity of cost estimates to the level of yield assumed, which obviously will vary considerably across farms and over time.

5.4.1 Comparative Production Costs

Given all the above caveats on the problems with cross-country comparisons, there is still much that can be learned in the process. From Table 5.21, we can see that the coffee estates in Kenya have high per hectare costs. Labor inputs are higher on the estates due to a greater use of pruning and spraying, irrigation, and general maintenance. More fertilizer and sprays are also used, raising input costs. Overhead costs, including management fees, salaries, and interest payments, are incurred on estates and not on smallholdings. Higher yields compensate for the higher costs, however, which is reflected in DRC ratios below one in 1982 and 1987 for Kenyan estates, indicating they do have a comparative advantage in coffee production. Smallholder producers in Kenya face much lower costs per hectare, and relatively low per kilogram costs, so they were also efficient producers of foreign exchange in these years, although the DRC ratio almost doubled from 1982 to 1987.

Production costs in Cameroon are relatively high and have increased substantially since 1982 due to extremely low yields resulting from intercropping and neglect. Producers in Cameroon process their cherry coffee into parchment on the farm increasing their production costs. (In Kenya, this is done at the cooperatives, which achieve better quality control and economies of scale.) Tanzania's production costs appear to be much lower than Cameroon's.

Production costs per hectare are high in Colombia and Costa Rica (although not as high as costs on Kenyan estates). Both countries have adopted more intensive production with a high planting density, resulting in high establishment and overhead costs. Although costs per hectare are similar in Colombia and Costa Rica, Costa Rican producers use more fertilizer and achieve higher yields, decreasing their costs per kilogram of coffee produced. Brazil's per kilogram costs in 1982 were very similar to those of Kenyan smallholders.

In Kenya, costs on the estates were significantly higher than those of smallholders, but estate producers still had a comparative advantage in coffee, reflected in low DRC ratios in 1982 and 1987. However, sensitivity analysis showed that at 1989 (or projected 1995) world prices, the estates will maintain a comparative advantage while the smallholders will no longer have one. This is due to the fact that the estate producers receive a higher proportion of the world price than the smallholders do (85% versus 70%), highlighting the need for more efficient and less costly marketing for smallholder coffee producers in Kenya. This imbalance also points to the importance of the producer price received, which is directly related to the quality of the coffee sold in the case of arabica coffee. Zimbabwe consistently gets a 10% premium over the world price for its high quality coffee, and Kenya could do the same with a greater proportion of its coffee if high quality is maintained and more effort made to find niche markets.

Zimbabwe producers have very high per hectare costs, since most of the coffee is both irrigated and fertilized. They achieve the highest yields in the world, however, averaging 2,300 kg/ha, which means their per kilogram costs are relatively low.

Table 5.22 converts the PAMs for Cameroon and Kenya into $US/ha to allow a comparison of the cost elements. Since this type of analysis is so sensitive to the exchange rate chosen, the official rate in March 1990 was first used; then a 40% devaluation and 25% devaluation were assumed for Cameroon and Kenya, respectively (since these are the estimated degrees of overvaluation for these countries).

In Cameroon, tradable input costs, labor costs, and capital costs were 10%, 62%, and 28% of total costs, respectively. In Kenya, tradable input costs made up a higher percentage of the costs at 26%, with domestic factors (labor and capital) at 74% of total costs. In other words, coffee production is more labor-intensive in Cameroon, and more tradable input-intensive in Kenya. At the official exchange rate, financial profits were $220/ha in Cameroon and $1000/ha in Kenya. The difference between financial and economic revenues and costs is negligible in Kenya and very large in Cameroon, indicating much larger policy distortions in Cameroon. This suggests that in Africa, where policy distortions are great, farmers have much less profitability and fewer incentives (the opposite of what occurs in the developed world).

Labor Costs. Coffee production is more labor-intensive in Africa than in Latin America. One of the major sources of comparative advantage for African smallholder producers is their heavy reliance on family labor. Labor is an important input in the production of coffee, even in Latin American countries, which lowers the relative overall costs for African producers. The cost of labor was much lower in Africa in 1982 (see Table 5.21), and all indications were that agricultural labor costs have not increased substantially in recent years. In fact, very little evidence was found to support the notion that high labor costs are a significant constraint to the competitiveness of traditional export crops in any of the 6 countries visited. The cost of imported inputs was cited more often as a constraint than domestic labor costs, with the possible exception of the large estates in Zimbabwe and Kenya, where a shortage of labor at critical times appears to be more of a constraint than labor costs per se. Lack of credit for hiring labor forces most smallholders in Kenya to rely on family labor, limiting their production.

Table 5.22 COMPARISON OF POLICY ANALYSIS MATRICES

I. CAMEROON ARABICA COFFEE

	REVENUE	COSTS (CFA/ha) Tradables	Domestic Factors	Total Costs	PROFIT
Financial	390000	33013	299728	332741	57259
Economic	342750	57463	397948	455411	-112661
Difference	47250	-24450	-98220	-122670	169920
	subsidy	tax	tax	tax	subsidy

Value Added (financial) Rf-Tf	356987
Value Added (Economic) Re-Te	285287
Profitability Coefficient Pf/Pe	-0.51
Subsidy Rate to Producers (Pf-Pe)/Re	0.50
Nominal Protection Coefficients	
a) Outputs Rf/Re	1.14
b) Tradable Inputs Tf/Te	0.57
Effective Protection Coefficient (Rf-Tf)/(Re-Te)	1.25
Private Cost Ratio Df/(Rf-Tf)	0.84
Domestic Resource Cost Ratio De/(Re-Te)	1.39

CONVERTED TO $U.S./ha

1. Conversion Rate: $1 U.S. = 260 CFA (Mar.1990)

	Revenue	Tradables	Domestic Factors	Total Costs	Profit
Financial	1500.00	126.97	1152.80	1279.77	220.23
Economic	1318.27	221.01	1530.57	1751.58	-433.31
Difference	181.73	-94.04	-377.77	-471.81	653.54

Value Added (financial) Rf-Tf	1373.03
Value Added (Economic) Re-Te	1097.26

2. Conversion Rate: $1 U.S. = 340 CFA (Assuming 40% devaluation)

	Revenue	Tradables	Domestic Factors	Total Costs	Profit
Financial	1147.06	97.10	881.55	978.65	168.41
Economic	1008.09	169.01	1170.44	1339.44	-331.36
Difference	138.97	-71.91	-288.88	-360.79	499.76

Value Added (financial) Rf-Tf	1049.96
Value Added (Economic) Re-Te	839.08

Source: Wyeth, 1990.

II. KENYA ARABICA COFFEE

CONVERTED TO $U.S./ha

1. Conversion Rate: $1 U.S. = 22 KShs (Mar. 1990)

	Revenue	Tradables	Domestic Factors	Total Costs	Profit
Financial	2783.24	468.18	1310.22	1778.40	1004.84
Economic	2958.39	33.15	1589.78	1622.93	1335.46
Difference	-175.15	435.03	-279.56	155.47	-330.62
	tax	tax	subsidy	subsidy	subsidy

Value Added (financial) Rf-Tf	2315.06
Value Added (Economic) Re-Te	2925.24

2. Conversion Rate: $1 U.S. = 27.5 KShs (Assuming 25% devaluation)

	Revenue	Tradables	Domestic Factors	Total Costs	Profit
Financial	2226.59	374.54	1048.18	1422.72	803.87
Economic	2366.71	244.90	1271.83	1516.73	849.98
Difference	-140.12	129.64	-223.65	-94.01	-46.11

Value Added (financial) Rf-Tf	1852.05
Value Added (Economic) Re-Te	2121.81

Source: Table 5.15 converted to $U.S.

Sensitivity analysis undertaken for Cameroon and Kenya showed that competitiveness is affected by the cost of labor since coffee is a relatively labor-intensive crop. However, labor costs would have to increase fairly substantially to impair competitiveness. In Cameroon, the DRC fell below one when labor costs were decreased by 20%, but the degree of comparative advantage was found to be much more sensitive to the other parameters, particularly the output price. In Kenya, when labor costs were assumed to increase by 50%, coffee maintained its comparative advantage.

Capital Stock Issues. Since coffee will still produce without any investment in productivity after it is established, the issue of capital stock investment and replacement is a critical one. In a year of low prices, a farmer may simply harvest, making no investment in the plantation. This will harm the production of the following year more than the production in the present year. The level of deterioration will depend on many factors, including variety, soils, tree spacing, shade level, age of the trees, altitude, rainfall, temperature, and fertilization in the previous year. A country with a good capital stock (young, well managed plantations or farms) will be in a much better competitive position than a country that has not kept up with investments in new plantings and has a stock of old, diseased trees.

5.4.2 Comparative Advantage at 1995 Projected World Coffee Prices

Table 5.23 and Figure 5.3 summarize the sensitivity analyses performed on the PAMs for Kenya and Cameroon. It shows that at 1995 projected prices Kenyan smallholders will have lost their competitiveness in arabica coffee production, whereas Kenyan estate producers will still be competitive. The different results for the two groups lie largely in the marketing margin since Kenyan estate producers receive a much higher percentage of the world price than do smallholders. Another factor is the higher level of productivity achieved on the estates.

For small coffee producers in Kenya to maintain competitiveness in future world markets, they must increase productivity, decrease marketing costs, and increase the level of efficiency of their cooperatives.

In Cameroon, the break-even border equivalent price is below the projected price range, implying Cameroon producers can also be competitive in the future if they keep costs down and increase their productivity.[9]

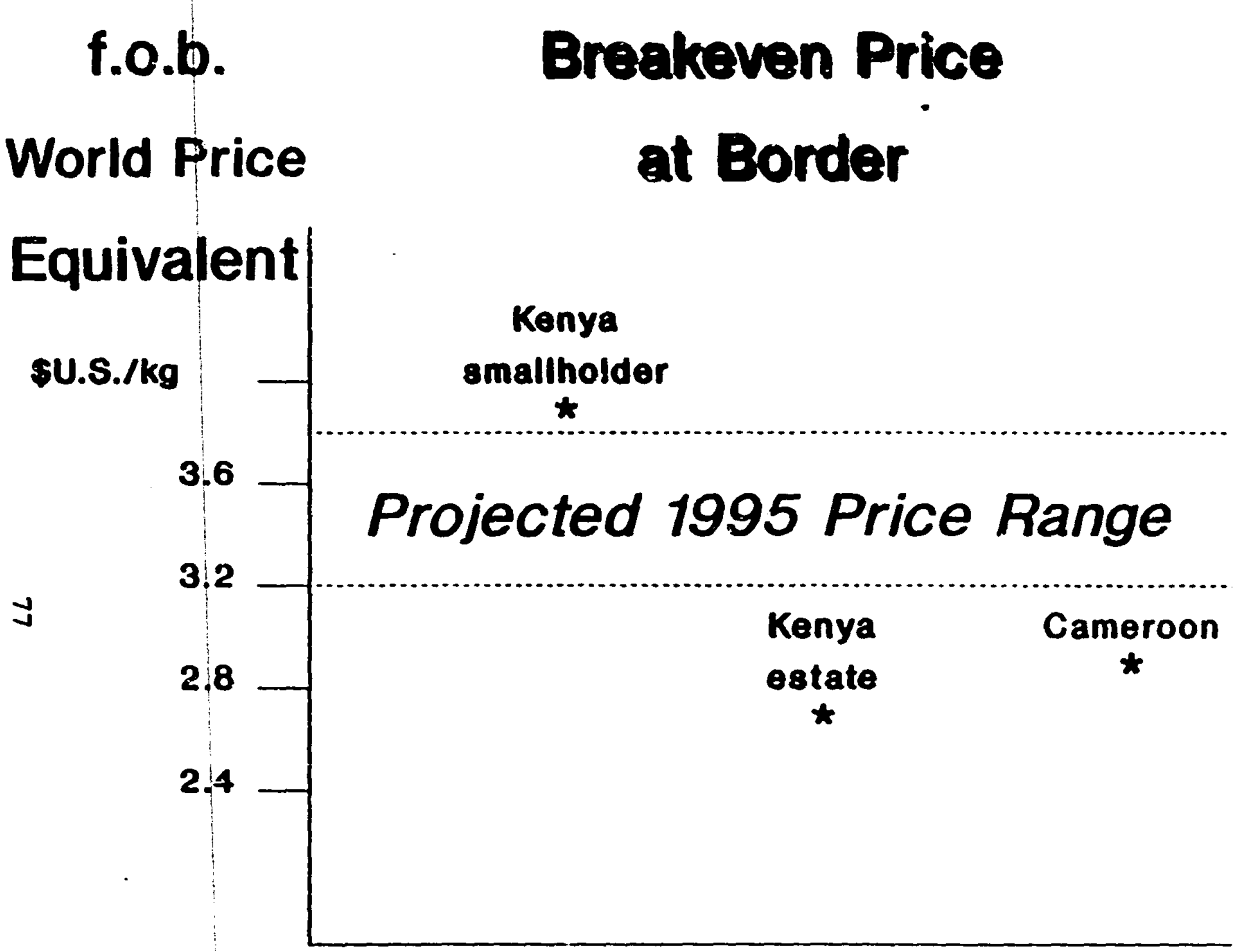
5.4.3 Marketing Cost Comparisons

Marketing costs and margins are relatively low in Brazil and Colombia where large quantities are handled. These costs are much higher in the smallholder sector in Kenya, as well as in Cameroon and Tanzania. With the gradual decline of the estate sector and the emergence of the smallholder producers, appropriate collection systems have become important. In Cameroon,

[9] DRC's for coffee in Cameroon were calculated under assumption of higher yields than are currently being achieved.

Figure 5.3

Arabica Coffee Breakeven Price at Border



* World price level at which DRC equals 1, i.e.comp.adv.exists
Breakeven producer prices (BEP) are calculated from PAM's; marketing margins were added to get fob equivalent BEP

Source: Country PAM Analyses

Assumption International freight costs: $.30/kg

Abt Associates Chart

Table 5.23

ARABICA COFFEE

SUMMARY TABLE OF SENSITIVITY ANALYSIS OF DRC'S

I. CAMEROON: Baseline Year - 1988/89

Assumptions about:

Labor Costs	Output Price	Establishment Costs	DRC
Baseline	Baseline	Yes	1.24
Baseline	5% increase	Yes	1
Baseline	Proj.1995:lower	Yes	0.75
Baseline	Proj.1995:upper	Yes	0.62
40% decrease	Baseline	Yes	0.82
20% decrease	Baseline	Yes	1
Baseline	Baseline	No	0.86

Projected 1995 prices: Percent increase from Baseline case:
Lower bound of range: 34%
Upper bound of range: 59%

II. KENYA: Baseline Year - 1986

Assumptions about:

1) Smallholder

Labor Costs	Output Price	Capital Costs	DRC
Baseline	Baseline	Baseline	0.63
50% increase	Baseline	Baseline	0.94
Baseline	Baseline	25% increase	1.08
Baseline	27% decrease	Baseline	1

Projected 1995 prices: Percent decrease from Baseline case:
Lower bound of range: -39%
Upper bound of range: -30%

2) Estate

Labor Costs	Output Price	Capital Costs	DRC
Baseline	Baseline	Baseline	0.57
50% increase	Baseline	Baseline	0.94
Baseline	45% decrease	Baseline	1

Projected 1995 prices: Percent decrease from Baseline case:
Lower bound of range: -33%
Upper bound of range: -24%

Abt Associates Table

Tanzania, and Kenya, cooperatives are responsible for collection and costs are quite high, in large part due to high transport costs, although poor management is often cited as an important factor as well.

Cameroon's marketing problems are basically institutional. Tanzania has serious institutional problems as well as infrastructural constraints, particularly in the transportation sector. Kenya faces marketing problems with some inefficient cooperatives, but for the most part they do not seriously constrain competitiveness. Storage costs (and interest payments) have been very high in recent years in Kenya (where huge stocks have accumulated due to quota constraints), and Cameroon (where inadequate storage and management exists). Zimbabwe has a very efficient marketing system and some of the best transportation and marketing infrastructure in Africa, although no data were available on marketing costs. One reason Zimbabwe's marketing boards operate to the farmers advantage is that producers are represented on the boards. The interests of both the small communal farmers and the large-scale commercial producers are represented by producer associations that work with the marketing boards.

5.4.4 Policy Distortions

A. Agricultural Policies. Policy distortions were found to be much higher in Cameroon and Tanzania than in Kenya. Incentives to produce more high quality coffee are weak in countries where policy distortions are large. These policy distortions can also create incentives that actually decrease the degree of competitiveness in world markets. The best example is in Cameroon, where producer prices were set to favor robusta production, when world market price differentials clearly signalled increasing demand for arabica coffee.

Bad policies also distort resource allocation among the types of crops grown. In Tanzania, for example, the coffee board subtracts marketing and agrochemical costs from the final price paid to the producer (who receives a small initial payment), which the producer may receive up to 18 months after harvesting his crop. He is told the quantity and kind of chemicals to apply, and pays for them whether or not they are applied. If he happens to live near the Kenyan border (where the majority of the coffee is grown), he realizes that the price he receives for his coffee is less than 50% of the world price, while his Kenyan counterpart receives 80-90% of the international price (although he still has to pay for agrochemicals applied). The price received is the same for all producers, regardless of the quality of their coffee. If that same farmer chooses to grow bananas or cassava, he can decide how much of each crop to produce and how to produce it, when and to whom to sell it and what price to charge. Such conflicting policy signals definitely create distortions in production patterns that would exist if "the policy playing field was equal." Pan-territorial pricing for crops in Tanzania encouraged the production of food crops such as maize in regions far from the major urban market, since uniform prices in effect subsidize transportation costs. The World Bank has observed a reallocation of resources underway in Tanzania as food crop prices are freed, and maize production is shifted to areas closer to urban markets while higher-value cash crops that can pay for the higher transportation costs are shifted to more remote regions (Blarel, 1990). The farmers who produce food crops which are no longer regulated are the same ones benefitting from structural adjustment, in particular from devaluation, whereas coffee and cotton producers have not yet benefitted. The marketing structure is so inefficient and costly that these benefits are not passed on to the farmer, but are "absorbed" in the marketing boards ever-escalating costs. Liberalization of food crops but not cash crops has also made food crop production relatively more attractive in Tanzania.

In Cameroon, farmers have increasingly relied on maize as a cash crop, partly due to delays of up to 18 months in payments for coffee. Since most households have to meet expenses such as school fees at particular times of the year, they cannot rely on erratic payments from marketing boards. They prefer to go to market and sell maize for immediate payment, even though the returns are higher for coffee. Delayed payments have thus seriously constrained coffee production incentives in Cameroon, as well as in Tanzania and to a lesser extent in Kenya.

A. Macroeconomic Policies. The most significant policy distortion affecting competitiveness of traditional export crops may be the maintenance of an overvalued exchange rate. The main factor affecting the competitiveness of all export crops in the CFA zone countries, the overvalued exchange rate, also affects other African countries to varying degrees. Estimates of the overvaluation of the CFA range from 30 to 50%. Although the Tanzanian and Kenyan shillings and the Zimbabwe dollar have been progressively devaluated in recent years, economists estimate each is still overvalued by up to 25% due to a strong demand for foreign exchange and active foreign currency black markets. (The degree of overvaluation is usually cited as approximately half of the devaluation indicated by the black market rate).

Devaluation has negative effects on competitiveness as well. Although exports become more competitive with devaluation, the cost of imported inputs rises at the same time. Producers in Zimbabwe, Tanzania, and Kenya have all experienced rapid cost increases in recent years primarily due to devaluation. In Tanzania, devaluation is coupled with an extreme shortage of foreign exchange, which has resulted in a lack of many essential imported inputs, such as fuel, spare parts, transportation equipment, and agrochemicals.

Relative increases in input costs compared to labor costs tends to shift resources toward labor-intensive rather than capital-intensive crops, generally implying a shift from cash crops to food crops. In Kenya, rising input costs are one factor leading to increased intercropping of coffee with horticultural crops, which negatively affects coffee yields and quality.

Domestic inflation is another issue that has affected competitiveness in all these countries to some extent. In Cameroon, the recent economic crisis has led to a high rate of inflation (due in large part to a poor management of Cameroon's oil revenues, the so-called "Dutch Disease"), which has driven up all domestic costs and kept producer's real income from rising. A recent article in the Financial Times stated that the cost of living is higher in all but one of the CFA zone capitals than in Paris, and is double that of Lagos and Accra (Financial Times, March 21, 1990, p.4).

Other studies have concluded that macroeconomic or economy-wide policy changes have had more effect on competitiveness than sector-specific policies (Krueger et. al, 1988). However, once the "bitter medicine" of structural adjustment is swallowed, sectoral policies, primarily those aimed at increasing marketing efficiency, will become very important factors in determining whether a country can remain a competitive producer of export crops.

6.0 COTTON: COUNTRY CASE STUDIES

INTRODUCTION

Cotton is an important export crop in five of the six case study countries chosen for this study: Cameroon, Kenya, Senegal, Tanzania and Zimbabwe. It is also the object of a small-scale diversification effort in The Gambia. This chapter presents descriptive data for cotton production systems in the study countries, comparative analyses of cost production and marketing for the francophone and anglophone countries, and Policy Analysis Matrices for cotton in Zimbabwe and Kenya. The PAMs were used to examine the sensitivity of measures of comparative advantage to changes in selected input costs, projected 1995 world prices, and certain policies

6.1 West and Central Africa

Cotton[1] has been cited in recent years as a success story for the 10 French-speaking African countries. The following facts provide evidence of this success:

- Mean yields per hectare rose from 200 kg of cotton in 1961 to 1200 kg in 1986.
- Area in cotton increased from 600,000 ha to 900,000 ha from 1961-1986.
- Cotton output increased from 130,000 tons to more than 1,000,000 tons in 1986 (Ministere de la Cooperation, 1987).

This success is due in large part to the involvement in all these countries of the French multinational firm CFDT (Compagnie Francaise du Developpement des Textiles), which since the colonial era has provided investment capital, production and processing technology, management and extension expertise and immediate access to the French market. After independence, these countries became majority shareholders, and CFDT continued to participate in parastatal companies in each country (e.g. SODEFITEX in Senegal and SODECOTON in Cameroon).

Cotton exports are an important source of foreign exchange in the countries studied. The cotton parastatals have had success in introducing animal traction technology to farmers who formerly practiced hand-hoe production methods. Improved maize varieties have been introduced in rotation with cotton, resulting in increased food crop yields and improved soil fertility in many cases. The success of cotton is due in large part to the ability of the parastatals to

[1] Throughout this report, "cotton" refers to the seed cotton the farmer produces, that is the unginned cotton, whereas lint cotton refers to the cotton after ginning. Cottonseed is the product left after ginning and can be crushed to produce oil and meal.

provide farmers with necessary inputs (traction equipment, seed, fertilizer, agricultural chemicals) on credit in a timely manner, assure producers of a market and fair returns, and upgrade management skills though careful production supervision (Holtzman, 1989).

6.1.1 Comparative Costs of Production for Cotton

Cost of production data were obtained for each of the study countries (as well as for some non-study countries) from various sources. The principal source of information was a recent French study on cotton production which contains comparative costs of production for the 10 French-speaking African countries, and for several Asian countries (Ministere de la Cooperation, 1987). Tables 6.1, 6.2, and 6.3 summarize the comparative cost of production information found in this study. Complementary information was obtained through interviews with CFDT in France and parastatals in the case study countries.

The major cost components at the farm-level include fertilizer and insecticide, hired labor, and irrigation. In West and Central Africa, hired labor and irrigation are seldom if ever used, so the producers' major cash costs are chemical fertilizer and pesticides. Table 6.1 includes the percentage of the cost of these inputs of the price received by the farmer in Cameroon and Senegal in 1985/86. Both Cameroon and Senegal have subsidized these input costs quite heavily, so the actual fertilizer price is not what the farmer pays. In Senegal, 100% of the input costs were subsidized in 1985/86. Recent policy changes have gradually eliminated these input subsidies in Cameroon. For 1989/90, input subsidies were 10% in Cameroon and 40% in Senegal.

In a comparison of input costs, it was found that actual (non-Subsidized) fertilizer and insecticide costs in West Africa were double those of Pakistan, one of the lowest cost producers in Asia. However, in Pakistan, irrigation and hired labor comprise approximately 40-45% of total costs, making total costs higher in Pakistan in the 1985/86 and 1986/87 seasons (220 CFA/kg and 178 CFA/kg, compared to 103 CFA/kg in Mali in 1985/86 and 123 CFA/kg in Cote d'Ivoire (see Table 6.1).

Table 6.2 compares costs of producing cotton and cotton lint across many countries in 1983/84. These numbers should be treated cautiously, however, because the cost calculations did not explicitly differentiate for such factors as farm size, quality differences, and method of watering (rainfed or irrigated). Family labor costs also were not included. In addition, it should be apparent that these cost figures vary considerably from year to year.

Table 6.2 shows that both Africa and Asia have a considerable cost advantage in producing cotton. The average cost is \$.35/kg in Asia and \$.41/kg in Africa. This compares to an average U.S. cost of \$.57/kg, versus \$.78/kg in Europe. Again, low production costs at the farm level in Africa are due in large part to scant use of irrigation and hired labor.

Among the countries studied, Cameroon had the lowest production cost at \$.27/kg cotton in 1983/84, and the highest ginning ratio at 38.9% (which is lower than the record fiber yields of 40% reported by CFDT for Cote d'Ivoire).

Table 6.1

Cost of Production – Cotton and Cotton lint

	Cameroon		Senegal	Cote d'Ivoire	Mali	Pakistan	
	83/84	85/86	85/86	85/86	85/86	85/86	86/87
PRODUCER PRICE (CFA/kg):							
Seed Cotton		140	100	115	85	116	82
Cotton lint		381	256	264	221	374	243
YIELD – Seed Cotton (Kg/ha)		1295	719	1237	1258	1000	1000
Ginning yield (%)		0.39	0.39	0.44	0.38	0.33	0.33
YIELD – Cotton lint (Kg/ha)		505.1	280.4	538	483	330	330
VARIABLE COSTS ($/kg)							
Seed Cotton	0.27			0.31	0.26	0.56	0.56
Cotton lint	1.4						
Exchange Rate (CFA/$U.S.)	437	393	393	393	393	393	319
RECEIPTS (CFA/ha)				141995	106772	123580	80252
BREAKDOWN OF PRODUCTION							
COSTS: CFA/ha and (% of total costs)							
Fertilizer and insecticide				66020(100)	49975(100)	40783(56)	33104(56)
Hired labor						20540(28)	16072(27)
Irrigation						3955	3211
Other						7266	5898
COSTS: CFA/kg cotton lint							
Fertilizer (Actual Cost)		87	98	66	63		
Insecticide (Actual Cost)		47	71	57	40		
% of Fertilizer Cost Subsidized		0.55	100	0.53	0.71		
Input Subsidy		74	169	57	30		
Farmers Input Cost		60	0	66	74		
Total Costs – CFA/kg lint				123	220	178	103
Farmers fertilizer & insecticide cost as percent of price received		0.16	0.00	0.25	0.33		
Extension/Technical Services (CFA/kg lint)		45	71	102	24		
Processing and Transportation		318	306				

Source: Ministere de la Cooperation, Paris, 1987.

Table 6.2

Comparative Costs of Production of Cotton 1983/84

Country	Yield Cottonseed kg/ha	Cost of Production $U.S./kg. cottonseed	Ginning Yield %	Cost of Production $U.S./kg. cotton lint
1. Africa				
Cameroon	1330	0.26	39	1.40
Tanzania	700	0.52	34	1.22
Zimbabwe	1650	0.48	35	1.13
Egypt	2560	0.28	n/a	n/a
Sudan	2336	0.49	n/a	n/a
Average	1715	0.41	36	1.25
2. Asia				
Pakistan	1383	0.33	30	0.97
Bangladesh	1100	0.42	33	1.27
Philippines	1460	0.30	37	1.20
Average	1314	0.35	33	1.15
3. United States	1500	0.57	35	1.54
4. Europe				
Greece	2400	0.89	33	2.70
Spain	3200	0.67	33	2.02
Average	2800	0.78	33	2.36
5. Middle East				
Israel	4890	0.76	33	2.14
Iran	1616	0.17	31	3.03
Syria	2500	0.89	37	2.42
Average	3002	0.61	34	2.53

Source: Ministere de la Cooperation, 1987.

Table 6.3

Comparative Cotton Marketing Costs 1985/86

COSTS – CFA/kg lint	CAMEROON	SENEGAL	BURKINA	MALI	COTE D'IVOIRE
Production Costs *	501	496	310	275	423
Processing & Transportation	318	306	218	231	206
(Proc. & Transp. as % of tot. costs	38%	38%	41%	46%	33%
TOTAL COSTS	819	802	528	506	629
Variable Costs	574	399	438	396	425
Fixed Costs	245	403	90	110	204

* includes cost of extension services to farmers.
Source: Ministere de la Cooperation, 1987.

Returns to Labor from Cotton vs. Alternative Ag. and Non-Ag. Employment

	CAMEROON	SENEGAL	KENYA ($U.S./DAY)	TANZANIA	ZIMBABWE
Cotton:		1.85	0.38		
Manual	2.85			0.91	1.00
Animal Traction	5.45			1.10	
Motorized	7.39				-1.46
Alternate Crops:					
Sorghum/Millet	3.78				
Maize	4.52	3.00	1.58	2.04	0.82
Groundnuts	3.43	2.08			
Rice	4.33				
Sugarcane			6.70		
Coffee			3.83		
Tea			3.82		
Alternate Employment:					
Hired Labor	4.77				
Sugarcane Estate			0.54	3.20	
Family Labor	0.90				
Min. wage, private sector	2.00	4.25			
Min. wage, public sector	1.73				
Min. agricultural wage					2.43

Source: World Bank, MADIA study, 1989.

However, ginning costs are high in Cameroon compared to Asian countries, so the cost of producing a kilogram of cotton lint is higher in Cameroon. Pakistani producers receive a fairly high price for cottonseed, which goes to local oil processing plants, and serves as an indirect subsidy to the cotton producer. Cameroon does not have local oil crushing capacity, and producers are therefore not compensated by the sale of the cottonseed along with the lint.

The price received by producers depends on the quality of the cotton produced. In 1985/86, the percent of the highest quality cotton sold in Cameroon was only 61%, while in Senegal it was 98%. Burkina Faso, Mali, and Cote d'Ivoire also produced close to 100% premier quality.

Cotton has a highly complex grading system which focuses on several quality factors that are important in the cotton and textile industries. Some of the most important factors are staple length and its uniformity, fineness and maturity (micronaire), fiber strength, color, and foreign matter content. There are 44 explicit cotton grades and 10 extra grades for long staple cotton in the U.S. and recognized in world trade. Prices vary considerably among grades.

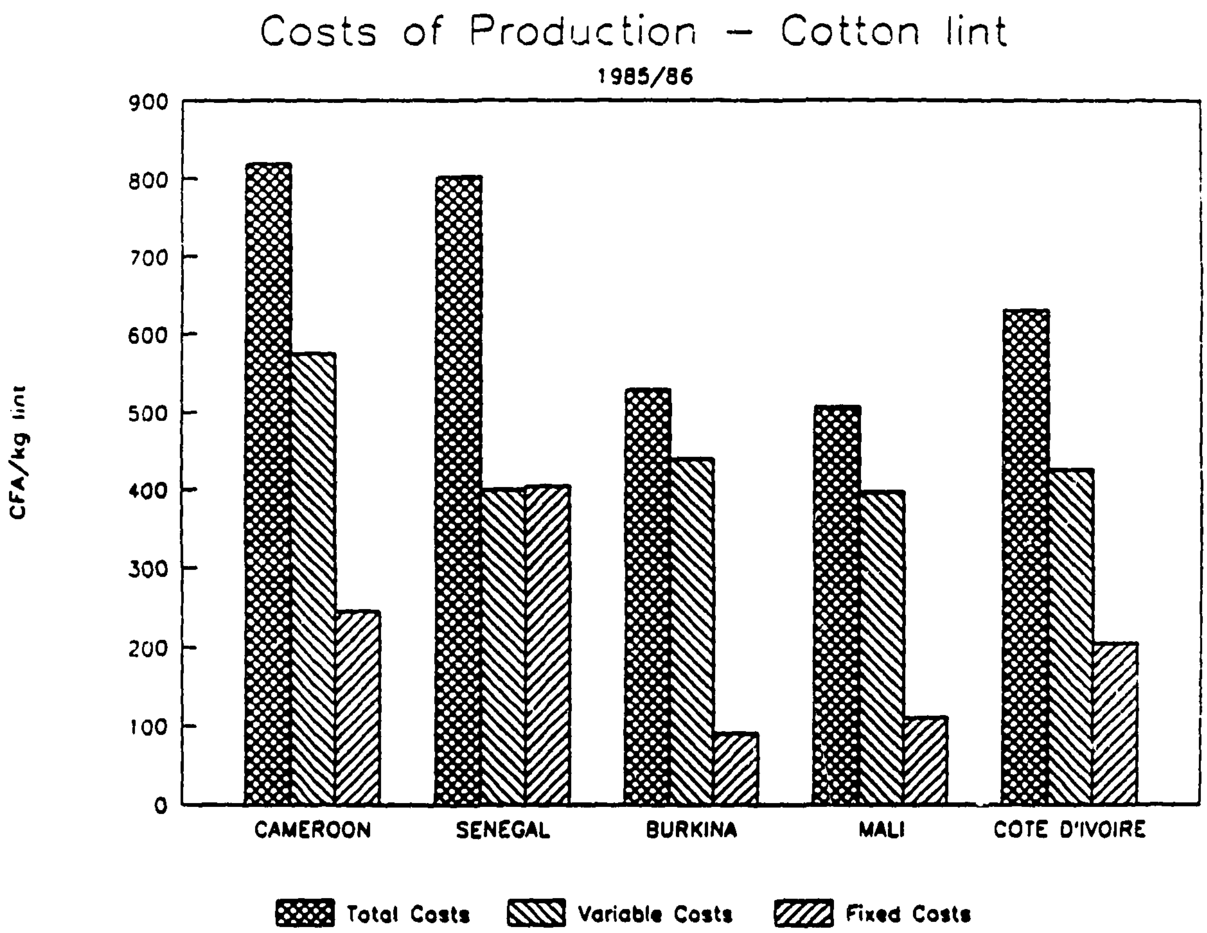
It was not possible in this study to obtain cotton price information by grade. We relate average cotton prices in the study countries to a world price that reflects an average of the most common grades of long staple cotton. Therefore, the analysis presented below may contain some errors due to the fact that the average quality cotton produced in a particular country may be either above or below the average reflected in the world market price.

Average yields of cotton are relatively high in Cameroon (1,300 kg/ha), but fairly low in Senegal (720 kg/ha). Burkina Faso, Mali, and Cote d'Ivoire also have average yields typically over 1,000 kg/ha. In areas of the world where cotton is irrigated (e.g. Egypt, Sudan, Israel), cotton yields are double or triple this level.

6.1.2 Marketing Costs

Marketing costs include any costs incurred in the movement, storage, and transformation of the cotton from the farmgate through the sale of the ginned cotton for domestic use or for export. The major marketing costs for cotton are transportation and ginning. Table 6.3 shows a breakdown of the costs of producing one kilogram of cotton lint in 1985/86 for Cameroon, Senegal, Burkina Faso, Mali, and Cote d'Ivoire (also see Figure 6.1). Unfortunately, although fixed and variable costs are differentiated, the two types of costs are not precisely defined. Production costs also included a cost for extension services.

The cost of producing one kilogram of cotton lint is higher in Senegal and Cameroon than in Burkina, Mali, and Cote d'Ivoire. Processing and transportation costs are very high in all African countries compared to non-African cotton producing countries, ranging from 33% to 46% of total costs. These costs comprise 38% of total costs in both Senegal and Cameroon. Fixed costs are highest in Senegal (four times as high as Burkina and Mali), and second highest



Source: Ministere de la Cooperation, 1987.

in Cameroon. These numbers, however, are difficult to interpret as they include some allocation of extension service costs and other components which are not presented explicitly. They were reported with a note of caution that they should represent magnitudes for comparison only, and not be treated as exact figures.

In 1983 a USAID evaluation of SODECOTON, Cameroon's cotton parastatal, gave the parastatal an extremely favorable rating. By 1985/86, SODECOTON had a deficit of 20 billion CFA, followed by deficits of around 13 billion CFA for each of the next three years. A study commissioned by the Government to look at the role of the parastatals blamed two major factors for SODECOTON's financial crisis: the progressive overvaluation of the CFA, which corresponded to the sharp fall in the relative value of the U.S. dollar after 1984/85; and the maintenance of a high producer price for cotton as the world price fell (BIRD, PNUD, AGRER, 1988).

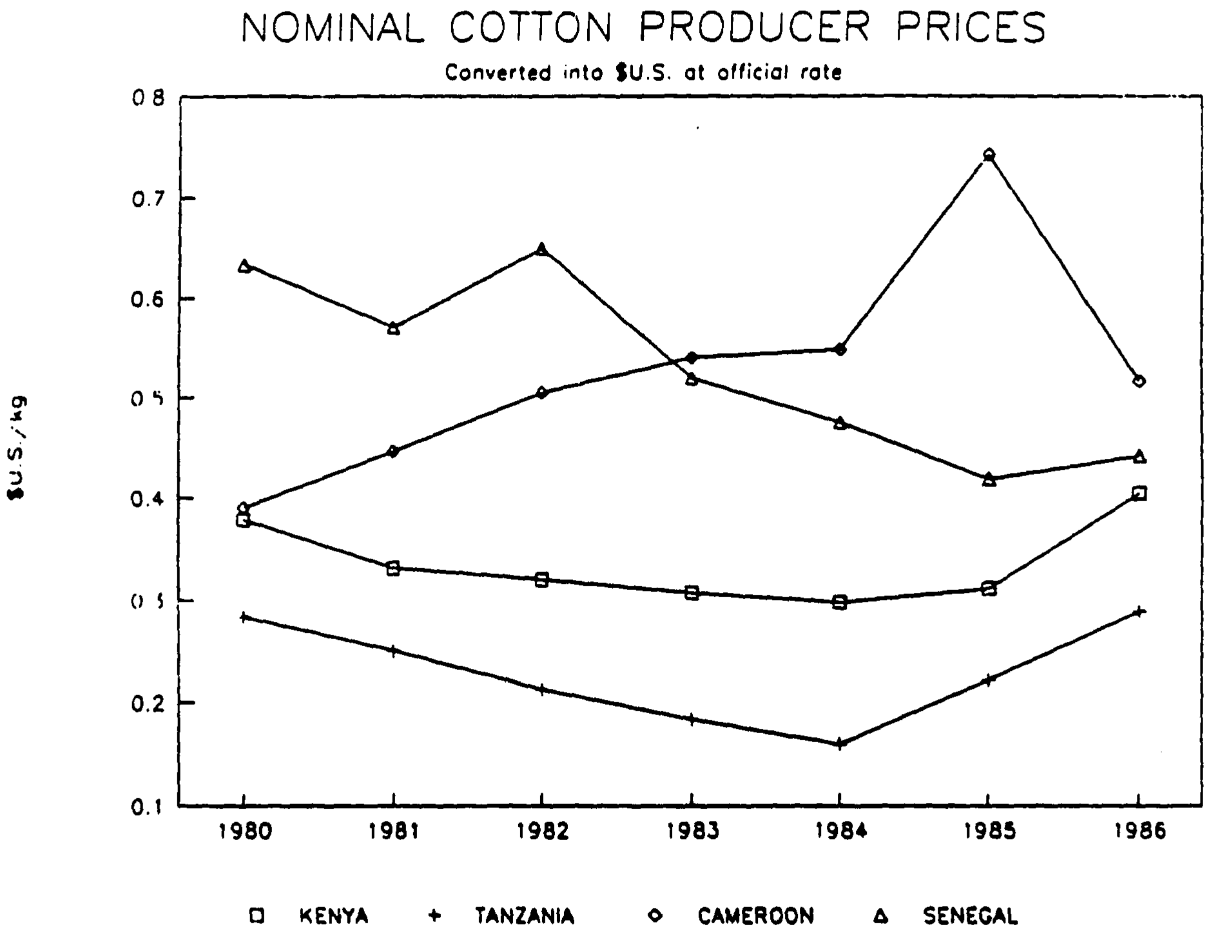
SODECOTON's high costs are also due to the fact that it serves as a rural development organization (the only one) for northern Cameroon. Many believe that without the presence and activities of SODECOTON in the extreme north, producers in this area would be much worse off. SODECOTON has built roads and provided farmers with extension support that has had positive effects beyond increased cotton production. In 1989/90, these rural development efforts were estimated to have cost SODECOTON around 1 million CFA (World Bank, 1990). The French Caisse Centrale has recently "bailed out" SODECOTON on the condition that it streamline its activities and reduce costs. This will entail reducing the staff level and scope of activities. In Senegal, SODEFITEX faces a similar situation. In addition to cotton-related activities, it fulfills a variety of rural development functions for the Senegal Oriental region.

6.1.3 Managing Agricultural Development in Africa (MADIA) Study

The World Bank recently completed a comprehensive study of six African countries: Cameroon, Senegal, Nigeria, Kenya, Tanzania and Malawi. One of the reports from the study examined the performance of cotton in these countries (Lele et al, "Cotton in Africa: An Analysis of Differences in Performance," 1989). Since the World Bank report addressed issues similar to those in this study, the findings are summarized here.

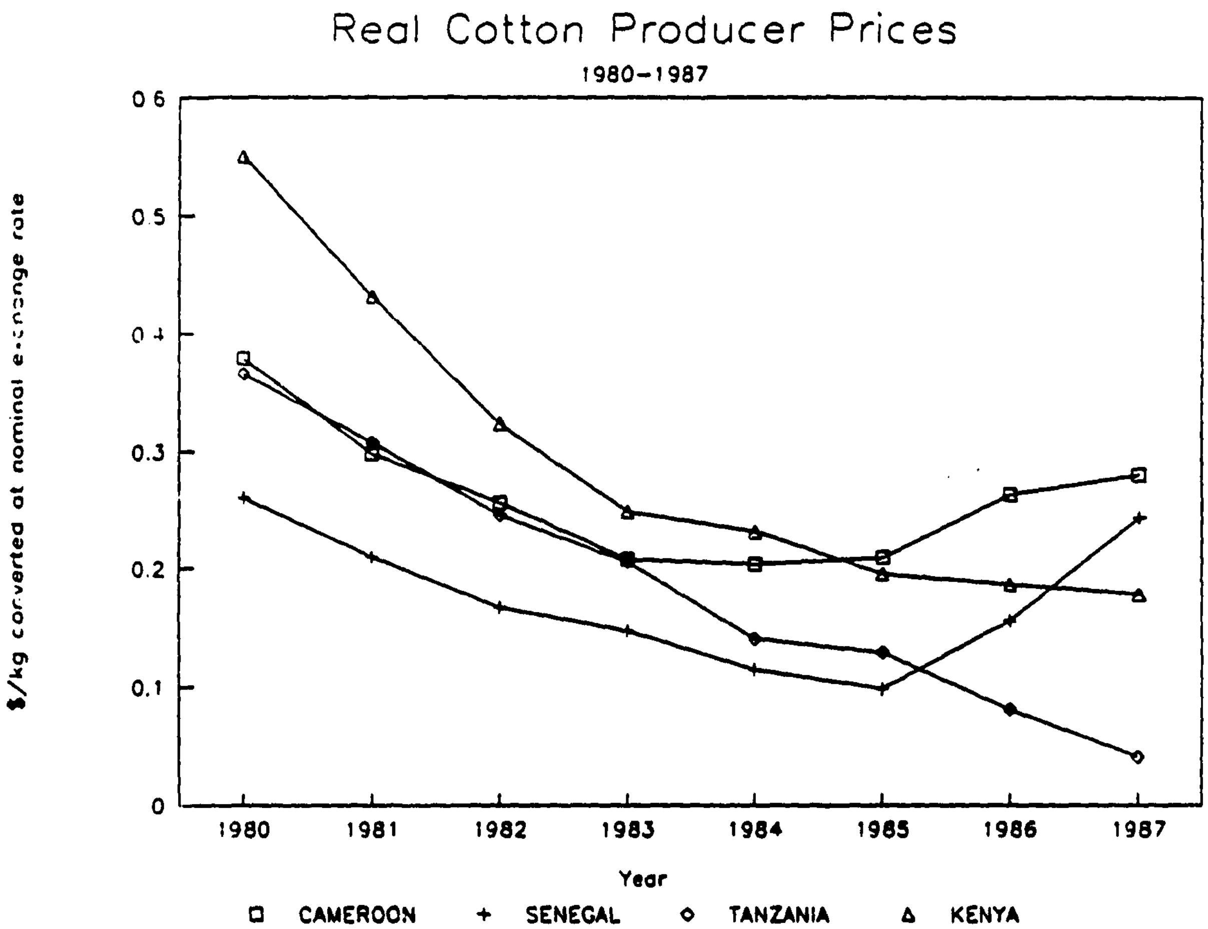
To explain differences in performance of cotton across countries, the study examined price and non-price factors. Figure 6.2 shows prices received by producers of seed cotton from 1980-1986 in Cameroon, Senegal, Tanzania and Zimbabwe (converted to $U.S./kg. at official exchange rates). Producer prices have been much lower in Senegal and Cameroon than in Tanzania and Zimbabwe over this period. In Zimbabwe, producers received a lower nominal price for their cotton each year. The MADIA study also converted official producer prices to reflect purchasing power parity, i.e. deflated by a CPI index (see Figure 6.3). Real producer prices for seed cotton were higher in Kenya than in Cameroon and Senegal from 1970 to 1984, sometimes by as much as 50%. Tanzania's real producer prices were similar to those in Cameroon until 1980, when prices in Cameroon started rising while prices in Tanzania declined, reaching the level of Senegal in 1985.

Figure 6.2



Source: World Bank MADIA study, 1989.

Figure 6.3



Note: Deflated by CPI index.

Source: World Bank, MADIA study, 1989.

The ratios of cotton producer prices to world prices from 1970-1986 are given in Figure 6.4. Farmers in Senegal have faced the lowest producer price incentives over this period, with the price received actually declining as a percentage of world price from 42% in 1970/71 to 27% in 1984/85, then increasing to more than 50% in 1986/87 and 1987/88. Producers in Tanzania also faced declining producer prices relative to world prices until the mid 1980's. In Cameroon, this ratio remained around 50% until 1986/87 when it jumped to 82%. More recently, producer prices have declined in both Senegal and Cameroon. Kenya has had the most consistent price incentives for producers, with this ratio ranging from 70% to 90% over this period. When cotton prices relative to alternative cash crops are examined, it can be seen that producer prices in general moved against cotton in favor of maize (in Cameroon, Kenya, and Tanzania), or groundnuts (in Senegal).

The MADIA study concludes, however, that a comparison of producer prices across countries does not adequately explain performance in the cotton sector in these countries. Returns to labor use were compared for cotton versus food crops and cotton versus non-agricultural employment, although this type of comparison is extremely difficult to make given a lack of data on actual farm-level practices and yields (see Table 6.3). In Cameroon, high cotton yields and the use of animal or motorized traction has meant returns to labor for cotton are higher than for maize, even though the maize producer price has risen faster than cotton prices over time. In Kenya, farmers use low input levels and receive lower yields. They have also faced growing non-agricultural employment opportunities. Thus, returns to cotton production are lower than returns to other crops. In Tanzania and Senegal, low producer prices have contributed to lower returns to cotton than to maize or groundnuts (Lele et al., 1989, p.19).

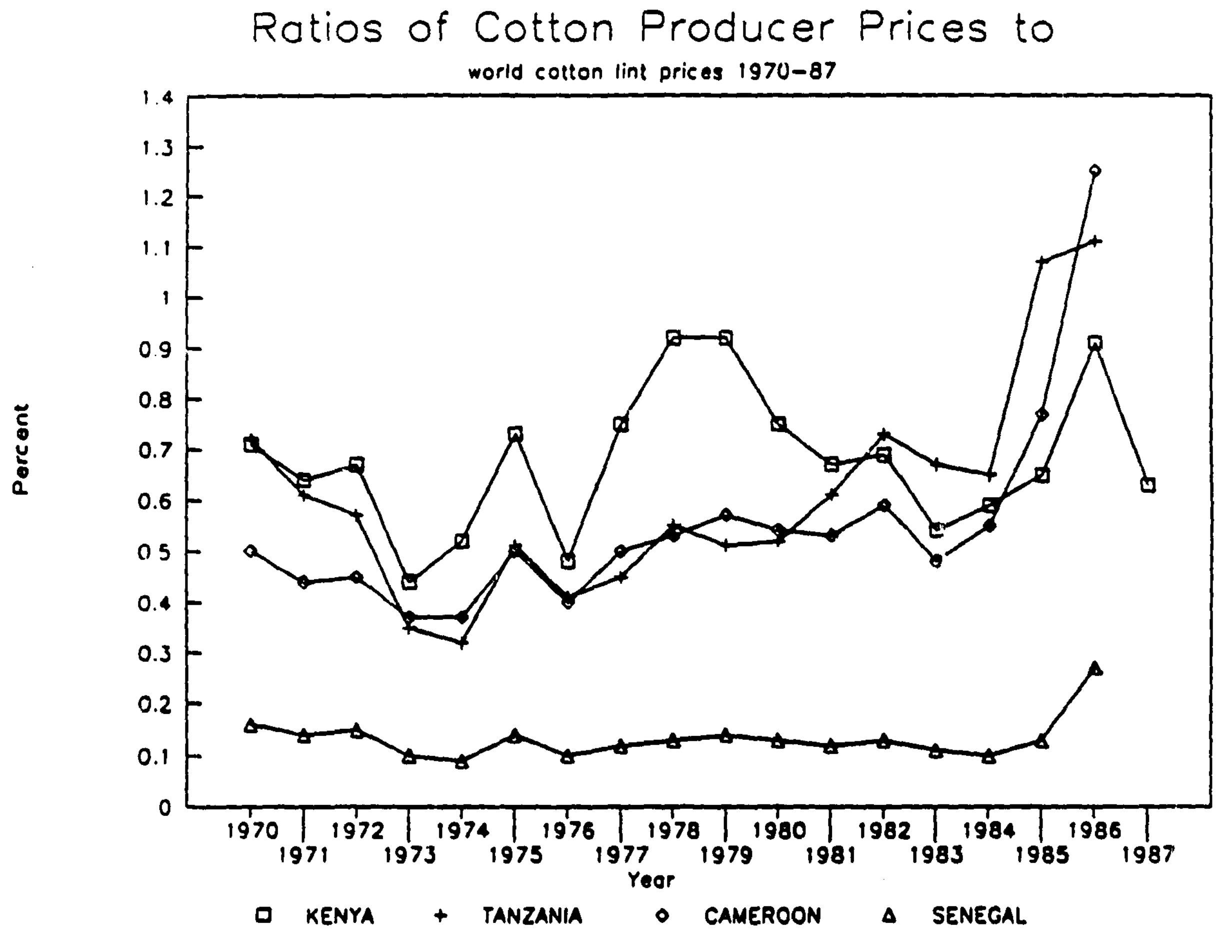
Another non-price factor emphasized was the value and timeliness of different input subsidies and producer payments. Fertilizer and pesticides are used widely only in Cameroon and Senegal, where delivery systems operate relatively efficiently. Although input subsidies and credit were provided in all the MADIA countries, it is apparent that where modern inputs are not used, this subsidy is ineffective. In Kenya and Tanzania (and Cameroon in the last two years), producers have not received payments on time, and thus a high official producer price is misleading.

6.1.4 Comparative Advantage

The MADIA study reviewed various domestic resource cost (DRC) estimates made by the World Bank's operational staff, and suggests that cotton has been an efficient earner of foreign exchange in francophone African countries (i.e. DRC's less than one). A comprehensive DRC study in Mali (Stryker et al, 1987) concludes that cotton is more efficient than food crops, although not in every year. Unfortunately, these DRC calculations and the assumptions made in estimating them were not included in the MADIA report.

The MADIA study concludes that two important issues relevant to whether these countries can achieve and maintain competitiveness in world cotton markets are the extent to which nonprice factors can increase productivity in cotton, and the extent to which subsidies are needed to maintain and develop

Figure 6.4



Note: Converted at official exchange rate.

Source: World Bank, MADIA study, 1989.

cotton production. These nonprice factors include investments in R&D, extension, infrastructure, and quality of management. Francophone countries have generally performed better than anglophone countries in many respects due to more investment in these institutional factors which are reflected in productivity levels. For example, in Senegal and Cameroon,(and anglophone Zimbabwe), inputs are delivered on time, farmers benefit from credit and effective extension services, and they get paid on time (although in Cameroon this is no longer true). Kenya and Tanzania lack such effective support: timely inputs are unavailable and payments have been delayed. Marketing services are vertically integrated in the francophone countries, while in Tanzania, the cotton sector has different institutions involved in extension, credit, marketing, ginning, and exporting. Institutional integration and stability contribute to good performance in the francophone countries, with CFDT managerial and technical support appearing to play an important role. The cost of CFDT's assistance to the cotton companies in Cameroon and Senegal, however, should be included in cost estimates, but this is extremely difficult to calculate.

6.2 Cotton in East Africa

6.2.1 Tanzania

Cotton is Tanzania's second major export crop after coffee. Over the 1970s and early 1980s the relative importance of cotton declined significantly, but in recent years the cotton industry has been recovering. Production of cotton reached its peak in 1972/73 when 225,000 tons of seed cotton were collected. By 1985/86, production had fallen to around 107,000 tons. This disastrous drop in production was largely due to the decline in real producer prices, poor rainfall in some years, institutional instability,[2] and inefficient marketing, as well as higher returns from the sale of food crops on the open market (MDB, 1988).

Since 1985/86, cotton production has more than doubled, reaching a level of 256,000 tons in 1987/88. The increase was due to higher producer prices, more favorable weather conditions, better availability of incentive goods, and lower open market prices for food crops. Cotton production in Tanzania is characterized by low yields (averaging 400 kg/ha). Fertilizer and machinery are not generally used. Tanzanian cotton is of high quality due to hand picking, and it usually attracts a premium price.

Cost of Production. Detailed crop budgets for cotton production were obtained for the 1986/87 to 1988/89 crop years in Tanzania. The 1988/89 crop budget, replicated in Table 6.4, breaks down costs by type of farm and

[2] The institutions and "rules of the game" governing cotton marketing in Tanzania have undergone substantial changes over the past 2 decades. Cooperative unions were abolished in 1976, and reintroduced in 1985, assuming responsibility for purchasing seedcotton from farmers and processing it. The new cotton marketing board (TCMB) was made responsible for export and domestic sales of cotton lint and seed at that time.

Table 6.4

TANZANIA

Production Costs and Returns to Labor of Cotton

1988/89

	Typical Hand	Typical Oxen	Improved Oxen	Improved Tractor& Hired Labor
Yield (kg/ha)	400	450	750	1100
Producer Price (Shs/Kg):AR	28	28	28	28
Producer Price (Shs/Kg):BR	11	11	11	11
RECEIPTS (Shs/ha):				
Value of Cotton:90% AR quality	10520	11835	19725	28930
CASH EXPENSES (SHs/ha):				
Labor & transport costs				
Land Preparation (Oxen/Traction)	0	1081	1081	5469
Transport (Oxen)	0	723	1037	2129
Weeding (Labor)	0	0	0	5850
Picking (Labor)	0	0	0	1366
Material Input Costs				
fertilizers	0	0	0	2806
pesticides	4879	4879	9758	9758
others	2569	2512	2483	3693
TOTAL VAR COSTS SEEDCOTTON (Shs/ha)	7448	9195	14359	31071
TOTAL VAR COSTS SEEDCOTTON (Shs/kg)	18.62	20.43	19.15	28.25
COST BREAKDOWN (Shs/ha):				
Marketing + Ginning costs (from table 5)	14461.3	16267.5	27112.5	39765
Non-tradable costs (excl M & G)	0	1804	2118	14814
Total Non-tradable costs	14461.3	18071.5	29230.5	54579
Tradable costs	7448	7391	12241	16257
PRIVATE RESOURCE COST RATIO *	4.71	4.07	3.91	4.31
Breakeven Marketing Costs **	3072	2640	5366	-2141
% decr. in mkting costs needed ***	78.8%	83.8%	80.2%	105.4%
Breakeven Revenues	21909.3	25462.5	41471.5	70836
Breakeven Producer Price	54.77	56.58	55.30	64.40
% incr. in producer price needed	95.6%	102.1%	97.5%	130.0%
Gross Margin (Sh/ha)	3072	2640	5366	-2141
Gross Margin ($/ha)	9.38	7.57	8.85	-0.25
Exchange Rate (Shs/$U.S.)	120	120	120	120
Variable Costs per hectare ($U.S.)	62.07	76.63	119.66	258.93
Variable Costs per kg ($U.S.)	0.16	0.17	0.16	0.24
% Labor Cost of Total Cost	0.00	0.20	0.15	0.48
% Fert.& Pest. of Total Cost	0.66	0.53	0.68	0.40

* PCR=Non-tradable input costs/Receipts - Tradable input costs in financial prices.

** Level of marketing costs at which PCR becomes one

*** in order for PCR = 1, i.e. to have a comparative advantage.

Source: Ministry of Agriculture and Livestock Development, MDB, 1987.

technique used, from traditional practices using hand tools without hired labor to improved practices using a tractor and hired labor.

As might be expected, the percentage of total costs attributable to labor and fertilizer and pesticide inputs varies across farm types. For traditional farms, labor costs are zero (family labor is assumed to be costless), while fertilizer and pesticides comprise around 60% of total production costs. For farms that use improved techniques including oxen or tractors, labor costs range from around 15% (oxen) to 48% (tractor). The percent of total costs attributable to fertilizer and pesticide costs is 68% for farms using oxen for animal traction, and 40% for mechanized farms using tractors. Fertilizer costs almost doubled over the three-year period from 1985/86 to 1987/88, and pesticide costs increased by a factor of 2.5.

Gross margins (receipts minus costs) per hectare are greatest for farms using improved oxen and lowest for farmers using tractors and hired labor. (The gross margin was actually negative in 1988/89 for the latter category.) Traditional methods using no fertilizers or hired labor (but using pesticides) resulted in higher returns in all three years, suggesting that fertilizer and hired labor costs (and possibly fuel costs) are a constraint in Tanzania.

Cost of Marketing. Table 6.5 shows marketing costs and margins in Tanzania over the period 1984/85-1988/89. Ginning costs, interest payments, and crop transport costs all increased substantially for the cooperative unions. The Tanzania Cotton Marketing Board's (TCMB) major expenses are also transport and handling costs and interest payments, which almost doubled from 1987 to 1988. Infrastructural problems, including extremely poor roads, old gins, lack of spare parts and fuel for vehicles, also raise costs and lead to inefficiencies in the marketing of cotton. In 1988/89 Tanzanian producers received only 39% of the average f.o.b. sales price realized due to this large marketing margin.

When these marketing costs are added to the production costs found in Table 6.4, the cost of producing one kilogram of cotton lint ranged from 163.5 to 192.24 Tanzanian shillings, or $1.36 to $1.60/kg lint (at the 1988 exchange rate level) in 1988/89.

Comparative Advantage. The private cost ratio (PCR) ranged from 3.29 to 5.08 for cotton producers in Tanzania. A private cost ratio above one implies that a comparative advantage does not exist, given the policy distortions in place. Unfortunately, we did not have quantitative information on economic prices or DRCs for Tanzania, which would show the degree of true economic comparative advantage (i.e. with the removal of policy distortions). However, it is clear that inefficient marketing and very high marketing costs cause one of the largest distortions.

Sensitivity Analysis. An analysis of the sensitivity of these financial prices showed that the producer would have to receive a price ranging from 75% higher (for farms using no animal traction) to 128% higher (for farms using tractors and hired labor) before the PCR fell below one. An alternative is to examine how far marketing costs would have to fall before a comparative

Table 6.5

TANZANIA

COTTON MARKETING COSTS AND MARGINS

	1984/85	1985/86	1986/87	1987/88	1988/89
			Sh/kg cotton		
Wtd Aver. Producer Price*	8.32	12.88	16.74	19.24	22.1
Wtd Aver. Sales Price	10.32	13.74	20.58	43.46	56.47
			Sh/kg lint		
Export Price f.o.b.	27.13	21.82	40.1	125.09	160.8
Prod Price as % of Export Price	80.6%	93.7%	81.3%	44.3%	39.1%
Cooperative Union Cost			Sh/kg cotton		
Society Levy	0.16	0.5	0.88	1.75	3
Union Levy					1.5
Bags and Twine		0.1	0.27	0.74	1.28
Crop Transport	0.22	0.45	0.81	1.78	2.93
Bank Interest		0.4	0.94	2.76	5
Ginning Fee	1.17	1.75	2.98	6.06	8.5
Other Costs		0.38	0.68	1.58	1.33
Total Union Costs		3.58	6.56	14.67	23.54
TCMB Marketing Costs			Sh/kg lint		
Staff Costs				2.84	1.62
Transport & Handling				4.46	8.36
Interest	0.66	0.71	2.06	11.75	19.32
Other Costs					
Total TCMB Costs				28.01	37.65
Exchange Rate (Sh/$)	17.85	18.65	50.76	82.84	120

*** Average price weighted according to quality: AR or BR.**

Production Costs (1988/89): 18.62 – 28.25 Sh/kg seed cotton
plus: co-op union costs: 23.54 Sh/kg seed cotton
Out-turn factor: 33.5% – lint cost equivalent: 125.85–154.59 Sh/kg lint
plus: TCMB marketing costs: 37.65 Sh/kg lint
Total Cost/kg lint: 163.5 – 192.24 Sh/kg lint ($1.36–$1.60/kg lint)

Source: MDB, 1989.

advantage existed. Marketing costs would have had to decrease by 76 to 105% for producers to become competitive in 1988.

The producer price level at which the PCR becomes one is 57.64 Sh/kg for farms using no animal traction and 63.91 Sh/kg for farms using tractors and hired labor. After adding average marketing costs of 36.15 Sh/kg, these break-even prices can be compared to our projected 1995 world price range for cotton, which is $1.25 to $2.21/kg at the Tanzanian border. For non-animal traction farms, the f.o.b. price equivalent at which the private cost ratio equals one is 94 Sh/kg, or $.78/kg at the 1988 exchange rate level (and $.48/kg after significant devaluation in 1989). For farms using tractors and hired labor, this break-even price is 100 Sh/kg, or $.83/kg in 1988 (and $.51/kg in 1989). These prices are significantly below our projected 1995 world cotton price levels. This implies Tanzanian cotton producers have become more competitive in world markets due to devaluation, and can remain competitive in 1995, given no significant changes in the cost structure.

Comparison of COP with Francophone Countries. Table 6.6 compares costs of production of cotton lint for Zimbabwe and Tanzania to the francophone countries. The major factor affecting comparative costs in Tanzania and Zimbabwe during the mid-1980s was the currency devaluation of both countries, which considerably lowered costs of production in terms of U.S. dollars. The French cotton study concluded that it was these devaluations that made cotton production in Zimbabwe and Tanzania more competitive with francophone cotton producers in 1985/86. Mali had the lowest cotton lint production costs in 1985/86, followed by Pakistan, Zimbabwe, Cote d'Ivoire, Tanzania, and Chad, according to comparative costs found in this study.

6.2.2 Zimbabwe

Zimbabwe's agricultural exports are more diversified than most African countries, with tobacco, cotton, sugar, meat products, maize, coffee, and tea being the most important in value terms. The major export markets for cotton are Western Europe, the Far East, and South Africa, although in recent years the Cotton Marketing Board has been developing new markets in Taiwan, the U.K., Spain, and Hungary (CMB, 1989).

Cotton is produced on large-scale commercial farms (LSC) in Zimbabwe as well as on small communal farms (SC). The area sown to cotton in the large-scale commercial sector has declined in recent years from around 74,000 hectares in 1984 to 65,000 hectares in 1988. The number of producers in the small-scale sector (including communal farmers, small commercial farmers, and resettlement farmers) increased by 40% from 1985/86 to 1986/87 (AMA, 1988). Average yields in the LSC sector are 1,700 kg/ha, while in the SC sector cotton yields 800 kg/ha on average. Reasons for this difference in yields include better agricultural land in the large-scale sector, and the fact that around one-half of LSC cotton production is irrigated whereas virtually none of the small-scale cotton is irrigated.

Cost of Production. Cotton production costs in Zimbabwe were obtained from the Policy Analysis Matrices (PAM) presented and discussed below. In the large-scale sector, the cost of production per kilogram of cotton are

Table 6.6 **Decomposition of Costs of Producing Cotton Lint**

	Zimbabwe		Tanzania	
	83/84	85/86	84/85	86/87
1. Cotton:				
	CFA/kg cotton			
Price farmer receives	150	129	209	107
Collection costs	n/a	n/a	10	22
Technical services	n/a	n/a	n/a	n/a
TOTAL COST	150	129	219	129
2. Cotton lint:				
	CFA/kg cotton lint			
Ginning yield (%)	0.35	0.35	0.33	0.33
Ginning cost	428	369	663	391
Storage cost	69	59	138	60
Farmer credit	50	15	50	42
Other costs	13	8	138	15
Processing cost	62	46	18	11
TOTAL COST: CFA/kg lint	622	497	1007	519
TOTAL COST: $U.S./kg lint	1.42	1.26	2.24	1.63
Exchange Rate:				
Local money/$	1.245	1.695	17.85	50
CFA/$	437	393	449	319

Comparison with other Countries Total COP:

	Pakistan		Mali	Cote d'Ivoire	Chad
	$U.S./kg cotton lint				
	85/86	86/87	85/86	85/86	85/86
Total cost	1.18	1.07	1.05	1.31	1.71

Note: A 45% Devaluation in Zimbabwe between 83/84 and 85/86 compared to CFA helped to lower total cost from $1.42/kg to $1.26/kg fiber, making it more competitive with francophone countries. A similar large devaluation occurred in Tanzania, reducing costs from $2.24/kg to $1.63/kg fiber.

Source: Ministere de la Cooperation, 1987.

Z$.89/kg, or around US$.45/kg (at the official exchange rate in early 1990). Small communal farmers produce cotton at half this cost, Z$.45/kg, or US$.20/kg.

Marketing Costs. Marketing costs are shown in Table 6.7. The Cotton Marketing Board (CMB) has faced large deficits in recent years, due largely to the heavy subsidization of the domestic textile industry. CMB must supply all local textile industry requirements (approximately one-half of the cotton being produced) at a price set by the Ministry of Agriculture. This price is maintained at around 50% of the export parity price, so local spinners are paying a much lower price for the same high quality cotton that is being exported. Since the price paid to producers by CMB has been close to export parity in recent years, CMB must absorb the difference, which is reflected in the deficit.

CMB's marketing costs also increased quite substantially between 1985 and 1989, rising from Z$.25/kg to Z$.63/kg. A recent commission which looked at the performance of the marketing boards in Zimbabwe recommended forming an independent board of directors for each of them (general managers are currently government appointees), responsibility for which would take over setting price levels from the Ministry of Agriculture. Marketing boards would thus be more responsive to the farmers and more cost-conscious. The commission also recommended streamlining CMB operations and reducing the number of employees.

Policy Analysis Matrix. Table 6.8 presents PAMs for cotton in both the LSC and SC sectors, under assumptions of average yields (Masters, 1989). Masters also calculated PAMs for maize and compared the two crops.

The PAM analyses show that in both the small-scale and large-scale sectors, the private cost ratio (showing comparative advantage given the policy distortions present) is greater than the domestic resource cost ratio (i.e. comparative advantage if all policy distortions were removed). This implies that removal of all policy distortions in both sectors would improve the competitiveness of cotton. In the LSC sector, the private cost ratio is greater than one (1.22), which means given the present policy distortions, large-scale producers of cotton do not have a comparative advantage. If all these distortions were removed, they would become competitive (the DRC becomes .79). The small communal farmers, however, do have a comparative advantage in cotton production even with current policy distortions (i.e. both the private cost ratio and domestic resource cost ratio are less than one). In other words, policy hurts the large farmers more than the small farmers in Zimbabwe.

These policy distortions include the following:

- A tax on output revenue, due primarily to exchange rate policy, maintains an overvalued exchange rate at an estimated premium of 50%. (Masters notes that the parallel market rates suggest a premium of 100%.)

Table 6.7

ZIMBABWE

COTTON MARKETING BOARD COSTS

	1985	1986	1987	1988	1989
SALES REVENUES					
Lint Sold Locally					
Weight (mil kgs)	22.4	24.1	26.6	30.3	30.8
Value (Z$ mil)	35.8	40.3	43.8	49.7	50.4
Z$/kg	1.59	1.66	1.65	1.64	1.64
Lint Exported					
Weight (mil kgs)	56.8	72.3	68.9	61.4	61.3
Value (Z$ mil)	144.1	165.4	129.3	145.6	183.4
Z$/kg	2.54	2.29	1.88	2.37	2.99
Percent of Export Price Paid by Local Textile Industry	62.6%	72.5%	87.8%	69.2%	54.8%
Marketing Board Costs					
Z$/kg	0.25	0.27	0.44	0.62	0.63
Transport & Export Costs	0.16	0.18	0.25	0.3	0.26
CMB Surplus (Deficit)					
$Z mil	56.8	(14.3)	(53.9)	(35.4)	(26.1)

Source: CMB Annual Reports 1985-1989

Table 6.8 COTTON POLICY ANALYSIS MATRIX: ZIMBABWE 1988

1) Large Scale Commercial Cotton
Assumptions: yield - 1700 kg/ha.
50% foreign exchange premium
Tax on labor doubles wages

	REVENUE	COSTS ($Z/ha) Trad-ables	Labor	Domestic Factors	Total Cost	PROFIT
Financial	1360	658	308	549	1515	-155
Economic	2219	987	154	822	1963	256
Difference	-859	-329	154	-273	-448	-411
	tax	subsidy	tax	subsidy	subsidy	tax

Value Added (financial) Rf-Tf	702
Value Added (Economic) Re-Te	1232
Profitability Coefficient Pf/Pe	-0.61
Subsidy Rate to Producers (Pf-Pe)/Re	-0.19
Nominal Protection Coefficients	
a) Outputs Rf/Re	0.61
b) Tradable Inputs Tf/Te	0.67
Effective Protection Coefficient (Rf-Tf)/(Re-Te)	0.57
Private Cost Ratio (Df+Lf)/(Rf-Tf)	1.22
Domestic Resource Cost Ratio (De+Le)/(Re-Te)	0.79
Returns to Labor ($Z/hr): financial prices	-0.41
Returns to Labor ($Z/hr): economic prices	0.67

2) Small Scale Communal Cotton
Assumptions: yield - 800 kg/ha
50% foreign exchange premium

	REVENUE	COSTS ($Z/ha) Trad-ables	Labor	Domestic Factors	Total Cost	PROFIT
Financial	640	227	34	99	360	280
Economic	1044	338	34	137	509	535
Difference	-404	-111	0	-38	-149	-255
	tax	subsidy		subsidy	subsidy	tax

Value Added (financial) Rf-Tf	413
Value Added (Economic) Re-Te	706
Profitability Coefficient Pf/Pe	0.52
Subsidy Rate to Producers (Pf-Pe)/Re	-0.24
Nominal Protection Coefficients	
a) Outputs Rf/Re	0.61
b) Tradable Inputs Tf/Te	0.67
Effective Protection Coefficient (Rf-Tf)/(Re-Te)	0.58
Private Cost Ratio (Df+Lf)/(Rf-Tf)	0.32
Domestic Resource Cost Ratio (De+Le)/(Re-Te)	0.24
Returns to Labor ($Z/hr): financial prices	0.28
Returns to Labor ($Z/hr): economic prices	0.54

Source: Masters, 1989.

- A tax on labor, due to a minimum wage policy for the large-scale sector, is estimated to double the wage farmers would otherwise have to pay. (Note: this does not affect the small communal farmers.)

- Capital and tradable inputs are subsidized due to credit market policy that provides credit to farmers at a rate of 13.9% instead of an economic rate of 25%. This subsidy primarily benefits the LSC sector.

- Policies tax output and labor and subsidize capital, but the taxes are greater than the subsidies, so the Effective Protection Coefficient is less than one.

- The combination of these policies results in the LSC sector substituting capital for labor, reducing agricultural employment.

- This substitution cannot be made by SC farmers (who don't have the same level of subsidized credit available to them), so the lower output prices they face result in lower incomes.

Sensitivity Analysis.

A. Exchange Rate Policy. To test the sensitivity of these results to the assumptions made above about the effects of individual policies, we first removed the output tax (due to exchange rate policy that maintains an overvalued Zimbabwe dollar) to see how the results would change if the Zimbabwe dollar was not overvalued. In the baseline case, the financial output price was Z$.80/kg and the economic price Z$1.30/kg. Most of the difference between these two values is due to overvaluation, making the opportunity cost of foreign exchange higher than the financial cost. The Zimbabwe dollar was assumed to be 50% overvalued, implying an economic price Z$.43/kg higher than the financial price. This Z$.43/kg was added back to the financial price and economic price in Table 6.9 to simulate a removal of this policy distortion and to examine the effects on the PAM. Another Z$.07/kg was added to the economic price to account for the marketing margin.

An exchange rate devaluation would increase the financial cost of tradable inputs. In Table 6.8, the difference between the economic and financial cost of tradables is due to the assumed overvaluation, which raised the opportunity or economic cost of tradables from Z$658/ha to Z$987/ha. In Table 6.9, the financial cost of tradable inputs is increased to Z$987/ha to account for the effects of removing this distortion.

In the large-scale sector, the private cost ratio drops from 1.22 to .78 when the exchange rate distortion is removed (and the labor market distortion still exists). This implies that if the Zimbabwean dollar was devalued, output revenues would increase and incentives would improve. However, the DRC increased from .79 to .80, implying the improvement in revenues is offset by the increase in tradable input costs that occurs with a devaluation.

In the small-scale sector, the only distortion assumed to exist in the baseline case was overvaluation. The removal of this distortion is therefore reflected in the difference between the economic and financial revenues and costs, and would result in a DRC of .24 compared to a private cost ratio of .32, implying small scale producers would become more competitive with a devaluation of the Zimbabwe dollar. Since the small-scale farmers use less tradable inputs, they benefit much more from a devaluation than do the large- scale farmers.

B. Wage Rate Policy. The minimum wage rate policy was assumed to double the wage faced by large-scale producers in the original analysis. Table 6.9 shows the results of the PAM if this assumption is relaxed (i.e. the financial cost of labor is the same as the economic cost). The private cost ratio drops from 1.22 to 1.0, implying cotton produced in the LSC sector would become more competitive if the wage rate policy distortion was removed.

C. Output Price. To examine the performance of the small-scale sector under expected world cotton market conditions in 1995, we examined the sensitivity of the PAM results to a change in the output price received by farmers.

Our projected 1995 world price for cotton ranged from a low of $.68/lb to a high of $1.12/lb, or $1.50/kg to $2.46/kg. This price is an average index price for cotton in London, reflecting a median quality of cotton sold on world markets. To get an f.o.b. equivalent price in Zimbabwe, international freight costs must be deducted from this price. These were derived from a comparison of f.o.b. Zimbabwe prices (found in CMB reports) and the world index price and averaged $.12/lb or $.26/kg. Thus, the f.o.b. equivalent projected world price range in Zimbabwe used here is $1.25 to $2.21/kg.

Since the PAM uses revenues received at the farm level, this f.o.b. equivalent price range must be "backed up" to the farm level. We can derive the marketing margin (internal transport and processing costs), or the difference between what the farmer receives and the f.o.b. sale price, directly from the PAM. The marketing margin is the difference between the financial revenue and the economic revenue found in column one of the PAM.[3] From Table 6.8, it can be seen that the financial price was Z$.80/kg and the economic price was Z$1.30/kg. The economic price was multiplied by 1.5 to reflect exchange rate overvaluation. Removing this exchange rate distortion leaves the difference in economic and financial price due purely to the marketing margin, which implies a marketing margin of $Z.07/kg or around $.04/kg.

[3] The financial revenue is the output price received by the farmer times the quantity sold, while economic revenue is derived from determining the border price from average export realizations from the CMB annual reports minus transport and handling costs (i.e. the marketing margin). This border price was multiplied by 1.5 to reflect the opportunity cost of foreign exchange (i.e. the Zimbabwe dollar was estimated to be 50% overvalued).

Table 6.9 COTTON POLICY ANALYSIS MATRIX: ZIMBABWE 1988

I. SENSITIVITY ANALYSIS

1) Large Scale Commercial Cotton
Assumptions: yield - 1700 kg/ha.
No foreign exchange overvaluation
Tax on labor doubles wages

COSTS ($Z/ha)

	REVENUE	Tradables	Labor	Domestic Factors	Total Cost	PROFIT
Financial	2091	987	308	549	1844	247
Economic	2210	987	154	822	1963	247
Difference	-119	0	154	-273	-119	0
	tax		tax	subsidy	subsidy	subsidy

Value Added (financial) Rf-Tf	1104
Value Added (Economic) Re-Te	1223
Profitability Coefficient Pf/Pe	1.00
Subsidy Rate to Producers (Pf-Pe)/Re	0.00
Nominal Protection Coefficients	
a) Outputs Rf/Re	0.95
b) Tradable Inputs Tf/Te	1.00
Effective Protection Coefficient (Rf-Tf)/(Re-Te)	0.90
Private Cost Ratio (Df+Lf)/(Rf-Tf)	0.78
Domestic Resource Cost Ratio (De+Le)/(Re-Te)	0.80

II. SENSITIVITY ANALYSIS

1) Large Scale Commercial Cotton
Assumptions: yield - 1700 kg/ha
50% foreign exchange premium
No tax on labor

COSTS ($Z/ha)

	REVENUE	Tradables	Labor	Domestic Factors	Total Cost	PROFIT
Financial	1360	658	154	549	1361	-1
Economic	2219	987	154	822	1963	256
Difference	-859	-329	0	-273	-602	-257
	tax	subsidy		subsidy	subsidy	tax

Value Added (financial) Rf-Tf	702
Value Added (Economic) Re-Te	1232
Profitability Coefficient Pf/Pe	0.00
Subsidy Rate to Producers (Pf-Pe)/Re	-0.12
Nominal Protection Coefficients	
a) Outputs Rf/Re	0.61
b) Tradable Inputs Tf/Te	0.67
Effective Protection Coefficient (Rf-Tf)/(Re-Te)	0.57
Private Cost Ratio (Df+Lf)/(Rf-Tf)	1.00
Domestic Resource Cost Ratio (De+Le)/(Re-Te)	0.79

Source: Masters, 1989.

This calculation leaves a projected 1995 range of prices at the farm level of $1.21 to $2.17/kg. The low end of the projected price range was used in the sensitivity analysis which is shown in Table 6.10. The policy distortions were assumed to still hold in this simulation. Even with the policy distortions still in place, at 1995 projected prices, large scale cotton producers will enjoy a comparative advantage in cotton production with a DRC of .51. Small-scale producers will be extremely efficient foreign exchange earners at this world price level, with a DRC of .17.

The break-even economic producer price (the price at which the domestic resource cost ratio equals one) was calculated in order to compare it to projected 1995 world prices (Figure 6.6). The break-even economic producer price is Z$.63/kg for the smallholder and Z$1.15/kg for the LSC producers. Adding a marketing margin of Z$.07/kg to get an f.o.b. equivalent price and using the March 1990 exchange rate level to convert to US dollars, world prices would have to reach a level of $.35/kg for smallholders and $.61/kg for large-scale commercial farmers to exhibit a comparative advantage if all policy distortions were removed. These prices are much lower than the projected world cotton prices, as can be seen in Figure 6.6. Although cotton producers in the LSC sector did not have a comparative advantage in 1988, they will have one in 1995 according to the analysis and price projections.

6.2.3 Kenya

Policy Analysis Matrix. A PAM for cotton in Kenya is found in Table 6.11. This can be compared to the PAMs for groundnuts and maize and beans (Table 6.12), which are crop substitutes for cotton in the Siaya region of Kenya. Cotton is not a very profitable crop in Kenya. Input use is low by historical standards, with only 10-20% of the crop fertilized (compared to 95% in Cameroon). Farmers have had problems receiving payment upon delivery of cotton to the marketing board, making them cautious about committing substantial expenditures on inputs, and making food crops which can be sold on the open market more attractive. The resulting yields are low, averaging around 500 kgs/acre, and have declined steadily in recent years (World Bank, MADIA study, 1989). Kenya's output is small in relation to the more than 90,000 tons of fiber that its textile industry processes each year, and substantial imports are required.

Cotton is perhaps the least profitable cash crop grown in Kenya, with returns similar to food crops but much lower than both coffee and tea (see Table 6.12 and the PAM for coffee in Kenya).

The PAM shows that cotton producers in Kenya are taxed by policies affecting input costs but are subsidized on outputs, with the overall policy effect resulting in a positive Effective Protection Coefficient.

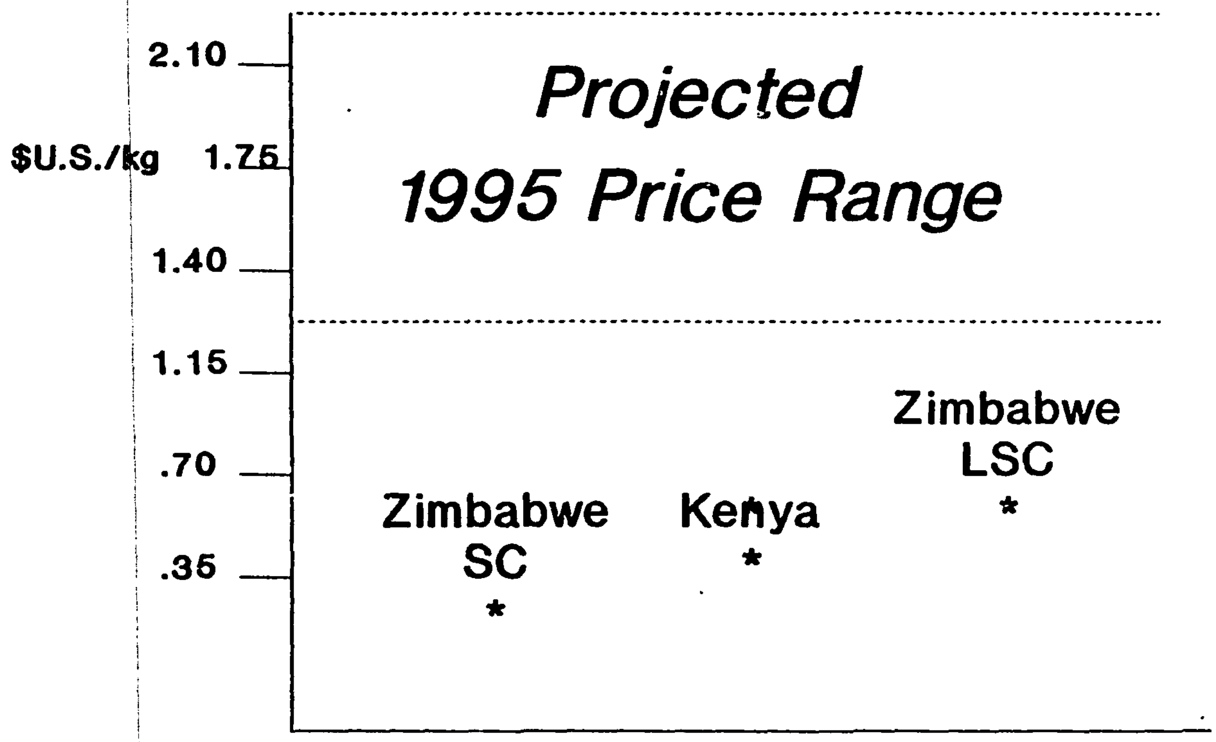
The private cost ratio is less than the domestic resource cost ratio, implying that a removal of these policies would decrease the competitiveness of cotton in Kenya (which is opposite from the conclusion reached for Zimbabwe). A DRC of .93, however, means given this cost structure, cotton is an efficient foreign exchange earner.

Figure 6.6

Cotton

Breakeven Price at Border

f.o.b.
World Price
equivalent



* World price level at which DRC equals 1, i.e.comp adv.exists
Breakeven producer prices (BEP) are calculated from PAM's
Marketing margins were added to get fob equiv. BEP

Source: Country PAM Analyses

Assumption: International freight costs $.26/kg

Table 6.10 COTTON POLICY ANALYSIS MATRIX: ZIMBABWE 1988
III. SENSITIVITY ANALYSIS

1) Large Scale Commercial Cotton
Assumption: yield - 1700 kg/ha
Output Price: 1995 Projected (Fin: $1.21/kg)
50% foreign exchange premium
Tax on labor doubles wages

	REVENUE	COSTS ($Z/ha) Tradables	Labor	Domestic Factors	Total Cost	PROFIT
Financial	2057	658	308	549	1515	542
Economic	2907	987	154	822	1963	944
Difference	-850	-329	154	-273	-448	-402
	tax	subsidy	tax	subsidy	subsidy	tax

Value Added (financial) Rf-Tf	1399
Value Added (Economic) Re-Te	1920
Profitability Coefficient Pf/Pe	0.57
Subsidy Rate to Producers (Pf-Pe)/Re	-0.14
Nominal Protection Coefficients	
a) Outputs Rf/Re	0.71
b) Tradable Inputs Tf/Te	0.67
Effective Protection Coefficient (Rf-Tf)/(Re-Te)	0.73
Private Cost Ratio (Df+Lf)/(Rf-Tf)	0.61
Domestic Resource Cost Ratio (De+Le)/(Re-Te)	0.51

2) Small Scale Communal Sector
Assumption: yield - 800 kg/ha
Output Price: 1995 Projected (Fin: $1.21/kg)
50% foreign exchange premium

	REVENUE	COSTS ($Z/ha) Tradables	Labor	Domestic Factors	Total Cost	PROFIT
Financial	968	227	34	99	360	608
Economic	1368	338	34	137	509	859
Difference	-400	-111	0	-38	-149	-251
	tax	subsidy		subsidy	subsidy	tax

Value Added (financial) Rf-Tf	741
Value Added (Economic) Re-Te	1030
Profitability Coefficient Pf/Pe	0.71
Subsidy Rate to Producers (Pf-Pe)/Re	-0.18
Nominal Protection Coefficients	
a) Outputs Rf/Re	0.71
b) Tradable Inputs Tf/Te	0.67
Effective Protection Coefficient (Rf-Tf)/(Re-Te)	0.72
Private Cost Ratio (Df+Lf)/(Rf-Tf)	0.18
Domestic Resource Cost Ratio (De+Le)/(Re-Te)	0.17

Source: Masters, 1989.

Table 6.11 COTTON POLICY ANALYSIS MATRIX: KENYA 1988

I. BASELINE CASE

	REVENUE	COSTS (Shillings/Acre) Tradables	Domestic Factors	Total Costs	PROFIT
Financial	5330	600	3400	4000	1330
Economic	4120	500	3350	3850	270
Difference	1210 subsidy	100 tax	50 tax	150 tax	1060 subsidy

Value Added (financial) Rf-Tf	4730
Value Added (Economic) Re-Te	3620
Profitability Coefficient Pf/Pe	4.93
Subsidy Rate to Producers (Pf-Pe)/Re	0.26
Nominal Protection Coefficients	
a) Outputs Rf/Re	1.29
b) Tradable Inputs Tf/Te	1.20
Effective Protection Coefficient (Rf-Tf)/(Re-Te)	1.31
Private Cost Ratio Df/(Rf-Tf)	0.72
Domestic Resource Cost Ratio De/(Re-Te)	0.93

II. SENSITIVITY ANALYSIS

Assumption: Domestic Factor costs increase 10%

	Revenue	Tradables	Domestic Factors	Total Costs	Profit
Financial	5330	600	3740	4340	990
Economic	4120	500	3685	4185	-65
Difference	1210 subsidy	100 tax	55 tax	155 tax	1055 subsidy

Profitability Coefficient Pf/Pe	-15.23
Private Cost Ratio Df/(Rf-Tf)	0.79
Domestic Resource Cost Ratio De/(Re-Te)	1.02

III. SENSITIVITY ANALYSIS

Assumption: Increased Rate of Capacity Utilization of Cotton Gin from 50% to 90%

	Revenue	Tradables	Domestic Factors	Total Costs	Profit
Financial	5530	600	2680	3280	2250
Economic	4120	500	2610	3110	1010
Difference	1410 subsidy	100 tax	70 tax	170 tax	1240 subsidy

Profitability Coefficient Pf/Pe	2.23
Private Cost Ratio Df/(Rf-Tf)	0.54
Domestic Resource Cost Ratio De/(Re-Te)	0.72

Source: Egerton University Project Team, 1990.

Table 6.12 GROUNDNUTS PAM: KENYA 1988

	REVENUE	COSTS (Shillings/Acre) Tradables	Domestic Factors	Total Costs	PROFIT
Financial	3620	490	1620	2110	1510
Economic	810	90	1560	1650	-840
Difference	2810	400	60	460	2350
	subsidy	tax	tax	tax	subsidy
Value Added (financial) Rf–Tf					3130
Value Added (Economic) Re–Te					720
Profitability Coefficient Pf/Pe					–1.80
Subsidy Rate to Producers (Pf–Pe)/Re					2.90
Nominal Protection Coefficients					
a) Outputs Rf/Re					4.47
b) Tradable Inputs Tf/Te					5.44
Effective Protection Coefficient (Rf–Tf)/(Re–Te)					4.35
Private Cost Ratio Df/(Rf–Tf)					0.52
Domestic Resource Cost Ratio De/(Re–Te)					2.17

MAIZE AND BEANS: KENYA 1988

	REVENUE	Tradables	Domestic Factors	Total Costs	PROFIT
Financial	3250	470	1310	1780	1470
Economic	2980	430	1230	1660	1320
Difference	270	40	80	120	150
	subsidy	tax	tax	tax	subsidy
Value Added (financial) Rf–Tf					2780
Value Added (Economic) Re–Te					2550
Profitability Coefficient Pf/Pe					1.11
Subsidy Rate to Producers (Pf–Pe)/Re					0.05
Nominal Protection Coefficients					
a) Outputs Rf/Re					1.09
b) Tradable Inputs Tf/Te					1.09
Effective Protection Coefficient (Rf–Tf)/(Re–Te)					1.09
Private Cost Ratio Df/(Rf–Tf)					0.47
Domestic Resource Cost Ratio De/(Re–Te)					0.48

Source: Egerton University Project Team, 1990.

Sensitivity Analysis

A. Output Price. The difference between the economic or border price and the financial price shown in Table 6.11 is attributable to the marketing margin (i.e. no exchange rate distortion was assumed in the original analysis). Given yields of 500 kg/acre, this implies a financial price of 10.66 Sh/kg and a border price of 8.24 Sh/kg, leaving a marketing margin of 2.42 Sh/kg, or around $.11/kg, which seems quite reasonable. In other words, the cotton producer in Kenya is receiving 77% of the f.o.b. price.

Bringing our projected world cotton price range back to the farm level in Kenya results in an estimated 1995 price range of $1.13 to $2.10/kg,[4] or 25 to 46 Sh/kg. A 1995 price of 25 Sh/kg is more than twice the 1988 farm level price of 10.7 Sh/kg, so cotton producers should be better off even if they receive a smaller percentage of the 1995 world price.

The economic producer price at which the DRC equals one is 7.7 Sh/kg or $.35/kg. Adding the marketing margin ($.11/kg) gives us a f.o.b. equivalent break-even price of $.46/kg. This is considerably below our projected 1995 price range for cotton of $1.25 to $2.21/kg at the Kenya border, implying Kenyan cotton producers will have a strong economic comparative advantage in the future if their costs don't change substantially.

B. Labor Costs. Sensitivity analysis shows that if domestic factor costs were increased by 10%, cotton would lose its comparative advantage (i.e. the DRC ratio rises above one). This implies that labor costs would have to increase by more than 10% before cotton lost its comparative advantage, since they make up only a part of total domestic factor costs. (Unfortunately, a breakdown of domestic factor costs was not given, so the exact percentage is not known.)

C. Capacity Utilization of Cotton Gin. The team working on the PAM for Kenya calculated the sensitivity of the results to a simulation of the effect of an improvement in the efficiency of the processing of cotton into lint. The capacity utilization of the cotton gin, currently at a low level of 50%, was increased to 90%. Although this involves a change in a post-farm activity, it can result in increased farm income, since some or all of the changes in post-farm costs will be passed back to farmers in the form of higher farm-gate prices. This will hold for systems that involve parastatals or co-ops that deduct post-farm costs from the value of sales to determine the price paid to the farmer, such as is found in Kenya.

Increasing the efficiency of processing was found to make a substantial difference (Table 6.11). Capital costs to the system declined by one-half, and both private and social profits showed large increases in relative terms. This type of sensitivity analysis is valuable, because it shows how significant the

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[4] Taking the projected world price range of $1.49-$2.46/kg minus international transport costs of $.25/kg, minus internal transport and processing costs of $.11/kg.

impact of changes in processing activities can be on the profitability of a commodity at the farm-level.

6.3 Cross-Country Comparisons for Cotton in East Africa

1988 production costs for Kenya, Tanzania, and Zimbabwe were converted to U.S. dollars in order to compare the magnitude of these costs (Table 6.13). This comparison depends heavily on the exchange rate chosen. The nominal exchange rate in March 1990 of each country was used for this comparison, since all three countries have experienced significant devaluation through 1989 and early 1990.

Cost of producing cotton on a per hectare basis. Large-scale commercial farms in Zimbabwe have the highest per hectare costs at $676/ha. Small communal farmers in Zimbabwe are much lower cost producers, with costs of only $16/ha. Production costs in Kenya resemble those of large-scale farms in Zimbabwe, at a level of around $450/ha. In Tanzania, variable costs of producing cotton on a per hectare basis were not as low as small farms in Zimbabwe, ranging from $38.19/ha (traditional methods) to $159.34/ha (tractor and hired labor).

Cost of producing cotton lint on a per kilogram basis. Since yields have such a strong influence on costs of production, a more relevant cost comparison is between per kilogram costs. The cost of producing one kilogram of cotton lint were the highest for large-scale farms in Zimbabwe ($1.73), where production costs on irrigated farms are high, and in Tanzania ($1.36 -$1.60), where very low yields raise per kilogram costs. At $.75, costs were lowest for small communal farms in Zimbabwe and slightly higher in Kenya, where the average cost was $1.04/kg cotton lint.

6.4 Comparison with Francophone Countries

Table 6.13 and Figure 6.5 also summarize comparative cost of production estimates for the anglophone and francophone African cotton producing countries, Pakistan, Philippines, Iran, the U.S., Colombia, Israel, and Australia. Since these estimates are not all for the same year and have been calculated in different ways, they should be treated with caution, but are informative nonetheless.

African Producers. Cameroon's and Senegal's costs are the highest in Africa ($2.08 and $2.04/kg cotton lint), followed by Zimbabwe's large-scale farmers ($1.73), Cote d'Ivoire ($1.60), and Tanzania ($1.36-$1.60). The lowest-cost African countries appear to be Zimbabwe's small communal farmers ($.75/kg cotton lint), Kenya ($1.04), Mali ($1.29) and Burkina Faso ($1.34).

Non-African Producers. Cotton producers in the southern U.S. have costs similar to the highest cost African producers (around $2.00/kg lint), while American producers in the Mississippi Delta and the Far West (who have better soils and more rainfall) have lower costs, around $1.55/kg lint.

Table 6.13

COTTON: COMPARISON OF PRODUCTION COSTS

$U.S./kg cotton lint

FRANCOPHONE AFRICA: 1985/86

Cameroon	2.08
Senegal	2.04
Burkina	1.34
Mali	1.29
Cote d'Ivoire	1.60

ANGLOPHONE AFRICA: 1988/89

Kenya		1.04
Tanzania:	Traditional	1.36
	Modern	1.60
Zimbabwe:	Large-Scale	1.73
	Small-Scale	0.75

ASIA: 1986/87

Pakistan	1.01
Iran	5.70
Philippines	1.20

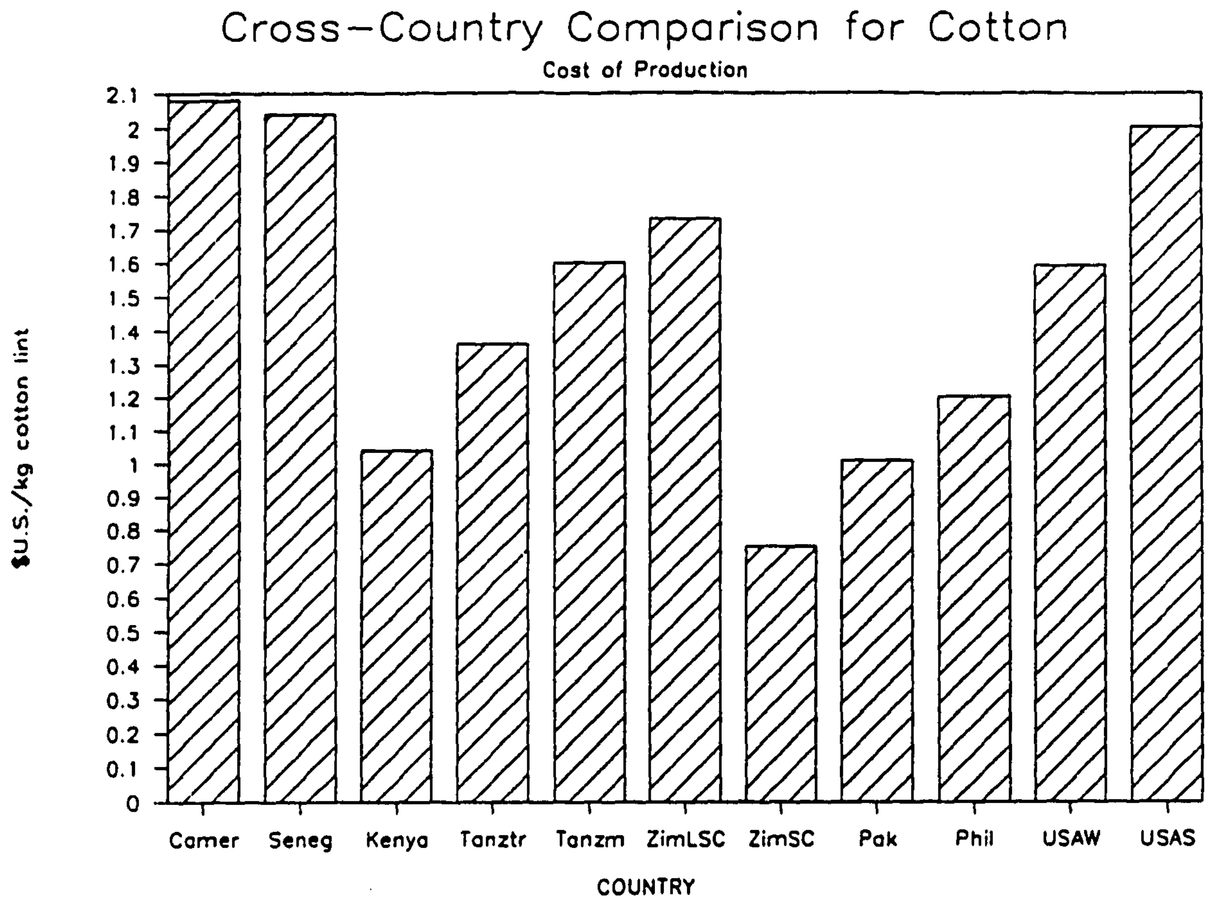
USA: 1986/87

Far West	1.59
Southern Plains	2.00
Mississippi Delta	1.53
South-East	1.98

COLOMBIA: 1986/87	2.38
ISRAEL: 1986/87	1.94
AUSTRALIA: 1986/87	0.86

Sources:
Francophone countries: table 6.3
Anglophone countries: tables 6.4, 6.8, and 6.11.
Others: International Cotton Advisory Committee,
Survey of the Cost of Production of Raw Cotton, Oct. 1988.

Figure 6.5



Source: Table 6.13

Pakistan and the Philippines have low production costs at $1.01 and $1.20/kg lint, respectively, which are in the same range as Africa's lowest cost producers. Israel, Iran, and Colombia are very high cost producers. Australia cotton producers appear to be among the lowest cost producers in the world with per kilogram costs of $.86.

Comparative Advantage at Projected 1995 World Prices. Figure 6.6 summarizes the sensitivity analyses performed using the PAM's obtained for Kenya and Zimbabwe. It was compared to projected 1995 world prices. Marketing margins were added to these producer price levels to get a border equivalent price so we could compare them to our world price projections (from which international transport costs were deducted to get a world price equivalent at the same border). The break-even economic f.o.b. equivalent price shows the world price level that is necessary for producers to achieve a "true" economic comparative advantage (i.e. accounting for policy distortions).

Figure 6.6 shows that the world price levels necessary for farmers to be actively competitive are below projected 1995 cotton price levels for Kenya and Zimbabwe. If the underlying cost structure does not change substantially, there is little reason to believe that these countries can not be competitive in world cotton markets in the future.

7.0 GROUNDNUTS (PEANUTS): COUNTRY CASE STUDIES

INTRODUCTION

The Groundnut (Peanut) is an important export crop in two of the six case study countries chosen for this study: Senegal and Gambia. Factors that influence the competitiveness of groundnut production in each country are discussed in this section.

Groundnuts are marketed in a number of different forms, including unshelled or shelled groundnuts, crude or refined oil, meal, confectionery groundnuts, or specialty products. The choice of market and associated costs will influence competitiveness.

The primary focus of this analysis is on markets for shelled nuts, crude oil and meal. However, the other markets offer important opportunities that merit further examination, especially considering that competing oils have eroded the market share of groundnut oil in world markets.

The process of evaluating competitiveness begins with an examination of each country's ability to deliver shelled nuts to its border at a price that permits it to sell at prevailing and projected international prices. This is a financial analysis that does not take into account the possibility of eliminating distortions caused by policies, subsidies and taxes. Sensitivity analysis is then used to simulate the economic impacts of eliminating distortions. As both Senegal and Gambia export crude oil and meal, as well as nuts, an analysis of crushing margins is also conducted.

7.1 Groundnuts in Senegal

7.1.1 Senegal's Market and Export Trends

Groundnuts are the predominant source of foreign exchange in Senegal. Senegal does not export significant quantities of groundnuts. Rather, it exports meal and oil, mostly to the European Community. Improvements in crushing and detoxification have enabled Senegal to meet the E.C.'s stringent aflatoxin tolerance levels. At one time Senegal exported some refined oil, but it is now consumed entirely on the domestic market, exports are of crude oil.

Groundnuts are by far the major oilseed produced in Senegal. Small quantities of cottonseed are also produced and processed. On balance, crush accounts for 60-65% of total disappearance in Senegal. Local consumption, seed use, informal trade and storage loss account for the remaining disposition.

Groundnut oil is a major source of foreign exchange for Senegal. As a matter of policy, the government tries to maintain oil exports to retain its market share and to sustain economic aid levels from the E.C.'s STABEX fund.[1] Most meal is also exported to the E.C. In addition, Senegal has been developing sales of confectionery groundnuts.

The groundnut market really has several components. Groundnuts can be sold on a shelled or unshelled, crushed for oil and meal, or crude oil or refined oil, or in various consumer packages. A wide variety of other consumer products can also be produced (George Washington Carver developed more than 100).

The primary consumer of groundnut oil on the world market is Europe, but the market there has been shrinking regularly. Overall, E.C. consumption has fallen 35% in the last five years. In France, the market share of groundnut oil among vegetable oils has fallen from 80% in the late 1970s to 18% in 1989, while the market share of sunflower seed oil has increased from 15% to 66%.

Most of Senegal's groundnut oil is sold to Lesieur, a French company whose links to Senegal date from the colonial era. In France, Lesieur brands (Huilor and Lesieur) have 55% of the market, house brands of the large grocery chains make up almost 30%, and smaller brands make up the rest. Lesieur brands' share of the market has fallen from 62% in 1984 to 55% in 1989 at the same time that overall groundnut oil consumption has lost market share. With the recent purchase of Lesieur by Feruzzi, the company is attempting to recover market share with the introduction of a new blended oil which is sunflower-based, but without groundnut oil.

For the Societe Nationale de Commercialisation des Oleagineux du Senegal (SONACOS), the monopoly groundnut processor in Senegal, these developments have important implications. SONACOS has been paying for Lesieur's facilities in Senegal under a lease-purchase arrangement that terminates in 1990. Lesieur remains SONACOS' primary client and no major efforts at diversification appear to be underway. The relationship with Lesieur on the selling side is informal, rather than contractual. However, SONACOS has had no problems selling its oil to date, and the lease-purchase arrangement has provided an incentive for Lesieur to remain a reliable customer for SONACOS. For the future, the combined impact of developments in European vegetable oil consumption, and the fact that the new owners of Lesieur have neither the financial interest of the lease-purchase payments nor the historical links with Senegal and SONACOS means that marketing and market diversification will require increased attention. A recent report by SOFRECO has urged improvements in strategic marketing capabilities in Senegal, either through private marketing or major strengthening of the SONACOS marketing service, to respond to the situation.

In many countries, parastatal organizations that have taken over responsibilities for cash crop production, processing and marketing have viewed marketing as a disposal activity, rather than an opportunity for aggressively gaining the maximum possible return on production. Often marketing is left to

[1]The Stabex Fund, is a commodity price stabilization fund provided for as part of the European Community's Lome Agreements with countries of Africa, the Caribbean and Pacific (ACP), provides cash transfers to developing country governments adversely affected by international commodity price movements.

a foreign organization. In the case of cotton, former activities of the CFDT have become parastatals partially owned by CFDT. For example, CFDT operates Cie Cotonniere, which acts as a broker for CFDT countries. In return for a 0.5% commission, the countries gain bargaining power, since their broker controls 3-5% of world trade.

SOFRECO found no evidence that a broker for groundnut oil sales, which would cost 1-2%, would have generated higher returns than SONACOS has historically. SONACOS does use a private broker for groundnut meal sales. Nonetheless, considering the uncertainty of traditional market outlets, a more aggressive approach to marketing and market diversification, coupled with pursuit of processing and handling economies, could lead to greater competitiveness. Important options to explore include sales to private label refiners, and increased refining and packaging for private label and house brand suppliers in European, as well as African markets, which import an average of 50% of their vegetable oil. The prospects for selling Senegal's groundnut oil as a premium oil should also be explored. As a monounsaturated oil, peanut oil may be able to take advantage of some of the same appeal that has pushed up demand for olive oil. Aggressive marketing and packaging might also be used to promote refined Senegalese oil.

7.1.2 Production Costs

Senegal's peanut basin has historically been its most productive agricultural region. Shifting rainfall patterns have decreased the productivity of the northern and central portions of the peanut basin, areas from Louga south to Thies and Diourbel, and including the northern portion of the Fatick Department. These areas, while heavily endowed with animal traction equipment from the pre-1980s Programme Agricole, have become relatively less important producers of groundnuts. Production is concentrated on traditional grain crops, millet and sorghum, with recent efforts to shift production from groundnuts to cowpeas (niebe), especially in the north. We assumed that groundnut production from this area would not be competitive, and concentrated our analysis further south. For further details on production costs see Martin, 1988.

The southern peanut basin is a more important producer of groundnuts, with productivity increasing as one moves from west to east. In the west, groundnuts compete with millet and sorghum, with animal traction limited by trypanosomiasis. In the eastern part of the zone, from Kaolack to the border of Senegal Oriental, groundnuts compete with millet, sorghum, some maize (corn) and small quantities of cotton. This area is relatively well endowed in animal traction equipment, and is the most productive for groundnut production. The crop budgets used in this report are derived from production costs in this zone, corresponding to zone 11 in Martin's crop budgets.

Eastern Senegal (Oriental) and the Casamance also produce important quantities of groundnuts. In Senegal Oriental and Upper (Haute) Casamance, competition with maize and cotton, in addition to cereals, is stronger, and animal traction less well developed. In the middle and lower Casamance, groundnuts are also important, with competition from millet, sorghum, and some rice.

Production cost data, presented in Table 7.1, are derived from Martin's 1988 crop budgets, with updates provided through interviews with Sidibe of Senegal's Agricultural Research Institute (ISRA) and others in Senegal. They represent results of cost analysis based on USAID supported production systems research.

The primary cost components of groundnut production at the farm level are animal traction, manual labor, seed, fertilizer and fungicide. According to cost and revenue data provided in Martin's crop budgets, input costs account for 31% to 37%, depending on production technique. Labor accounts for 43% to 47% of total variable costs, depending on production technique.

7.1.3 Input Subsidy Policy

In general, the trend in Senegalese agriculture is toward less parastatal control and reduced subsidization of inputs.

Seed Policy. With the abolition of the marketing parastatal, ONCAD in 1980, the provision of groundnut seed was passed on to the successor body, another parastatal SONAR, and to the Regional Development Agencies (RDAs), such as SODEVA in the groundnut basin. Under the directives of the New Agricultural Policy (NPA), seed distribution passed to the oil milling companies, SONACOS and SEIB, which have now merged.

Through the 1984/85 season, a share of the producer price was retained at sale to cover costs of seed and fertilizer. For example, in 1983/84 the announced producer price of 70 CFA/kg was reduced by 15 CFA/kg to cover seed, and 5 CFA/kg to cover fertilizer. In 1985, the net producer price was raised 50% in nominal terms to 90 F/kg, and seed and fertilizer purchases were left to the farmers. Reconstitution of the groundnut seed stock was also left to the farmers, with SONACOS holding only a buffer stock of 100,000 tons. Storage may become a problem under this policy, since the ratio of seed to sown area is very high for groundnuts (the ratio of output to seed is around 10, versus 45-50 for maize and millet). While the transfer of responsibility to farmers does not appear to have reduced the area under groundnuts, seed quality may also be a long-term concern.

Fertilizer Policy. Reduction of the heavy fertilizer subsidies borne by the Government has been an explicit condition of the Structural Adjustment Loans of the World Bank. The conditions of the second Structural Adjustment Loan have had a dramatic impact on fertilizer prices. By 1985/86, the average fertilizer price was 2.4 times its 1980 level in real terms in contrast to groundnut producer prices, which were only 13% higher. The impact on fertilizer demand has been significant. Sales of fertilizer for groundnuts and millet, which accounted for 80% of fertilizer sales between 1975 and 1980, declined in 1984/85 and 1985/86 to less than 30% of their former level. Apparent consumption fell from over 102,000 mt in 1980/81 to 12,000 mt in 1986/87.

TABLE 7.1
SENEGAL
Production Costs and Gross Margins

	High Tech, Low Fert.	High Tech, Med. Fert.	Med. Tech, No Fert.	Low Tech, No Fert.
RECEIPTS (CFA/ha)				
Yield (Kg/ha)				
Peanuts	1,100	1,000	900	700
Hay	1,750	1,590	1,420	1,090
Shelled Groundnut Value 70 CFA/Kg	77,000	70,000	63,000	49,000
Value of Hay 35 CFA/Kg	61,250	55,650	49,700	38,150
Total Recipts	138,250	125,650	112,700	87,150
PRODUCTION COSTS (CFA/ha)				
Animal Traction	6,873	6,873	5,861	5,082
Manual Labor 500 CFA/Day	25,500	22,500	17,750	14,500
Seed 110 CFA/Kg	13,200	13,200	13,200	13,200
Fertilizer 82 CFA/Kg	9,876	6,584	0	0
Fungicides 1,000 CFA/Kg	1,000	1,000	1,000	1,000
Total Production Costs (CFA)	56,449	50,157	37,811	33,782
Total Production Costs ($US) 1989/90 exchange rate 275 CFA/$US	205.27	182.39	137.49	122.84
% Traction Cost of Total Cost	12	14	15	15
% Labor Cost of Total Cost	45	45	47	43
%of Seed Cost of Total Cost	23	26	35	39
% Fert & Fung of Total Cost	19	15	3	3
GROSS MARGINS				
Gross Margin (CFA/ha) =Recipts - Total Costs	81,802	75,494	74,890	53,369
Gross Margin ($US/ha) 1989/90 exchange rate 275 CFA/$US	297.46	274.52	272.33	194.07

The combination of credit reduction and privatization of fertilizer distribution, coupled with changes in the formulation of compound fertilizers made available contributed to this decline.

Agricultural Technology Policy. Under the Programme Agricole which was sustained up to 1980, substantial credit and equipment were provided to the agricultural sector through parastatal institutions, resulting in a major shift in the technical basis of agriculture. This involved the introduction of animal traction and ploughs, seeders, hoes, and lifters, together with horse drawn carts to transport crops and inputs. Senegal became the only agricultural economy in West Africa where the use of such technology was widely adopted. However, the distribution of machinery has almost entirely ceased since 1980. The collapse of the Programme Agricole and the formal credit system has resulted in reduced costs to the State, but also a decline in available machinery stock. The informal sector involved in the maintenance and occasionally the production of agricultural equipment, although well developed, has been hampered by lack of access to formal credit. Machinery produced by the public enterprise, SISMAR, has been relatively expensive. With removal of price subsidies, demand collapsed. High import tariffs, averaging over 70% for production inputs and 32% to 38% for agricultural machinery and equipment, have also ensured low levels of demand.

Credit Policy. The absence of a formal credit system has become a critical constraint to agricultural production since the collapse of the Programme Agricole. Seasonal crop credits, which have been primarily for groundnuts and have been directed through SONACOS and SEIB, were halved between 1980/83 and 1984/87 as a share of total domestic credit. The mid-1980's saw the establishment of a Caisse Nationale de Credit Agricole (CNCA), but the policy stance by the government and donors toward the reestablishment of a credit system remains understandably conservative. This does little to address current constraints on the sector. Without organized credit to purchase inputs and acquire animal stock and equipment, utilization will remain very low. At the same time, Senegal's experience with regular debt forgiveness in the agricultural sector has done little to facilitate development of a self-sustaining credit system.

7.1.4 Labor Costs

In nominal terms, the minimum wage (SMIG) in Senegal has remained constant since 1985, and the cost of living for an African family has actually decreased slightly (BCEAO, 1989). At the same time, the value of the minimum wage has risen markedly in $US terms as the exchange rate, tied to the French franc, has risen from about 500 CFA/$US in 1985 to 280 CFA/$US in March 1990. Despite a SMIG of about 1,500 FCFA ($5.35) daily, ISRA, the agricultural research institute, reports that agricultural wages are about 500 FCFA/day ($1.79). This represents an almost 80% increase in U.S. dollar terms since 1985.

Because labor makes up about 45% of total variable groundnut production costs, application of the official minimum wage would triple labor costs, making it considerably less profitable to produce groundnuts under the current price structure.

As it stands, the value of the groundnut hay approaches 80% of the value of the nuts to the producer, (see Table 7.1), so that roughly two-thirds of the gross margins to groundnut production are attributable to the value of hay.

7.1.5 Returns

A. National Pricing Policy. Producer price policy has been a major focus of donors in Senegal, particularly the World Bank. The net producer price, which ranged between 40 and 45% of the unit export value of crude groundnut oil and groundnut cake during the 1970s has subsequently fluctuated substantially. The producer price increase of 1985 lifted the farmgate price to over 80% of the consolidated unit export value, mainly due to the sharp fall in world groundnut prices (ODI/ISRA, "Senegal 1979-1988"). Recent decisions have reduced producer prices just as world price levels in dollar terms have begun to rebound. Nonetheless, with the CFA tied to the French franc, appreciation of the latter relative to the dollar has brought even the reduced producer price very close to the export unit value. Exchange rates play a critical role in competitiveness.

In order to maintain a stable producer price for groundnuts despite fluctuating international prices of groundnut oil, the GOS created,by Decree 86 of November 8, 1986 a Groundnut Price Guarantee Fund. The fund operates in cooperation with SONACOS. Financial resources available to stabilize prices are derived from STABEX contributions, general GOS budget allocations, and assessments paid by SONACOS if exports are profitable.

To reduce financial losses, the GOS announced on May 1, 1988 that the purchase price of groundnuts during the 1988/89 campaign would be 70 CFA/kg compared to 90 CFA in 1987/88, a 22% cut. Even at this level, the fund will need to compensate SONACOS for buying groundnuts at the support price and exporting them at a loss. In 1987/88, these losses totaled 31.6 billion CFA. For each kilogram of groundnuts exported as oil and meal, the loss was estimated at over 72 CFA. For 1989/90, SOFRECO has estimated that this deficit could be eliminated, but given recent exchange rates, the export unit value would have to be about $600 per ton on a shelled nut equivalent basis, equivalent to about $400 per ton on an unshelled basis. While prices in the first three months of 1990 came close to these levels, as are prices reported by SONACOS in late 1989, longer term prices are unlikely to remain at these levels. Tables 7.2-7.4 show the relation between international market prices, production, marketing and processing costs, and potential government exposure for subsidies.

B. Comparative Returns: Groundnuts Versus Foodcrops. Groundnuts compete with millet and sorghum, and in areas with sufficient rainfall, corn (maize) as well. Groundnuts are also grown in rotation with cereal crops, so the relationship is in part complementary.

In 1985, the GOS began to implement a package of measures, the New Agricultural Policy, intended to increase productivity and reduce government intervention in agriculture. In order to increase cereal production, farmers

Marketing Costs

		1989/90 CFA/kg	1989/90 $/ton
Crude oil price (Europe)		267.00	970.91
transport, ins		17.23	62.64
value fob mill		249.78	908.27
value of oil unshelled basis (34%)		84.92	308.81
Meal price - cif Europe		58.40	212.36
transport, ins		15.66	56.95
value meal - fob mill		42.74	155.42
value of meal - unshelled basis (42%)		17.95	65.28
value of oil and meal - unshelled basis		102.87	374.09
margin (2.5%)		2.57	9.35
crushing costs		24.40	88.73
Export value - fob mill		75.90	276.01
loss or gain		(13.10)	(47.63)
Cost - fob mill		89.00	323.64
Marketing costs		19.00	69.09
Variable			
foreign material	1.3		
commercial margin	1.0		
equipment	0.2		
transport	6.6		
handling	0.7		
total variable costs	9.8		
Fixed			
financing	5.8		
insurance, transport			
gen admin			
labor - mgmt			
total fixed costs	9.2		
Producer Price	70000	70.00	254.55
Production costs (1)	(FCFA/ha)	FCFA/kg	$/ton
animal traction	6873	6.87	24.99
manual labor	22500	22.50	81.82
seed	13200	13.20	48.00
fertilizer	6584	6.58	23.94
fungicides	1000	1.00	3.64
total variable	50157	50.16	182.39
Gross Margin (nuts only)	19843	19.84	72.16

Source: derived from SOFRECO, SONACOS, Martin, ISRA and interviews
(1) Production costs are based on a high technology, medium fertilizer mode of production and a yield of 1,000 mt/ha.
(2) Prices recieved are based on November 1989 values reported by SONACOS
(3) Conversion assumes $1 = 275 FCFA.
(4) Returns from hay are not included.

TABLE 7.3
SENEGAL GROUNDNUTS
Marketing Costs: 1995 Projections

	1989/90 $/mt	1995 High $/mt	1995 Low $/mt
value of oil and meal – shelled basis	558.34	500.00	300.00
margin (2.5%)	13.96	12.50	7.50
crushing costs	132.43	132.4	132.4
Export value – fob mill	411.95	355.1	160.1
loss or gain	(71.09)	(127.97)	(322.97)
Cost – fob mill	483.04	483.04	483.04
Marketing costs	103.12	103.12	103.12
Producer Price	379.92	379.92	379.92

Source: derived from SOFRECO, SONACOS, Martin, ISRA and interviews
nb. returns from hay not included. Projected prices based on a shelled equivalent.
Conversion based on $1 = 275 FCFA

TABLE 7.4
SENEGAL GROUNDNUTS
Marketing Costs: 1995 Projections
Exchange Rate Sensitivity

	1989/90 $/mt	1995 High $/mt	1995 Low $/mt
value of oil and meal – shelled basis	558.34	500.00	300.00
margin (2.5%)	13.96	12.50	7.50
crushing costs	91.04	91.0	91.0
Export value – fob mill	453.34	396.5	201.5
loss or gain	121.25	64.37	(130.63)
Cost – fob mill	332.09	332.09	332.09
Marketing costs	70.90	70.90	70.90
Producer Price	261.19	261.19	261.19

Source: derived from SOFRECO, SONACOS, Martin, ISRA and interviews
nb. returns from hay not included. Projected prices based on a shelled equivalent.
Conversion based on $1 = 400 FCFA

in the semi-arid Zone of Louga are being encouraged to plant millet in rotation with cowpeas instead of with groundnuts. In contrast, groundnut production is being promoted in the Southern Groundnut Basin and Eastern Senegal where rainfall and soil conditions are more favorable.

Martin's 1988 crop budgets indicate that in 1986/87, net returns per person/day for groundnuts under three sets of assumptions and under two technologies were three to four times greater than the returns for millet, but sometimes less than that of maize.

His analysis indicated that where groundnuts compete with grain crops, the fact that producer prices for groundnuts were reduced from 90 to 70 CFA/kg reduced the advantage over millet and sorghum, but did not shift their relative positions. In Eastern Senegal, where maize is produced, it is more profitable on a financial basis than are groundnuts during a short crop year , but less so in average or good years.

This raises an important issue relative to price variability and risk. While grain prices in Senegal have traditionally been regulated as though they were fixed by the government and stable throughout the marketing season (Sow and Newman), the reality is that there is considerable seasonal and spatial variability (Newman, Ndoye and Sow), and average prices falling in years of large crops and rising in years of smaller production. In contrast, while some groundnuts are marketed throughout the year, and there are instances of price variation when insufficient funds are available to purchase the crop and pay cash at harvest time, the official price has generally been assured.

In Senegal Oriental, where cotton is produced, Martin found that on a financial cost basis, cotton was the least profitable of crops, with extremely high non-labor variable costs per hectare. For 1987/88, he reported that these were about 73,975 CFA per hectare for cotton, 25,600 for groundnuts, 18,740 for maize and 9,340 for millet and sorghum. Cotton also requires more labor than other crops, 81 person days per hectare, compared to 69 for groundnuts, 66 for millet and sorghum and 49 for maize (Martin, 1988, pp.44-45.) Input subsidy reductions have further aggravated the variable cost differential for cotton, to the extent that producers in Senegal went on strike during 1989/90 in response to price increases. The high cash costs of cotton production stem from insecticide and herbicide treatments that are required five to seven times during the season.

7.1.6 Marketing

Senegal's government manages the groundnut sector through the national oil milling parastatal, SONACOS, which monopolizes crushing and marketing of oilseed products.

A leading feature of the adjustment process has been the liberalization of domestic markets for all major agricultural commodities. Responsibility for groundnut marketing was transferred from the government to the oil millers by 1982/83. However, it was only in December 1985 that the mills were allowed to make their own assembly arrangements using private traders. Under the earlier system, the entire marketing chain was financed by crop credits given to oil mills and SONAR by the central bank. Liberalization of domestic markets for agricultural commodities has involved a significant disengagement by the state in marketing arrangements for some major products (Morris and Newman), but this has been less true for groundnuts. The parastatal oil millers remain de facto monopoly buyers.

The New Agricultural Policy has also included a reduction in the amount of credit available to purchase inputs in favor of cash purchases by farmers, gradually elimination of the subsidy on fertilizer, a reduction in the role of the government in the maintenance of groundnut seed stocks, and an increase in private sector involvement in the marketing of agricultural products.

In 1982/83, the oil milling companies, SONOCOS and SEIB, were given responsibility for purchasing the groundnut crop, operating through cooperatives. More recently, there have been attempts to introduce private buyers operating for SONACOS, which now has taken over SEIB. In addition to the formal marketing channel, some informal trade has centered on the religious center of Touba, where some shelled groundnuts have been sold for artisanal crushing and consumption in the local markets. The Touba centered trade has long been the subject of discussion, as even when it was legal to sell only in-shell groundnuts to the cooperatives, they were traded openly in the markets of Touba, which operates as a de facto free trade zone. Over the years, there have been reported unofficial groundnut exports to North Africa through Mauritania have ben reported, but with recent problems between Senegal and Mauritania, this trade has reportedly slowed somewhat and shifted to pass through Mali.

Assembly costs, shown in Table 7.2 are estimated at about $70 per ton (SOFRECO, 11/1989), with financing making up about one third of the total marketing margin. Since capital is obtained on concessional terms of 6.5%, the margin would be about $91 per ton if interest paid were closer to a commercial rate of 13%. By comparison, interest rates in Gambia are over 20%, so that assembly would cost about $115 per ton on an unshelled basis.

Actual assembly costs are about 27% of the producer price, and about 17% of the export unit value. While groundnuts are less dense than cereals, such margins are high relative to private cereals assembly costs (Morris and Newman, Ouedraogo and Ndoye), indicating that substantial economies could probably be achieved in the pursuit of more competitiveness.

7.1.7 Processing

Excess capacity is a major problem in the processing sector. Over the period 1978-85, maximum capacity utilization did not surpass 78% and in some years fell below 40%. This is reported to be partly a function of declining rainfall and a drop in overall production. It also reflects rainfall variability and wildly fluctuating annual production. The processing sector has been sustained by the state's subsidization of any differences between actual capacity and a guaranteed level of 600,000 tons per annum (Jammeh, 1985).

Since September, 1987 the Government of Senegal (GOS) has been evaluating possibilities for reducing losses by restructuring the oilseed processing industry (SOFRECO, 1990, Republique du Senegal, MDR, 1989). The proposals call for SONACOS crushing capacity to be reduced by closing the least efficient plants and temporarily closing some plants when there is a production shortfall. Costs of crushing at various SONACOS facilities vary by about 50%, but the highest cost facility, the SEIB plant at Diourbel, is in an area with strong politico-religious influence and few alternative employment opportunities, making changes in its operations politically sensitive.

For 1989/90, average crushing costs are estimated at about $90 per ton, with SONACOS taking an additional $10 margin. Costs at SONACOS' Dakar plant are about $60 per ton, and recommended extensions and consolidation would lead to greater capacity utilization and other economies, reducing these further (SOFRECO). Examination of data presented in Table 7.2 indicates that achievement of such processing economies would bring SONACOS much closer to the breakeven point, even at current exchange rates.

In contrast to SONACOS, an efficient U.S. plant would have costs in the $18-25 range (Woodward). It is essential to stress the importance of the overvalued exchange rate in making Senegal noncompetitive. At 1985 exchange rates, crushing costs at Dakar would have been about $36 per ton, even with low capacity utilization per ton.

Quality. The quality of SONACOS' oil is recognized as high, although the product exported is sold as crude oil, rather than refined oil. SOFRECO reports that SONACOS sold oil in November 1989 at 302 FCFA per kg, and meal at 66 CFA. This is equivalent to almost $1,000 per ton for oil and yields an unshelled equivalent oil price of $475/mt, or $707/mt shelled c.i.f. Europe. If this is the case, SONACOS is already receiving a premium, since oil sold at Rotterdam during the same period was quoted at about $870 per ton. As Senegal examines alternative methods of becoming more competitive, trading on its image and reputation for quality might permit it to maintain returns despite a declining overall market. The success of coffee in Zimbabwe, discussed in Chapter 5, may be instructive. While conclusions related to the health impacts of consuming nonunsaturated oils, like peanut, olive and sesame, are not definitive, potential for increasing returns by promoting the image of a refined, high quality, and healthful product is one avenue for increasing returns that merits further examination.

7.1.8 Competitiveness and Sensitivity Analysis

Analysis of production, marketing and processing costs from farm to European destination indicates that Senegal's future competitive position in groundnut exports is unclear despite its reputation for quality. In large measure, this disadvantage can be attributed to exchange rate overvaluation. Efficiency gains in marketing and processing could nonetheless take Senegal part of the way toward offsetting the exchange rate disadvantage.

Table 7.3 presents results of examination of sales at current prices and marketing costs indicate that sales become competitive at an average price of about $325 per metric ton on an unshelled basis, or about $480 on a shelled basis (prior to shelling costs,) or more than $550 after crushing. Given our 1995 price projection range of $300 to $500 on a shelled basis, Senegal is likely to require significant subsidies at either level.

As indicated above, a sensitivity analysis was conducted of the costs and competitiveness of four factors: labor, marketing and processing, interest rates, and exchange rates. Exchange rates are most important, given that world market prices for oilseeds are denominated in dollars.

Results indicate that application of the official minimum wage rate (SMIG) to agriculture would make production financially unprofitable in the absence of a market for the groundnut hay, which is estimated to be worth about four-fifths as much as the nuts. In contrast, returns to labor are still higher for groundnuts than for alternative crops, except maize, which cannot be substituted in all areas in which groundnuts are grown. Reduction of wage rates would have little impact, as the prevailing rural wage is reported to be only about one-third of the official rate. Wage inflation in dollar terms is linked to the exchange rate, and there has not been deflation in nominal consumer prices that would permit downward adjustment in wages without a real decrease in purchasing power.

Reduction in both marketing and processing costs would contribute to increased competitiveness, but even a 30% reduction in marketing and processing costs would leave an important deficit.

Analysis of the impact of interest rates indicated that concessional terms reduce the financial cost to SONACOS of assembling the groundnut crop, but economic costs are even higher.

The most important variable, the exchange rate is critical to determining competitiveness. With about 45% appreciation of the French Franc against the U.S. dollar since 1985, Senegal has become less competitive in a market that was declining in the first place. Continued sales are projected to require government subsidies, that could amount to as much as $300 per ton. In the event that the par between the French franc (FF) and the CFA franc was varied, so that the value went from its current 275-300 CFA/ $US to 375-400 CFA/$, Senegal would be competitive in groundnut exports at the upper bound of our projected 1995 price range (See Table 7.4). Increased efficiency in processing and marketing could bring it into a competitive position in the middle of the range.

This would imply a 30%-40% devaluation of the CFA relative to the French franc, making the exchange rate 65-70 FCFA/FF. While such a devaluation would have other implications beyond the scope of this analysis, it does point out that it would be possible to make Senegal's groundnuts more competitive without breaking the franc zone's link with the French franc, or awaiting a major strengthening of the dollar or weakening of the French franc relative to each other.

<u>Domestic Resource Costs</u>. The World Bank has estimated the comparative advantage of various regions of Senegal in groundnut production using prices for 1987-89. The results, presented in Table 7.5, are somewhat ambiguous. As comparable calculations were not obtained for groundnut production in other countries, we have not performed sensitivity analysis.

TABLE 7.5
SENEGAL
Selected Domestic Resource Cost Estimates
1987–89

Groundnuts	
N.C. Groundnut Basin	
Intensive	0.96
Semi-Intensive	1.22
Extensive	0.99
Late	1.12
Sine Saloum	
Intensive	1.18
Semi-Intensive	1.06
Extensive	0.92
Late	1.05
Millet/Sorghum	
S.W. Groundnut Basin	
Intensive	0.74
Semi-Intensive	0.87
Extensive	0.90
Late	1.06
Maize	
Oriental	
Intensive	0.92
Semi-Intensive	0.83
S.E. Groundnut Basin	
Intensive	0.52
Semi-Intensive	0.64

Source: Cindy Hollerman, preliminary draft results for the World Bank

Other Competitiveness Issues. With declining price prospects for peanut oil and meal on world markets, one option for improving competitiveness is to target niche markets offering greater returns. SONACOS has created a subsidiary, SEPFA, that has been developing production and exports of confectionery groundnuts in pursuit of this goal.

Increased attention to marketing, as opposed to product disposal, examination of the potential to raise returns by exporting refined oil to regional and other markets, all may offer avenues to make Senegal more competitive, and increase the potential returns to producers in an otherwise declining market.

7.2 GROUNDNUTS IN THE GAMBIA

7.2.1 Gambia's Market and Export Trends

Groundnuts are very important in generating foreign exchange in Gambia, accounting for about one-half of the export earnings. Groundnuts, oil and meal comprise about three-fourths of exports produced domestically. Much of the value of Gambia's total exports is derived from transshipments into neighboring Senegal. The recent breakup of the Senegambia Confederation has led to some tightening of informal trade along the Senegal/Gambia border. Nonetheless, such informal flows have been important, complicating analysis of official trade statistics.

Groundnut exports have been somewhat variable. In the 1987/88 season, 43% of the total harvest was exported as groundnuts and 27% as unrefined oil and meal. The remaining 30% went to domestic consumption, seeds, losses and illegal trade.

Of the 55,000 mt of groundnuts that were exported uncrushed in the 1987/88 season, 43% went to The Netherlands and 57% to Senegal. Forty percent of the 12,167 mt. of groundnut cake(meal) that was exported in that season, went to Belgium and 60% to France. The Gambia's groundnut oil exports were also destined for Western Europe, with 5,063 metric tons exported to the United Kingdom, 1,822 mt to France, 1,000 mt to West Germany and 504 mt to The Netherlands.

In recent years, official prices offered to groundnut producers have been much lower in Gambia than in neighboring Senegal. In 1987/88, for example, Senegal maintained a price of approximately D2,093 (CFA 90,000 per ton), while Gambia reduced the heavily subsidized producer price of D1,800 per mt to D1,500 per metric ton in order to align it more closely with the world price. This coupled with credit-based purchasing policies followed by the Gambian marketing parastatal provided incentives for illegal cross-border trade. Smuggling into Senegal accounted for a large share of total exports in 1987/88. For 1988/89, producer prices in both Gambia and Senegal were reduced in response to weak international prices; in Gambia they were increased again for the 1989/90 season.

In addition to the producer price differential, Gambian policies that encourage cross-border trade include target volume purchases by GPMB and a credit ceiling on crop financing imposed on Gambian groundnut buyers. As a result, Gambian farmers are forced to sell their produce elsewhere once the targets are reached.

The Gambia Produce and Marketing Board (GPMB), the sole legal buyer of groundnuts for processing and export, purchases groundnuts from the Gambian Cooperative Union (GCU) and from private, licensed traders. With the recent announcement of decision to permit private businesses to purchase for export, at least one group of Gambian entrepreneurs has started negotiating with a multinational firm to export decorticated groundnuts.

7.2.2 Production Costs

In a recent study by the International Food Policy Research Institute, the variable cost of groundnut production is shown to be 266 Dalasi/hectare. (Von Braun, 1988, Government of the Gambia, 1985). Our own estimates of production costs, developed from price and production system data presented in the literature and collected in both Gambia and Senegal are presented in Table 7.6.

Groundnut yields and therefore unit production costs are highly dependent on rainfall. During the 1980s yields varied from 1.15 mt/ha to 1.59 mt/ha. Production during this period ranged from 75.8 mt. to 151.4 due to a number of factors including producer price, weather conditions at planting time, seed availability, and the timing of price announcements (before or after planting).

Credit and input policies in Gambia have undergone major changes since 1984/85 and initiation of the second phase of the multi-donor sponsored Agricultural Development Project (ADPII). Under ADPII, requirements for obtaining farm inputs on credit from GCU have been tightened. Starting in 1987/88, commercial sources of funding have been discontinued, and funds provided by the ADPII currently account for practically all GCU's source funding. Credit activity has dropped further since 1987/88 with the introduction of the World Bank's new credit eligibility criteria and the restructuring of GCU.

Until 1985, GPMB imported fertilizer and organized its domestic handling. The majority of the fertilizers used for groundnuts (SSP) were imported from Western Europe. Whereas the grant component of fertilizer imports had typically been less than 10% before 1985/86, ADPII allowed for free supplies of fertilizer to GOTG under a grant from the Italian Government.

Before 1985/86, fertilizer prices were heavily subsidized, accounting for only 70% to 80% of actual total fertilizer cost to GPMB in some years. The Gambian Government (GOG) raised fertilizer prices charged for SSP by 70% in 1985/86 and by 60% in 1986/87. In 1987/88 and 1988/89, fertilizers which the Italian Government supplied free to GCU were auctioned and sold at the c.i.f import price, estimated at 840 dalasis/ton.

Due to the rise in fertilizer prices and to more stringent agricultural credit requirements introduced under the ADPII and ERP, fertilizer use has dropped sharply. Von Braun and Puetz found that overall fertilizer use in their survey area declined by more than 50% from 1984 to 1987. In 1988, fertilizer

TABLE 7.6
THE GAMBIA
Production Costs and Gross Margins

	High Tech, Med. Fert.	Med. Tech, No Fert.	Low Tech, No Fert.
RECIPTS (Dalasi/ha)			
Yield (Kg/ha)			
Peanuts	1,000	900	700
Hay	1,590	1,420	1,090
Shelled Groundnut Value 1.47 Dalasi/Kg	1,470	1,323	1,029
Value of Hay 1.00 Dalasi/Kg	1,590	1,420	1,090
Total Recipts	3,060	2,743	2,119
PRODUCTION COSTS (Dalasi/ha)			
Animal Traction	205	175	152
Manual Labor 10 Dalasi/Day	600	450	1,090
Seed 1.50 Dalasi/Kg	180	180	180
Fertilizer(1) 1.18 Dalasi/Kg	118	0	0
Fungicides 30 Dalasi/Kg	30	30	30
Total Production Costs (Dalasi)	1,133	835	1,452
Total Production Costs ($US) 1989/90 exchange rate 8.2 Dalasi/$US	138.16	101.80	177.01
% Traction Cost of Total Cost	18	21	10
% Labor Cost of Total Cost	53	54	75
% Seed Cost of Total Cost	16	22	12
% Fert. & Fung. of Total Cost	13	4	2
GROSS MARGINS			
Gross Margin (Dalasi/ha) =Recipts - Total Costs	1,927	1,908	667
Gross Margin ($/ha) 1989/90 exchange rate 8.2 Dalasi/$US	235.01	232.71	81.40

prices were lowered to roughly 60% of the estimated economic cost under pressure from the World Bank. The sale price of SSP, the fertilizer used with groundnuts, was 840 Dalasi/ton in this year. This change in fertilizer policy has reversed the declines in fertilizer use over the past four years.

Preliminary results of the PPMU National Agricultural Sector Survey (NASS) indicate that in 1989, fertilizer was used on only 15% of groundnut area, compared to 31% of the area of other major crops (Government of the Gambia, 1990). This may reflect the fact that the ratio of cereal to groundnut prices fell from 2.2 in 1986/87 to .9 in 1988/89 (Jabara).

Agricultural implements are imported, primarily from Senegal, and thus their prices have risen with the devaluation and depreciation of the Dalasi which has been even sharper against CFA than against the dollar. Farm implement data from the GCU indicate price increases of 70 to 100% since the start of the Economic Reform Program (Jabara, 1990). Nonetheless, PPMU's 1989 survey indicated that animal traction was used on 92% of groundnut fields, compared to 85% of coarse grain fields (Government of the Gambia, 1990).

7.2.3 Labor Costs

Estimated labor use on groundnuts is reported to be higher in Gambia than in neighboring Senegal, with somewhat less use of animal traction. The reported daily agricultural wage is about D 10, or $1.22, or less than 70% of that reported in Senegal at current exchange rates. In contrast to Senegal, where actual rural wages are reportedly much lower than the official wage rate, the official Gambian daily wage is only D 5. In light of the physical proximity of the two countries, and the fact that products flowed relatively freely across borders until the breakup of the Senegambia Confederation several months ago, one might expect the two wage rates to be closer to each other. Nonetheless, market forces have closed a considerable portion of the gap between official wage rates in the two countries. Imperfect mobility of labor between the two countries probably explains the remaining difference.

In less mechanized production systems, it is estimated that 109 days of labor are used per hectare, accounting for about 75% of total variable costs.

7.2.4 Returns

The International Food Policy Research Institute - Gambia PPMU study reported above indicates that groundnut production in McCarthy Island Division (MID) produced an average gross margin of 8.7 Dalasis per person/day of family labor (with a coefficient of variation of 0.87) and 943 Dalasi per hectare (with a coefficient of variation of 0.77) in 1985/86 (Von Braun and Puetz, 1990).

The study also provides figures on percentage of total harvests devoted to different uses. In 1984, 2.5% of groundnut harvests were used for loan repayments, 0.4% for labor hired and implement rental (in-kind payments), 3.5% for gifts and donations, 71.1% sold, and 29.0% consumed (including retained seed, which is typically 10.9% of the groundnut crop). The same percentages in 1985 were 1.7%, 1.2%, 2.4%, 65.7%, and 29.0%, respectively.

Until 1985/86, the Government of Gambia (GOG) pricing policy for groundnuts was to set producer prices substantially below the export (f.o.b.) prices. The differential represented an export tax on groundnuts, Gambia Produce Marketing Board's (GPMB) costs for marketing, storage and processing, and the farmers' contribution to the Groundnut Stabilization Fund.

Upward adjustments in producer prices were made in 1985/86 and 1986/87 under the Economic Reform Program. Farmers responded to these price increases by increasing area devoted to groundnuts from 65,900 ha to 81,900 ha in the 1985/86-1986/87 period and to 96,500 ha in the 1986/87 - 1987/88 period. During 1989/90, producer prices in Gambia reached a 15-year low, causing area devoted to groundnuts to decline. In the 1989/90 season, the GOG plans to phase out price support subsidies to the GPMB. In order to cushion the impact of this measure on farmers, the GOG suspended the export tax on groundnuts (Jabara).

Currently, official GCU and GPMB purchase prices are D1470/mt and D1650/mt, respectively, with farmers required to deliver a minimum of 5 tons directly to depots, in order to sell directly to GPMB at the higher price. At current exchange rates, GCU price converts to a producer price of $180/t, about 83% of the export value and still 29% lower than that in neighboring Senegal.

Analysis of production costs and gross margins, shown in Table 7.6, shows that the value of groundnut hay is potentially higher than the value of the nuts themselves, which is necessary to assure an attractive net margin. Gross margins are lower than in Senegal, as are prices and costs.

7.2.5 Comparative Returns: Groundnuts Versus Foodcrops and Cotton

The official farmgate price for groundnuts was increased in 1986/87 to over three times its nominal level in 1982/83. The temporary increases in farmgate groundnut prices substantially raised the incentives to produce groundnuts relative to cereals from 1985/86 to 1986/87. Nonetheless, von Braun and Puetz report that average net returns to labor on men's fields in the MID were higher for groundnuts than for any other crop except rice on irrigated fields with full water control. Returns to millet, sorghum and traditional rice were about 10% lower, followed by maize and cotton. In women's fields, returns to millet and to sorghum, and irrigated rice with partial water control, surpassed returns to groundnut production.

In an attempt to promote diversification, the CFDT and French CCCE have been working on a project in Eastern Gambia to promote cotton production.

7.2.6 Marketing Costs

Monopsony power over the purchase of Gambian groundnuts has been vested in the Gambian Produce Marketing Board (GPMB). The GPMB carries out its purchases through the Gambian Cooperative Union (GCU) and licensed buying agents and buyers, who set up buying stations, or seccos, as they are called locally, throughout the groundnut growing regions. Traders are restricted from purchasing groundnuts at any time other than the official trade season. GCU, which is the only public buying agent of GPMB, has traditionally accounted for about 80% of groundnut crop purchases delivered to GPMB through its member societies. The other 20% has been purchased by licensed buyers and traders.

The groundnut marketing system in Gambia has recently experienced some modifications. With the introduction of a revised marketing policy for 1988/89, farmers and traders now can sell and deliver their produce directly to the GPMB, GCU, private traders or middlemen, who move from village to village to purchase produce from farmers. Prices received from these buyers vary tremendously, from D1650/MT offered by the GPMB for direct deliveries to one of 10 depots in quantities of 5 tons or more and D1470/MT by GCU to considerably less than D1470/MT for private traders offering cash at the farm.

A farmer's choice of sales outlet depends on the quantity produced, proximity and ability to transport to an official secco (or assembly center), and the cash-flow conditions of GCU and other agents and traders. Interviews with GPMB indicated that for 1989/90, GCU purchased only about 50% of the crop, with the rest sold to other farmers or traders for direct delivery to depots.

The licensed buyer sets up a buying station where the groundnuts are screened to remove foreign matter, rebagged and weighed. Some farmers transport their groundnuts to the trader's <u>secco</u> by donkey cart while others wait for the trader to send his truck to the village to purchase their groundnuts. Once weighed, the groundnuts are heaped into the trader's <u>secco</u> and taken to the GPMB depot. Purchasing continues until the trader runs short of cash.

Cash-flow problems are often a major constraint in the purchase of Gambian groundnuts. The Central Bank makes funds for crop financing available to commercial banks at a 15% interest rate; the money is on-lent by the GPMB at 16% to the public licensed buyer (GCU) and 17% to private licensed buyers and licensed buying agents. In contrast, commercial rates are above 20%.

Most individual farmers in Gambia produce between one and three metric tons of groundnuts per season. Since the minimum sale to GPMB is set at five metric tons, farmers are forced either to organize joint sales to GPMB or to sell their product at a lower producer price. For this reason, GCU is still the prime outlet for individual farmers' produce.

Previous studies evaluating the efficiency of GPMB have been inconclusive in some respects regarding the efficiency of groundnut assembly (Woodward et al., AMIS, 1989). On the other hand, the Gambia Cooperative Union (GCU), which has been GPMB's primary buying agent for groundnuts, is highly inefficient in its buying operations as compared to the private sector, with GCU costs averaging 77%, or D57/ton greater than those of the private trade in the part of the assembly process in which it participates (Langan, 1988).

While it is difficult to separate GPMB marketing costs associated with local assembly from some associated with exporting, GPMB costs reported by AMIS, shown in Table 7.7, are close to those reported for SONACOS in Senegal, about $70/ ton. Again there are probably substantial opportunities for efficiency gains, as these represent about 30% of the export value, higher than that required by the private trade.

Export marketing has been handled by the GPMB office in London. However, the office was recently closed, and the former British employee is now apparently operating as its agent. Prices reported by GPMB were somewhat lower than those reported for Senegal, but it was not possible to investigate the source of the difference within the scope of this study.

Processing. Gambian groundnuts are exported both as groundnuts and as oil and meal after crushing. Since 1980, exports have ranged between 31,000 and 76,000 tons. Processing facilities include two oil mills at Denton Bridge including a transit station that receives 70% of marketed groundnuts, a decortication plant that has a capacity of 450 tons of undecorticated groundnuts, one refinery with a capacity of 20 tons per day and another that is no longer operational. GPMB also has a decorticating plant at Kaur with a slightly larger capacity, 2,200 tons per week, compared to 1,600 tons for Denton Bridge (Woodward et al, (AMIS) p.34).

Woodward et al. examined world prices and relative returns to exporting decorticated nuts versus unrefined oil and meal. They concluded that in most years the financial returns to marketing oil and meal instead of shelled nuts have been negative.

Analysis of GMPB returns is based on assumptions of a 43.5% oil yield and 55.5% meal yield, both slightly lower than those retained in Senegal by SOFRECO. Analysis of sample lots from the 1989/90 crop by a multinational firm indicate a higher oil content than either of these, but the extraction process would have to be examined to determine whether this is a problem. Again, this is beyond the scope of the current study.

Crushing cost estimated by Woodward et al. excluded costs of staff, depreciation and interest. After some allowance for these factors, we have estimated crushing costs at $40-$60 per ton, lower than in Senegal, but substantially above costs in efficient plants. Some crush related costs are included in the marketing costs shown in Table 7.7 because of difficulties in allocating GPMB expenditures.

Quality. There has reportedly been no research on groundnuts in Gambia over the last 20 years, although yields are similar to those in Senegal. In terms of processing, the AMIS report examining privatization options for GPMB indicated marginally lower processing yields than in Senegal.

At one time, GMPB exported hand picked select (HPS) confectionery groundnuts. It was not possible to determine why this practice was stopped. Gambia has apparently been less successful than Senegal in assuring that groundnut meal is tree of aflatoxin. This affects the market for the crop, as well as the image of the Gambian product.

7.2.7 Competitiveness and Sensitivity Analysis

The results of our financial analysis indicate that Gambia can be competitive at the middle-range projections for 1995 so long as it does not

Marketing Costs

		1989/90 Dalasis/mt	1989/90 $/mt
Crude oil price (Europe)		7,209.00	882.74
transport, ins		367.50	45.00
value fob mill		6,841.50	837.74
value of oil unshelled basis (29%) (1)		1,984.48	243.00
Meal price - cif Europe		858.00	105.06
transport, ins		204.17	25.00
value meal - fob mill		653.84	80.06
value of meal - unshelled basis (42%)		235.36	28.82
value of oil and meal - unshelled basis		2,219.85	271.82
margin (2.5%)		55.50	6.80
crushing costs		391.02	47.88
Export value - fob mill		1,773.33	217.14
loss or gain		(326.67)	(40.00)
Cost - fob mill		2,100.00	257.14
Marketing costs		630.00	77.14
(GPMB costs - from AMIS)			
foreign material			
commercial margin			
depreciation	70.0		
port charge/shipping	60.0		
handling	150.0		
financing	150.0		
insurance, transport	60.0		
gen admin	50.0		
labor - mgmt	90.0		
Depot Price		1,650.00	202.04
Producer Price	1470000	1,470.00	180.00
Production costs (1)	Dalasis/ha	Dalasis/mt	$/mt
animal traction	205	205.00	25.10
manual labor	600	600.00	73.47
seed	180	180.00	22.04
fertilizer	98	98.00	12.00
fungicides	30	30.00	3.67
total variable	1113	1,113.00	136.29
Gross Margin (nuts only)	1468887	357.00	43.71

Source: derived from AMIS, Langan, USAID and interviews with GPMB.
(1) Production costs are based on a high technology, medium fertilizer mode of production and a yield of 1,000 mt/ha.
(2) Prices recieved are based on February 1990 values reported by GPMB.
(3) Conversion assumes $1 = 8.2 Dalasi.
(4) Returns from hay are not included.

reinstitute an export tax, permits its exchange rate to continue to float and improves on marketing efficiency in order to control costs and assure that returns from exports approximate market averages or better (Tables 7.8 and 7.9).

In the absence of available studies estimating Domestic Resource Costs, our analysis is based on simulations using production, marketing and processing costs derived from available studies and data obtained in interviews.

Table 7.8 shows that Gambian groundnuts can be delivered f.o.b Banjul for about $380 per ton on a shelled basis, under prevailing margins, producer prices and other costs. This amounts to about $260 per ton on an unshelled basis, as shown in Table 7.7. At export prices provided by GPMB, this would lead to a loss. However, international prices reported by Senegal and international sources (USDA, 1990), indicate that Gambia may be receiving a lower than average price. This merits further investigation.

Wage rates. Under the most labor-intensive production technology, and assuming that labor is remunerated at prevailing wage rates, the production of 1 ton of groundnuts and 1.3 ton of groundnut hay costs about $170 in labor. The value of each portion of the output is approximately equivalent, so that the labor cost as a share of the f.o.b Banjul price of groundnuts is 20% to 25% of the total, about the same as the assembly costs. If the entire labor cost is attributed to the groundnuts, it makes up 40% to 50% of the total. In the latter case, a reduction in the wage rate might be expected to make Gambian groundnuts more competitive.

Two factors merit mention, however. First, as noted above, rural wages are already double the official minimum. This implies that labor scarcity must play a role in determining the wage rate, so that reduction of wages would have to be accomplished by reducing the product price, which in turn might eventually lead to substitution in production away from groundnuts. Second, labor costs make up such a large share of the export value only on the least mechanized farms, which are most likely to use family labor, rather than hired labor. As a result, labor costs reported really reflect the shadow prices of labor used, not actual cash expenditures, so that wage rate changes would have no impact.

Interest rates. As noted in the discussion of policies, nominal interest rates in Gambia are above 20%, and credit used in assembling and processing groundnuts is provided at lower rates. As interest costs make up about 25% of assembly and processing costs, this makes Gambian exports more competitive on a financial basis than on an economic basis. Interest expenses make up about 8% of the cost of delivering f.o.b, so that paying the full cost of credit would increase that cost $10-15 per ton. Likewise, if interest rates were 6.5%, as paid by SONACOS in Senegal, the cost would fall $15 to $20 per ton.

Marketing and Processing Costs. As noted above, marketing and processing costs are affected by a range of factors, including management and use of facilities, capacity and labor. Assembly and marketing costs are reportedly high, and some opportunities for efficiency gains have been identified (Langan, Woodward). A 20% reduction in assembly costs would reduce the f.o.b cost about $15 per ton.

TABLE 7.8
GAMBIA GROUNDNUTS
Marketing Costs: 1995 Projections

	1989/90 $/mt	1995 High $/mt	1995 Low $/mt
value of oil and meal – shelled basis	405.62	500.00	300.00
margin (2.5%)	10.14	12.50	7.50
crushing costs	71.46	71.46	71.46
Export value – fob mill	324.02	416.04	221.04
loss or gain	(59.78)	32.24	(162.76)
Cost – fob mill	383.80	383.80	383.80
Marketing costs	115.14	115.14	115.14
Producer Price	268.66	268.66	268.66

Source: derived from AMIS, Langan, USAID, and interviews with GPMB.
nb. returns from hay not included. Projected prices based on a shelled equivalent.
Conversion assumes $1 = 8.2 Dalasis.

TABLE 7.9
GAMBIA GROUNDNUTS
Marketing Costs: 1995 Projections
Exchange Rate Sensitivity Analysis

	1989/90 $/mt	1995 High $/mt	1995 Low $/mt
value of oil and meal – shelled basis	405.70	500.00	300.00
margin (2.5%)	10.14	12.50	7.50
crushing costs	71.46	71.46	71.46
Export value – fob mill	324.10	416.04	221.04
loss or gain	10.66	102.60	(92.40)
Cost – fob mill	313.43	313.43	313.43
Marketing costs	94.03	94.03	94.03
Producer Price	219.40	219.40	219.40

Source: derived from AMIS, Langan, USAID, and interviews with GPMB.
nb. returns from hay not included. Projected prices based on a shelled equivalent.
Conversion assumes $1 = 10 Dalasis.

Exchange rates. The analysis of the Senegalese case clarified the importance of exchange rate overvaluation in making Senegal's groundnuts noncompetitive. In Gambia, devaluation in 1986 and a managed float since then have played a major role in making the country more competitive, albeit at the cost of considerable inflation. In 1985 $1 was worth D3.9; from Sept. 1989 to March 1990 it has been worth an average of D8.2. Although producer prices increased 137%, more than offsetting the exchange rate depreciation, other items, such as GPMB marketing costs, rose less quickly, so that Gambian groundnuts are potentially more competitive than those from Senegal.

Of course, a range of other factors associated with structural adjustment and economic policy, such as mining of the soil with decreased fertilizer use may affect future competitiveness. The cost of delivering a ton of groundnuts f.o.b Banjul went from $487 on a shelled basis ($327 unshelled) to $380-$420 in 1989/90.

7.3 Cross-Country Comparison

Analysis of relative costs and returns for Senegal and the Gambia points to the importance of macroeconomic policy, especially exchange rates and interest rates, and sectoral policies, related to prices and market participants, in influencing competitiveness. While the competitiveness of groundnut sales from neither country is assured under the range of price forecasts for 1995, the Gambia appears to be able to deliver a ton of shelled nuts to its border at about $50 per ton less than is the case in Senegal. Exchange rates, producer prices, marketing and processing costs, all play a role in this difference. At the same time, Senegal reports higher returns for its groundnuts that may offset the cost differential. A clear understanding of the differences in returns will require supplemental investigation.

8.0 CONCLUSIONS

The findings presented clearly demonstrate the importance of understanding international market conditions and prospects, policy impacts, and macroeconomics in establishing priorities with respect to investment in traditional export crops.

The three commodities examined clearly differ in market prospects, as indicated by contrasting forecasts for 1995. Continued growth in the market for natural fibers is expected to contribute to bright prospects for cotton exporters, after a serious slump in the mid-1980s. Despite the breakup of the International Coffee Agreement (ICA), our commodity market forecast anticipates a stronger market for robusta and arabica coffee, with overall prices increasing from levels that prevailed before the ICA broke down. By contrast, rapid growth in production of lower cost competitive vegetable oils makes the outlook less promising for groundnuts. If current returns are to be maintained, exporters will have to devote new attention to marketing strategy for their products, rather than merely selling them to international purchasers.

In all three commodity markets, opportunities for product differentiation were identified. Zimbabwe has increased returns to coffee by selling a deluxe product to niche markets despite the breakup of the ICA. In a few cases, producing extra long staple cotton and adding value to cotton through traditional weaving and sales are promising options. Sales of confectionery peanuts and deluxe oil are also being pursued. Thus, in all cases, there are opportunities for "export optimism" with sufficient attention to factors that influence the product being sold, and the cost at which it can be delivered.

At the national macro and sectoral policy levels, exchange rates, interest rates, price policies for inputs, labor and products were examined. Despite assertions in the literature that African wage rates are overvalued, our analysis failed to confirm that wage rates alone are a major barrier to competitiveness. Prevailing wage rates were found to deviate widely from official wages in rural areas, suggesting that labor markets in agriculture may adjust to economic forces better than those in industrial and government sectors. Rigidities in the latter can detract from competitiveness in countries where overvalued exchange rates prevail, as in the CFA zone. The combination of input subsidy reduction and exchange rate adjustment has led to decreased input use in a number of case study countries, with potentially longer term negative consequences for sustainability of production and competitiveness.

At the microeconomic level, analysis of production and marketing costs is made difficult by limited data availability and noncomparability of estimates. Nonetheless, analysis of cost of production and marketing data provides some clear insights into constraints to competitiveness. These range from high cost parastatal marketing services to producer price levels that approach or exceed the value of the product on international markets. In some cases, disadvantages of high cost marketing and input distribution make small producers less competitive than their larger competitors. Since this may encourage rural-urban migration and result in other social costs, investments in infrastructure and other efforts to make smallholders more competitive merit consideration.

Our conclusions on the combined impacts of microeconomics of production, policies and market forecasts are summarized in Table 1. The six countries and three export crops are categorized according to a competitiveness indicator, along with an indication of which factors affecting competitiveness were found to be constraints in each particular case. To indicate the degree of competitiveness, a numbering system was used, where a 3 indicates strong competitiveness given current policies and market prospects, a 2 signifies weak competitiveness given the current situation, and a 1 indicates a situation where market prospects and the domestic situation are such that being competitive in the future will depend on major changes occurring in domestic policies and institutions. This categorization is necessarily a simplification, however, the reader is directed to the case studies found in chapters 5-7 for a more thorough examination of factors affecting competitiveness.

The countries that have been most successful in staying competitive in world markets are the ones that have paid the most attention to basic marketing principles. Their agricultural and other policies have not heavily taxed the producer, nor have they greatly distorted patterns of production away from those that exploit comparative advantage. For example, Kenya and Zimbabwe are successfully marketing high-quality arabica coffee and receiving price premiums above average world market price levels.

Another factor contributing to competitiveness is the degree of political power wielded by agricultural producers. Where farmers have political power, they have influenced investments in infrastructure and marketing board management, so policies have been less successful in distorting competitive position. For example, in the relatively unique case of Zimbabwe, large-scale producers have historically had strong political influence, which recently appears to have positively influenced the small-scale sector as well. The fact that both small-scale and large-scale producers are represented by farmers unions and on the marketing boards is one measure of their influence. Zimbabwe was the only study country where farmers had a strong voice in policy decisions affecting them, however.

Success also has been achieved where considerable investment has been made in improving productivity, as with cotton in the francophone countries. The French firm CFDT put heavy emphasis on improving technology and productivity (research and development) and maintaining quality through extension support. A systems approach integrated the production and marketing stages from the farm-level through processing and export. A suitable technological package is available to farmers, necessary inputs are delivered on credit, the cotton is assembled and farmers are paid at harvest, alleviating much of the risk to the farmer.

In countries which have had little success competing in world markets with traditional agricultural exports, major policy distortions have occurred. Producers have been heavily taxed and typically have faced inefficient top-heavy parastatal organizations that have failed to market the commodity well. Examples are coffee in Cameroon and coffee and cotton in Tanzania.

Table 1

Summary Table of Findings

Country & Commodity	Competitiveness Indicator	Constraints to Future Competitiveness									
		Int'l Markets	Macro Policies	Production Costs	Marketing Costs	Productivity	Exchange Rate	Labor Costs	Infra-Structur	Instit-utions	Quality
Cameroon											
Coffee	1	x	x		x	x	x		x	x	x
Cotton	1		x		x		x			x	
Kenya											
Coffee	2				x		x	x			
Cotton	2				x	x	x		x	x	
Tanzania											
Coffee	1		x		x	x	x		x	x	x
Cotton	1		x		x	x	x		x	x	
Zimbabwe											
Coffee	3										
Cotton:LS*	2			x			x	x			
Cotton:SS**	3						x		x		
Senegal											
Groundnuts	1	x	x		x		x		x	x	
Cotton	1		x		x		x		x	x	
The Gambia											
Groundnuts	1	x			x				x	x	x

Abt Associates Table

<u>Competitiveness Indicator:</u>
3 - strong competitiveness
2 - weak competitiveness
1 - competitiveness in future will require policy changes
*LS - Large-Scale Commercial Farms
**SS - Small-Scale Communal Farms

Policy distortions in these countries led producers to grow crops for which they had no comparative advantage (e.g. rice in Senegal and Cameroon), or to increase production of a commodity for which world demand was declining (e.g. robusta coffee in Cameroon). The current liberalization of food crop marketing in Tanzania and Cameroon is leading to a reallocation of resources to food crops from cash crops, which still have to go through inefficient and costly (controlled) marketing channels. While some policy makers believe the shift to food crops increases food self-sufficiency, cash crops play an important role in the diversification strategies of producers in all of the countries studies.

While price incentives (i.e. percent of export price received by producers) were found to contribute significantly to competitiveness, the timing and reliability of producer payment was equally important. In Cameroon and Tanzania producers are finding immediate payment for food crops on the open market to be an attractive option compared to uncertain and delayed payments from their coffee marketing board.

Our analyses addressed the sensitivity of comparative advantage to changes in such factors as output price (i.e. world price levels), input costs, and policy distortions. Projected 1995 world price levels were compared to costs levels to determine if a country could expect to be competitive in 1995 given the expected world market situation.

<u>Coffee</u>. The results showed that for coffee, estate producers in Kenya and producers in Cameroon will be competitive at 1995 prices. For Cameroon, however, these results are based on an assumed yield that is higher than current productivity levels. This result, therefore, is expected to hold only if productivity can be increased over the next five years.

Small coffee farmers in Kenya will not remain competitive. The difference between smallholders and estates results from the higher marketing costs borne by smallholders who receive 70% of the world price compared to 85% for estate producers. Policies and programs directed at reducing smallholder marketing costs can improve their competitive position.

The competitiveness of coffee in Kenya was not sensitive to labor costs. Even with a substantial increase in labor costs, producers would maintain a comparative advantage in arabica production. Sensitivity to the cost of capital, however, was found to be much stronger for coffee than for annual crops, due to high establishment costs and the time lag before production. When the economic rate of interest was increased from 15 to 25% coffee went from one of the most profitable crops to one of the least profitable.

A comparison of cost of production and marketing data for the study countries led to the following conclusions:

o The coffee producer in Tanzania received only 60% of the export price in 1988, indicating large marketing margins and inefficiencies in the marketing chain from producer to export sale.

o Labor costs are not higher in Africa than in the competing coffee producing countries of Brazil, Colombia, and Costa Rica. In fact, low labor costs appear to be a major factor in making African countries competitive in world markets, given generally low levels of productivity.

- Per kilogram costs of production are reasonable where high yields are obtained, such as in Zimbabwe which has the highest per hectare production costs in the world but also the highest productivity.

- In Cameroon and Tanzania, where the farmer was receiving less than 50% of the world price of coffee due to poor price policies and inefficient marketing, the impact on long-run competitiveness has obviously been detrimental.

- Producer price incentives are particularly important for coffee producers who need to make a substantial investment four to five years before earning any revenue. In this case some protection may be needed in years of extremely low world prices in order to maintain producer incentives to maintain levels of investment and improve productivity.

Cotton. Cotton producers in Kenya and Zimbabwe will be competitive in the future if the underlying cost structure does not change substantially. Policy distortions are relatively minor in Kenya and Zimbabwe, so economic prices do not diverge significantly from financial prices.

In 1988, the exchange rate in Zimbabwe was estimated to be overvalued.[1] Sensitivity analysis suggested that producers would benefit substantially from a devaluation, especially small farmers who use relatively more labor and less imported inputs. The minimum wage rate taxes large-scale commercial farmers in Zimbabwe, who had no comparative advantage at 1988 cotton price levels. Their competitiveness would improve with a removal of this distortion. This did not affect the small communal farmers who were competitive even at world cotton prices that were relatively low.

In Kenya, however, labor costs would have to increase substantially before cotton lost its competitiveness, particularly at projected future world prices. A more significant impact on competitiveness was demonstrated in the simulation of the effect of an improvement in the efficiency of the processing of cotton into lint. Although this is a post-farm cost, increases in ginning efficiency, which are passed on to the farmer through a higher producer price, were found to strongly influence competitiveness.

The importance of marketing efficiency and costs was also apparent in Tanzania, where crop budgets and marketing cost information were analyzed. The private cost ratio (measured in financial prices rather than economic prices as is the DRC ratio) was significantly above one, and marketing costs would have to decrease by at least 75% to make cotton competitive.

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[1]Throughout 1989 and early 1990, Zimbabwe, Kenya, and Tanzania all experienced a steady and substantial devaluation of their currencies, which has helped make them more competitive in world markets.

Cost of production and marketing data were used to compare competitiveness of cotton in the francophone countries. Farm-level production costs were relatively low in Cameroon and Senegal, and labor costs were not a constraint. When the marketing margin (processing, transportation, and marketing costs) was added to farm-level costs, the costs in Cameroon and Senegal were substantially higher than those in Côte d'Ivoire, Mali, and Burkina Faso (also CFA zone countries). Again, this indicates the importance of reducing marketing costs. This reduction may be accomplished through a combination of improved incentives to private investment, regulatory incentives, and public investment in infrastructure.

In comparison with the anglophone countries, costs of producing cotton lint are significantly higher in Cameroon and Senegal. There may be some quality difference that narrow the gap, however. The difference narrows further if the estimated degree of overvaluation of the CFA is taken into account. In both Cameroon and Senegal, problems in allocating the costs attributable to rural development activities of parastatals complicates the analysis.

Groundnuts. Results for the two case study countries, Senegal and Gambia, clearly demonstrate the critical importance of macro and sectoral policies for competitiveness in a market where demand is static or declining.

While both Gambia and Senegal may be able to market groundnuts and their products on a close to competitive basis under current market conditions, the outlook for 1995 is unclear. Gambia has benefitted from devaluation of the Dalasi, although producer price increases have more than compensated for the devaluation. At the same time, producers in Senegal are facing higher prices than Gambian producers, so there are already problems with sales across the border.

In the case of Senegal, current exports are possible with small subsidies only because of a rebound in prices to levels $100 to $300 per ton higher than those forecast for 1995.

Implications

The case study evidence presented here clearly demonstrates that "export pessimism" espoused by some leaders and observers of Sub-Saharan Africa often stems from a failure to understand the dimensions of the problem of export competitiveness. Narrow comparative advantage studies also miss some important aspects of the problem. International market prospects, macro and sector policy, and micro-economics for specific countries, commodities and products are all shown to play an important role in the options and tradeoffs in an export oriented marketing strategy.

African policy makers, international donors, and the research community continue to debate the most appropriate paths to food security. Export crop production offers the promise of foreign exchange to pay for food crops that can sometimes be more cheaply imported than domestically produced. Some charge that export crops are being promoted to assure loan reimbursement to international financial institutions at the expense of national welfare and development. Their argument concludes that food self-sufficiency and import substitution are preferable to export crop development.

The study results show that export crops and food crops do not necessarily compete with each other, and often are complementary in terms of farmers strategies. Furthermore, many African countries can compete in international markets for traditional export crops, even under circumstances of adverse policy and institutional environments.

This study has brought together a wealth of secondary data and source material, supplemented with personal interviews in the case study countries. The comparisons made, and conclusions drawn, have used available data sources, while indicating limitations in the data themselves and comparability issues where possible. It is important to underline that detailed analysis has been possible in a number of cases because of major investments in data collection in individual case study countries.

As case study countries and other countries in Africa seek to evaluate their competitiveness, additional analysis will be required. Improved data and on-going monitoring of marketing, processing and production costs will clearly facilitate analysis and permit policy makers to focus on cost elements that deviate significantly from those of competitors. Potential impacts of infrastructure and training investments on financial and economic costs, returns, and incentives merit further examination in order to identify priority investments.

At the macro and sectoral policy level, A.I.D. and other donors and financial institutions are already providing considerable technical assistance. Nonetheless, the sensitivity analysis conducted here indicates that further attention to the broader consequences of exchange rates in general and the CFA zone in particular is necessary. Continued assistance in development of price and institutional policies and the definition of appropriate roles for private business and government are also essential.

Improved monitoring of international markets will also be important for staying competitive in increasingly aggressive world markets. In bulk commodity markets, it appears that parastatals often sell products at prices that diverge from those reported for a number of reasons - including quality differences, services provided that differentiate suppliers, and other factors. As governments in Sub-Saharan Africa consider appropriate public and private sector roles in commodity markets, an improved understanding of factors affecting prices received would be valuable from both marketing and regulatory perspectives.

Follow up case studies could also usefully examine niche marketing opportunities for traditional cash crops. As noted above, a number of cases were identified in which possibilities exist for increasing returns through value added processing, promotion, and targeting of specialty markets. These should be examined in further detail to determine the product characteristics required, the potential volumes that could be sold into such markets, and marketing requirements and returns.

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AGRICULTURAL POLICY ANALYSIS PROJECT, PHASE II

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EXPORT CROP COMPETITIVENESS: STRATEGIES FOR SUB-SAHARAN AFRICA

APPENDICES

July 1990

APAP Technical Report No. 109

Final Report of the African Cash Crop Competitiveness Strategy Study

Prepared for:

U.S. Agency for International Development
Bureau for Africa, Office of Development Planning
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This volume contains the appendices to a report presented to the U.S. Agency for International Development Bureau for Africa (AFR/DP/PAR) in fulfillment of terms of reference for the African Cash Crop Competitiveness Study. The study, part of the Applied Trade Research Agenda, was conducted under a buy-in to the Agricultural Policy Analysis Project II (APAP II).

Appendices A, B, and C contain descriptions of the current world market situations for coffee, cotton, and groundnuts. The nature of world markets for these commodities are discussed and projected prices to 1995 are given. The report contains a summary of these three appendices in Chapter 3. These price projections have been made by Martin Abel, of Abel, Daft, and Earley. These price estimates are partly based upon World Bank price projections, however, they do not agree with them in all cases. Since price projection is not an exact science, predicted prices are presented as a range, including a most likely price under normal production conditions, to possible low and high projected prices in 1995.

Appendices D through H present descriptions of policies and strategies currently being pursued in Zimbabwe, Cameroon, Tanzania, Kenya, and Senegal. Economic performance, trade performance, macroeconomic policies, and agricultural policies are all discussed. These summaries were prepared by Cheryl Christensen.

WORLD COFFEE MARKET

Introduction

For many years, the world coffee market was dominated by the International Coffee Agreement (ICA) operated by the International Coffee Organization (ICO). That arrangement covered 85-90 percent of world trade in coffee and attempted to support world coffee prices through the use of export quotas. When quotas were in effect, exporting member countries were forced to maintain stocks in years when their production exceeded domestic use and exports.

Growing discontent with the ICA in some member countries caused its collapse in July of 1989. Because of large stocks, prices declined sharply in the absence of an agreement and it is not clear if and when a new agreement might be negotiated. This makes the outlook for coffee prices especially murky, as discussed later in this paper.

World Coffee Production

World coffee production has fluctuated considerably due primarily to weather (Table 1). Drought is a periodic problem in a number of producing countries. Also, occasional freezes cause sharp declines in Brazil, the world's largest producer. Freezes in Brazil have been mitigated to some extent as production has shifted northward out of the most vulnerable areas, but they remain a problem. In addition to weather, coffee trees have a biennial yield cycle. Finally, yields may also vary in response to the amount of fertilizer used and other cultural practices.

World coffee production has grown at modest rates. Using three-year averages to help dampen the influence of weather on production, world output increased at an average annual rate of 2.7 percent between the 1975/76-1977/78 and 1986/87-1988/89 periods (Table 2). The two main types of coffees are arabicas (mild) and robustas (strong). Over this same period output of robustas grew faster than output of arabicas.

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A number of major and minor producers were able to expand production at a faster rate than total world output and to increase their share of world output. These include, among others, Mexico, Brazil, Burundi, Central African Republic, Rwanda, Togo, Zaire, Zimbabwe, India, Indonesia, Philippines, Thailand, and Papua New Guinea. Some countries actually experienced declines in output, e.g., Cote D'Ivoire, Madagascar, Tanzania, and several other African countries not listed separately in Tables 1 and 2.

Brazil and Colombia remain the world's leading producers and together they accounted for nearly 41 percent of total output in the 1986/87-1988/89 period. Brazil's share of world production has been increasing while Colombia's share has been declining. Mexico and the Central American and Caribbean countries have accounted for nearly 19 percent of world output in recent years. Other major producers include Cote D'Ivoire, Ethiopia, Kenya, Uganda, India, and Indonesia.

Table 1

World Coffee Production and Stocks

	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89
	1,000 60 kg bags													
United States	204	158	213	169	196	243	211	267	202	276	200	284	210	212
Mexico	4,136	3,431	3,301	4,022	3,600	3,862	3,900	4,530	4,530	4,250	4,826	5,297	4,717	5,200
Central Am. & Carib.	9,118	9,471	10,784	11,653	11,873	12,109	11,384	12,652	10,860	12,292	10,105	11,902	12,172	11,688
Brazil	23,000	9,300	17,500	20,000	22,000	21,500	33,000	17,750	30,000	27,000	33,000	13,900	38,000	25,000
Colombia	8,500	9,300	11,050	12,600	12,712	13,500	14,342	13,300	13,300	11,000	12,000	11,000	13,000	11,200
Other So. America	3,322	3,152	3,747	4,060	6,087	4,097	4,369	4,138	3,822	4,258	4,608	5,099	4,470	5,312
Burundi	279	359	285	387	466	315	730	340	730	325	535	495	625	600
Cameroon	1,482	1,307	1,371	1,634	1,658	1,860	1,850	1,830	1,000	2,316	2,067	2,191	1,251	1,800
Cent. Afr. Rep.	150	166	165	130	230	277	284	316	150	275	250	230	235	250
Cote D'Ivoire	5,266	4,867	3,123	4,742	3,973	6,090	4,160	4,510	1,420	4,609	4,420	4,405	3,112	4,420
Ethiopia	2,611	2,782	3,143	3,142	3,188	3,264	3,212	3,350	3,300	2,587	2,833	2,700	3,100	2,900
Kenya	1,244	1,687	1,417	1,239	1,531	1,568	1,396	1,522	1,982	1,549	2,011	1,822	2,104	1,750
Madagascar	1,223	984	1,292	814	1,313	1,150	1,305	1,000	1,100	1,100	1,000	1,000	1,125	1,000
Rwanda	434	531	362	311	501	506	502	377	536	542	717	643	717	680
Tanzania	959	805	835	856	761	1,060	959	1,033	843	796	867	701	800	816
Togo	151	177	82	105	182	165	225	284	275	215	275	260	290	300
Uganda	2,214	2,660	1,928	1,944	2,042	2,133	2,885	3,000	2,700	2,800	2,700	2,700	2,600	3,000
Zaire	1,072	1,417	1,129	1,293	1,316	1,526	1,425	1,354	1,350	1,540	1,610	1,875	1,970	1,650
Zimbabwe	77	77	71	77	68	94	82	117	147	180	188	200	250	175
Other Africa	1,523	1,618	1,341	1,318	798	1,179	1,004	1,000	651	868	738	742	846	797
India	1,498	1,753	2,031	1,842	2,495	1,977	2,540	2,170	1,667	3,250	2,033	3,350	2,080	3,350
Indonesia	3,049	3,384	3,911	4,788	4,803	5,365	5,785	4,750	5,515	5,600	5,800	5,900	5,965	6,400
Philippines	483	557	563	678	811	944	1,067	1,225	973	1,111	1,138	1,125	1,045	1,350
Thailand	102	105	124	125	152	201	277	324	364	470	527	463	610	680
Other Asia	283	270	249	277	268	268	261	271	259	294	316	270	338	365
New Guinea	588	802	655	818	776	880	917	648	925	775	860	756	1,100	1,179
World	72,978	61,129	70,677	79,035	81,810	86,143	98,100	82,064	88,605	90,284	95,630	79,316	102,738	92,080
Arabica	55,523	42,919	54,371	59,772	62,153	63,017	75,038	59,238	70,233	65,283	71,565	53,075	79,096	65,064
Robusta	17,078	17,814	15,912	18,842	19,240	22,670	22,549	22,358	17,917	24,514	23,594	25,760	23,247	26,681
Ending Stocks	38,984	25,667	29,406	25,059	25,517	32,013	44,518	41,412	41,374	37,154	42,272	33,719	47,228	47,025

Source: World Coffee Situation, FAS, USDA, August 1989.

Table 2

Coffee Production

	1975/76-1977/78 Avg.		1986/87-1988/89 Avg.		Annual
	Production	Share	Production	Share	Growth
	m.b.	percent	m.b.	percent	percent
United States	192	0.28	235	0.26	1.8
Mexico	3,623	5.31	5,071	5.55	3.1
Centra Am. & Carib.	9,791	14.34	11,921	13.05	1.8
Brazil	16,600	24.32	25,633	28.05	4.0
Colombia	9,617	14.09	11,733	12.84	1.8
Other So. America	3,407	4.99	4,960	5.43	3.5
Burundi	308	0.45	573	0.63	5.8
Cameroon	1,387	2.03	1,747	1.91	2.1
Cent. Af. Rep	160	0.23	238	0.26	3.7
Cote D'Ivoire	4,419	6.47	3,979	4.35	-1.0
Ethiopia	2,845	4.17	2,900	3.17	0.2
Kenya	1,449	2.12	1,892	2.07	2.4
Madagascar	1,166	1.71	1,042	1.14	-1.0
Rwanda	442	0.65	680	0.74	4.0
Tanzania	866	1.27	772	0.84	-1.0
Togo	137	0.20	283	0.31	6.8
Uganda	2,267	3.32	2,767	3.03	1.8
Zaire	1,206	1.77	1,832	2.00	3.9
Zimbabwe	75	0.11	208	0.23	9.7
Other Africa	1,494	2.19	795	0.87	-5.6
India	1,761	2.58	2,927	3.20	4.7
Indonesia	3,448	5.05	6,088	6.66	5.3
Philippines	534	0.78	1,173	1.28	9.1
Thailand	110	0.16	584	0.64	16.4
Other Asia	267	0.39	324	0.35	1.8
New Guinea	682	1.00	1,012	1.11	3.6
World	68,261	100.00	91,378	100.00	2.7
Arabica	50,938	74.62	65,745	71.95	2.4
Robusta	16,934	24.81	25,229	27.61	3.7

The locations of arabica and robusta production are shown in Tables 3 and 4. Central America, the Caribbean, and South America dominate in the production of arabica coffee. Other significant producers are Burundi, Ethiopia, Kenya, Rwanda, Tanzania, India, Indonesia and Papua New Guinea. On the other hand, Africa tends to be the dominant producing area for robusta coffee. Indonesia, India, and the Philippines have also been significant producers and output in Brazil has been expanding very rapidly.

Table 3

World Arabica Coffee Production

	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89
	1,000 60 kg bags													
United States	204	158	213	169	196	243	211	267	202	276	200	284	210	212
Mexico	4,126	3,411	3,271	3,977	3,540	3,787	3,815	4,430	4,420	4,160	4,726	5,197	4,617	5,100
Central Am. & Carib.	9,077	9,412	10,744	11,615	11,837	12,064	11,340	12,627	10,823	12,250	10,056	11,876	12,156	11,672
Brazil	22,800	9,000	17,100	19,100	20,900	20,250	31,500	15,750	28,000	25,000	30,600	10,400	34,300	21,300
Colombia	8,500	9,300	11,050	12,600	12,712	13,500	14,342	13,300	13,000	11,000	12,000	11,000	13,000	11,200
Other So. America	3,059	2,788	3,360	3,615	3,635	3,575	3,818	3,326	3,335	3,443	3,794	4,192	3,735	4,383
Burundi	264	339	270	367	441	295	695	320	700	300	508	479	609	583
Cameroon	370	327	344	413	458	425	415	327	250	333	330	334	248	370
Cent. Afr. Rep.														
Cote D'Ivoire														
Ethiopia	2,611	2,782	3,143	3,142	3,188	3,264	3,212	3,350	3,300	2,587	2,833	2,700	3,100	2,900
Kenya	1,244	1,687	1,417	1,239	1,531	1,568	1,396	1,522	1,982	1,549	2,010	1,821	2,103	1,749
Madagascar	45	42	51	28	54	60	58	52	48	54	45	38	46	44
Rwanda	434	531	362	311	501	506	502	377	536	542	717	643	717	680
Tanzania	640	537	577	571	475	819	737	801	625	600	642	503	625	644
Togo														
Uganda	150	200	150	150	175	170	190	220	210	200	200	180	180	210
Zaire	161	145	139	135	140	150	115	120	125	150	170	180	220	240
Zimbabwe	77	77	71	77	68	94	82	117	147	180	188	200	250	175
Other Africa	28	26	34	30	26	39	32	39	48	62	86	104	114	97
India	885	1,090	1,132	1,085	1,189	1,000	1,300	1,241	1,134	1,330	1,098	1,600	1,100	1,630
Indonesia	226	229	242	260	229	215	231	247	297	350	400	500	575	600
Philippines	11	13	19	37	51	73	97	123	101	109	114	60	60	60
Thailand	2	2	2	3	3	3	4	5	5	6	6	6	6	6
Other Asia	15	55	59	63	64	73	70	71	62	68	25	67	74	79
New Guinea	553	768	620	783	739	843	875	605	882	733	816	710	1,058	1,129
World	55,523	42,919	54,371	59,772	62,153	63,017	75,038	59,238	70,233	65,283	71,565	53,075	79,096	65,064

Source: World Coffee Situation, FAS, USDA, August 1989.

Table 4

World Robusta Coffee Production

	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89
	1,000 60 kg bags													
United States														
Mexico	10	20	30	45	60	75	85	100	110	90	100	100	100	100
Central Am. & Carib.	31	59	40	38	36	45	44	25	37	42	49	26	16	16
Brazil	200	300	400	900	1,100	1,250	1,500	2,000	2,000	2,000	2,400	3,500	3,700	3,700
Colombia														
Other So. Americ'n	253	352	375	432	438	503	552	796	773	803	804	902	733	926
Burundi	15	20	15	20	25	20	35	20	30	25	27	16	16	17
Cameroon	1,112	980	1,027	1,221	1,200	1,435	1,435	1,503	750	1,983	1,737	1,857	1,003	1,430
Cent. Afr. Rep.	150	165	165	130	230	277	284	316	150	275	250	230	235	250
Cote D'Ivoire	5,266	4,867	3,123	4,742	3,973	6,090	4,160	4,510	1,420	4,609	4,420	4,405	3,112	4,420
Ethiopia														
Kenya											1	1	1	1
Madagascar	1,178	942	1,241	786	1,259	1,090	1,247	948	1,052	1,046	955	962	1,079	956
Rwanda														
Tanzania	319	268	258	285	286	241	222	232	218	196	225	198	175	172
Togo	151	177	82	105	182	165	225	284	275	215	275	260	290	300
Uganda	2,064	2,460	1,778	1,794	1,867	1,963	2,695	2,780	2,490	2,600	2,500	2,520	2,420	2,790
Zaire	911	1,272	990	1,158	1,176	1,376	1,310	1,234	1,225	1,390	1,440	1,695	1,750	1,410
Zimbabwe														
Other Africa	1,482	1,582	1,297	1,278	761	1,127	956	949	591	794	640	625	720	688
India	613	663	899	757	1,306	977	1,240	929	533	1,920	935	1,750	980	1,720
Indonesia	2,830	3,152	3,666	4,528	4,574	5,150	5,554	4,503	5,218	5,250	5,400	5,500	5,390	5,800
Philippines	268	309	279	360	482	551	595	766	548	638	655	725	697	1,060
Thailand	100	103	122	122	149	198	273	319	359	464	521	457	604	674
Other Asia	71	79	86	97	91	92	109	97	93	127	211	178	171	196
New Guinea	35	34	35	35	36	36	41	42	42	42	44	46	42	50
World	17,078	17,814	15,912	18,842	19,240	22,670	22,549	22,358	17,917	24,514	23,594	25,760	23,247	26,681

Source: World Coffee Situation, FAS, USDA, August 1989.

Stocks

The role of quotas and stocks in stabilizing world coffee prices can be seen in Table 1. During the 1975/76-1977/78 and 1986/87-1988/89 periods stocks represented about 47 percent of production. Stocks were drawn down in years of low production and increased when world output was large. For example, the 1987/88 crop was a record 102.7 million bags, 23.4 million bags above the previous year. Stocks increased by 13.5 million bags thereby absorbing nearly 60 percent of the increase in output. Coffee can be stored for a long time without losing quality or quantity and storage costs are very low.

The level of stocks varies considerably among countries in relation to production (Table 5). There are many reasons for this, one of them being the ICA which has not been able to keep members' export quotas in line with their production and the fact that non-member producers have been freer to sell their output than ICA members. The 15 largest stock holders in the 1986/87-1988/89 period accounted for 90.6 percent of world stocks but only 80.1 percent of world production.

Table 5

World Coffee Stocks

	1986/87-1988/89 Avg.	Stock Share	Production Share
	1,000 bags	percent	
Costa Rica	903	2.1	2.8
Dominican Republic	599	1.4	0.9
Mexico	1,246	2.9	5.6
Brazil	10,864	25.5	28.0
Colombia	8,364	19.6	12.8
Ecuador	588	1.4	2.2
Cameroon	1,587	3.7	1.9
Cote D'Ivoire	2,818	6.7	4.4
Ethiopia	1,614	3.8	3.2
Kenya	1,454	3.4	2.1
Uganda	3,546	8.3	3.0
Zaire	1,063	2.5	2.0
India	1,600	3.8	3.2
Indonesia	1,717	4.0	6.7
Philippines	705	1.6	1.3
Others	3,989	9.4	19.9
World	42,657	100.0	100.0

Source: World Coffee Situation, FAS, USDA, August 1989

Disappearance

Coffee disappearance in ICA importing countries is shown in Table 6. The data also reflect stock changes in these countries. The ICA importers are mainly industrialized countries and their imports have been fairly stable. The United States and the EC dominate this group and together have accounted for 77 percent of ICA importer disappearance in recent years. All ICA importing countries account for 85-90 percent of world trade. Non-member imports vary but generally average about 7 million bags a year.

Given that world coffee production has been increasing at about 2.7 percent a year, most of the growth in use has been in developing and centrally planned nations, and ICA member producers and exporters are virtually all developing countries.

Table 6

Coffee Disappearance in ICO Member Countries

	1982	1983	1984	1985	1986	1987	Share 1987
	1,000 60 kg Bags						percent
United States	18,283	17,923	18,397	18,378	17,572	18,197	30.3
EC	26,096	26,893	25,397	26,223	26,504	28,135	46.8
Australia	664	592	634	553	597	814	1.4
Austria	999	1,073	973	925	977	1,032	1.7
Canada	1,777	1,764	1,789	1,865	1,775	1,766	2.9
Finland	1,027	1,047	1,187	824	987	1,036	1.7
Japan	3,662	3,848	4,011	4,301	4,506	4,963	8.2
Norway	720	782	717	724	704	755	1.3
Sweden	1,629	1,685	1,570	1,608	1,624	1,640	2.7
Switzerland	594	642	648	665	714	775	1.3
Yugoslavia	397	594	341	225	897	982	1.6
Other	30	73	101	33	16	37	0.1
Total	55,878	56,895	55,765	56,325	56,873	60,132	100.0

Source: Demand, ICO, April 1988

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Coffee Trade

World coffee trade has grown at an average annual rate of about 1.9 percent since the mid-1970's, slower than production (Table 7). Coffee beans dominate world trade with soluble coffee being the next most important product. Trade in roasted ground coffee is small and has shown little growth. On the other hand, trade in soluble coffee products has grown more rapidly than beans.

The significantly slower rate of growth in trade than for production means that (a) consumption in major producing countries has been increasing faster than in importing nations and (b) stocks have grown slightly faster than production. The data in Table 1 indicate that stocks increased by an average annual rate of 2.8 percent between the 1975/76-1977/78 and 1986/87-1988/89 periods, slightly faster than production. The imbalance between production and consumption and the persistent trend toward larger stocks is one of the reasons why the ICA was under such intense pressure and finally collapsed.

Table 7

World Coffee Exports

Year	Beans	Roasted Ground	Soluble	Total
	1,000 bags			
1975/76	57,010	371	2,168	59,549
1976/77	53,996	351	2,181	56,528
1977/78	47,631	183	923	48,737
1978/79	61,912	222	2,464	64,598
1979/80	59,151	218	2,688	62,057
1980/81	56,771	167	2,916	59,854
1981/82	60,996	223	4,068	65,287
1982/83	62,541	220	2,495	65,256
1983/84	65,035	352	2,772	68,159
1984/85	68,302	311	3,344	71,957
1985/86	66,793	249	2,506	69,548
1986/87	63,355	298	2,333	65,986
1987/88	63,948	343	2,329	66,620
1988/89	66,122	319	2,851	69,292
Annual Growth Rate(%) 1975/76-1977/78 to 1986/87-1988/89	1.8	0.5	3.3	1.9

Source: World Coffee Situation, FAS, USDA, August 1989

Coffee Prices

World prices for both arabica and robusta coffees have fluctuated considerably as shown in Table 8, and these data do not reflect the collapse in coffee prices during the second half of 1989 after the ICA unravelled. By the late summer of 1989 futures prices for coffee were in the 70¢ - 75¢/lb. range. While the ICA through its quotas and forced stock holding may have tempered price fluctuations somewhat, it was still not able to prevent wide price swings resulting from fluctuations in production and a low price elasticity of demand for coffee, estimated by the World Bank to be in the range of -0.1 to -0.5 in most major consuming countries.

Table 8

Indicator Prices for Coffee

	Arabicas 1/	Robustas 2/
	------U.S cents/lb.------	
1975	65.41	61.05
1976	142.75	127.62
1977	234.67	223.76
1978	162.82	147.48
1979	173.53	165.47
1980	154.20	147.15
1981	128.23	102.61
1982	140.05	109.94
1983	132.05	123.90
1984	144.64	137.75
1985	146.05	120.14
1986	194.69	147.16
1987	113.62	101.99
1988	135.10	95.11

Source: Prices, ICO, November 1988 and FAS data.

1/ Prices at New York and Bremen/Hamburg

2/ Prices at New York and Le Havre/Marseilles

In general, arabicas sell for a higher price than robustas since most of the world prefers milder coffees. The average price difference in the 1975-88 period was about 18¢/lb. But it is also evident that the spread between arabica and robusta coffees has increased over

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time. Robustas sold at an average discount of about 10¢/lb. in the 1975-77 period. The discount increased to an average of 33¢/lb. by the 1986-88 period and reached 40¢/lb. in 1988. The increase in the price discount is consistent with robusta production growing more rapidly than arabica output.

Implications for Development

The pattern of production, consumption, and trade for coffee raises some interesting questions about the role of that crop on generating foreign exchange for developing country exporters and for being a crop that can play a leading role in economic development.

First, growth in world coffee trade has been slow relative to other major agricultural commodities such as grains and oilseeds as shown in Table 9. Second, growth in world trade will have to rely heavily on growth in imports by developing and centrally planned countries since consumption growth in developed countries is very low. Whether or not coffee exports to developing and centrally planned countries can grow at reasonable rates is a key question that will need to be answered to determine foreign exchange earnings prospects for coffee.

Export earnings prospects for coffee do not look very good for the next few years, at least not unless a new ICA can be negotiated. The current imbalance between production plus stocks and consumption will keep world coffee prices very low for a few years, as discussed later. Eventually, coffee production will decline as the rate of new plantings slows, older trees begin to lose yield potential, and fewer inputs such as fertilizer are used in production. As this adjustment occurs, a better supply-demand balance will allow coffee prices to recover, but it may take several years absent a major weather problem.

Table 9

Annual Growth Rates For Selected Agricultural Commodities

1975/77-1977/78 to 1986/87-1988/89

	percent
All grains	2.0
Wheat	3.4
Coarse grains	0.6
Rice	2.6
Oilseed meals	7.2
Vegetable oils	6.1
Coffee	1.9

International Coffee Agreement[1/]

The ICA has used an export quota system to help stabilize world coffee prices. The first agreement went into effect in 1963 to help arrest declining prices. The ICA was discontinued in 1973 because members could not agree on quota and price levels. After a sharp rise in prices in the mid-1970's, coffee prices declined sharply and persistently after 1977. This pushed producing and consuming countries to negotiate a new ICA which remained in effect between October 1980 and February 1986, when the quota system was suspended. Quota's were reinstated in October 1987 and remained in force until mid-1989 when negotiations for a new ICA broke down.

When quotas were in effect, a global quota and those for each exporting member of the ICA were determined at the beginning of each marketing year (October-September). Exporting member countries could export only up to their quota level to importing member countries which accounted for 85-90 percent of world imports. Quotas were adjusted periodically based on world market price behavior.

1/ This section draws heavily upon Takamasa Akiyama and Panayotis N. Varangis, Impact of the International Coffee Agreement's Export Quota System on the World's Coffee Market, WPS 148, International Economics Department, The World Bank, February 1989.

There were no constraints on member exporting countries selling to non-ICA importing countries which consist of New Zealand, the USSR, Eastern Europe except Yugoslavia, and all developing countries. Price data on sales to non-ICA countries are not available but these prices are typically significantly below those paid by member importing countries.

Two of the main reasons for the recent collapse of the ICA are unhappiness with the sharply discounted prices charged to non-ICA countries and inflexibility in the allocation of quotas among producing countries and among coffee varieties. Brazil, the world's largest producer and stock holder, was particularly unhappy with the quota allocation mechanism since it considers itself one of the most efficient producer, its output of robusta coffee has been growing rapidly, and it felt that it was entitled to larger quotas.

At this point it is very difficult to assess when an ICA will come back into force. Brazil appears to be willing to hang tough on the quota issue and to be following a strategy of gaining market share before it is willing to discuss quotas again. The United States has also been cool to a new ICA, although it does not appear to be as intransigent as Brazil about starting a new round of negotiations.

Forecasting Coffee Prices

Forecasting coffee prices is complicated because of the uncertainty concerning the future of the ICA. The World Bank has developed a model of the world coffee economy and has used it to project prices with and without an ICA. 2/ Their price projections are shown in Figure 1 and are in terms of 1985 U.S. constant dollars.

Had the ICA remained in force, coffee prices would have remained relatively stable through 1995 at about 90¢-97¢/lb. in terms of 1985 constant dollars. But without an ICA, the model indicates that prices would initially decline to about the 62¢/lb. level during the first year and then recover to about the 80¢-85¢/lb. level by 1995 as production and consumption adjusted to the sharply lower prices.

2/ See footnote 1

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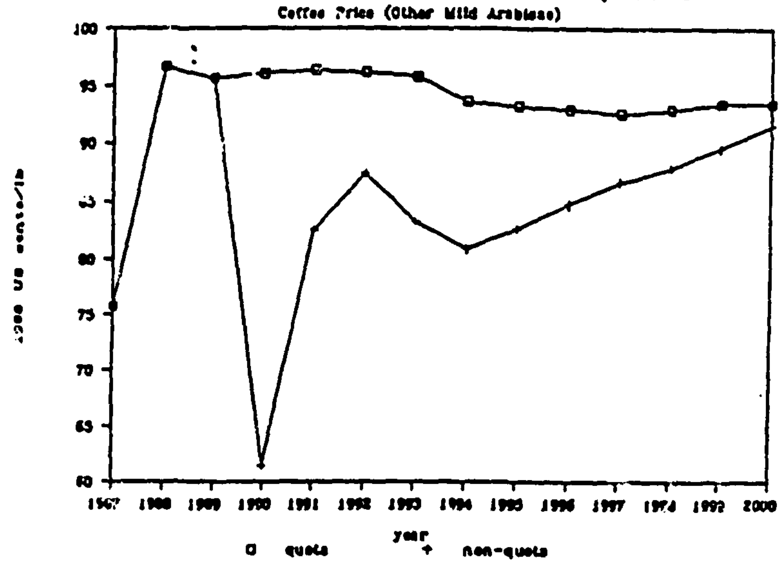
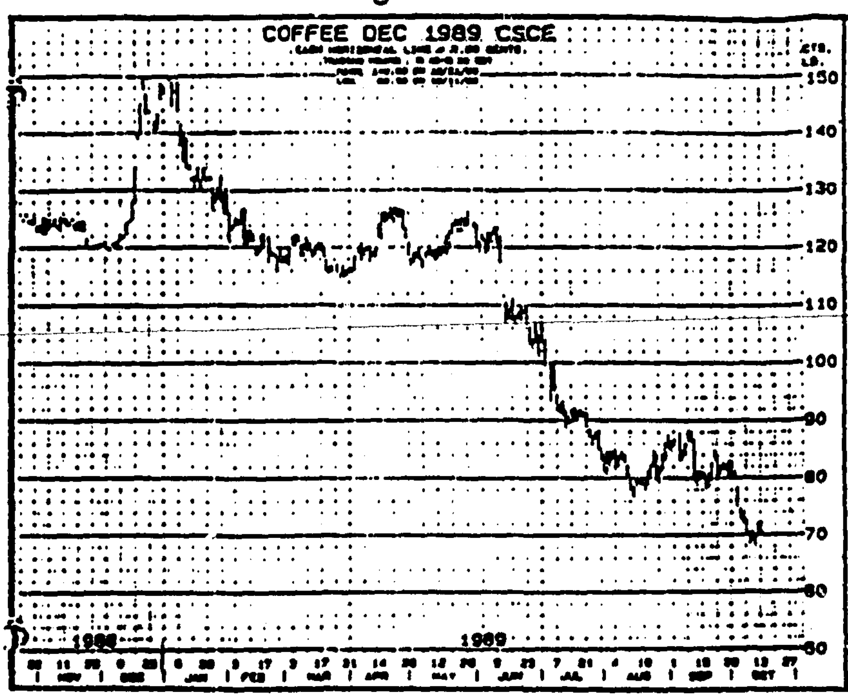
Figure 1

Forecasts with and without Quotas



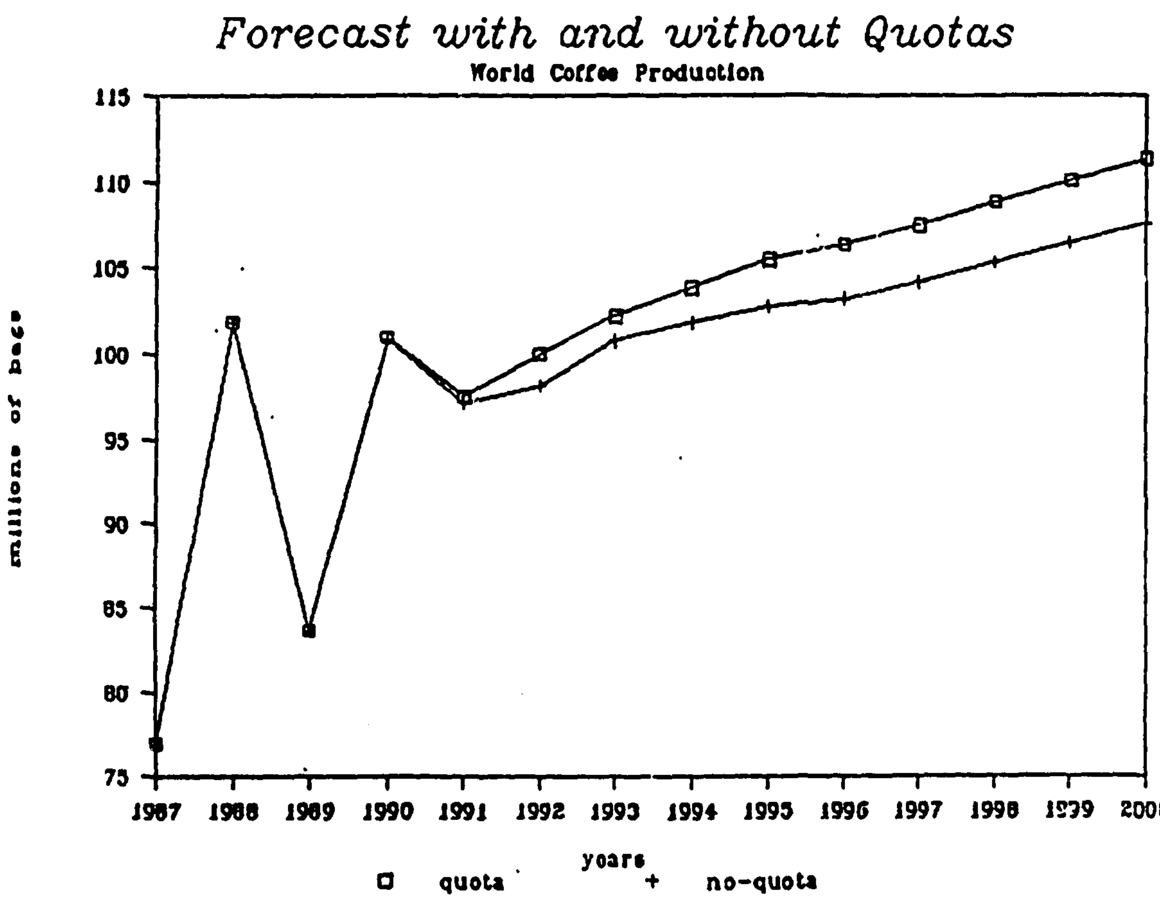
The projected initial price decline on an annual basis is about 35 percent. This projected magnitude compares very favorable with the actual price decline experienced during the first four months after the collapse in the ICA. Actual price behavior is shown in Figure 2 in terms of New York coffee futures prices. Prior to an indication that the ICA discussions would fail, futures prices traded at about the 120¢/lb. level. Prices began to decline in June, 1989 in anticipation of the ICA talks failing and continued to fall after the talks failed. By mid-October, 1989 futures prices were at about the 70¢/lb. level, representing about a 40 percent decline.

Figure 2



The impact of lower prices without an ICA on coffee production, as projected by the World Bank model, is shown in Figure 3. As one would expect, lower prices would result in lower output with the difference between output with and without an agreement growing gradually over time. This adjustment path is consistent with the economics of tree-crop production. For this type of crop, the early adjustment comes from less use of variable production inputs, such as fertilizers and chemicals, which reduces yields. Over the longer term, new plantings decline and a further decline in yields is experienced as trees get older and eventually experience yield declines as a result of old age. At some point, area in production begins to decline.

Figure 3



The World Bank's project real prices for coffee (1985 U.S. dollars) can be translated into nominal prices using the price deflator employed by the Bank. [3/] The implied annual rate of inflation in terms of the U.S. GNP deflator is about 5 percent.

Using this inflation rate, we project nominal coffee prices to 1995 in terms of the indicator prices for arabicas and robustas shown earlier in Table 8, and these projections are shown in Table 10. A range in prices is obtained by assuming that the high end of the range corresponds to an ICA coming into force again and the low end corresponds to no new ICA being negotiated by 1995. Weather problems would be an additional source of price variability with or without a new ICA, but they are not considered here because the ICA is probably the dominant price factor for the next few years.

In addition to inflation adjustment, we have to deal with the spread between arabica and robusta prices which widened considerably in the 1980's. It is plausible to assume that by 1995 the recent discount for robusta coffee of about 33¢/lb. (40¢/lb. in 1988) will return to a more normal discount of 10¢-20¢/lb. If there is no ICA, market forces working through both the demand and supply sides will bring about adjustments in the price discount to its more normal historical level. Alternatively, if there is a new ICA it is likely that one can come into force only if there is general agreement among ICA member to realign quotas among both countries and types of coffee. This realignment would likely reduce the price discount for robusta coffee back toward its more normal historical level. Since the production adjustment process may be incomplete by 1995, we have assumed that robusta coffee will sell at a 20¢/lb. discount to arabica by that date.

With an ICA, the annual prices of arabica and robusta coffees are projected to be 180¢/lb. and 160¢/lb., respectively, by 1995 compared to 1988 prices of 135¢/lb and 95¢/lb. In the case of robusta coffee, the projected price would be about 20¢/lb. lower than the one for arabica compared to a 40¢/lb. discount in 1988. With no ICA, prices in 1995 would be about 20¢/lb. lower for both arabica and robusta coffees. While the price differences in 1995 between having and not having an ICA seem to be relatively small, one has to keep in mind that the price differences would be much larger between 1989 and 1995, as illustrated in Figure 1, and particularly during the very early part of this period.

[3/] Price Prospects for Major Primary Commodities: 1988-2000, Vol. II, The World Bank, February 1989.

Table 10

Project Nominal Coffee Prices

	1988	1995	
	Actual	No ICA	ICA
	U.S. cents/lb.		
Arabica	135	160	180
Robusta	95	140	160

APPENDIX B

WORLD COTTON MARKET

Overview

Production

World cotton production has been increasing, although growth has been somewhat erratic as shown in Table 1. Production increased at an average annual rate of 3.2 percent in the 1976/77-1988/89 period. Most of this growth was accounted for by yield increases which averaged 2.9 percent a year over this period; area increased by only 0.3 percent a year.

Table 1

World Cotton Supply and Use

	Area	Yield	Prod.	Beg. Stks.	Imports	Cons.	Exports	End Stks.	s/u*
	1,000 acres	lbs/a.**	--------	--------	1,000 bales	--------	--------	--------	ratio
1976/77	81,381	338	57,261	26,041	17,913	60,269	17,588	23,327	.39
1977/78	88,019	346	63,527	23,327	19,814	60,402	19,449	26,671	.44
1978/79	85,229	334	59,319	26,671	19,914	63,140	19,913	23,235	.37
1979/80	84,825	366	64,651	23,228	23,328	64,988	23,348	22,916	.35
1980/81	85,157	358	63,587	22,916	20,662	65,134	20,052	20,913	.32
1981/82	86,121	385	69,164	20,913	20,178	64,803	20,363	25,000	.39
1982/83	80,949	391	65,979	25,000	19,785	66,284	19,590	24,697	.37
1983/84	79,521	401	66,384	24,697	21,305	68,080	19,846	24,082	.35
1984/85	86,952	486	88,024	24,082	21,305	69,592	20,754	43,199	.62
1985/86	80,476	477	79,941	43,199	21,964	75,894	20,688	48,319	.64
1986/87	72,679	466	70,517	48,320	25,877	83,671	26,850	34,935	.41
1987/88	79,631	489	81,159	34,900	23,700	83,025	23,700	32,497	.39
1988/89	84,519	477	83,998	32,497	24,685	83,552	24,685	32,847	.39

* Stocks-to-use ratio equals ending stocks divided by consumption.
** 480 lb. bale

Source: Cotton: World Statistics, Bulletin of the International Cotton Advisory Committee, various issues.

Global output is responsive tc price. Low world prices discourage cotton plantings and production and high world prices stimulate output.

The surge in cotton plantings, production, and stocks in 1984/85 was due mainly to huge increases in China. Chinese production increased by 7.4 million bales in that year after a healthy 4.8 million bale increase in the previous year. Having overexpanded production in 1984/85, China reduced output sharply in the following year by 9.7 million bales. To illustrate these wide swings, China's cotton production in the 1980's is shown in Table 2.

Table 2

China: Cotton Production

	thousand bales
1980/81	12,433
1981/82	13,632
1982/83	16,525
1983/84	21,300
1984/85	28,747
1985/86	19,045
1986/87	16,260
1987/88	19,501
1988/89	19,292

Source: Cotton: World Statistics, Bulletin of the International Cotton Advisory Committee, April, 1989

Consumption

World cotton consumption increased from 60.3 million bales in 1976/77 to 83.6 million bales in 1988/89, or by 2.8 percent a year. There have been significant annual variations about this trend caused by fluctuations in cotton prices and world economic conditions.

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Growth in world consumption during the 1980/81-1988/89 period is shown by country/region in Tables 3 and 4, which are based on data not quite as current as in Table 1. During this period, world consumption grew at an average annual rate of 3 percent. Countries or regions that had higher than average growth rates were Central America, South America, China, Korea, Other East and Southeast Asia, South Asia and the Middle East. These areas have had either high population growth rates or high rates of economic growth; and some countries/regions experienced both.

Table 3

World Cotton Consumption

	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89
	1,000 bales								
North America (U.S. Canada & Mexico)	6,924	6,157	6,396	6,707	6,317	7,281	8,200	8,485	8,023
Central America	131	97	130	154	140	157	180	200	197
Caribbean	174	190	200	215	214	215	241	222	226
South America	3,810	3,714	3,693	3,805	4,158	4,805	5,212	5,069	4,971
EC-12	4,798	4,719	5,048	5,239	5,399	5,496	6,177	6,176	5,767
Other W.Europe	418	399	418	445	449	471	505	569	508
E. Europe	3,282	3,166	3,281	3,203	3,263	3,313	3,426	3,367	3,319
USSR	8,250	7,855	7,600	7,900	8,630	9,200	9,400	9,000	9,200
China	15,024	16,230	16,509	16,195	16,003	18,478	20,508	20,040	20,240
Japan	3,286	3,383	3,291	3,277	3,181	3,098	3,431	3,477	3,300
Korea	1,477	1,536	1,553	1,617	1,637	1,811	1,874	1,915	1,972
Other E & S. E Asia	3,557	3,559	3,780	4,230	4,124	5,250	6,321	6,100	5,852
Oceania	100	95	80	94	93	97	101	102	115
South Asia	8,798	8,609	9,180	9,482	10,181	10,083	11,662	11,583	12,140
Middle East	2,168	2,239	2,464	2,612	2,740	2,899	3,195	3,375	3,531
Africa	2,937	2,854	2,661	2,906	3,062	3,241	3,236	3,346	3,383
World	65,134	64,803	66,284	68,080	69,592	75,894	83,671	83,025	82,746

Source: Cotton: World Statistics, Bulletin of the International Cotton Advisory Committee, April, 1989.

Table 4

Annual Average Growth in Cotton Consumption, 1980/81-1988/89

	Percent
North America	1.9
Central America	5.2
Caribbean	3.3
South America	3.4
EC-12	2.3
Other W. Europe	2.5
E. Europe	0.1
USSR	1.4
China	3.8
Japan	0.1
Korea	3.7
Other E. & S.E. Asia	6.4
Oceania	1.8
South Asia	4.1
Middle East	6.3
Africa	1.8
World	3.0

Trade

World cotton trade grew at an average annual rate of 2.9 percent in the 1976/77-1988/89 period, slightly slower than production but slightly faster than consumption. This implies that production in some major consuming countries such as China and India at least kept pace with growth in consumption.

Stocks

World cotton stocks have generally increased in line with production and consumption. However, the ratio of stocks-to-use (consumption) has exhibited wide fluctuations. The stocks/use ratio averaged .42 in the 1976/77-1988/89 period. But this ratio fluctuated from a low of .32 in 1980/81 to a high of .64 in 1985/86.

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There tends to be a "cyclical" pattern in stock fluctuations and in the stocks/use ratio. A few years of stock increases tend to be followed by a few years of stock decline. Globally, stocks have been declining relative to use since the very high levels reached in 1985/86.

Also, there is a reasonably good correlation between world cotton prices and the stocks/use ratio, as indicated in Table 5 and Figure 1, i.e., fluctuations in prices are generally associated with significant changes in the stocks/use ratio. Large values of the ratio are associated with depressed prices and low ratio values are associated with high prices.

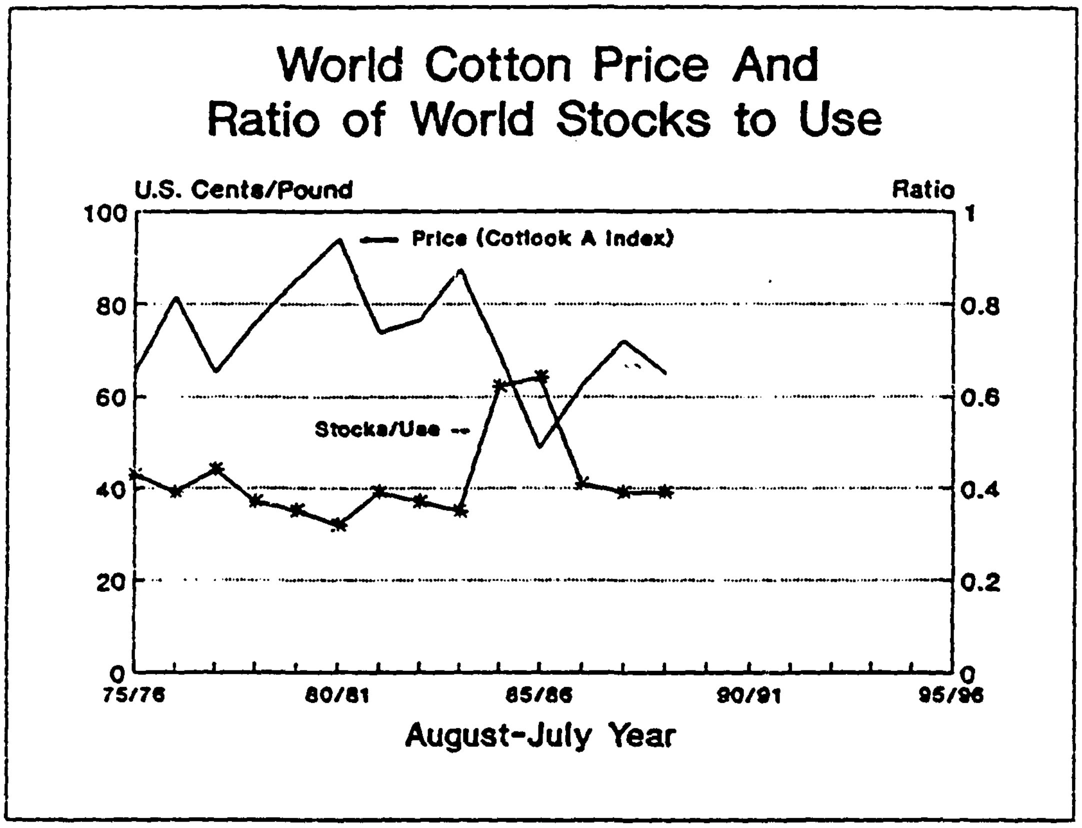
Table 5

Cotton Prices and Stocks

	Price A Index U.S. cents/lb.	Ratio of World Stocks to Use
1976/77	81.69	.39
1977/78	65.00	.44
1978/79	76.07	.37
1979/80	85.58	.35
1980/81	94.11	.32
1981/82	73.76	.39
1982/83	76.65	.37
1983/84	87.61	.35
1984/85	69.25	.62
1985/86	48.82	.64
1986/87	62.38	.41
1987/88	72.14	.39
1988/89	66.27	.39

Source: Cotton: World Statistics, Bulletin of the International Cotton Advisory Committee, various issues.

Figure 1



Details on Cotton Production

Detailed data on cotton production by country/region are shown in Table 6 for the 1976/77-1988/89 period. Data are shown separately for a large number of African countries. In any one year, cotton production in individual countries and globally is significantly influenced by weather and crop conditions since a large share of the world's output is not irrigated. To help smooth out the effects of weather, we calculated three-year averages for the 1976/77-1978/79 and 1986/87-1988/89 periods. These are shown in Table 7 along with annual growth rates based on these averages and world market shares for the two three-year periods.

China, the United States, the USSR, India, and Pakistan are the world's largest cotton producers. In the 1986/87-1988/89 period, these five countries accounted for 73 percent of total world output. The remaining output is distributed among a large number of countries.

Some countries experienced rapid growth in production between the 1976/77-1978/79 and 1986/87-1988/89 periods while others had negative growth. Among the major producers, production in China, India and Pakistan increased faster than the world as a whole. Production in the USSR was unchanged and U.S. output increased at only one percent a year. In the case of the United States, however, production is restrained by a supply control program.

The experience in Africa was quite mixed, with cotton production having grown rapidly in some countries while others did poorly. The North African region, of which Egypt is the dominant producer, experienced a 1.3 percent annual decline in output. In Sub-Saharan Africa, the Central African Republic, Chad, Senegal, Sudan, and Zaire, had negative growth rates. But a number of other countries outperformed world growth and by a substantial margin for some of them. These include Benin, Burkina Faso, Cameroon, Cote D'Ivoire, Mali, Niger, Togo, South Africa, Tanzania, and Zimbabwe. Production in other Sub-Saharan African countries remained essentially unchanged. Countries with good production performance were mainly in Francophone Africa, although Anglophone countries such as Tanzania and Zimbabwe did well as did South Africa. The reasons for the differential rates of performance between Francophone and Anglophone Africa are discussed later.

Table 6

World Cotton Production

Country/Region	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89
	1,000 bales (480 lbs)												
United States	10,582	14,390	10,858	14,628	11,122	15,641	11,963	7,771	12,982	13,432	9,731	14,760	15,412
Mexico	1,043	1,621	1,562	1,506	1,620	1,440	840	1,038	1,110	1,010	638	1,025	1,417
Cent. Am. & Caribbean	1,548	1,672	1,658	1,144	1,151	890	798	848	776	578	437	466	395
Argentina	735	1,010	795	666	384	696	511	827	787	551	482	1,309	781
Brazil	2,499	2,117	2,522	2,624	2,730	3,126	2,693	3,423	4,431	3,644	2,909	3,811	3,348
Other South America	1,493	1,635	1,309	1,548	1,617	1,379	818	1,127	1,882	1,626	1,445	2,153	2,033
North Africa	1,846	1,865	2,030	2,246	2,461	2,325	2,144	1,917	1,853	2,034	1,891	1,669	1,458
Other Africa													
Benin	37	23	37	46	22	25	54	80	153	155	220	124	184
Burkina Faso	92	60	101	133	108	99	132	138	158	211	303	269	276
Cameroon	87	69	106	142	149	141	131	170	176	211	223	207	299
Cent. Afr.Rep.	69	51	55	46	40	28	47	56	78	61	44	35	53
Chad	243	211	230	152	144	120	175	275	163	178	156	220	253
Cote D'Ivoire	142	188	216	271	256	260	302	268	406	378	427	523	606
Guinea	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1	1	1	3	7
Guinea Bissau	N.A.	N.A.	N.A.	N.A.	3	2	2	2	3	2	2	5	3
Mali	211	193	220	257	186	175	229	252	254	308	361	344	436
Niger	14	5	9	5	5	3	4	7	7	8	14	15	11
Senegal	78	64	60	46	33	70	85	54	87	50	49	70	69
Togo	14	18	23	28	41	38	52	47	106	122	152	128	149
Sudan	730	909	638	524	446	712	944	1,021	933	652	753	613	747
South Africa	161	239	253	299	264	166	124	165	165	205	213	355	312
Tanzania	308	230	257	280	197	207	216	217	237	150	292	392	292
Zaire	55	28	32	46	45	40	49	39	41	30	30	23	18
Zimbabwe	234	276	262	299	283	256	275	420	473	390	367	494	417
Other Africa	754	619	610	531	527	501	500	518	526	464	623	658	693
W. Europe	721	919	845	657	821	878	715	780	910	1,078	1,359	1,170	1,562
E. Europe	87	64	60	60	78	42	47	52	49	45	57	60	55
USSR	12,010	12,470	11,831	12,410	12,224	11,267	10,380	9,976	11,928	12,778	12,217	11,331	12,620
Australia	129	202	243	381	454	618	463	651	1,142	1,179	977	1,281	1,215
China	9,957	9,411	9,957	10,159	12,429	13,632	16,526	21,298	28,720	19,046	16,261	19,500	19,291
Other E.&S.E. Asia	175	211	207	386	358	342	263	256	186	229	134	193	207
India	4,928	5,658	6,196	6,274	6,256	6,559	6,481	5,870	7,927	8,979	7,418	7,082	8,081
Pakistan	1,998	2,641	2,172	3,344	3,281	3,435	3,783	2,271	4,631	5,587	6,059	6,741	6,435
Other S. Asia	285	230	207	133	230	308	301	297	333	355	359	344	370
W. Asia	3,964	4,552	3,922	3,670	3,592	3,743	3,933	4,253	4,410	4,215	3,911	3,786	4,489
Total World	57,261	63,527	59,319	64,651	63,587	69,164	65,979	66,384	88,024	79,941	70,517	81,159	83,998

Source: Cotton: World Statistics, Bulletin of the International Cotton Advisory Committee, various issues.

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Table 7

World Cotton Production

Country/Region	Production 1976/77-1978/79 Average	Production 1986/87-1988/89 Average	Annual Growth Rate	Share 1976/77-1978/79 Average	Share 1986/87-1988/89 Average
	---1,000 bales---		---percent---		
United States	11,943	13,301	1.1	19.85	16.93
Mexico	1,409	1,027	-3.1	2.35	1.31
Cent. Am. & Caribbean	1,626	433	-12.4	2.71	.55
Argentina	847	857	0.1	1.41	1.05
Brazil	2,379	3,356	3.5	3.96	4.27
Other South America	1,479	1,877	2.4	2.46	2.35
North Africa	1,914	1,672	-1.3	3.15	2.13
Benin	32	176	18.6	.05	.22
Burkina Faso	84	283	12.9	.14	.36
Cameroon	87	243	10.8	.14	.31
Cent. Afr. Rep.	58	44	-2.7	.10	.06
Chad	228	210	-0.8	.38	.27
Cote D'Ivoire	182	519	11.0	.30	.66
Guinea	N.A.	4	-	N.A.	-
Guinea Bissau	N.A.	3	-	N.A.	-
Mali	208	380	6.2	.35	.46
Niger	9	13	3.8	.01	.02
Senegal	67	63	-0.6	.11	.08
Togo	18	143	23.0	.03	.18
Sudan	759	704	-0.8	1.26	.90
South Africa	218	293	3.0	.36	.37
Tanzania	265	325	2.1	.44	.41
Zaire	38	24	-4.4	.06	.03
Zimbabwe	257	426	5.2	.43	.54
Other Africa	661	658	0.0	1.10	.84
W. Europe	828	1,364	5.1	1.38	1.74
E. Europe	70	57	-2.0	.12	.07
USSR	12,104	12,056	0.0	20.16	15.35
Australia	191	1,158	19.8	.32	1.47
China	9,775	18,351	6.5	16.28	23.36
Other E. & S.E. Asia	198	178	-1.1	.33	.23
India	5,594	7,527	3.0	9.32	9.56
Pakistan	2,270	6,412	10.9	3.78	8.16
Other S. Asia	241	358	4.0	.40	.46
W.Asia	4,146	4,062	-0.2	6.91	5.17
World	60,036	78,558	2.7	100.00	100.00

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As we discussed earlier, most of the increase in world cotton production has resulted from growth in yields. It is interesting to see, therefore, how yield performance has varied among countries or regions.

Yield data by country/region are shown in Table 8 for the 1976/77-1988/89 period. In Table 9, we have attempted to remove some of the annual fluctuations in yields due to weather by calculating three-year averages for the 1976/77-1978/79 and 1986/87-1988/89 periods. We also show annual average growth rates between these two periods and country/region yield as a percent of world yield for the 1986/87-1988/89 period.

One is struck by the extreme variation in yields among countries or regions. At the high end, Israel's yield has been over 260 percent of the world average. At the low end is Zaire where yields have averaged only 19 percent of the world average. Irrigation is one factor explaining yield differences and countries that use irrigation generally have the highest yields. In the United States, for example, irrigated cotton yields in Arizona and California typically are in the 1,200-1,300 lb./acre range while non-irrigated cotton yields in other states are in the 350-500 lb./acre range. Climate is another factor affecting both irrigated and non-irrigated yields with some areas of the world being endowed with more favorable climate than others. Finally, technology, agricultural policies, and infrastructure all play roles in determining production practices and yield levels.

As shown in Table 9, yields in Sub-Saharan Africa are generally below the world average, Cote D'Ivoire being an exception. Even the Sudan has below average yields despite the fact that most of its cotton is produced with irrigation. But despite low yields on average in Africa, many countries experienced rates of growth in cotton yields that were significantly above the world growth rate. These countries include Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Nigeria, Senegal and Zaire. Yields in Cote D'Ivoire increased only slightly faster than the world average, although this country's yields are already quite high. In several other African countries, yield growth was slow and even negative in some cases.

Table 8

Cotton Yields

Country/Region	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89
	pounds per acre												
United States	465	520	420	547	404	542	590	508	600	630	552	706	619
Mexico	845	808	882	787	888	799	856	797	692	963	826	865	865
El Salvador	745	742	619	759	698	644	734	710	741	601	590	646	660
Guatemala	1,154	1,022	1,172	1,056	1,100	887	698	934	838	633	801	1,051	922
Nicaragua	529	495	577	514	708	605	786	660	542	518	672	521	612
Argentina	276	323	231	228	265	339	289	342	342	316	343	517	310
Brazil	244	204	249	259	128	159	144	214	232	213	261	280	270
Colombia	388	315	413	514	486	507	523	562	525	553	563	520	417
Paraguay	294	259	175	295	288	270	218	251	340	282	283	455	367
Peru	456	538	614	586	538	589	381	707	713	581	562	638	596
Egypt	675	595	783	859	902	900	917	871	862	855	806	821	649
Benin	257	230	261	287	176	204	432	637	373	301	414	336	324
Burkina Faso	227	164	278	311	280	296	357	349	373	434	466	355	335
Cameroon	275	279	445	485	411	432	466	463	466	458	458	424	519
Cent. Afr. Rep.	107	80	92	109	99	106	135	152	191	142	130	168	171
Chad	149	168	164	157	169	174	248	310	223	234	244	287	317
Cote D'Ivoire	424	420	388	428	393	405	457	382	541	480	521	563	561
Guinea	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	480	480	480	480	480
Guinea Bissau	N.A.	239	319	319	288	240	240	240	240	157	253	347	270
Mali	379	339	374	424	353	428	519	484	414	430	481	449	446
Niger	185	143	152	239	218	323	442	689	285	280	298	260	279
Senegal	341	301	233	283	214	426	390	318	365	250	375	473	399
Togo	282	506	306	206	273	315	383	311	474	342	481	367	352
Sudan	343	366	296	247	223	382	468	496	504	388	422	376	437
So. Africa	506	574	448	483	448	298	229	323	322	371	328	431	303
Tanzania	165	116	110	119	99	115	335	94	118	79	142	169	143
Zaire	77	44	60	98	95	94	125	92	103	96	97	72	98
Zimbabwe	366	387	489	458	409	444	389	429	398	391	310	353	326
Greece	712	747	814	660	741	849	650	680	673	696	869	766	818
Italy	239	159	137	137	137	240	288	288	N.A.	N.A.	194	194	154
Spain	602	535	648	732	943	869	993	929	789	1,000	1,019	911	708
USSR	791	809	756	780	755	691	632	607	692	749	683	624	722
Australia	777	1,126	960	1,058	1,043	1,168	932	941	1,135	1,287	1,229	1,073	1,231
China	416	389	412	435	491	511	551	681	806	720	734	782	672
India	139	140	149	151	155	158	160	148	209	232	204	186	204
Pakistan	208	278	223	312	302	301	325	199	401	459	470	511	512
Iran	471	502	421	400	351	357	408	444	470	498	527	483	511
Iraq	319	382	308	333	243	288	278	229	250	250	268	253	255
Israel	1,181	1,119	1,195	1,176	1,203	1,368	1,386	1,456	1,234	1,353	1,286	1,306	1,152
Syria	767	721	760	740	757	806	888	982	764	848	779	669	797
Turkey	729	660	653	695	564	666	733	770	681	708	785	818	817
World	363	369	354	395	358	385	391	401	486	477	466	489	477

Source: Cotton: World Statistics, Bulletin of the International Cotton Advisory Committe, various issues.

Table 9

Cotton Yields

Country/Region	1976/77-1978/79 Average	1986/87-1988/89 Average	Annual Growth Rate	Percent of World Yield 1986/87-1988/87
	----------pounds/acre----------		----------percent----------	
United States	468	626	+3.0	131
Mexico	845	852	+0.1	179
El Salvador	702	632	-1.0	132
Guatemala	1,116	925	-1.9	194
Nicaragua	534	602	+1.2	126
Argentina	277	390	+3.5	82
Brazil	232	270	+1.5	57
Colombia	372	500	+3.0	105
Paraguay	243	368	+4.2	77
Peru	536	599	+1.1	125
Egypt	684	759	+1.0	159
Benin	249	358	+3.7	75
Burkina Faso	223	385	+5.6	81
Cameroon	333	467	+3.4	98
Cent. Afr. Rep.	93	156	+5.3	33
Chad	160	283	+5.9	59
Cote D'Ivoire	411	548	+2.9	115
Guinea	N.A.	480	N.A.	101
Guinea Bissau	279	290	+0.4	61
Mali	364	459	+2.4	96
Nigeria	160	279	+5.7	58
Senegal	292	416	+3.6	87
Togo	365	400	+1.0	84
Sudan	335	412	+2.1	86
So. Africa	509	354	-3.6	74
Tanzania	130	151	+1.5	32
Zaire	60	89	+4.0	19
Zimbabwe	414	330	-2.2	69
Greece	758	818	+0.8	171
Italy	178	181	+0.2	38
Spain	595	879	+4.0	184
USSR	785	676	-1.5	141
Australia	954	1,178	+2.1	247
China	406	729	+6.0	153
India	143	198	+3.3	41
Pakistan	236	498	+7.8	104
Iran	465	507	+0.9	106
Iraq	336	259	-2.6	54
Israel	1,165	1,247	+0.7	261
Syria	749	748	0.0	157
Turkey	681	807	+1.7	169
World	362	477	+2.8	100

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Research and Productivity Change in Africa

The rather steady growth in global cotton yields is an indication that research is important in increasing productivity and production. And as we have seen, some countries have done very well on this score while others have performed poorly.

A recent report by the World Bank extensively examined the role of research in West African agriculture.[1] This report looked at research for food and commercial crops as well as for livestock.

West Africa has had a long history of production and exports of cash or commercial crops, prompted by the interest of former colonial powers or private firms. Tree crops, cotton, and groundnuts have been the main cash crops in the region and they continue to be or can be produced on both small and large farms. Production of these crop has benefited from research in the past and still does in some countries, but research systems have deteriorated in a number of African countries. For the future, Africa's competitiveness in world markets for commercial crops will depend heavily on the rate at which it increases yields and productivity relative to the rest of the world.

In general, research and extension activities have remained stronger in the post-colonial period in Francophone than in Anglophone Africa. As Kenneth Anthony points out in the case of cotton:

> "A significant event in the development of cotton production in Francophone Africa was the establishment of the Compagnie francaise pour le developpement des fibres textiles (CFDT) in 1949 to take over responsibility for all development aspects of production. From the start, CFDT was concerned with the extension of information to farmers, seed distribution, the supply of inputs, the purchase of seed cotton, ginning, and marketing. CFDT worked closely with IRCT (the cotton research organization) helping the translation of research results into practice. The same close liaison has continued between IRCT and CFDT-associated organizations, established by countries after their independence. BCGA (British Cotton Growers Association) did not acquire a similar status to CFDT in the anglophone countries. Its activities and expertise became largely directed to ginning and consultancy services.[2]

1/ West African Agricultural Research Review, The World Bank, February 28, 1987
2/ Kenneth Anthony, Cotton Research, West African Agricultural Research Report, World Bank, 1986

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Historically, the approach to cotton research has been different than that for most other crops because some major consuming countries had an interest in promoting and improving quality in the developing countries that supplied part of the importing countries' needs. Both France and the United Kingdom (UK) were important players. France maintained its research network in Africa while the U.K. did not do so to the same extent. Also, the two countries differed with respect to emphasis. French institutions stressed increases in yield while British institutions focused on fiber quality.

The relative role that these two countries have played in funding research in Sub-Saharan Africa is illustrated in Table 10. Of the total amount of bilateral funding of agricultural research in Sub-Saharan Africa, France's share increased from 7.7 percent in 1976 to 42.8 percent in 1983 and the absolute increase in funding over this period was over $74 million in constant 1980 U.S. dollars. At the same time, the U.K's share declined from 1.7 percent in 1976 to 1.5 percent in 1983 and its absolute increase in funding was only about $1.2 million.

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Table 10

External Funding for Agricultural Research in Sub-Saharan Africa 1976, 1980 and 1983 1/

(Constant 1980 US dollars (1000) converted with data from IMF)

Country	1976	1980	1983
Australia 8/	—	—	260
Belgium	—	8,500	—
Canada	18,190	10,610	—
Denmark	—	90	—
Finland	17	—	—
France 8/	6,830	53,589	81,000
Germany, Fed. Rep. 4/ 7/	7,395	7,395	—
Japan	48	4,555	—
Netherlands 3/	4,330	8,100	—
Norway	80	2,940	—
Sweden 8/	930	2,660	4,875
Switzerland 3/ 4/	870	350	—
United Kingdom 4/ 8/	1,550	460	2,783
United States 4/ 8/	8,890	38,120	60,000
Total bilateral	89,130	133,275	189,366
IFAD 2/	—	655	—
EEC 2/	—	13,330	—
IBRD	4,075	28,340	25,780
UNDP/FAO 2/ 4/ 5/	—	30,000	35,000
Total multilateral	4,075	72,325	74,765
Total bi-and multilateral	93,205	205,600	260,131
CGIAR 4/ 6/	30,670	42,000	45,000
OVERALL TOTAL	129,895	247,600	307,131

1/ "—" indicates no 1983 estimate obtained. In summing the "1983" column, 1980 figures for those donors have been added to actual 1983 figures where available. All are in 1980 dollar terms.

2/ Data for 1976 unavailable or incomplete.

3/ Includes contribution to core budgets of CGIAR.

4/ Includes some projects not identified by African region.

Source: West African Agricultural Research Review, World Bank, February 28, 1987.

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The French Institute de recherche du coton et des textiles exotiques (IRTC) and the Montpellier Research Center continue to have extensive involvement right down to the farm level with cotton production in a number of West African countries. These countries include Benin, Cote D'Ivoire, Mali, Senegal, Togo, Burkina Faso, Cameroon, Chad, and the Central African Republic [3/]. Clearly, this involvement is one of the explanations why growth in cotton yields in a number of Francophone countries has outperformed growth in world average yields. The few Anglophone countries that have also done well in increasing cotton yields have had respectable research efforts as well.

The World Bank has examined differential rates of performance among six Francophone and Anglophone countries. [4/] It concludes that while macroeconomic and sectoral pricing policies have been important, institutional factors have been the dominant ones in explaining good growth in cotton production in Francophone countries. In addition to differences in research efforts already discussed, CFDT has taken an integrated approach to cotton production though promoting selective mechanization to alleviate peak labor demands that compete with food crop production, assuring producers get paid on time, providing adequate credit, and seeing to it that farmers have adequate production inputs. These favorable institutional factors are largely absent in Anglophone countries. The World Bank study points out that in Nigeria, Kenya and Tanzania, for example, producers sometimes have to wait 9-24 months to get paid for their cotton crops. Even then, they may not receive the full official price. These institutional barriers seriously undermine pricing policies even when official prices are set at favorable levels.

3/ West African Agricultural Research Review, World Bank, February 28, 1987, pp. 132-136.

4/ Uma Lele, Nicolas van de Walle, and Marthurin Gbetibouo, Cotton in Africa: An Analysis of Differences in Performance.

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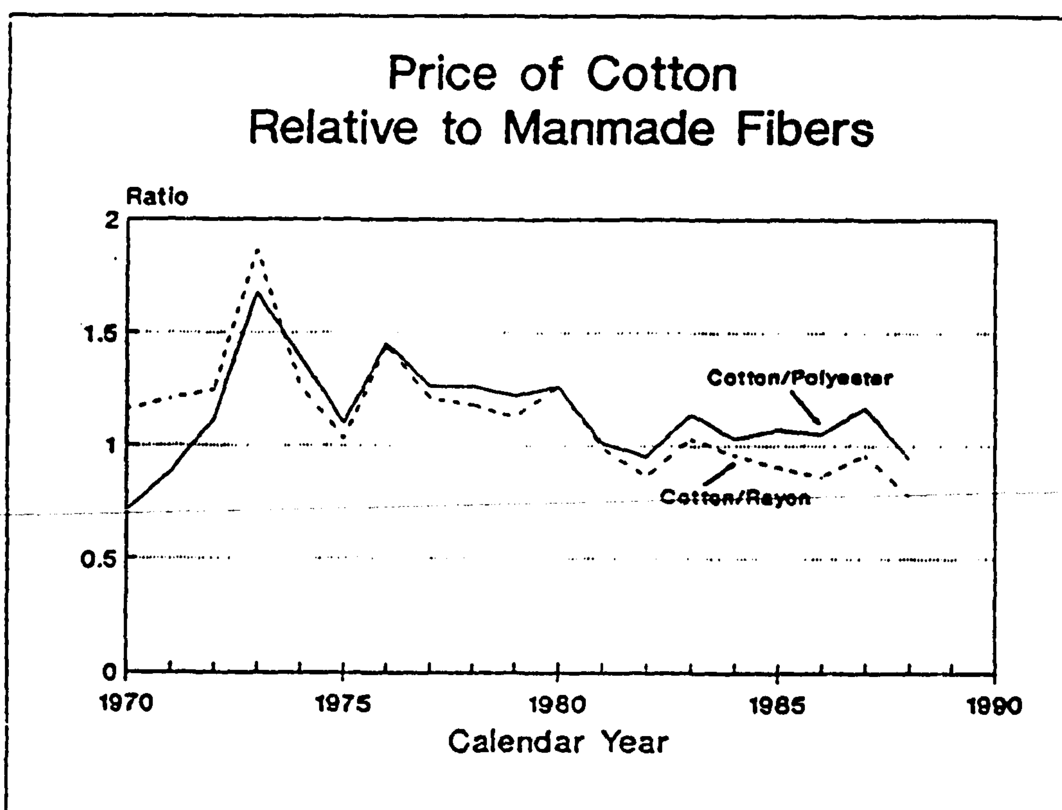
Cotton vs Manmade Fibers

World consumption of cotton is influenced by economic and population growth and cotton prices relative to manmade fibers. In some countries, consumption is also influenced by the level of textile imports and exports. For example, textile exports have grown for a number of Asian countries and this resulted in their increasing cotton imports.

With respect to competition from manmade fibers, cotton has fared quite well. In Figure 2 we show the relationships between cotton and manmade fiber prices in the United States for the 1970-88 period. This is probably not a bad representation of the world market situation although conditions may vary considerably among countries since textile production is so important in developing and centrally planned countries where prices do not always correspond to world or U.S. equivalent levels.

Cotton prices have been declining relative to polyester and rayon since 1973 and even since 1970 although there has been a considerable amount of annual variation about this trend. If world cotton yields continue to increase, and we see no reason for them not to do so, cotton prices should continue to remain competitive with those for manmade fibers.

Figure 2



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Price Outlook for Cotton

As we saw in Table 5, world cotton prices have fluctuated considerably and exhibit a degree of cyclical behavior. Periods of low prices discourage production and these are then followed by high prices which, in turn, lead to increased output. Part of the production adjustment process is also related to U.S. policies which restrict output through requiring that some cotton acreage be idled in return for price support benefits. U.S. planting restrictions increase during periods of low prices and decline when prices are high.

Future cotton prices will be influenced by the evolution of demand and production. World consumption is expected to continue to grow although probably not quite as rapidly as the 3.0 percent annual rate experienced during the 1980/81-1988/89 period. That was a period in which world economic growth was fairly robust especially since the world economy has been recovering from the global recession which occurred early in the period. Still, we expect the world economy to achieve respectable growth over the next five years or so and this will help cotton consumption to increase. The geographic pattern of consumption growth is likely to remain as it has been (see Table 4). Industrial countries, Eastern Europe, the USSR, and developing nations with severe financial problems will continue to have low growth rates. On the other hand, consumption should continue to grow rapidly in Asia (excluding Japan) the Middle East, and a number of developing countries in other parts of the world whose economics have been growing and are expected to grow at respectable rates.

World production will keep pace with the growth in demand and further increases in yields will be the primary source of growth. Output is expected to fluctuate annually in response to cyclical price behavior.

We present price projections for cotton to 1995. During the 1976/77-1988/89 period the A Index Price of cotton (middling 1 3/32", c.i.f. Northern Europe) averaged about 74¢/lb and ranged from a low of 49¢/lb. in 1984/85 to a high of 94¢/lb in 1980/81. The World Bank is currently projecting a nominal price in terms of the A Index of 101¢/lb. by 1995. In real terms, this price would be 25-30 percent below the average level for the 1976/77–1981/89 period, depending on the deflator used by the World Bank. 5/ A conti-

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5/ Price Prospects for Major Primary Commodities, 1988-2000, World Bank, 1989.

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nued decline in real cotton prices is consistent with the further growth in yields and productivity that is expected to occur.

But the future outlook is always uncertain, and especially so now given the political developments in China, the USSR, and Eastern Europe and what they mean for the economic outlook in these countries. Other areas of uncertainty include the evolution of economic growth in industrial countries, weather and crop conditions, and what might happen to commodity policies at the national level. The latter could be significant in the United States, a major cotton producer and the only one that controls cotton output through explicit annual supply control programs.

Even if the world economy experiences modest inflation rates, the World Bank's projected price of 101¢/lb. seems high in view of the strong likelihood that cotton yields will continue to increase, world economic growth will slow somewhat from its recent fairly strong performance, and the United States can expand production by reducing acreage idling requirements in response to high prices. This is especially so when one considers that the World Bank's projected price is 7¢/lb. above the highest price realized in the 1976/77-1988/89 period and 27¢/lb. above the average price for that period.

Our projections of cotton prices are shown in Table 10. We project a most likely price of 90¢/lb. for the A Index price in 1995. But cotton prices also fluctuate significantly over time and variations of plus or minus 25 percent about an average price are well within historic experience. Using 90¢/lb. as the mid-point of a possible range of prices in 1995, one derives a high price of 112¢/lb. and a low price of 68¢/lb. The World Bank's projection falls within the middle of the upper half of our projected price range.

It is useful to compare our projected prices with those expected for the 1989/90 crop year in which world production is down sharply, consumption is expected to remain fairly strong and stocks will be low. World production is forecast by USDA to be 80.78 million bales, 3.22 million bales below a year earlier because of production problems in a number of major producing countries and a large acreage idling program in the United States. Consumption is projected to be 85.34 million bales, 1.54 million bales above last year. World cotton stocks are expected to be 25.20 million bales at the end of the 1989/90 season, 4.94

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million bales below a year earlier. The ratio of stocks to use will be .30, which will be even lower than the .32 realized in 1980/81 when the A Index price was 94¢/lb. Even in this tight supply situation, the A Index price is expected to be 90¢-95¢/lb, nearly 24¢/lb. above 1988/89. This price forecast is based on private estimates since USDA is prohibited by law from forecasting cotton prices. If world producers respond to these high prices, as we expect them to do, and consumption growth is also tempered by high prices, the world cotton economy should return to a more normal stock-use ratio of .42 in future years (the average value for the 1976/77-1988/89 period) and cotton prices should decline from the levels reached in 1989/90.

The expected experience for the 1989/90 crop year is further support for our contention that the World Bank's 1995 price projection is high in terms of the most likely price assuming normal weather and yields and for why we have chosen a 90¢/lb. price as the most likely one under normal production conditions, assuming cotton yields continue to increase at their historic rate, and the world economy continues to grow at a modest price.

Table 10

Cotton Price Projections

	A Index (U.S. cents/lb.)
1976/77-1988/89 Average	74
Projected 1995	
High	112
Mid-Point	90
Low	68

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WORLD GROUNDNUT MARKET

Overview

Groundnuts are the world's fifth most important oilseed after soybeans, cottonseed, rapeseed and sunflowerseed. They are also different than other oilseeds in that a substantial amount of production is consumed directly for food whereas most other oilseeds are crushed for meal and oil.

While food use is important, world market prices for groundnuts are still determined mainly by the value of oil and meal derived from them. As a consequence, groundnut prices are determined by the overall market situaiton for oilseeds and oilseed products. We begin, therefore, with an overview of the world oilseed and oilseed product markets.

World Oilseed Production

World oilseed production has grown rapidly as illustrated in Tables 1 and 2. We calculate three-year averages for the 1976/77-1978/79 and 1986/87-1988/89 periods to help smooth out the effects of weather on production. Using these averages we see that world oilseed production grew at an average annual rate of 3.8 percent. Production increased most rapidly for rapeseed, palm kernel, and sunflowerseed. Soybean production increased at slightly less than the rate for all oilseeds. Groundnut production increased at only a 1.9 percent annual rate.

Production of most oilseeds is driven by the demand for meal and oil. The one major exception is cottonseed which is a by-product of cotton production and its supply is determined by economic forces affecting cotton production.

Since most oilseeds are processed into meal and oil, it is the demand for these products that are driving oilseed production. Meal is used primarily as a protein feed. Growth in meal demand has been most rapid in the developed, rapidly growing high income developing countries, the Soviet Union and several other countries where livestock and poultry production are growing and where there is a large or emerging feed demand. On the other hand, vegetable oil consumption has grown most rapidly in developing countires which typically have higher rates of population growth and where income has been rising rapidly.

Table 1

World Production of Major Oilseeds

	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89
	mmt												
Soybeans	59.46	72.79	77.58	93.61	81.11	86.66	93.63	83.21	92.90	97.48	97.86	102.81	94.08
Cottonseed	21.90	24.53	23.21	25.30	25.12	27.67	26.32	26.89	34.66	31.12	27.53	31.54	32.65
Groundnuts, shelled	11.57	11.73	12.80	12.48	11.83	14.24	12.44	13.40	14.22	14.62	14.69	13.61	15.21
Sunflowerseed	10.09	13.01	13.04	15.49	13.10	15.14	16.90	15.65	17.96	19.62	18.83	20.98	20.54
Rapeseed	7.17	7.92	10.77	10.08	11.47	12.39	14.96	14.38	17.13	18.71	19.74	22.95	22.27
Sesameseed	1.66	1.78	1.85	1.85	1.71	2.07	1.80	1.95	1.92	2.20	2.18	1.94	2.14
Copra	4.34	4.72	4.19	4.47	4.56	4.59	4.36	3.50	4.15	5.26	4.97	4.44	4.71
Palm Kernel	1.08	.97	1.19	1.31	1.31	1.56	1.66	1.71	1.98	2.36	2.39	2.53	2.81
Linseed	2.58	3.39	2.74	3.09	2.52	2.46	3.00	2.60	2.74	2.96	3.25	2.79	2.22
Castorseed	.69	.78	.91	.88	.78	.91	.92	.96	1.07	1.22	.91	.83	1.04
Total	120.54	141.61	148.28	168.56	153.52	167.70	175.99	164.25	188.71	195.53	192.35	204.42	197.67

Source: Oil World

Table 2

World Oilseed Production

	1976/77-1978/79 Average	1986/87-1988/89 Average	Annual Rate	Production Share 1976/77-1978/79 Average	Production Share 1986/87-1988/89 Average
	mmt		percent		
Soybeans	69.94	98.27	3.5	51.1	49.6
Cottonseed	23.21	30.57	2.8	17.0	15.4
Groundnuts, shelled	12.03	14.50	1.9	8.8	7.3
Sunflowerseed	12.05	20.12	5.3	8.8	10.2
Rapeseed	8.62	21.65	9.6	6.3	10.9
Sesameseed	1.76	2.09	1.7	1.3	1.0
Copra	4.42	4.71	0.6	3.2	2.4
Palm kernel	1.08	2.58	9.1	0.8	1.3
Linseed	2.90	2.75	-0.5	2.1	1.4
Castorseed	.79	.93	1.6	0.6	0.5
Total	136.81	198.15	3.8	100.0	100.0

Oil and Meal Production

Production data for meals and oils are shown in Tables 3 and 4. Included in meal production are corn gluten feed and meal, by-products from corn wet milling. Output of these products has grown rapidly because of the expansion of sweetener and alcohol production, especially in the United States. For example, production of these meals exceeds that of groundnut meal. In the case of oils we include palm and palm kernel oil output. Production of these oils has also grown rapidly and in the case of palm oil there is no associated output of meal.

Oil and meal content varies by oilseed as shown in Table 5. Thus, the availability of oils and meals varies as the mix of oilseed production changes over time. Soybeans, the dominant oilseed, have a high meal and low oil content. Groundnuts, rapeseed, and sunflowerseed have a high oil and relatively low meal content.

Oil and meal production will generally follow output of oilseeds, but there are differences in any one year due to changes in oilseed stocks and to oil and meal contents which are influenced by weather.

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World meal production increased at an average annual rate of 4.7 percent in the 1976-87 period, significantly faster than the rate of growth for oilseeds. Even if we net out production of corn gluten feed and meal, oilseed meal output grew at a 4.6 percent annual rate. Meals that experienced rapid annual growth rates were soybeans (4.6%), sunflowerseed (7.6%), rapeseed(9.8%), corn gluten meal and feed (6.6%) and palm kernel (8.6%). On the other hand, groundnut meal output increased at an annual rate of only 0.7 percent. Cottonseed meal production increased by 2.5 percent a year.

World vegetable oil production increased at an average annual rate of 4.8 percent in the 1976-87 period, about the same rate as that for meal. Oils which grew most rapidly are palm and palm kernel (8.8%), rapeseed (9.9%), and sunflowerseed (7.1%). As a consequence, these oils gained in relative importance. Soybean oil increased by 4.4 percent and groundnut oil by only 0.5 percent.

Table 3

World Meal Production

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
							mmt						
Soybean	41.98	41.98	49.53	53.04	58.95	57.30	59.90	60.26	57.29	60.69	62.85	68.50	67.52
Cottonseed	9.41	9.35	9.80	10.18	10.58	10.72	11.57	11.12	12.90	15.22	13.63	12.34	13.61
Groundnut	4.59	4.08	3.92	4.42	4.15	3.98	4.74	4.22	4.79	5.27	4.88	4.98	N.A.
Sunflowerseed	3.66	4.07	5.10	5.33	5.91	5.95	6.33	7.13	6.86	7.79	8.34	8.22	N.A.
Rapeseed	4.21	4.29	4.52	5.38	5.62	7.06	7.83	8.18	8.62	9.87	10.45	11.79	N.A.
Sesameseed	.55	.59	.61	.64	.61	.57	.67	.67	.69	.75	.79	.75	N.A.
Corn gluten meal	1.47	1.58	1.70	1.77	1.83	1.91	2.04	2.15	2.17	2.33	2.59	3.00	N.A.
Corn gluten feed	3.92	4.02	4.53	4.72	5.12	5.38	5.63	6.42	6.73	7.74	7.79	7.86	N.A.
Palm kernel	.51	.52	.53	.60	.68	.67	.81	.86	.94	1.09	1.27	1.27	N.A.
Copra	1.86	1.59	1.65	1.47	1.59	1.59	1.62	1.51	1.19	1.53	1.94	1.78	N.A.
Linseed	1.34	1.49	1.62	1.53	1.48	1.53	1.39	1.52	1.52	1.49	1.49	1.54	N.A.
Total	73.50	73.56	83.51	89.08	96.52	96.66	102.53	104.06	103.70	113.77	116.02	122.03	

Source: Oil World

Table 4

World Vegetable Oil Production

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
							mmt						
Soybean	9.63	9.65	11.24	12.06	13.38	13.13	13.39	13.64	13.28	13.96	14.33	15.52	15.40
Cottonseed	2.74	2.77	2.89	2.90	2.99	3.01	3.21	2.96	3.35	3.93	3.58	3.21	3.63
Groundnut	3.27	2.88	2.73	3.06	2.86	2.72	3.26	2.91	3.26	3.57	3.33	3.45	N.A.
Sunflowerseed	3.34	3.66	4.44	4.66	5.02	5.00	5.39	6.12	5.88	6.57	7.10	7.08	N.A.
Rapeseed	2.61	2.71	2.83	3.34	3.48	4.32	4.68	4.91	5.23	6.08	6.46	7.40	N.A.
Sesameseed	.46	.49	.50	.53	.50	.46	.54	.54	.55	.59	.63	.60	N.A.
Corn	.69	.72	.78	.82	.87	.90	.95	1.01	1.03	1.16	1.22	1.25	N.A.
Olive	1.70	1.56	1.75	1.69	1.70	1.84	1.64	1.91	1.65	1.80	1.83	1.74	N.A.
Palm	3.07	3.23	3.46	3.94	4.54	4.81	5.66	5.28	6.28	6.89	7.61	7.88	8.73
Palm kernel	.44	.45	.45	.51	.57	.55	.66	.70	.77	.88	.99	1.02	N.A.
Coconut	3.19	2.71	2.83	2.53	2.72	2.73	2.79	2.60	2.06	2.64	3.36	3.07	N.A.
Linseed	.69	.76	.84	.80	.76	.80	.72	.78	.78	.77	.77	.80	N.A.
Total	31.83	31.59	34.74	36.84	39.39	40.27	42.89	43.36	44.12	48.84	51.21	53.02	

Source: Oil World

Table 5

Oil and Meal Yields

	Oil	Meal
	--------percent--------	
Soybeans	17.9	78.8
Cottonseed	16.0	45.4
Groundnuts (shelled)	42.2	55.9
Sunflowerseed	40.0	55.0
Rapeseed	35.0	60.0

Factors Influencing Output

Many factors have been at work to influence the relative importance of different oilseeds and meal and oil output. Some of the more important ones particularly in more recent years, are market forces, national policies and technology.

Policies in the United States and especially since 1986 under the Food Security Act of 1985 have made production of major grains and cotton more attractive than oilseed production. As a consequence, soybean and sunflowerseed production declined and output shifted elsewhere in the world, particularly to Argentina and Brazil in the case of soybeans. The EC also adopted policies in the 1980's that favored oilseed production relative to grains. Production of rapeseed, sunflowerseed, and soybeans expanded rapidly under those policies. Finally, U.S. policies to support both sugar and alcohol prices helped stimulate sweetener and alcohol production based on corn and resulted in increased output of corn gluten meal and feed.

A combination of conducive (market oriented) policies and rapid advances in technology led to a major expansion in palm and palm kernel oil production in Malaysia and Indonesia. Because these countries are very efficient producers, output continues to expand even when world vegetable oil prices are low by historical standards.

The efficiency of palm oil production is illustrated in terms of production costs for major producers calculated by Tan Bock Thiam.[1/] His long-run and short-run cost estimates

1/ Tan Bock Thiam, Cost of Palm Oil Production in Major Producing Countries, 1987 International Oil Palm/Palm Oil Conference, Kuala Lumpur, Malaysia, 1987 are shown in Table 6. These costs do not include land, but do include capitalization of costs for land clearing, planting, and maintenance before trees begin to produce.

Malaysia, Indonesia, Thailand, and Cote D'Ivoire all have low long-run costs of producing crude palm oil relative to even the lowest world market prices experienced so far. Long-run costs range rom \$205-\$242/mt or 9.3¢-11.0¢/lb. Short-run costs, i.e., cash expenses, are even lower for these four countries in the \$116-\$143/mt or 5.3¢-6.5¢/lb. range. Moreover, the cost of harvesting and processing is so low -- about 2 cents per pound -- that world vegetable oil prices could never fall enough to cause fresh fruit bunches to be left unharvested.

Table 6

Cost Structure For Crude Palm Oil in Major Producing Countries

Item	Malaysia	Indonesia	Thailand	Cote D'Ivoire
	US\$/mt CPO			
Capital	61.7	125.6	81.4	88.7
	(30.1)	(51.9)	(35.5)	(40.0)
Fertilizer	51.0	53.5	53.8	26.1
	(24.9)	(22.1)	(23.5)	(11.8)
Labor	43.8	22.9	48.2	43.8
	(21.4)	(9.5)	(21.1)	(19.8)
Others	29.3	19.0	22.2	42.0
	(14.3)	(7.8)	(9.7)	(18.9)
Net processing	19.3	21.0	23.3	21.0
	(9.3)	(8.7)	(10.2)	(9.5)
Long-run cost	205.1	242.0	228.9	221.6
Short-run cost	143.3	116.4	147.5	132.9

* Numbers in parentheses are percentage shares of long-run costs.

The pressure from expanded palm oil supplies has resulted in oil prices declining relative to meal. This has favored output of high meal containing oilseeds except in situations where domestic policies work to offset these market forces. The world price situation for oilseeds, meals, and oils is discussed next.

Oilseed Complex Prices

World prices for the major oilseeds, meals, and oils are presented in Tables 7-9. While prices of oilseeds and products fluctuate over time as a result of changing supply-demand conditions, prices generally move together over time indicating a high degree of substitution among oilseeds, among meals, and among oils on a global basis.

The relative prices of oil and meal also vary over time depending on supply-demand conditions in the two markets. For example, meal prices were very low relative to oil in 1984 and 1985 because tight oil supplies that resulted from stagnation in world palm oil production generated high oil prices.

We also see differences at times among oilseed prices for reasons that are related to differing characteristics among oilseeds. When meal prices are high relative to oil, this favors prices of high meal-content seeds such as soybeans. When oil prices are high relative to meal, prices of high oil-content seeds such as rapeseed and sunflowerseed benefit.

Not all meals have the same protein content or protein quality. This can influence the relative prices of meals in years when protein content or quality are important.

In the case of oils, preferences for certain types of oil are pronounced in some countries for historic and cultural reasons. At times, these countires are willing to pay a significant price premium for the oils they prefer. For example, Egypt has a strong preference for cottonseed oil and is willing to pay a substantial price premium to get it.

As discussed earlier, groundnuts are different in that there is a large direct food use. Thus, in years of tight groundnut supplies, prices may be substantially above those for other oilseeds as food demand exerts a strong claim on available supplies.

Table 7

Oilseed Prices

	Soybeans, U.S. Rotterdam	Groundnuts Afr. Shelled, Eur.	Sunseeds c.i.f Rott.	Rapeseed c.i.f. N.W. Eur.
	$/mt			
1976	231	425	304	246
1977	280	543	299	312
1978	268	621	290	300
1979	298	565	329	312
1980	296	500	305	311
1981	288	636	320	299
1982	245	385	285	287
1983	282	395	299	319
1984	282	433	349	349
1985	224	361	274	287
1986	208	323	202	215
1987	216	276	203	169
1988	304	291	292	239

Source: Oil World

Table 8

Oilseed Meal Prices

	Soybean Meal U.S., 44%, Rott.	Cottonseed Meal China, 43%, U.K.	Groundnut Meal 48/50%, Arg. c.i.f. Rott.	Sunseed Meal 38% Arg. c.i.f Rott.	Rape Meal 34% ex. mill, Hmb
	$/mt				
1976	198	201	194	163	154
1977	230	205	232	175	169
1978	213	167	223	156	169
1979	243	190	229	183	187
1980	259	211	255	196	204
1981	253	216	256	205	200
1982	218	176	208	168	179
1983	238	188	229	166	180
1984	197	146	187	129	135
1985	157	98	147	89	98
1986	185	120	165	112	115
1987	203	145	162	125	108
1988	268	159	210	153	158

Source: Oil World

Table 9

Vegetable Oil Prices

	Soybean Oil Dutch, ex mill	Cottonseed Oil PBSY c.i.f Rott.	Groundnut Oil c.i.f. Rott.	Rape Oil Dutch ex mill	Palm Oil Malaysia N.W. Eur.
			$/mt		
1976	438	593	692	415	405
1977	575	622	846	584	530
1978	607	661	1,079	597	600
1979	662	798	889	636	654
1980	598	657	859	571	586
1981	507	649	1,043	483	571
1982	447	554	585	417	445
1983	527	695	711	499	502
1984	724	836	1,017	687	729
1985	572	710	905	540	501
1986	342	489	569	308	257
1987	334	497	500	305	343
1988	463	599	590	427	437

Source: Oil World

The relationship between oil and meal prices varies over time as shown in Table 10. Except for 1984 and 1985 when a temporary world vegetable oil shortage developed, oil prices have been declining relative to meal. The rapid expansion in palm oil production which does not have an associated meal output is one factor explaining the decline in oil prices relative to meal. Another is EC policies that have favored a rapid expansion in output of high oil-content oilseeds.

This trend has not been favorable for groundnut production since this oilseed has a relatively high oil content and produces a poorer quality meal compared to soybeans. Since production in excess of food use goes for crushing, meal and oil values determine the value of groundnuts for this use.

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Table 10

Relative Oil and Meal Prices

	Soybean Meal U.S., 44%, Rott.	Soybean Oil Dutch, ex mill	Oil/Meal Ratio
	---------------$/mt---------------		
1976	198	438	2.25
1977	230	575	2.50
1978	213	607	2.85
1979	243	662	2.72
1980	259	598	2.31
1981	253	507	2.00
1982	218	447	2.05
1983	238	527	2.21
1984	197	724	3.68
1985	157	572	3.64
1986	185	342	1.85
1987	203	334	1.65
1988	268	463	1.73

World Groundnut Situation

Groundnuts are produced in a large number of countries (Table 11). India, China, and the United States are the largest producers and these three countries combined accounted for 65 percent of world output in the 1986/87-1988/89 period. Groundnuts are also produced in many African countries. Senegal, Nigeria, and Sudan are among the largest producers in this region of the world.

Crushings account for about 60 percent of groundnut use (Table 12). This use appears to be sensitive to the absolute level of oil prices and the relationship of oil and meal prices. One can see that crushings increased significantly relative to other uses in 1984 and 1985 when oil prices were high relative to meal.

Table 11

Groundnut Production

	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89
	1,000 mt												
Nigeria	350	210	315	378	473	293	277	414	435	420	400	475	390
Senegal	858	368	753	480	371	619	713	363	484	417	598	684	500
Sudan	517	715	563	596	495	505	348	289	270	192	265	304	290
U.S.	1,272	1,264	1,345	1,350	783	1,355	1,170	1,121	1,499	1,260	1,259	1,231	1,365
Argentina	420	260	485	236	242	229	165	230	200	307	363	260	160
Brazil	215	218	310	360	238	213	190	167	227	145	131	114	100
China	1,311	1,385	1,664	1,975	2,520	2,678	2,741	2,766	2,370	4,665	4,117	4,225	4,000
India	3,685	4,261	4,346	4,038	3,504	5,056	3,698	4,960	4,505	3,585	4,113	3,971	5,300
Others	2,942	3,049	3,013	2,843	2,992	3,049	2,934	2,904	2,999	3,361	3,595	3,742	3,848
Total	11,570	11,730	12,794	12,256	11,618	13,997	12,236	13,214	13,989	14,352	14,841	15,006	15,953

Source: Oil World

Table 12

Groundnut Utilization

	Crushing	Other Uses	Crush as Percent of Total Use
	----------mmt----------		percent
1976	8.00	4.76	62.7
1977	7.08	4.48	61.2
1978	6.80	4.93	58.0
1979	7.64	5.18	59.6
1980	7.16	5.05	58.6
1981	6.85	4.75	59.1
1982	8.16	5.85	58.2
1983	7.27	4.96	59.4
1984	8.23	4.96	62.4
1985	9.02	4.94	64.6
1986	8.39	5.84	59.0
1987	8.60	6.17	58.2
1988	8.92	N.A.	N.A.

Source: Oil World

Groundnut meal sells at a discount to soybean meal, illustrating that the former has inferior quality compared to the latter (Table 13). Furthermore, this discount has been increasing in the 1980's. The EC has been a major market for groundnut meal, but groundnut meal in this market has been under increasing competitive pressure from expanded supplies of sunflowerseed and rapeseed meals produced from rapidly expanding output of these oilseeds in the EC.

Groundnut oil has preferred qualities, e.g., favorable taste and it can be heated to high temperatures without smoking. The EC has been a major market for world-traded groundnut oil and oil produced from imported groundnuts. As can be seen in Table 13, groundnut oil has sold at a significant premium to soybean oil in the EC. But the rapid expansion in EC production of sunflowerseed and suflowerseed oil, which has similar characteristics to groundnut oil, has resulted in a decline in EC groundnut oil imports in the 1980's. 2/ These developments in the EC will not only limit the size of the market for world-traded groundnut oil, but it may also limit the premium which this oil can command relative to other oils.

2/ Price Prospects for Major Primary Commodities, 1988-2000, World Bank, 1989.

Table 13

Relationships of Groundnut Meal and Oil to Soybean Meal and Oil Prices

	Groundnut/Soybean Meal	Groundnut/Soybean Oil
	percent	
1976	98	158
1977	101	147
1978	105	178
1979	94	134
1980	98	144
1981	101	206
1982	95	131
1983	96	135
1984	95	140
1985	94	158
1986	89	166
1987	80	150
1988	78	127

* Based on prices in Tables 9 and 10.

As we look ahead, the outlook for international trade in groundnuts and groundnut meal and oil does not appear to be promising relative to other oilseeds and products. First, world oil prices are likely to remain weak relative to meals, especially in view of the continued expansion of palm oil. For example, the World Bank projects world palm oil production to increase between 1987 and 1995 by nearly 5.6 mmt or by 72 percent. Production in Malaysia and Indonesia is expected to increase by 5.1 mmt over this same period or by 86 percent indicating that these two countries will continue to increase their share of world output.[3/] Since groundnuts have a high oil content, they are not likely to fare well relative to other oilseeds and products except in countires that provide support to groundnut prices, e.g., the United States.

Second, the EC-- the major market for world-traded groundnuts and products--is likely to continue to support domestic oilseed production and this will limit the markets for groundnuts and products.

3/ Ibid

The future of groundnut production in countries that depend heavily on exports will, therefore, depend heavily on the extent to which they follow both competitive pricing policies and are able to increase yields and productivity relative to countries producing competing oilseeds, meals and oils.

Price Outlook for Groundnuts

The price outlook for groundnuts and other oilseeds and products to 1995 is shown in Table 14. We have presented both the World Bank's and our own projections. In general, our projections are below those of the World Bank.

In the case of oilseeds and products, we expect prices to increase from the levels realized in the 1986/88 period. Oil prices will remain low relative to meal for the reasosn discussed above. And, we expect groundnut meal and oil prices to be near their recent levels relative to other major competitive meals and oils.

Table 14

Projected Nominal Prices of Oilseeds and Products, European Location

	1986-88 Average	1995 World Bank	1995 Abel, Daft & Earley
Soybeans	243	358	275
Groundnuts, shelled	297	500*	400
Soybean Meal	219	266	250
Groundnut Meal	179	233	210
Soybean Oil	380	850	515
Palm Oil	346	592	505
Groundnut Oil	553	957	745

* Inferred from product values.

There are four main reasons why our projected prices are generally below the World Bank's. First, the USSR increased imports of oilseeds, vegetable oils, and meals very rapidly in recent years as part of that government's policies to increase food supplies. While the

USSR may continue to increase imports, the rate of growth will be significantly slower than in the recent past and this will temper growth in world oilseed and product consumption and trade.

Second, we expect the world economy to grow more slowly than it has in recent years and this too will exert less demand pressure in the future.

Third, U.S. agricultural policies under the Food Security Act of 1985 have discouraged oilseed production relative to grains and cotton. This occurred because government payments to grain and cotton producers but not to oilseed producers made oilseed production less attractive relative to other major crops. At the same time these policies resulted in world oilseed prices being very high relative to grain and cotton prices by historic standards. These policies also resulted in the United States losing world market share for oilseeds and products while it gained in its share of world grain trade. For example, soybean area has declined in the United States while it has increased rapidly in Argentina and Brazil.

We expect future U.S. agricultural policies to redress to some extent the imbalances created by the Food Security Act of 1985. A move in this direction would help re-establish a more normal balance between production of oilseeds and other major crops. It will also result in a decline in oilseed product prices relative to grains and cotton in world markets toward a more normal historic relationship.

Finally, the United States still has excess production capacity in the sense that land is being idled under crop programs providing price supports and payments (grains and cotton). It is, therefore, in a position to expand production in response to higher world mrket prices. If production controls are relaxed on grains and cotton, this will also lead to some increase in oilseed plantings since farmers will have more total area to plant and will try to maintain a planting balance among crops for agronomic reasons.

For purposes of this study, we use our own projected prices for groundnuts as the most likely outcome for 1995 and as being the mid-point of likely price ranges. Variations of 25 percent above and below the average price in the 1976-88 period encompass most prices realized during this period (see Table 7) and we use this same degree of price variation to determine possible high and low prices about the level projected for 1995. The results are shwon in Table 15.

Table 15

Projected Groundnut Prices, Europe

	$/mt
1976-88 Average	443
Projected	
High	500
Mid-point	400
Low	300

7/19.

Country Policy Appendix
Zimbabwe

I. Background

A. General development strategy

Zimbabwe has since independence maintained a commitment to socialist development under President Robert Mugabe. This commitment, however, has coincided with the maintenance of private sector dominance in much of industry and commercial agriculture. (ATAD)

Zimbabwe's agricultural development objectives have been identified in three government planning documents: Growth with Equity (Government of Zimbabwe, 1981), the Transitional Development Plan (Government of Zimbabwe, 1982) and the First Five Year National Development Plan (Government of Zimbabwe, 1986). The major agricultural development goals were:

- fair distribution of land ownership
- poverty reduction
- increased land and labor productivity
- increased employment
- promotion of agriculture's ability to earn generate foreign exchange and industrial inputs
- integration of the peasant and commercial sectors
- promotion of regional balance
- conservation
- human resource development (Rohrbach)

These were to be persuaded through land reform, expansion of agricultural services (credit, marketing research, and extension), pricing policies geared toward the production of exports and industrial inputs, resettlement, better use of underutilized land, promotion of cooperatives and small-scale industry, and research on alternative production systems (eg. semi-arid land crops including finger and bullrush millet, edible dry beans and sunflower). (Rohrbach)

Progress was made in each of these areas, although sometimes less than anticipated. Resettlement lagged. Parastatal credit facilities were dramatically expanded, extension worker to farmer ratios were reduced, the parastatal market system was expanded with the establishment of new depots and collection points, research efforts were expanded for semi-arid crops, and infrastructural investment was made in rural growth

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points. The formation of farmer groups and cooperatives were encouraged. (Rohrbach)

B. Demographic/geographic features

Zimbabwe, a country of 8 million people, has a high population growth rate (3%), which exacerbates land scarcity, and threatens to outstrip gains in agricultural productivity. (ATAD)

C. Crop production

Zimbabwe's varied ecological conditions permit a wide range of crops to be grown--included irrigated wheat. About 3/4 of the country (the west and south) are dry and best suited to extensive cattle raising. (ATAD)

II. Economic Performance

A. GDP/capita

Zimbabwe's per capita GDP (circa 1985) was over $700, the third highest of non-oil exporting countries in Sub-Saharan Africa. Manufacturing is the largest economic sector, providing 25% of GDP (higher than agriculture at 15%). Manufacturing is highly diversified and mostly foreign owned. (ATAD)

However, GDP growth averaged only 2.6% per year between 1980-86, less than population growth. Two droughts and global recession constrained growth, but domestic policies and macroeconomic constraints also weakened performance. (See MACRO Spreadsheet and GDP graph)

B. Agricultural performance

Zimbabwe's agricultural sector has performed well by Sub-Saharan African standards. The sector produces a diversified mix of crops, the most important including beef, milk, corn, wheat, cotton, soybeans, groundnuts and tobacco. Corn is the leading food crop, and Zimbabwe is generally an exporter. Aggregate cereal production grew about 1.5% (up to about 1985), but was outstripped by a 3% increase in population, leading to growing, but still small, cereal imports. (ATAD)

1. Production

Grain production has performed well historically, and has been one of the successes of the post

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independence period. (See TOTAL GRAINS spreadsheet) The rapid expansion of corn production and marketing, much of it by communal farmers, was a major feature of Zimbabwean agriculture in the early to mid 1980's. Strong producer prices, coupled with an emphasis on improved services to communal areas, were the major reasons for growth.

Cotton was targeted for production increases in the 5 year plan, with a target of 3.5 million tons by 1990. The main expansion is expected to occur on communal, small scale and state farms. (ZAS, 1987)

Cotton output set records in 1984 and 1985--with communal farmers accounting for much of this growth. (ATAD) The expansion of cotton production, however, has already (1985) over-extended ginning capacity and new infrastructure development is required. (ZAS, 1986) Production fell in 1986 when cotton was temporarily classed as an agro-industrial crop, with significant higher wages. This was later rescinded, but plantings had already declined 4%. (ZAS, 1987) Cotton production was strong in 1987, even with drought. In 1987 48% of the crop was produced by commercial farmers and 52% by the communal sector. (ZAS, 1988)

Zimbabwe's coffee production is expanding is at the 11-14 million ton level (earning Z$70 in foreign exchange circa 1986). Growers have been urged to begin growing Robusta to meet expanding overseas markets. (ZAS, 1987) Zimbabwe coffee commands a premium on world markets because of its superior quality and good handling. (ZAS, 1989)

2. Sector income/share of GDP

Agriculture (circa 1985) accounts for about 15% of GDP. Agriculture, fisheries and forestry employ about 1/3 of the workforce. (ATAD)

C. Trade Performance

1. Balance of trade/payments

Zimbabwe has not experienced the serious balance of trade deficits recorded by many other African countries. In part, this reflects their pre-independence legacy, as well as tight control of imports in recent years. (See MACRO spreadsheet and

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TRADE graph)

For five years (1982-7), Zimbabwe has shown a balance of trade surplus. The surplus has been achieved mainly be contracting imports (by an average of 3%/year), coupled with modest (1%/year) real export growth. The country faces serious balance of payments problems, however, because of large outflow on the capital account, mainly for dept repayment and remittance of profits and dividends. (ZAS, 1988)

Zimbabwe has increased its trade surplus (expected for 1988/9) by keeping foreign currency allocations below export levels regardless of the impact on the economy as a whole. (ZAS, 1988)

2. Agricultural trade

Imports (concessional and food aid)

Wheat is Zimbabwe's only significant agricultural import. (ATAD) Food imports account for about 2.5% of total imports. Zimbabwe has avoided major food imports even during periods of drought. (See FOOD IMPORTS graph)

Exports

Agricultural exports account for about 40% of export earnings. (ATAD)

Zimbabwe produces a range of agricultural exports. Flue-cured tobacco is the country's leading export. Cotton is a major export, and commands premium prices in European markets as a result of hand picking and good quality. Other significant exports include sugar, coffee and tea. (ATAD)

Cotton exports were of lower quality in 1985, and this combined with some pressure from lower international prices, threatens the traditional surplus on the cotton trading account. (ZAS, 1986)

Agricultural exports showed good performance--despite drought--in 1985, with tobacco and cotton lint accounting for 70% of total agricultural exports. Zimbabwe has been in a position to export maize as well, but has had difficulty finding profitable export markets given its high internal prices. (ZAS, 1986)

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Zimbabwe had exported vegetable oil and fats, but in recent years, production has been inadequate to meet local demand for vegetable oils and exports have essentially ended. Groundnut exports were reportedly being lost due to inadequate supplies in 1985 (ZAS, 1986) but exports increased significantly (171% from a very small base) in response to producer price increases which brought prices closer to international market levels. (ZAS, 1988)

D. External Debt/Reserves

Zimbabwe has experienced a rapid growth in its external debt since 1977. Total external debt was $1.7 billion in 1986. (See MACRO spreadsheet and DEBT graph) The debt service ratio has been high since 1983. (See DEBT SERVICE graph)

Debt repayments, accounting for somewhere around 25% of export earnings, have placed a serious strain on Zimbabwe's balance of payments account. Debt repayments increased 33% between 1985 and 1986 ($Z491.2 million in 1985, $Z650 in 1986). (ZAS, 1988)

III. Policy Environment

A. Policy Legacy

1. Macroeconomic

a. Exchange rates

Zimbabwe's currency shows significant overvaluation during the 1970's and 1980's. (See EXCHANGE RATE spreadsheet) The government has since undertaken a series of devaluations designed to support its balance of trade.

Foreign exchange control restrictions were implemented in March, 1984 but lifted in May, 1985 following an improvement in the balance of payments situation. Dividend and profit remitability were restored in 1985, and funds were to be released from January, 1986. (ZAS, 1986)

b. Domestic macro

The government establishes minimum wages. Changes in minimum wages established in July, 1985 changed the categories of agricultural labor, and set new wage levels. The original proposal had been to extend the agro-industrial wage to workers on farms where any form of industrial process would take place, with the notable exception of tobacco. This effectively doubled the minimum wage, and was modified after intense debate. Hence, as of November, 1985, the agricultural sector has a three tiered wage structure: those workers not growing plantation crops or in agro-industrial undertakings (Z$75/month); workers involved in growing timber, tea, sugar cane, coffee, citrus, and fruit trees become plantation workers and are entitled to Z$85/month when working on these crops; workers on farms with processing plants are entitled to Z$110/month. (ZAS, 1986) Minimum wages were raised again in 1986, to $Z85 for agricultural laborers and $Z143 for agroindustrial employees. (ZAS, 1987) and in 1988 to Z$100 for agricultural laborers and $Z165.31 for agroindustrial employees. (ZAS, 1988)

After several years of price and wage increases, the government introduced a wage/price freeze in June, 1987, which remained in effect until March, 1988. The objective of the freeze was apparently to limit the budget deficit which would have resulted if the public sector received wage increases, to prevent the public sector retrenchment which would have been needed to increase wages and maintain budgetary control (ZAS, 1988) and to contain inflation (appears to have been held to 8% with the freeze in effect), but inflationary pressure resumed when the freeze was lifted. Price increases more than 5% require government approval. (ZAS, 1989)

The analysis of real wages suggests that they have fallen. The USDA Ag Attache estimates that the real average non-agricultural wage is now below that at independence. For low income families, the estimated cost of living increase for 1987 was 8%, compared with 10% for higher income families. (ZAS, 1988)

Zimbabwe faces a serious budget deficit, which increased 15% between 1984/5 and 1985/6. Land/agriculture/resettlement accounted for about 8% of the budget (1986), but contracted in real terms. Agricultural subsidies remained

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large (Z$155 million) but declined in real terms. (ZAS, 1986)

Zimbabwe has experienced increasing inflation, up from a low of about 8% (1985) to 15% by mid 1986. The increased inflation reflects both increases in food and fuel associated with subsidy removal, and higher import costs due to $Z depreciation and foreign exchange shortages. (ZAS, 1987).

2. Agricultural Sector

The Zimbabwean government has intervened significantly in the agricultural sector, setting producer prices for a wide range of controlled crops, marketing them through parastatal marketing boards (grains, cotton and dairy) and controlling retail prices. (ATAD)

a. Institutions

The Ministry of Agriculture's agricultural marketing authority (AMA) coordinates (circa 1985) operations of the grain, cotton and dairy marketing boards and the cold storage commission. The AMA's mandate is to promote efficient marketing of all controlled or regulated agricultural commodities and to advise the ministry of agriculture on commodity prices, including market guarantees and subsidies. (ATAD)

The grain marketing board markets and stores corn, as well as overseeing capital improvement for bulk handling and storage facilities. (ATAD) The grain marketing board also appears to handle deliveries of oilseeds. (ZAS, 1986)

The GMB is the sole legal trader of maize in most of the commercial farming areas, and the residual purchaser in the remainder of the country, including the communal farming areas. Free local trade in maize is permitted outside the commercial farming areas. The GMB is responsible for handling, storage and disposal of maize, and the management of imports and exports. It does not process maize, but sells it to private sector millers at a government controlled price. Farmers can deliver maize directly to GMB depots, or sell through a local cooperative or "approved buyer" who charge a

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fee for transporting it to GMB. GMB buys at a standard price (pan territorial, no seasonal variation) and so bears most storage risks/costs.
Studies indicate that the GMB could significantly improve the distribution of maize and the welfare of both producers and consumers by relaxing controls on internal maize trading. (Child cited in Blackie)

The cold storage commission (CSC) appears to handle slaughter bookings of beef. (ZAS, 1986) It also provides credit to producers. (Blackie) There is a "semi-legal" free market in beef, and during 1986 many producers diverted their production to this market, reducing the cold storage commission's share of total sales from 97% to 75%. In January, 1987 measures were introduced to give CSC a virtual monopoly on the supply of beef to urban areas. Under the new rules no one can sell, distribute or deliver a carcass to 19 urban abattoirs without a CSC roller mark. (ZAS, 1987)

The dairy marketing board (DMB) handles milk marketing. In 1985 it faced a surplus of milk; retail prices would need to rise significantly for DMB to reduce its deficit. (ZAS, 1986) The DMB accumulated deficit (1986) was $Z46 million, the result of price controls in the face of rising costs.
Growing surpluses resulted in the DMB asking producers to make voluntary production cuts in 1987. (ZAS, 1987)

The cotton marketing board (CMB) has wideranging responsibilities including: (1) insuring an adequate supply of certified seed for planting; (2) purchasing and storing all seed cotton produced; (3) ginning and (4) marketing the lint and cottonseed. The CMB controls a variety of aspects of cotton production. All producers must register with CMB, and large producers must adhere to a delivery quota system to facilitate orderly ginnery throughput. Grading standards are established, and crop and other information is obtained from growers and the trade. CMB controls the varieties of cotton which can be planted. Under the Seeds Act, it is a certifying agent for the seed certification scheme. It also acts for the government of

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Zimbabwe in the collection of statutory levies from growers.
The CMB operates through a single broker, the privately owned Zimbabwe Cotton Corporation (ZCC), which is an integral part of the Zimbabwe cotton industry. ZCC and CMB have developed a unique quality control system to insure that one quality of seed cotton is ginned at one time to produce a lint of known and uniform specification, which is used to produce high quality yarn. The entire production/marketing/extension system is geared to meet the requirements of this specialty market. (Blackie)

The CMB "provides a valuable model" for state intervention in the marketing system. (Blackie) Producers are represented on the CMB. They run their own training center, serving large and small farmers. CMB assures the efficient flow of harvested cotton from producer to the spinning mill by controlling the key points in the marketing system and coordinating the activities of the other agencies involved in production and disposal. Through its monopoly as certified seed purchaser and lint seller, it assures seed and product quality. It is involved in setting Ministry of Agriculture research priorities for cotton, and runs its own extension system. The implementation of the grading and quality control system, as well as the selling of cotton lint to overseas buyers, is contracted to private industry (ZCC). (Blackie)

The CMB, which had traditionally been profitable, showed losses in 1986 and again in 1987, when export prices improved. The major reason for the losses is that the government-set price domestic selling price of lint is substantially below the export price. (ZAS, 1988) Export performance gained, but losses on domestic sales continued through 1988. (ZAS, 1989)

The ministry of trade and commerce recommends consumer setting prices with the primary concern of keeping consumer prices low. (ATAD)

Government subsidies to commodity marketing boards have been large, and remained large in 1986 ($Z140 million). Corn, beef and dairy

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accounted for most of the losses, although the cotton marketing board also registered a $Z 14 million loss in 1986. (ZAS, 1986)

b. Prices

The government sets most producer prices and controls many retail prices. Price intervention has been reasonably efficient and successful, although government outlays are large. During the first half of the 1980's, outlays on consumer food subsidies rose from Z$26 million (1979-80) to Z$126 in 1982-3, before subsidies were reduced to Z$65 million in 1983-4. (ATAD)

During 1986 and 1987, the government significantly increased prices for a range of subsidized goods, including electricity (42%), selected consumer goods such as tobacco, drinks, and textiles, and food. Corn meal (14%) beef, bread (14%) and milk (32%) prices were increased significantly. The price increase for corn meal effectively eliminated the consumer subsidy on this staple. Retail milk prices are scheduled to rise 8-17% over the next 4 years to remove the deficit of the DMB. (ZAS, 1987)

The general aim of Zimbabwe's producer pricing policy is to set prices at levels calculated to make Zimbabwe self-sufficient in basic foodstuffs, to balance supplies of different commodities and to encourage production of potential export crops. (ZAS, 1986)

The government has subsidized (though higher than world market producer prices) production of beef, corn, wheat and soybeans in various years. It has taxed (though lower than world market prices) the production of milk, wheat, cotton, soybeans and groundnuts. Program costs for producer price support operations also increased, but less than outlays for consumer subsidies. (ATAD)

The government is now (1986) firmly committed to not announcing pre-planting prices except in exceptional circumstances. Post-plant prices are believed to be a more effective lever for influencing deliveries to marketing boards. (ZAS, 1986)

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Price policy on oilseeds appears to have contributed to large stockpiles of cottonseed meal, with high prices and reduced stock level the major factors. (ZAS, 1986)

Beef exports have tended to be profitable, but the domestic market is subsidized, with average wholesale prices significantly (9-24% for various years) below established producer prices. (ZAS, 1986)

By 1987, as stocks of maize increased, the government imposed a standsill on maize prices, and announced measures to limit corn production. Large scale commercial farmers were permitted to sell up to 50% of their 1986 deliveries at $Z180/ton, with the remainder to be sold at $Z100/ton. Small scale commercial farmers who sold less than 1,000 tons in 1986 received the full producer price on their sales. There were no restrictions on sales from communal farmers.

c. Inputs

Combined short term lending to the agricultural sector rose 94% between 1981-84, with the share of the agricultural finance corporation (AFC) increasing from 36% to 41%. The main area of expansion has been in AFC's program of lending to the communal sector. (ZAS, 1986) Over time, lending to the agricultural sector appears to be becoming more "dualistic", with lending to large scale commercial farms coming primarily from commercial lenders, and AFC lending increasingly focused on small scale, communal and resettlement farmers. (ZAS, 1987)

A national farm irrigation fund administered for government my AFC was initiated in April, 1985 to promote winter wheat growing. The fund offers loans at 9.75 for first 10 years, AFC rates thereafter. Commercial farmers must plant winter wheat to qualify; small holders not. Strong response from the commercial sector--only one applicant from the communal sector. (ZAS, 1986) The fund appears to have been successful in increasing water availability for domestic wheat production, and had led to significant increases in domestic wheat production. (ZAS, 1989)

The government apparently sets fertilizer prices, and does so by increasing prices significantly every few years. Hence, after no increase from 1985 to 1988, the prices rose 17-22% for super and phosphate fertilizers, but only 2% for nitrate and urea. Farmers reportedly find the periodic large increases disruptive and would prefer small annual changes, but have been unsuccessful in achieving any change. (ZAS, 1989)

e. Land/land tenure

Zimbabwe has a modern commercial agricultural sector dominated by less than 5,000 predominately white farmers. The farms, occupying some of the country's best agricultural land, follow modern farming practices. They are capital intensive, efficient and productive. Commercial agriculture employs more labor than any other sector of the economy, although employment has fallen in recent years. (ATAD)

The communal sector, comprised of some 700,000 African farm families, is organized into smaller plots, farmed primarily through traditional methods. Because men frequently migrate to the cities or mines, women work a substantial portion of the communal farms. (ATAD)

Zimbabwe also has an assortment of other farming arrangements, including some large commercial estates (tobacco, sugar), state-run settlement schemes and a small-scale commercial sector of some 8,000 farmers. (ATAD)

The government's policy has been to attempt to preserve the productivity of the commercial sector, while enhancing the performance of communal agriculture and narrowing the income gap between the two sectors. Land redistribution was to be the major vehicle for achieving this objective. A program for resettling over 160,000 families on land purchases from the commercial sector was planned. Although resettlement schemes include options for cooperative farming, communal living and central core estates providing farm services, the most common is for individual land allocations, communal grazing areas and village settlements. Expected income targets, credit and extension services are also provided. (ATAD)

Land policy remains a critical issue. By mid-1985 resettlement plans were well short of target, with less than 40,000 families resettled. Drought and lack of ancillary services led some settlers to vacate their allotted land. Land acquisition for resettlement has been adequate (in fact ahead of schedule); resettlement implementation has been the major problem. The amalgamation of the ministries of agriculture and lands, resettlement and rural development under the control of the former minister of lands (Moven Manachi) highlights government concern over the land resettlement program. (ZAS, 1986)

f. Marketing

The government plays a major role in marketing through parastatal marketing boards. The Ministry of Agriculture's agricultural marketing authority (AMA) coordinates (circa 1985) operations of the grain, cotton and dairy marketing boards and the cold storage commission. The AMA's mandate is to promote efficient marketing of all controlled or regulated agricultural commodities and to advise the ministry of agriculture on commodity prices, including market guarantees and subsidies.

Corn activities account for the major portion of the grain marketing board's activities. The grain marketing board also oversees capital improvement for bulk handling and storage facilities.

There have been significant increased in communal marketing of agricultural produce--especially cotton and maize--since independence. By 1985, communal farmers accounted for 40-45% of the marketed output of these crops. The increase can be attributed to the post-independence government's priority on developing agricultural and service infrastructure in communal farming areas, producer price incentives and an end to transportation disruptions caused by the war. (ZAS, 1986)

3. Inter-sectoral Biases

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4. Trade

A bill providing for the creation of a state trading corporation (STC) to act on behalf of the government to conduct import and export trade was gazetted in 1986. (ZAS, 1987)

Imports.
Foreign exchange allocations for agriculture (and other sectors?) are controlled by the Ministry of Commerce and Trade. The new (1985) Minister of Agriculture, Lands and Resettlement has indicated that he would support a more to place foreign currency allocations for agricultural imports under his ministry. (ZAS, 1986)

Exports.

The government began an Export Promotion Program (EPP) in 1987. Suppliers of inputs to agricultural industry are allocated foreign exchange through this program. Very little foreign exchange is directly allocated to the agricultural sector. Funds were used to import vehicles, spare parts and other essential commodities for agriculture, and have gone some way to stabilize the deterioration in farm equipment. (ZAS, 1989)

B. Policy Reform Initiatives

1. WB

2. IMF

Zimbabwe had an IMF program in the early 1980's. (ATAD)

3. USAID

Zimbabwe had $5 million in DFA funding in FY 1988, with an estimated $5 million for 1989 and $5 million requested for 1990. (AID/CP)

III. Constraints/Distortions

1. Policy-based

Internal factors weakening economic performance include macroeconomic constraints related to the structure of the economy, fiscal and monetary policy, investment policy, and microeconomic policies that have constrained household level

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production and income. The economy is plagued by low investment and declining foreign exchange availability, which stifles economic growth and constrains employment creation. The dualistic structure of the agricultural sector constrains the productivity of the communal sector, and compounded the effects of drought on these producers. (AID/CP)

2. Other

a. Infrastructure

Transportation disruptions due to conflict in Southern Africa are a major constraint.

Bulk handling and storage facilities are more adequate than in most Sub-Saharan African countries.

b. Physical

c.

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Macro Format Zimbabwe

Year	GDP current (local) millions	Imp. GDP deflator	real GDP (local) millions	real GDP ($) millions	CPI	exchange official (local/$)	exchange unofficial (local/$)	Merch. Exports	Merch. Imports	BOT	Net Services	Net Transfers	Current Account	Food Imp.	Ag. Imp.	Foreign Exchange Reserve	Total Outstanding Debt	Total Debt Service	Food as % of Total Imports	Debt Service Ratio	Tobacco	Gol[illegible]
								------	------	$US Million	------	------	------	------								
1966	733	37.8	1,939	2,716	46.6	0.71	0.40	280.0	273.0	7.0	NA	NA	NA	22.8	28.0	64.9	NA	NA	8.4%	NA	21.6	[illegible]
1967	794	38.4	2,068	2,896	46.6	0.71	0.39	272.0	301.0	(29.0)	NA	NA	NA	NA	NA	58.6	NA	NA	NA	NA	NA	9.
1968	862	39.6	2,152	3,013	47.3	0.71	0.41	263.0	333.0	(70.0)	NA	NA	NA	NA	NA	3.6	NA	NA	NA	NA	NA	22.
1969	977	40.9	2,389	3,346	47.5	0.71	0.41	325.0	321.0	4.0	NA	NA	NA	NA	NA	27.9	NA	NA	NA	NA	NA	16.
1970	1,080	42.5	2,541	3,569	48.4	0.71	0.96	370.0	378.0	(8.0)	NA	NA	NA	NA	NA	20.3	NA	NA	NA	NA	NA	10.
1971	1,244	43.7	2,847	3,987	49.9	0.71	1.05	404.0	456.0	(52.0)	NA	NA	NA	NA	NA	6.1	NA	NA	NA	NA	NA	[illegible]
1972	1,419	46.4	3,126	4,610	51.3	0.68	0.87	516.0	479.0	37.0	NA	NA	NA	NA	NA	61.3	NA	NA	NA	NA	NA	[illegible]
1973	1,563	51.7	3,004	5,135	52.9	0.59	0.74	687.0	605.0	82.0	NA	NA	NA	NA	NA	124.7	220.7	16.5	NA	2.4%	NA	8.
1974	1,861	56.0	3,323	5,903	56.4	0.56	0.78	867.0	868.0	(1.0)	NA	NA	NA	NA	26.8	70.8	220.5	15.1	NA	1.7%	NA	75.
1975	1,998	62.7	3,187	5,711	62.1	0.56	0.79	927.0	927.0	0.0	NA	NA	NA	26.0	31.5	80.0	189.8	8.3	2.8%	0.9%	122.5	81.
1976	2,166	68.1	3,181	5,081	68.9	0.63	1.67	974.0	703.0	271.0	NA	NA	NA	12.0	18.1	76.6	144.6	7.5	1.7%	0.8%	131.0	55.
1977	2,198	76.6	2,869	4,568	76.0	0.63	2.04	901.0	671.3	229.7	(228.4)	(15.3)	(14.0)	10.8	16.9	72.6	153.8	6.1	1.6%	0.7%	118.6	72.7
1978	2,361	78.1	3,023	4,463	80.3	0.68	1.56	923.2	654.2	269.0	(214.4)	(17.4)	37.2	7.2	11.5	148.0	418.1	8.5	1.1%	0.9%	151.3	
979	2,825	91.6	3,084	4,536	94.9	0.68	1.43	1,079.6	875.0	204.6	(257.4)	(55.9)	(108.7)	14.7	17.8	298.9	523.9	14.8	1.7%	1.4%	125.7	
[illegible]	3,443	100.0	3,443	5,368	100.0	0.64	1.07	1,446.5	1,339.0	106.5	(287.4)	(62.9)	(243.8)	44.9	61.9	213.5	697.1	44.1	3.4%	3.1%	191.2	
[illegible]	4,433	111.1	3,990	5,779	113.9	0.69	1.19	1,461.4	1,534.0	(82.6)	(519.6)	(33.7)	(636.9)	25.4	44.7	169.5	793.2	70.2	1.7%	4.8%	324.9	
982	5,160	126.4	4,081	5,389	128.4	0.76	1.20	1,312.1	1,472.0	(159.9)	(466.4)	(82.8)	(709.1)	17.3	33.0	140.4	1,182.3	139.6	1.2%	10.6%	257.1	
983	6,132	[illegible].3	4,251	4,206	156.1	1.01	2.40	1,153.7	1,069.6	84.1	(471.0)	(73.3)	([illegible]0.2)	26.4	41.1	75.4	1,538.6	440.7	2.5%	38.2%	230.2	
[illegible]	6,696	163.0	4,108	3,301	183.4	1.24	NA	1,173.6	989.3	184.3	(333.9)	49.7	(99.9)	40.3	88.9	46.4	1,412.2	271.5	NA	23.1%	230.9	
	8,099	181.9	4,462	2,762	202.7	1.61		1,119.6	918.9	200.7	(295.9)	19.6	(75.6)	14.5		93.4	1,545.1	307.1		27.4%	227.0	
[illegible]	9,129	204.6	4,461	2,679	231.5	1.67		1,326.0	1,011.1	314.9	(292.4)	30.9	53.4			106.4	1,711.6	338.6		25.5%	254.7	
987										0.0			0.0					403.5				
	66-84: IFS82-86:IMF Aug 86 82-86:IMF 8/14/87 CSO-Central Statistical Office (of Zimbabwe				66-80 IBRD IFS	66-81 IBRD IFS	(Pick's)	66-86: IFS			IFS	IFS		Cntry Trade Books fd/animals oilseeds f veg oils proc. oils	74-82 Ag Devel	IFS (IFS- foreign exchange)	66-86 IBRD Debt tables	66-87 IBRD Debt tables				IFS CSO for 1966

Source: Economic Research Service, U.S. Department of Agriculture

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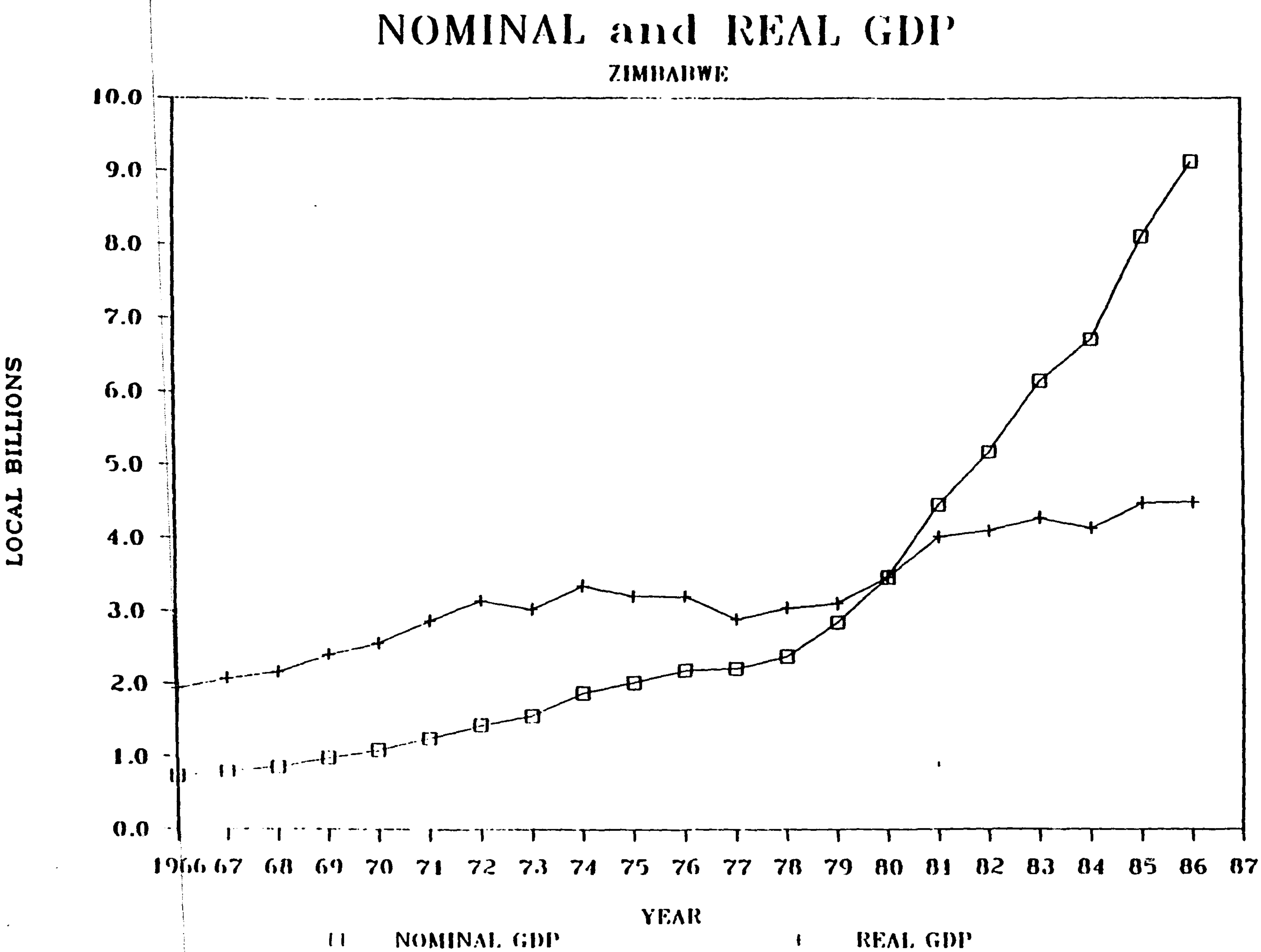
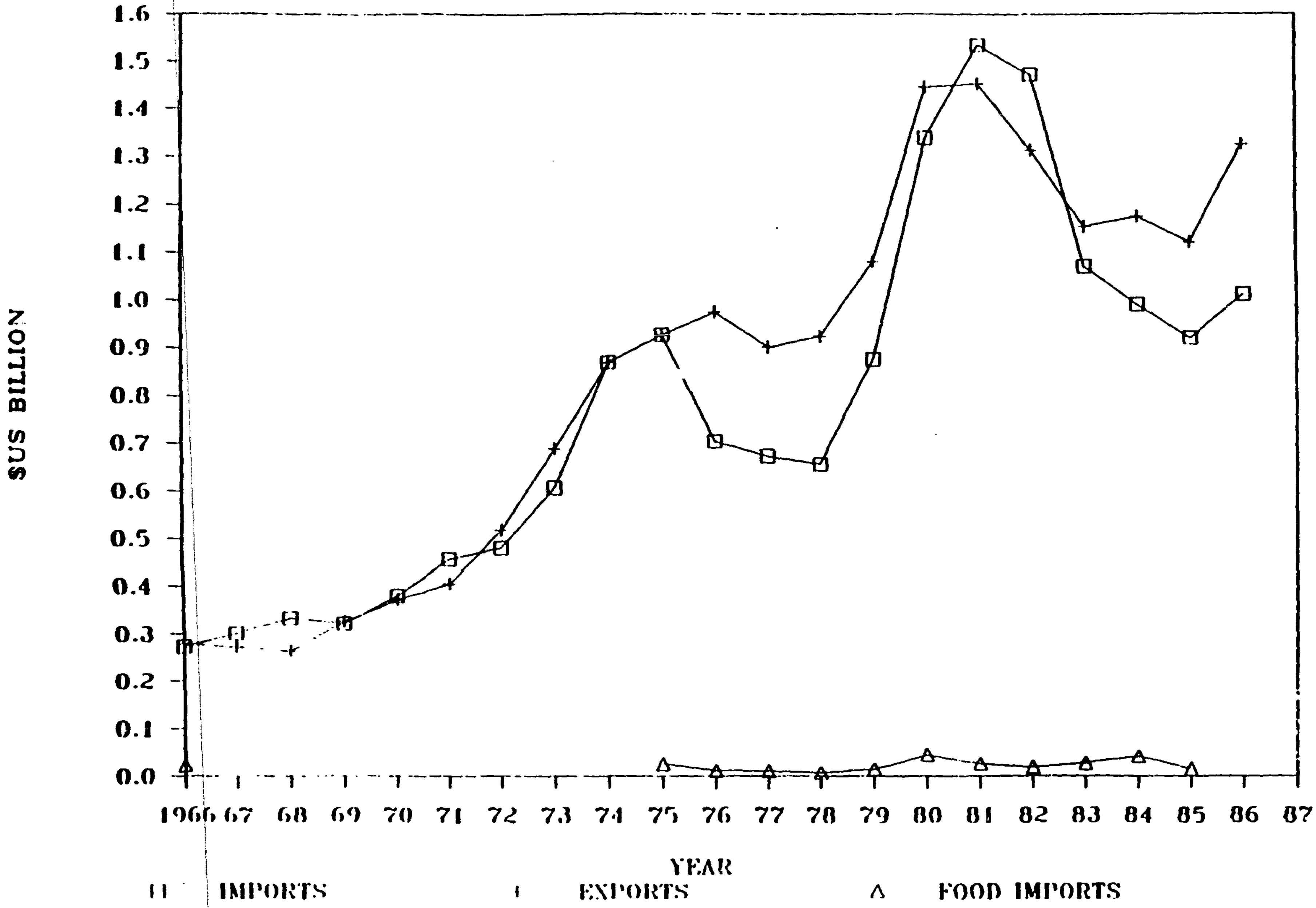


Source: Economic Research Service, U.S. Department of Agriculture

IMPORTS, EXPORTS, AND FOOD IMPORTS

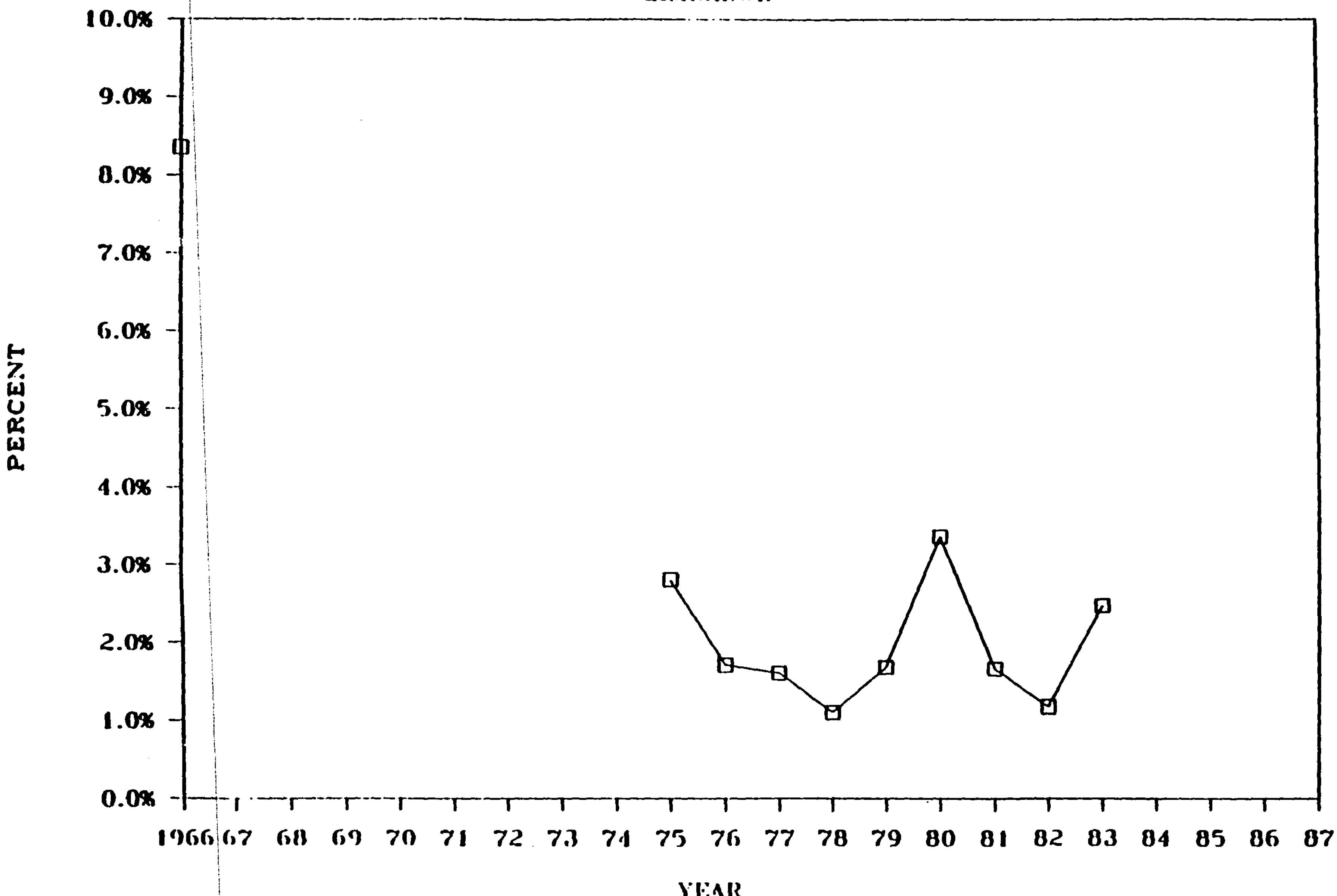
ZIMBABWE



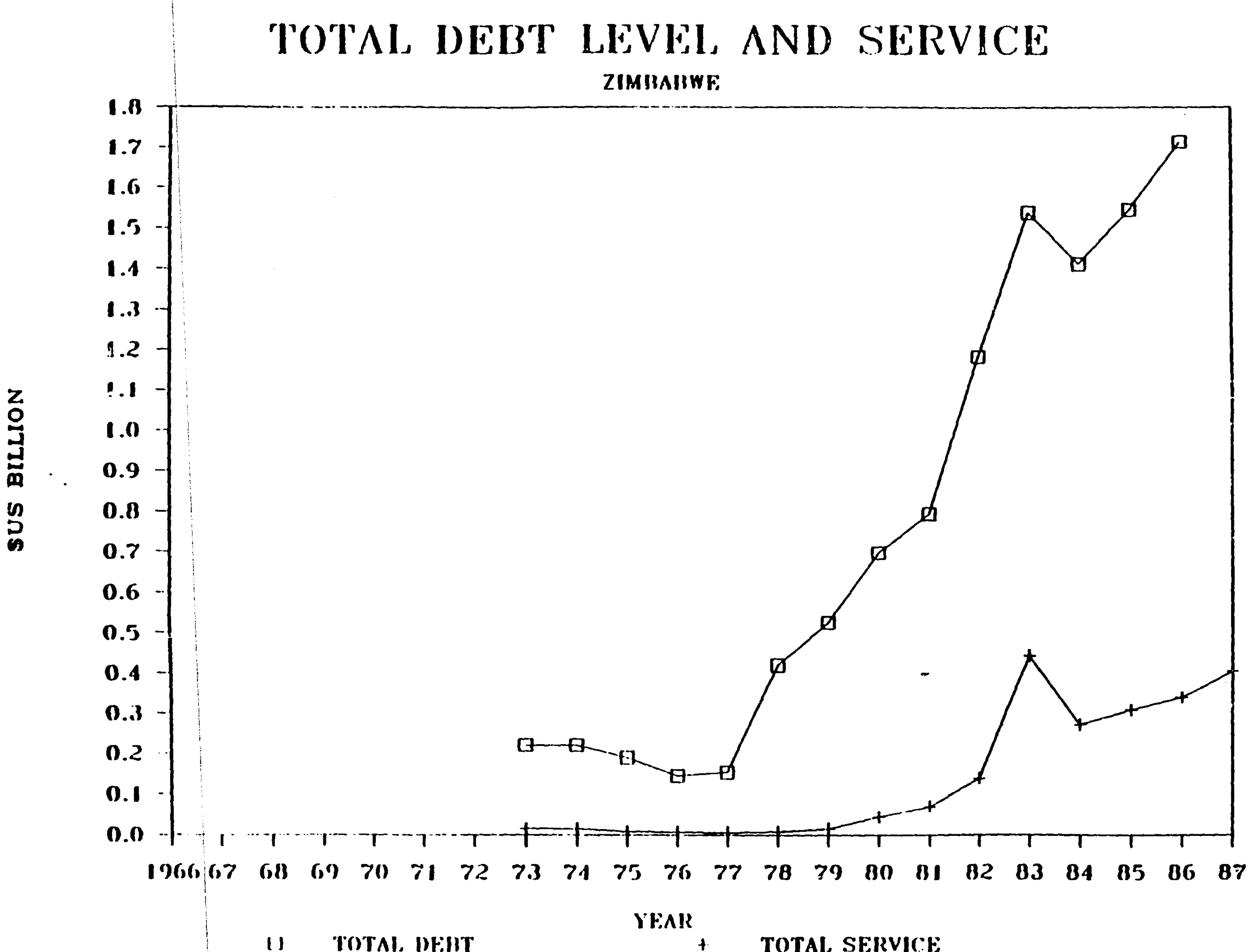
Source: Economic Research Service, U.S. Department of Agriculture

FOOD IMPORTS AS A % OF TOTAL IMPORTS

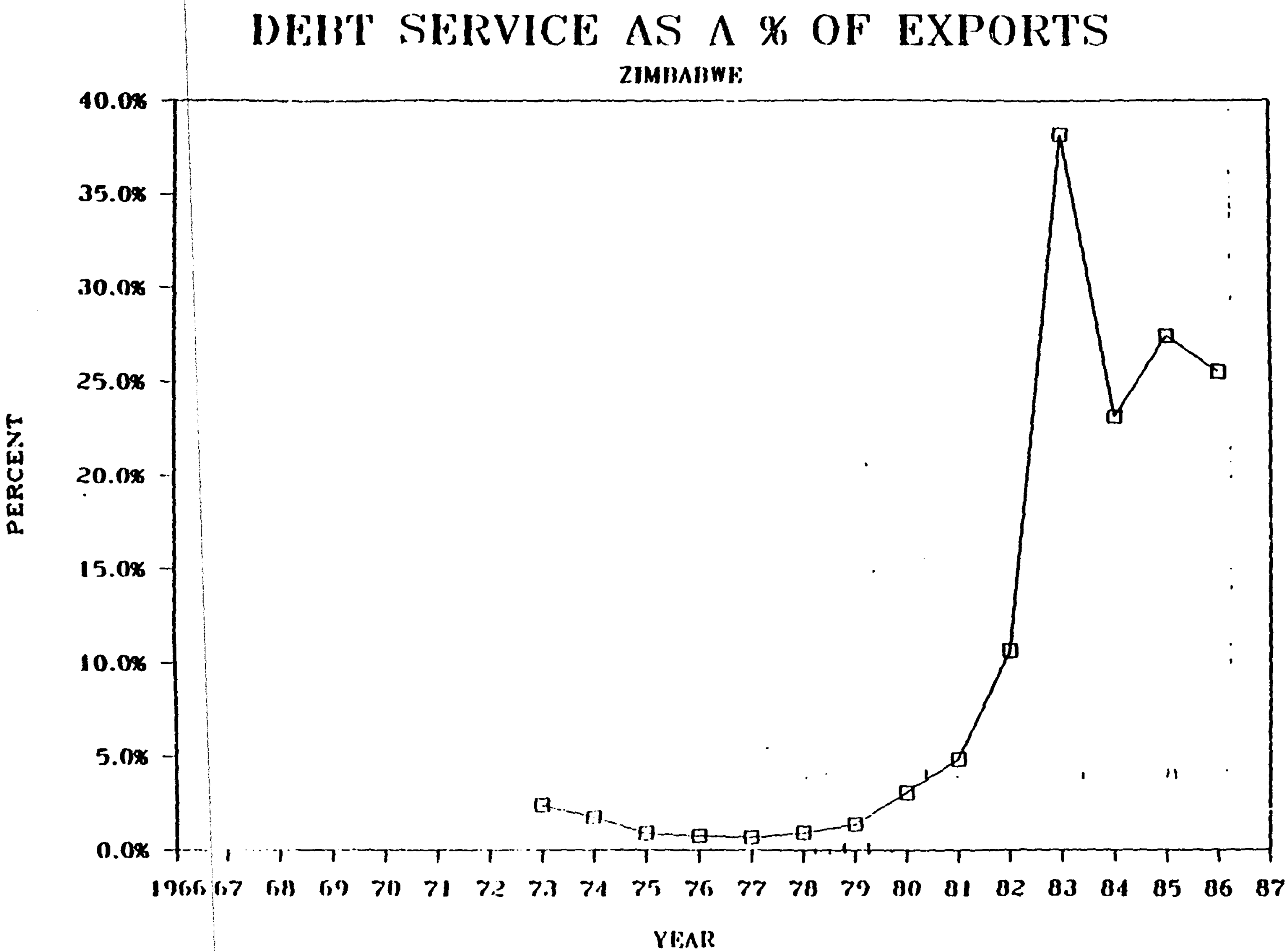
ZIMBABWE



Source: Economic Research Service, U.S. Department of Agriculture

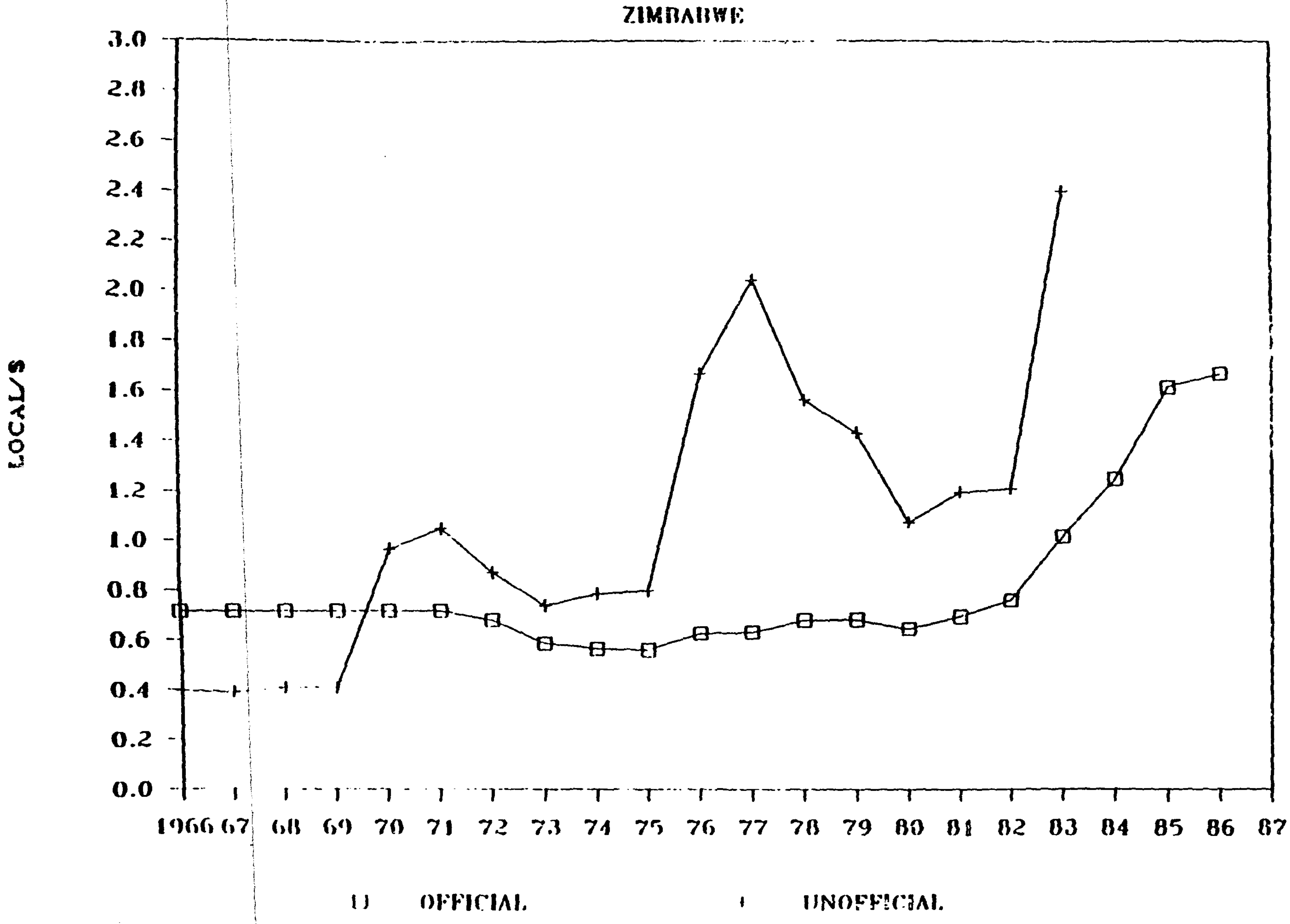


Source: Economic Research Service, U.S. Department of Agriculture



Source: Economic Research Service, U.S. Department of Agriculture

OFFICIAL and UNOFFICIAL EXCHANGE RATES



Source: Economic Research Service, U.S. Department of Agriculture

Country Policy Appendix
Cameroon

I. Background

A. General development strategy

Cameroon has been a politically stable country. President Biya (the country's second chief of state) has been in office since 1982. The country has maintained consistently good relations with the West, particularly with France. (ATAD)

The principal goals of the sixth development plan include food self-sufficiency (production increases of 4.3% per year), expanded production of export crops (production increases of 4% per year), modernization of agriculture through support for medium-sized farms, increased industrial use of domestic raw materials, and improved infrastructure to promote trade and regional development and slow rural-urban migration (ATAD, WB)

The emphasis on food self-sufficiency has led to high cost rice production (with delivered prices in Duala more than twice landed international prices (1987?) and subsidies to the government rice parastatal SEMRY. (Clarke)

B. Demographic/geographic features

Cameroon has a diverse physical environment which offers a wide range of crop production possibilities. Approximately 2 million of the country's 15.3 million hectares are cultivated. Land pressure is increasing in the densely populated northern, western and central provinces. (WB)

C. Crop production

Cameroon's major export crops are cocoa and coffee, which account for almost 70% of agricultural export earnings. Other major export commodities are cotton, palm oil, rubber and groundnuts. Cocoa, coffee and cotton are smallholder crops. Palm oil and rubber are produced on large estates. (Starr)

The main food crops, grown primarily on small farm, are plantains, cocoyams, cassava, yams, corn, millet and sorghum. (ATAD)

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Clarke argues that productivity has declined in the export crop sector, and that only cotton has escaped a generally observed decline in yields. (Clarke)

II. Economic Performance

A. GDP/capita

Cameroon's per capita GDP ($ 900 circa 1986) is one of the highest in Africa. The country experienced rapid oil-based growth between 1980-86. (See MACRO Spreadsheet and GDP graph)

Cameroon had real annual growth rates averaging 5.1% between 1965 and 1986, which increased to 8.2% during 1980-86 as a result of petroleum exports. (AID/CP)

Cameroon experienced a severe economic crisis beginning in 1986, as declining oil exports reduced foreign exchange earnings and government revenue sharply. Real GDP declines are now a reality.

Cameroon's strong, oil led, growth masked underlying weaknesses which have now come to the fore, including the significant increase of the public sector/parastatal workforce (9 % per year) between 1975 and 1985. (AID/CP)

B. Agricultural performance

1. Production (if possible food and export crops)

Cameroonian agriculture has performed relatively well by Sub-Saharan African standards, with positive per capita production growth throughout most of the last twenty years. The sector stagnated after 1982, primarily because of declining cash crop production.

Cameroon is presently (1986-8) 90% self-sufficient in food. (DME)

2. Sector income/share of GDP

Agriculture contributes about 20% of Cameroon's GDP. (ATAD) It employs 75% of the labor force. (ATAD)

C. Trade Performance

1. Balance of trade

Until its recent financial crisis, Cameroon has a significant balance of trade surplus. This shifted to a serious deficit by the end of 1986. (See MACRO spreadsheet and TRADE graph)

2. Agricultural trade

Imports (concessional and food aid)

Food imports account for about of the total import bill. (See FOOD IMPORTS graph) Virtually all of these imports are commercial, as Cameroon has received little food aid.

Exports

Cameroon's export performance was strong through 1986, fueled by oil, coffee and cocoa exports. Between 1987 and 1989, however, the country lost about one-half of its export revenue, which precipitated a serious financial crisis. (AID/CP)

Although the relative contribution of agriculture declined as oil exports expanded, the agricultural sector still (1986) accounts for about 27% of export earnings. (ATAD)

Non-petroleum exports increased by an average of 3%/year in constant 1980 prices (1980-87?). Traditional export crops--such as coffee--stagnated. (See TRADE and EXPORTS graphs) The real stagnation of traditional commodity exports has not been compensated for by other agricultural commodities principally produced and marketed by state bodies (eg. banana, rubber, tea, cotton). (Clarke)

D. External Debt/Reserves

Cameroon's faces an increasingly serious debt situation. Its public and publically guaranteed debt rose relatively rapidly until 1981, and then stabilized (in both real and relative terms). (See MACRO spreadsheet and DEBT graph) Virtually all public investment was financed through oil proceeds. As a result of the decline in export earnings, however, the debt service ratio rose considerably in 1986--to 38% of export earnings.

III. Policy Environment

A. Policies

1. Macroeconomic

The government was slow in responding to the rapidly growing liquidity crisis in 1987. The delay in belt tightening and the depreciating dollar accentuated the decline in export commodity prices, thus deepening the crisis. (AID/CP)

a. Exchange rates

Cameroon is a member of the CFA and the BEAC (central bank of the franc zone). The CFA is pegged at .02 French francs. There are no restrictions on payments and transfers for international or CFA zone. (See EXCHANGE RATE speadsheet)

b. Domestic macro

Cameroon has a complex system of administratively set interest rates (21 for borrowing, 49 for deposits). Interest rate structure and levels are jointly determined by BEAC, which sets base (discount) rates and the individual Ministers of Finance. Interest rates much below international levels have constrained resource mobilization, discouraged saving, and hampered the development of a domestic capital market. (DME)

The government reduced the 1987/8 budget by about 20%, with a 15% reduction in the recurrent budget. It launched a review and reduction of parastatals. (AID/CP)

The government financed the 1986/7 budget deficit by accumulating public arrears in domestic payments. It withdrew large cash deposits from commercial banks to meet some internal debts, thus triggering a severe liquidity crisis that is still contributing to an acute recession. (AID/CP)

2. Agricultural Sector

The government has given priority to the development of the agricultural sector, which it considers to be the backbone of the economy. Programs aimed at increasing the productivity of food and cash crops have been financed mainly through either the national produce marketing board (Office National de .ization de Produits de Base, ONCPB) or the agricultural credit agency (Fonds National de Development Rural, FONDAR). (ATAD)

In practice, however, the agricultural sector appears to have been neglected. Investment in the renewal of plantations (coffee, cocoa, palm) has fallen behind replacement rates, resulting in lower levels of productivity and contributing to high cost structures, less competitiveness and reduced profitability. (Clarke)

a. Institutions

The main institutions which were used to implement agricultural programs are ONCPB and FONDAR. FONDAR is being (1987) dismantled. (Clarke) However, there are a number of other organizations with an impact on agricultural development, distributed across different Ministries. Coordination is difficult. These organizations include:
Ministry of Agriculture--SOCOPALM (palm oil), SEMRY, HEVECAM (rubber), SODECAO
Ministry of Commerce and Industry--ONCPB and SODECOTON (cotton)
Planning Ministry--CAMDEV (oil palm, refinery, cake, different rubber activities)
Ministry of Finance--will have the Agricultural Credit Bank being created to replace the dismantled FONADER.

An announcement was issued in December, 1987 of the creation of a Ministry for policy coordination, reporting to the Presidency, which may contribute to greater coherence/coordination in policymaking. (Clarke)

ONCPB (under the Ministry of Commerce and Industry) was created as a commodity stabilization fund in 1976. (Clarke) It assures uniform and guaranteed prices for cocoa, coffee, cotton, peanuts and palm oil. It also has a monopoly on the internal and external marketing of these crops. ONCPB has an operating fund to cover normal marketing costs and outlays and a reserve fund to support price stabilization. Both funds generally accumulate surpluses on their operations. These surpluses, however, are the result of the taxation of export crop producers. (ATAD)

In practice, ONCPB deals mainly with coffee and cocoa marketing.

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Coffee handling is institutionally more complex than cocoa. For historical reasons, another state commodity entity NPMB is maintained in the anglophone provinces. Its role includes the actual purchase and marketing of coffee (principally arabica) as well as stabilization fund functions. (Clarke) Arabica coffee is handled by the producers' cooperative union (UCCAO), but remuneration levels for its activities are set by the government. (Starr) All coffee activities other than export marketing and intervention are carried out by SODECOTON. ONCPB's groundnut activity was "dormant" in 1986. Oil palm activities have become the responsibility of Cameroon Development Corporation (CDC). (Clarke)

ONCPB has undergone significant growth and restructuring. Between 1978 and 1986, it grew from 100 employees to nearly 2,000 (with a 25% increase between 1985 and 1986). Half of those employed are of executive grade. (Clarke) It has divested all responsibility for cotton activities except
FONDAR is an agricultural credit agency. Subsidy programs account for the bulk of its operations. These subsidies include fertilizer and pesticide distribution, village water supplies and the development of food and export crops. (ATAD)

SODECOTON is regarded as the best of the parastatal organizations, with the best inhouse extension service. It has a longstanding and well established technical partnership with the French cotton group C.F.D.T. which provides the latest technologies in cultural practice, seed varieties, plant nutrition and protection. There is some indication that other agricultural producers in the area serviced by SODECOTON (Northern Plains) may have benefitted from a fallout effect since yield increases were on a comparable scale to cotton over the reference period. (Clarke)

ONCPB also makes refund payments (ristourne) to producers--primarily in the form of subsidies (especially for fertilizer). While all farmers pay the tax, not all receive the subsidies. Estimates are that about 50% of the farmers receive fertilizer or pesticide subsidies. (Clarke)

b. Prices

are supports for export crops (coffee, cocoa, rubber, cotton) and basic staples (oil palm, rice); (DME) subsidies on fertilizers and pesticides and bonuses for replanting coffee and cocoa trees. There are no guaranteed minimum producer prices for food crops, which are handled mainly by private traders. (ATAD)

Despite increased producer prices, the government's policy (circa 1986) is to tax export crop producers and transfer resources out of the sector. Producers (circa 1986) receive about 50% of the world market price for coffee and cocoa. The revenue funds ONCPB programs (which have not increased agricultural output as expected). (ATAD)

The government establishes producer prices (indicative price, valeur mercuriale) annually. The difference between the producer price and the export parity price is split between the government treasury (which accrues in the form of an export duty) and to ONCPB (as a variable levy to be used for producer price stabilization purposes). The export levy was 32% of the indicative price (valeur mercuriale) for the last two seasons (circa 1987) (Clarke) ONCPB collects the remaining price differential as its variable levy. (Starr)
Part of the ONCPB levy is sometimes turned over to cooperatives for redistribution to farmers as a bonus (ristourne). (Clarke)

The government agreed (1984/5?) to a pricing formula for cocoa which linked domestic producer prices to world market prices and established a system to pass on surplus of export revenues to farmers. Even with the ristourne, however, producer prices of cocoa in 1985/6 were only 49% of world market prices. (DME)

Cotton prices, on the other hand, have been the highest in francophone Africa. Higher prices, in conjunction with intensified measures to raise productivity, led to strong performance. (Clarke)
The retail prices of locally produced foodstuffs are subject to a system of administered prices (valeur mercuriale) that are controlled ex-post. A basic value margin, ranging between 12% to 65%, is applied to the unit producer prices and to the total cost of imports, exclusive of custom duties. (DME)

Starr claims that until recently (circa 1986) cotton was moderately taxed. (Starr) During the significant collapse of world cotton prices in 1985, the tax was converted to a subsidy of some 300 CFA per kilogram. (Starr)

Robusta coffee prices have remained well below export parity prices, and robusta coffee is the most heavily taxed of the major export crops (NPC of .51 between 1970 and 1985. (Starr)

Producer prices for arabica coffee have been the most favorable of the major export crops, with an NPC of .57 1970-85, compared with .51 for robusta and .54 for cocoa.

c. Inputs

Fertilizer and pesticides are subsidizes through FONADER. About 40% of the fertilizer came through FONADER and was sold to producers at about 60% of cost. (Starr)

Pesticides are distributed free of charge to cocoa producers, the major users of fungicides and insecticides. (Starr)

The Ministry of Agriculture determines agricultural input prices, and thus subsidy levels. (Clarke)

Input distribution problems include late arrival, inappropriate products, and the tendency to reach only the large and institutional producer. (Clarke)

The subsidies are either directly or indirectly provided, without a clear objective of providing incentives for expanding economically efficient activities. (DME)

Credit is provided for crop financing and its exports (credit index) rediscounted in full at a preferential discount rate. (DME)

Extension is provided through multiple channels--including development agencies at the provincial levels, parastatals, and the ministries involved in the agricultural sector. USAID alleged the "near inexistance of a functioning extension system". More complementarity across different extension systems was called for in the VIth plan. (Clarke)

e. Land/land tenure

f. Marketing

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ONCPB has an internal and external monopoly on marketing of cocoa, coffee, cotton, peanuts and palm oil. Food crop marketing is handled primarily by private traders. (ATAD)

ONCPB does not become the owner of coffee or cocoa stocks--it sets prices by establishing annual price schedules for all marketing activities (baremes) and regulates entry by authorizing traders and cooperatives to conduct specific activities in specific areas. (Starr) Cooperatives and private traders are paid according to the bareme for the marketing functions they perform. Renumeration is based on average cost estimates plus a government determined margin. These prices poorly reflect changing real opportunities. Estimates indicate that ONCPB marketing costs represent about 13% of crop FOB prices. (Clarke)

Marketing systems differ in anglophone and francophone Cameroon. In the anglophone area, the National Produce Marketing Board (NPMB) handles the buying of cocoa and robusta coffee. It operates like the monopoly export marketing boards found elsewhere in anglophone West Africa. In the case of cocoa, it collects, processes and transports the commodity. In the case of robusta coffee, a variety of cooperatives and private traders (operating in specified regions) collect and process the commodity. In anglophone Cameroon, NPMB/ONCPB exports directly rather than through licensed exporters. In francophone areas, ONCPB assigns export quotas to established exporters. (Starr)

Arabica coffee is marketed through the Union Centrale des Cooperatives Agricoles de l'Ouest (UCCAO), which operates within the Western province where arabica is produced. UCCAO has a monopoly on arabica purchasing and exports, and has additional responsibilities for input supply, extension and agricultural credit. Producers are responsible for primary processing (depulping, fermentation, cleaning and drying). The cooperative transports the crop, and exports its directly (for a 1% commission). Another cooperative organization, COOPAGRO handles terminal processing and export of the 17 plantations' production. In the Northwest province, arabica marketing is similar to arrangements for cocoa and robusta coffee. A cooperative, the Bamenda Cooperative Farmers' Association (BCFA) plays a role, but operates in competition with private traders. (Starr)

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ONCPB's restricted entry/fixed renumeration system for coffee and cocoa is intended to protect producers from uncompetitive buying. In practice it promotes inefficiencies in export marketing by creating opportunities for trader rents and discourages cooperatives from minimizing costs. Private marketing of foodstuffs appears to be more efficient, and does not generate persistent excess profits (cites Hollier 1985) (Starr)

3. Inter-sectoral Biases

Only about 1/3 of the surplus generated by taxation of exports was returned to the agricultural sector. (Clarke)

Alleged deterioration in agricultural incomes relative to others (coinciding with increased oil revenue) are alleged to exist and to have fueled urbanization, but no data are provided. (Clarke)

4. Trade

Exports.

Cameroon has a long established policy of heavy taxation of traditional export crops, despite evidence of a positive, though lagged, response to prices. (DME)

Direct taxation of exports has been accompanied by (generally higher) indirect taxation in the form of ONCPB levies on cocoa and coffee. In 1986/7, however, these OBCPB levies were negligible. Overall rates of taxation follow fluctuations in world prices, but with average taxation levels for both coffee and cocoa of 48% between 1970 and 1985. (Clarke)

Imports.

Taxes on imports and some locally produced items were increased (1987/8) and measures introduced to reduce avoidance of these taxes and custom duties. (DME) The government increased taxes on all imports (ranging up to 150% of net value) in an effort to stop the erosion of foreign exchange, to encourage the consumption of locally produced goods,

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and to generate revenue. (Jan 1988?) (DME)

Since a large part of the domestic production had to be stockpiled in the past, the government temporarily suspended rice imports (1986?) (DME)

B. Policy Reform Initiatives

1. WB

Cameroon is (was) negotiating its first structural adjustment agreement with the WB. (AID/CP)

2. IMF

In response to its 1987 financial crisis, Cameroon negotiated and signed a standby agreement with the IMF. (AID/CP)

3. USAID

AID's involvement in sector reform is through the Fertilizer Subsector Reform Program, which began in late 1987. It aims at phasing out fertilizer subsidies and privatizing fertilizer imports and distribution. AID has requested funding for a new, non-project assistance program, Economic and Financial Policy Reform (EFPR), which will work in conjunction with the IMF/IBRD financed structural adjustment program to strengthen unsubsidized private sector distribution and marketing of agricultural inputs and production. (AID/CP)

III. Constraints/Distortions

1. Policy-based

Slow growth in food crops is attributed to low productivity and an inadequate marketing system, while low prices and taxation have been disincentives to export crop production. (ATAD)

Low productivity in the export crop sector is attributed to government policy (taxation/low prices), the high cost of state-run input distribution and harvest collection, and investment neglect. (Clarke)

A recommended strategy for improved export performance is: (1) reform of extension activities; (2) an increased share of FOB prices to peasant farmers; (3)

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liberalization of the input/distribution and marketing (price) system; this is alleged to promise a more immediate and significant effect on national production than costly investment in new, large scale state planation projects. (Clarke)

Exporters all refer to high transport costs--attributed to the CAMSHIP (   ) conference monopoly regulations, as a major factor in high export costs which undermine competitiveness in world markets. (Clarke)

2. Other

   a. Infrastructure

   b. Physical

   c. Imperfect or non-existent extension distribution of high yield technologies, inadequate extension, shortages of labor (Clarke)

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Macro Format Cameroon

Year	GDP current (local) billions	Imp. GDP deflator	real GDP (local) billions	real GDP ($) millions	CPI	exchange official (local/$)	exchange unofficial (local/$)	Merch. Exports	Merch. Imports	BOT	Net Services	Net Transfers	Current Account	Food Imp	Ag. Imp.	Foreign Exchange Reserve	Total Outstanding Debt	Total Debt Service	Food as % of Total Imports	Debt Service Ratio	($US Mil.) Main Export Coffee	Petro
								---$US Million---														
1966	177.3	NA	NA	NA	34.8	246.9	NA	145.0	146.0	(1.0)	NA	NA	NA	11.1	15.8	31.6	NA	NA	7.6%	NA	43.0	
1967	194.5	NA	NA	NA	36.1	246.9	NA	158.0	188.0	(30.0)	NA	NA	NA	16.1	23.4	22.1	52.7	2.0	8.6%	1.3%	43.6	
1968	219.4	NA	NA	NA	34.9	246.9	NA	197.0	188.0	9.0	NA	NA	NA	16.6	24.8	38.4	92.7	4.5	8.8%	2.3%	51.0	
1969	247.3	32.0	772.8	2,976	34.5	259.7	NA	228.0	204.0	24.0	NA	NA	NA	16.1	23.6	45.4	107.7	6.6	7.9%	2.9%	45.6	
1970	300.4	33.7	892.2	3,213	36.6	277.7	279.9	218.7	190.8	27.9	(68.0)	10.3	(29.8)	23.2	31.1	70.9	130.9	8.6	12.1%	3.9%	53.1	
1971	321.3	35.0	918.9	3,316	38.0	277.1	273.8	235.7	223.1	12.6	(66.0)	8.9	(44.5)	25.0	33.3	58.7	161.9	12.8	11.2%	5.4%	52.6	
1972	355.9	37.1	958.7	3,801	41.1	252.2	246.5	239.3	257.6	(18.3)	(79.4)	42.9	(54.8)	24.3	34.2	24.7	195.4	15.3	9.4%	6.4%	61.2	
1973	400.5	41.2	972.7	4,368	45.4	222.7	224.5	409.5	310.5	99.0	(109.2)	(6.4)	(16.6)	32.4	43.4	30.2	236.8	24.6	10.4%	6.0%	91.1	
1974	492.6	48.5	1,016.0	4,225	53.2	240.5	239.6	493.2	389.9	103.3	(121.4)	1.2	(16.9)	49.9	62.7	65.7	274.9	25.3	12.8%	5.1%	119.8	
1975	580.2	54.3	1,068.3	4,985	60.4	214.3	215.3	512.0	540.3	(28.3)	(147.9)	23.7	(152.5)	52.9	68.6	17.0	371.7	35.9	9.8%	7.0%	108.2	
1976	657.2	60.4	1,088.8	4,556	66.4	239.0	236.7	584.2	554.9	29.3	(159.4)	37.8	(92.3)	46.8	63.3	33.6	513.3	39.1	8.4%	6.7%	161.9	
1977	789.9	68.7	1,150.6	4,684	76.2	245.7	245.6	809.6	719.7	89.9	(214.6)	31.5	(93.2)	72.1	93.2	34.2	861.3	57.3	10.0%	7.1%	224.2	
1978	968.1	79.8	1,213.8	5,379	85.6	225.6	227.2	1,095.9	949.0	146.9	(331.9)	0.4	(184.6)	78.0	101.2	43.6	1,184.8	106.9	8.2%	9.8%	239.1	
1979	1,134.4	88.7	1,279.5	6,015	91.3	212.7	216.1	1,351.8	1,267.9	83.9	(209.2)	(0.9)	(126.2)	101.6	128.4	117.3	1,684.7	135.9	8.0%	10.1%	283.9	399.7
1980	1,366.2	100.0	1,366.2	6,418	100.0	211.3	209.5	1,646.8	1,607.7	38.1	(486.7)	8.7	(439.9)	112.7	138.9	173.5	2,048.6	186.2	7.0%	11.3%	299.1	864.6
1981	1,796.4	123.7	1,501.3	5,525	110.7	271.7	274.7	1,406.7	1,363.0	38.7	(513.2)	(6.0)	(480.5)	91.1	115.0	70.9	2,048.8	207.1	6.7%	14.7%	188.7	986.8
1982	2,172.8	142.5	1,612.4	4,907	125.4	328.6	332.8	1,347.8	1,220.1	127.7	(517.2)	(7.5)	(397.0)	95.4	120.6	50.1	1,958.7	270.5	7.8%	20.1%	199.9	1,143.9
1983	2,616.1	163.7	1,689.8	4,434	146.3	381.1	400.3	1,363.6	1,222.6	141.0	(560.8)	5.9	(413.9)	106.4	133.7	150.9	1,853.5	207.5	8.7%	15.2%	197.2	1,266.4
1984	3,195.0	177.5	1,799.6	4,119	162.9	437.0		1,589.0	1,064.7	524.3	(668.6)	(20.8)	(165.1)	113.7	115.2	47.6	1,746.7	223.8	10.7%	14.1%	204.8	1,561.2
1985	3,739.1	192.0	1,947.2	4,334	185.7	449.3		1,318.9	1,341.5	(22.7)	(493.0)	(39.4)	(556.0)	103.5		127.6	1,982.9	240.4	7.7%	18.2%	199.2	1,099.3
1986	3,926.1	188.6	2,081.3	6,010		346.3		784.4	1,705.0	(920.6)						55.3	2,267.3	299.6		38.2%	314.5	
1987																		353.1				

	Sources
GDP current	66-83: IFS; 84-86: IMF 12/86
CPI	IFS
exchange official	IFS
exchange unofficial	Pick's
Merch. Exports / Imports	66-69: IFS trade supp.; 70-86: IFS; 86 est. CFA francs
Net Services	IFS
Food Imp	FAO: fd/animals oilseeds f veg oils proc. oils
Ag. Imp.	FAO
Foreign Exchange Reserve	IFS- foreign exchange
Total Outstanding Debt	66-86 IBRD Debt tables
Total Debt Service	66-87 IBRD Debt tables
Main Export	IMF 5/15/84 p86; IMF 08/08/85 p. vii; 83-86: IMF 11/86

Source: Economic Research Service, U.S. Department of Agriculture

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Cameroon-Total Grains

Year	Area 1000 ha	FAO Prod. 000 MT	ERS Prod. 000 MT	ERS Milled 000 MT	Calc. Yield ton/ha	Beg. Stocks	End Stocks	Aid Imports	Total Imports	Exports	Total Avail. 1000 MT	Feed Use	Seed Use	Waste	Non-Food	Consumption	Prod. Price (govt) local/ton	Indices Population 1,000	Growth Rate (%)	Per cap. Consump. kg
1966	683	778	778	772	1.13				39		39	24	19	82	123	32	NA	6,217	---	---
1967	925	637	637	629	0.68				52		824	18	17	69	105	719	NA	6,336	1.88	113.6
1968	854	647	647	641	0.75				62		691	19	16	71	106	585	NA	6,460	1.92	90.6
1969	809	744	744	740	0.91				63		704	22	14	81	117	587	NA	6,590	1.97	89.1
1970	699	668	668	663	0.95				73		813	20	15	74	109	704	NA	6,727	2.04	104.6
1971	751	722	637	632	0.84			0	100		763	19	14	74	107	656	NA	6,870	2.08	95.5
1972	706	702	616	613	0.87			5	92		724	19	15	71	105	619	NA	7,021	2.15	88.2
1973	779	723	630	626	0.80			1	91		704	19	15	72	105	598	NA	7,179	2.20	83.3
1974	737	880	767	759	1.03			3	81		707	22	21	85	128	579	NA	7,346	2.27	78.8
1975	1,043	1,103	1,103	1,093	1.05			4	68		827	32	19	117	169	658	NA	7,522	2.34	87.5
1976	964	904	904	887	0.92			4	83		1,175	26	19	99	144	1,032	NA	7,706	2.39	133.9
1977	980	849	846	831	0.85			5	116		1,003	24	21	97	141	862	NA	7,907	2.54	109.0
1978	1,052	888	857	841	0.80			5	136	0	967	24	21	99	145	822	NA	8,116	2.58	101.3
1979	1,067	861	863	850	0.80			8	164	0	1,005	24	20	103	148	857	NA	8,320	2.45	103.0
1980	1,032	902	903	887	0.86			4	141	0	991	25	19	104	150	841	NA	8,576	2.99	98.1
1981	964	835	828	810	0.84			10	192	0	1,079	24	22	102	147	932	NA	8,810	2.66	105.8
1982	1,082	956	967	934	0.86			11	150	0	960	26	20	111	157	802	NA	8,994	2.05	89.2
1983	981	932	859	825	0.84			6	207	0	1,141	23	17	107	147	994	NA	9,221	2.46	107.8
1984	805	728	729	690	0.86			0	217	0	1,046	18	19	95	131	914	NA	9,467	2.60	96.6
1985	929	886	886	849	0.91			9	207	0	897	21	19	103	143	754	NA	9,723	2.63	77.5
1986	929	864	864	824	0.89			0	254	0	1,039	22	9	110	140	899	NA	9,986	2.63	90.0
1987	931		866	826	0.89						730	11	0	38	49	302	NA	10,255	2.62	29.5
1988					0.00												NA	10,532	2.63	0.0
					0.00												NA			

Source: Economic Research Service, U.S. Department of Agriculture

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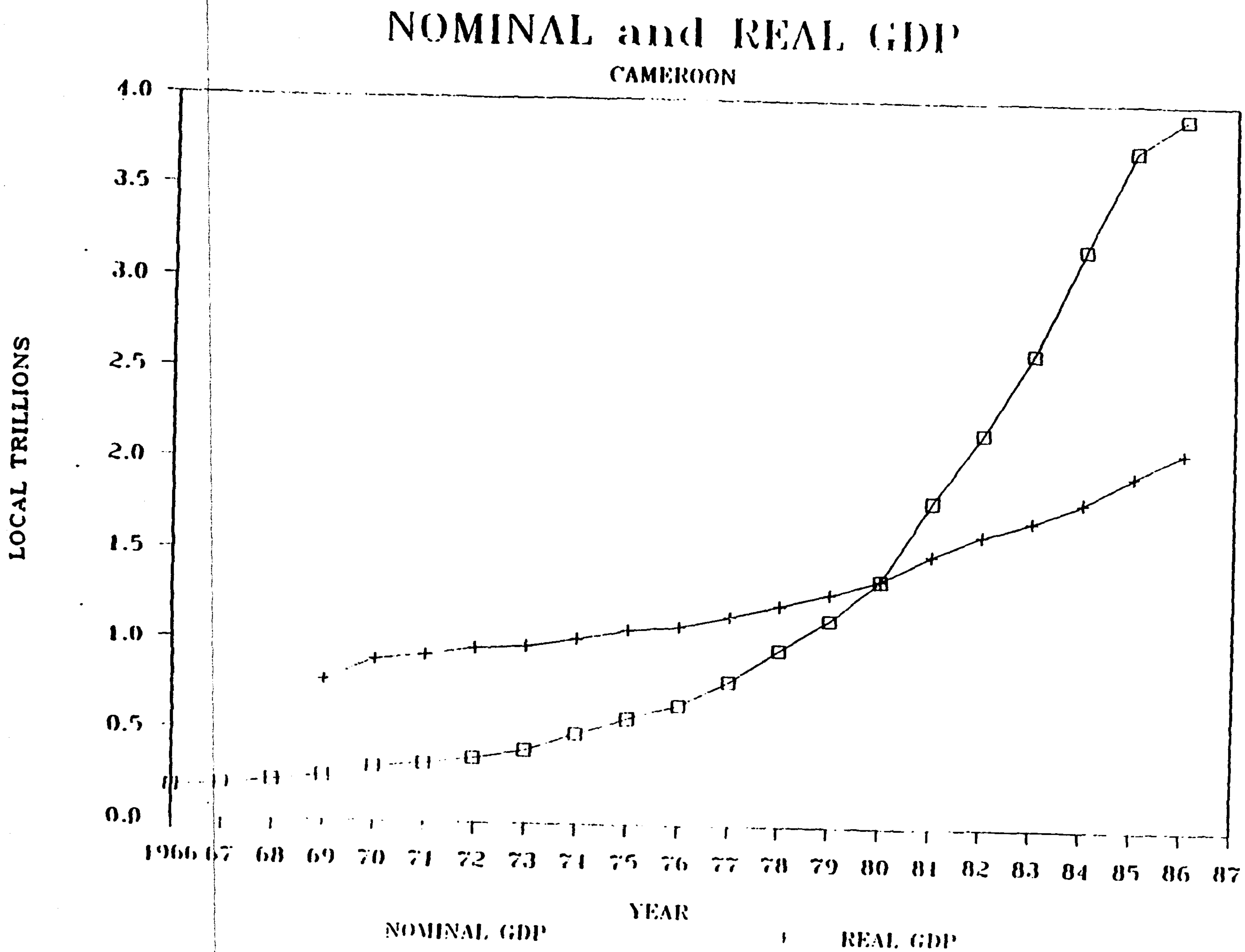
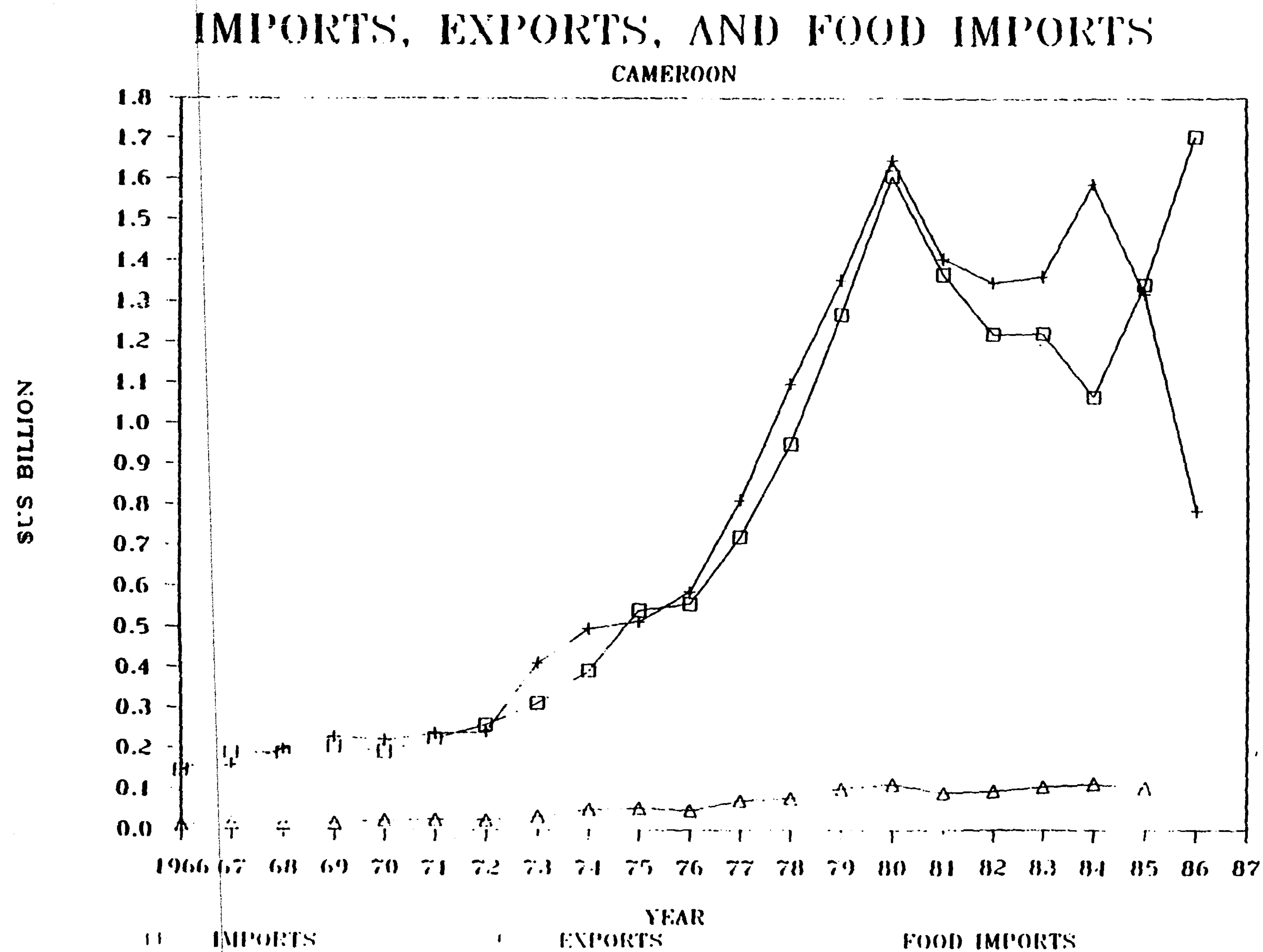


Source: Economic Research Service, U.S. Department of Agriculture



Source: Economic Research Service, U.S. Department of Agriculture

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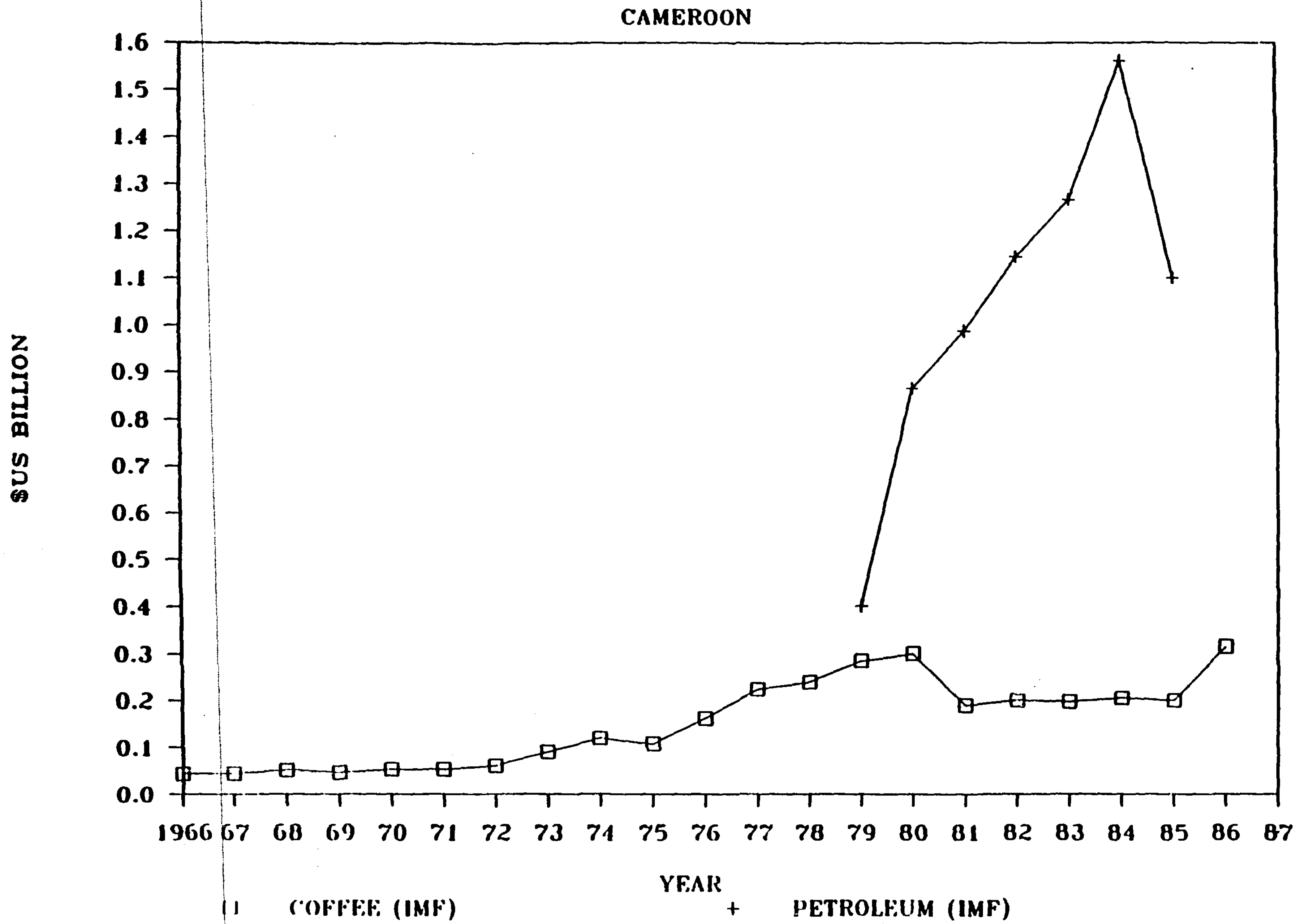
EXPORTS OF MAJOR SOURCE OF FOR.EXCHANGE



Source: Economic Research Service, U.S. Department of Agriculture

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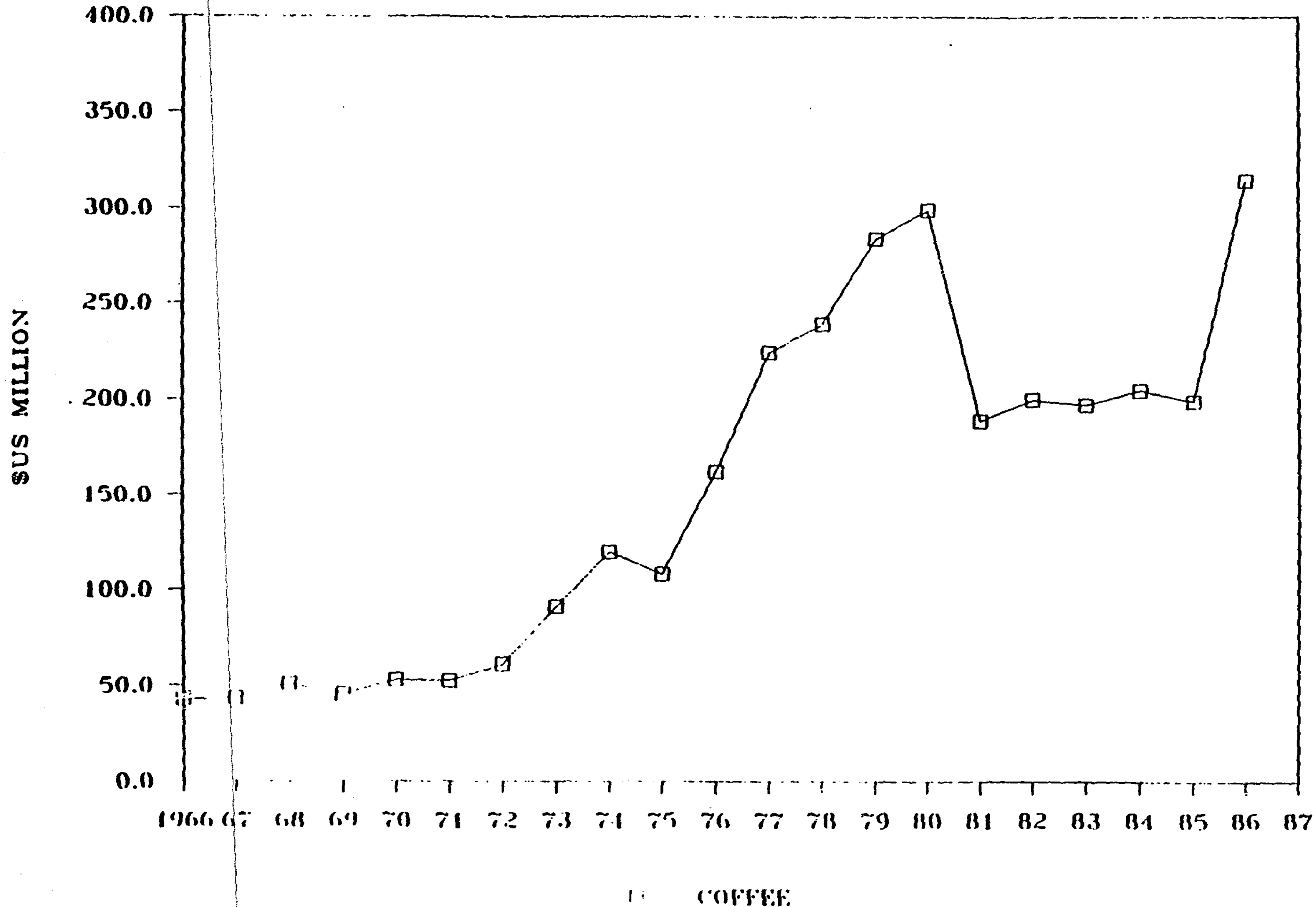
EXPORTS OF MAJOR SOURCE OF FOR.EXCHANGE

CAMEROON



Source: Economic Research Service, U.S. Department of Agriculture

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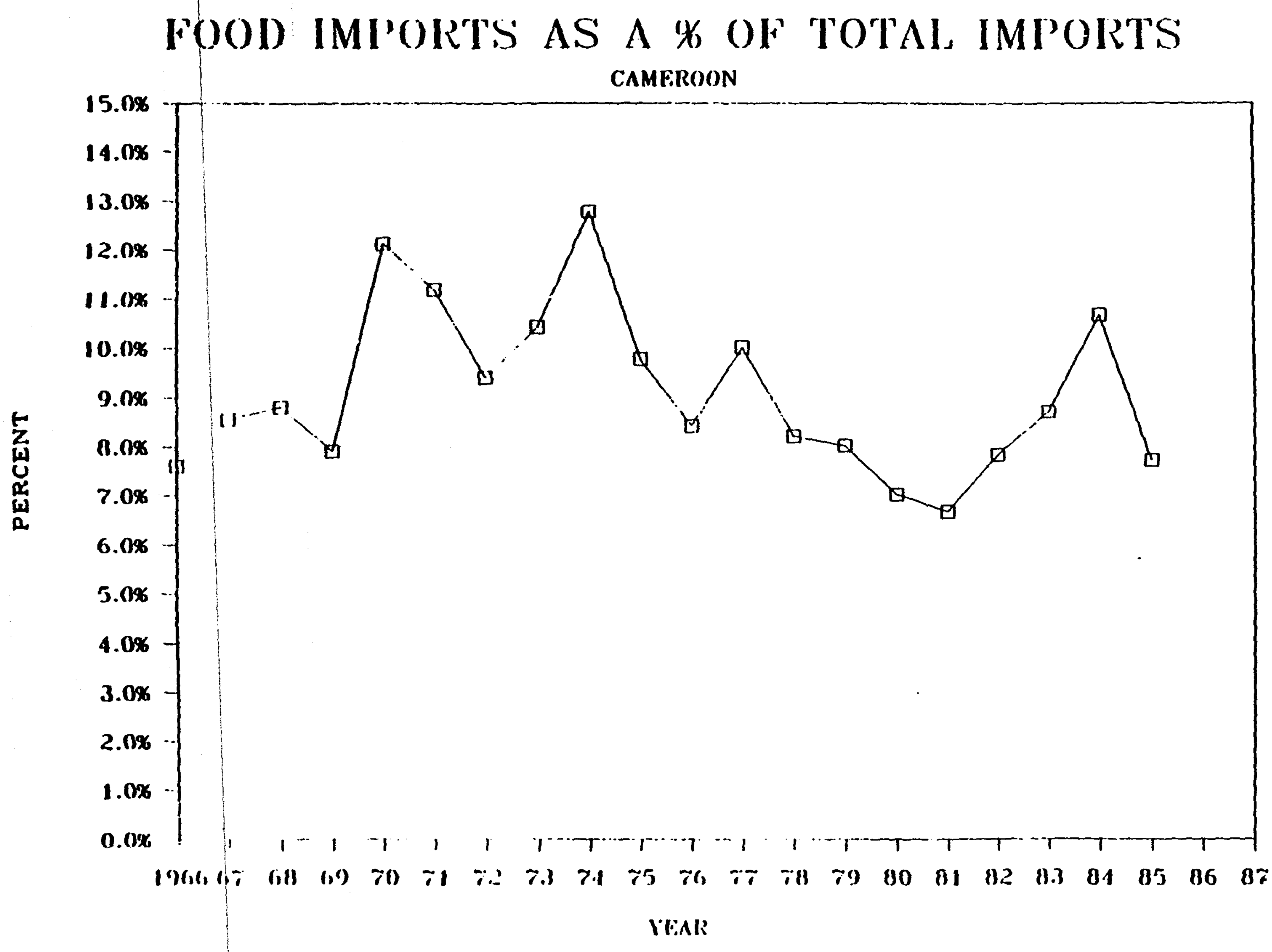

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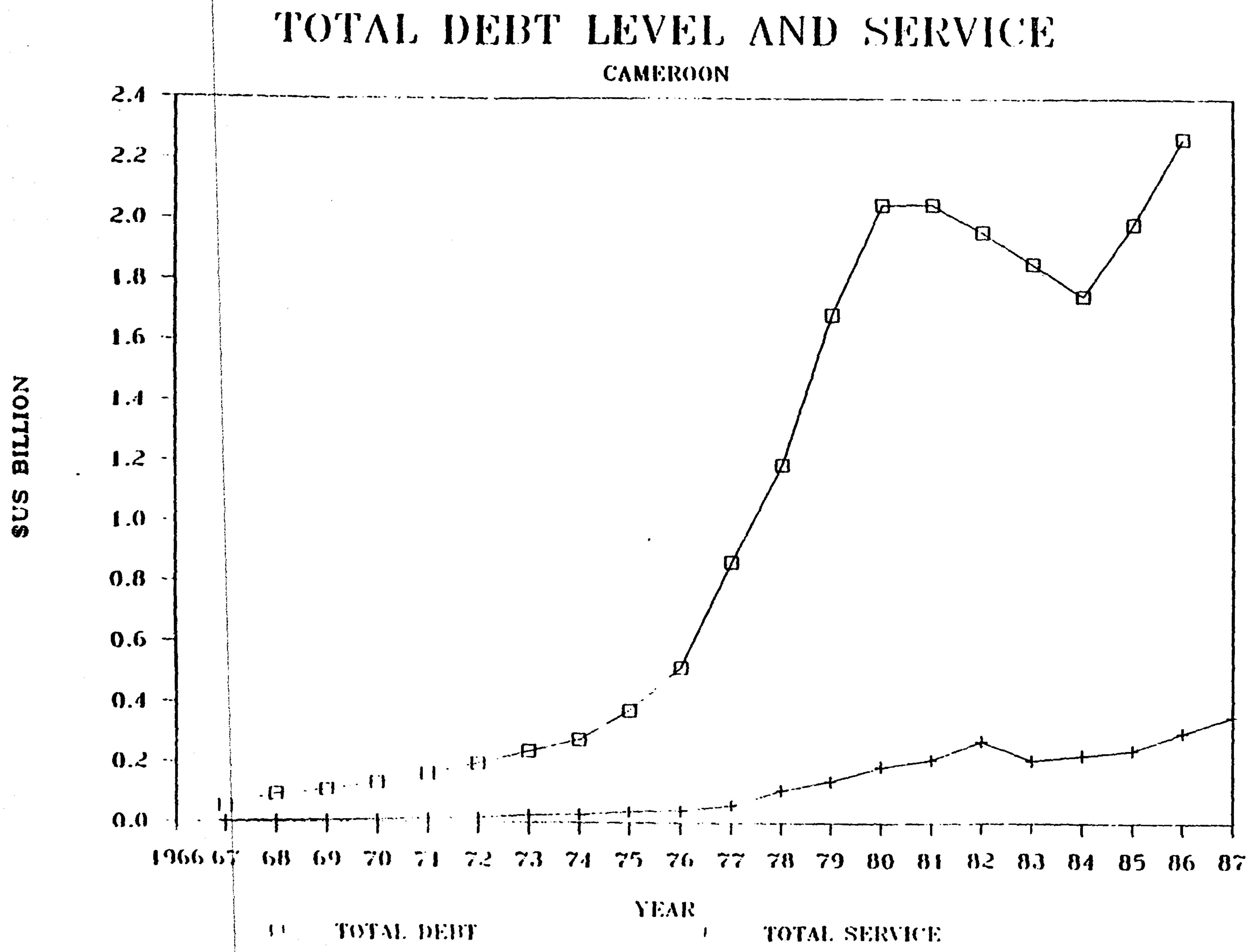
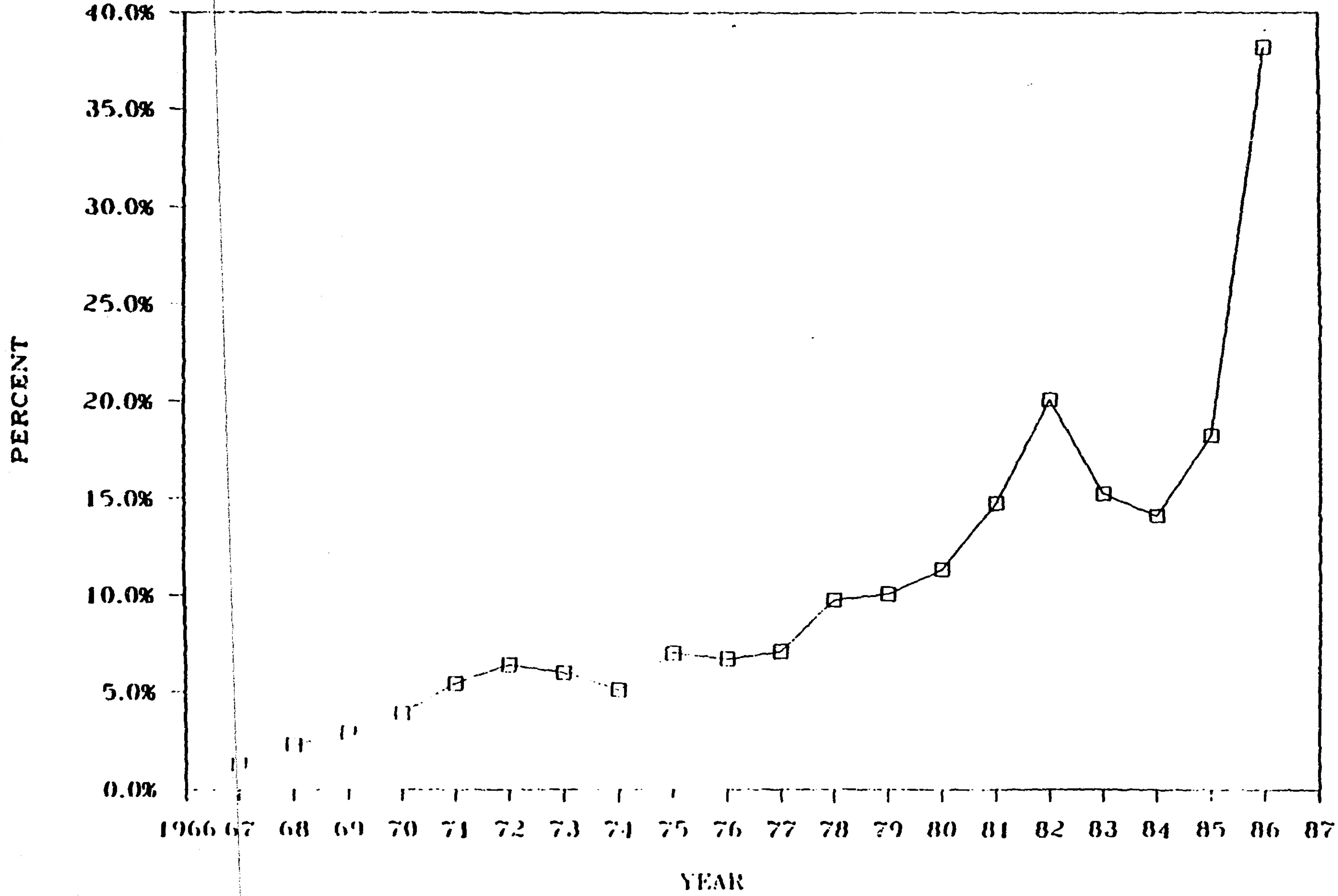


Source: Economic Research Service, U.S. Department of Agriculture

DEBT SERVICE AS A % OF EXPORTS

CAMEROON



Source: Economic Research Service, U.S. Department of Agriculture

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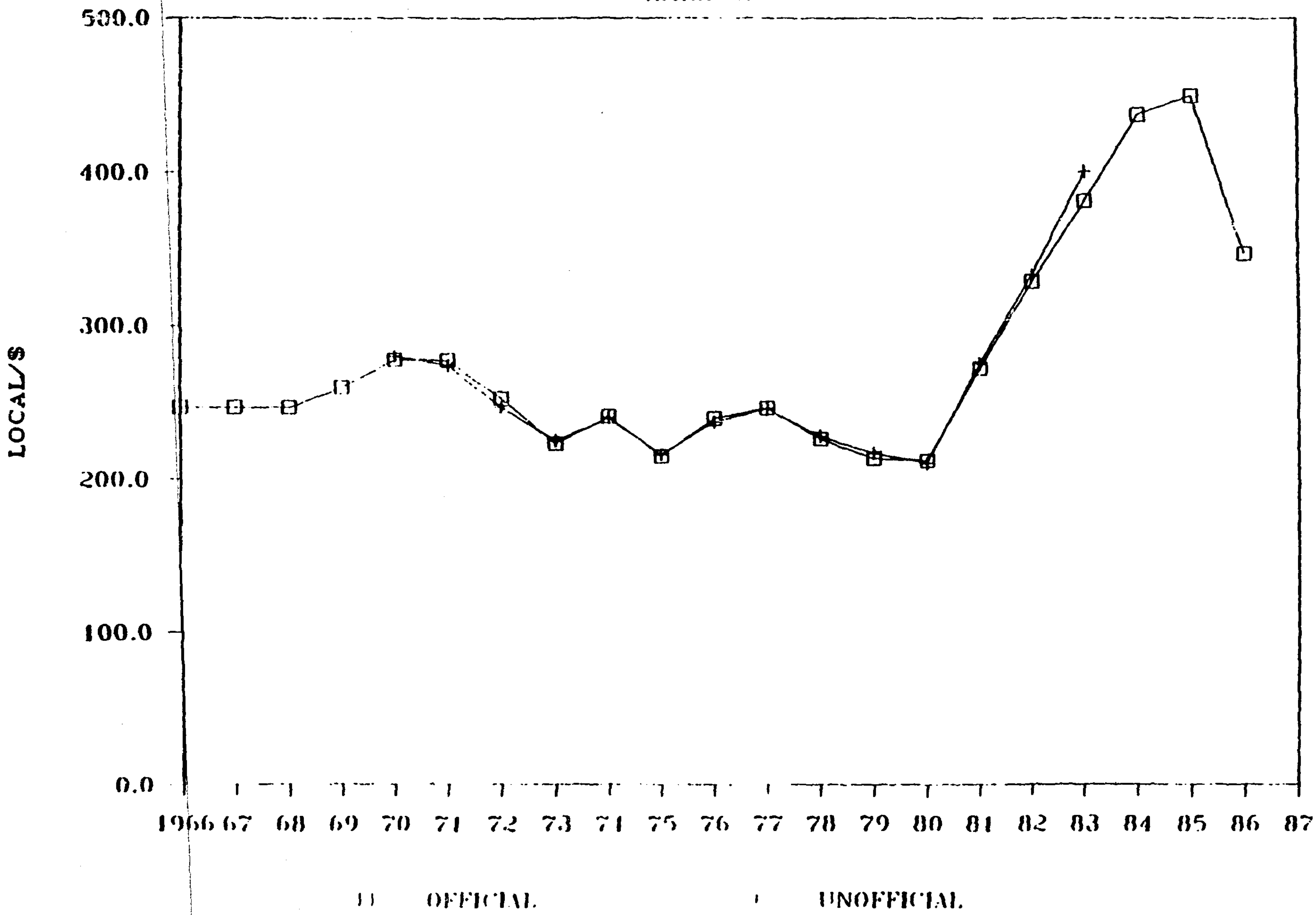
OFFICIAL and UNOFFICIAL EXCHANGE RATES

CAMEROON



Source: Economic Research Service, U.S. Department of Agriculture

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Country Policy Appendix
Tanzania

I. Background

A. General development strategy

Between 1961 and 1985, Tanzania pursued a socialist development strategy under President Julius Nyerere. This orientation is slowly giving way to a more market oriented approach under President Ali Hassan Mwinyi. Nyerere remains head of Tanzania's only political party, the Chama Cha Mapinduzi (CCM). Tensions between the party and the shift in economic strategy continue to be resolved. (TAS, 1988)

The government plans to reinforce its economic reform program by (1) maintaining an average economic growth rate of 4%; (2) reducing domestic inflation from 30% (1986/7) to below 10% (1989/90); (3) reducing the current account deficit from 176% of merchandize exports (1986/7) to 122% (in 1989/90). (TAS, 1988)

B. Demographic/geographic features

Tanzania is a country of about 21 million people, with a population growth rate of 3.3%. It features a wide range of agro-ecological zones, and is capable of producing a wide variety of agricultural commodities. (Currie) Only 8% of total land areas is cultivated, primarily because of climatic conditions. (TAS, 1988)

C. Crop production

Maize is the staple food crop, with millet and sorghum produced in drier areas. Wheat is grown, although cultivation is limited by climatic factors. Other major food crops include cassava, beans, bananas and a variety of fruits and vegetables. (TAS, 1988) Coffee, tea, cotton, tobacco and sisal are major export crops. (Currie)

II. Economic Performance

A. GDP/capita

Tanzania faced a serious economic crisis throughout much of the 1970's and 1980's. The country's GDP grew at a

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si... ticant..y. (See MACRO Spreadsheet)

In the wake of the country's Economic Recovery Plan (ERP) (initiated in July, 1986), growth has resumed. For the first time in the 1980's, real per capita income increased in 1986 and 1987. (TAS, 1988)

B. Agricultural performance

1. Production (if possible food and export crops)

Tanzanian agriculture performed poorly over much of the 1970's and early 1980's. Grain production grew around 3% a year, with significant variations associated with drought. (See TOTAL GRAINS spreadsheet) Export crop production stagnated, then declined, pulling down total exports.

Tanzania's agricultural performance improved significantly in the aftermath of the ERP, in part as a response to economic and agricultural policy changes, and in part a reflection of the resumption of favorable weather. (TAS, 1988) Agricultural growth rose from 3.5% in 1984/5 to 4.2% in 1986/7. Bumper grain and cotton crops were harvested in 1987. The production of other agricultural commodities is also reviving.

Coffee production declined 18% in 1986/7, however. Prior to ERP, output was constrained by low producer prices, inefficient marketing,critical domestic transport problems, input shortages, pests and unfavorable weather. Not withstanding higher prices and better weather, the tight money supply situation and increased transport costs remain constraints to further production increases. (TAS, 1988)

2. Sector income/share of GDP

Agriculture accounts for nearly 46% of GDP. (TAS, 1988) About 90% of the population live in rural areas, and 80-90% of these people are engaged in subsistence agriculture. (TAS, 1988)

C. Trade Performance

1. Balance of trade

From the mid-1970's on, Tanzania had a serious

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. with declining export production. By the time of the ERP, imports were double export earnings. (See MACRO Spreadsheet and TRADE graph)

2. Agricultural trade

Imports (concessional and food aid)

Tanzania food imports increased significantly in the 1970's and 1980's, in several years accounting for bwtween 17%-23% of total imports. (See MACRO Spreadsheet and FOOD IMPORT graph) Grains accounted for the bulk of the imports. Most were provided on concessional terms.

Exports

Agricultural exports account for 75% of total export earnings. (TAS, 1988)

Coffee, the major export crop, accounts (1988) for over half of all agricultural foreign exchange earnings and 35% of national foreign exchange earnings. Export earnings from coffee, the major source of foreign exchange, fell and stagnated after their peak in the 1975-6. (See EXPORTS graph)

Cotton is the second export crop. (TAS, 1988) Production and exports have recovered substantially under the Economic Recovery Program.

D. External Debt/Reserves

Tanzania has a serious debt problem. Its total debt increased significantly during the 1970's and early 1980's, reaching $3. billion in 1986. (See MACRO Spreadsheet and DEBT graph) Tanzania's debt service stabilized at about 18% of exports prior to the initiation of ERP, down from a high of 36% in 1980. (See DEBT SERVICE graph)

Tanzania essentially depleted its foreign exchange reserves between 1976 and 1985. (See MACRO spreadsheet)

Tanzania's debt was rescheduled at the Paris Club in 1986, with another rescheduling anticipated for 1988. (TAS, 1988)

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A. Policies

1. Macroeconomic

Tanzania experienced serious inflation throughout much the the 1970's and early 1980's, with the CPI reaching 450 at the time of the ERP. (See MACRO Spreadsheet) Inappropriate policies and a high budget deficit were a major sources of inflation.

Inflation has fallen significantly under the ERP, and was at about 30% over the 1986-8 period. (TAS, 1988)

a. Exchange rates

The Tanzanian shilling was seriously overvalued for most of the 1970's and 1980's. (See EXCHANGE RATE graph) Currency devaluations were begun in 1982, but they were inadequate to stimulate economic recovery. As part of the ERP, more significant devaluations were undertaken, resulting in a 100% depreciation between June 1986 and March, 1988. At this point, however, the official rate (94 shillings to the dollar) was well below the informal market rate (200-250). (TAS, 1988)

b. Domestic macro

There are no private banks in Tanzania. The Bank of Tanzania provides central banking facilities, with the National Bank of Commerce handles commercial banking. On Zanzibar, both central and commercial banking functions are performed by the Zanzibar Peoples Bank. (TAS, 1988)

In an attempt to encourage private and foreign investment, the government has promised to improve investment incentives and make more credit available to the private sector. (TAS, 1988)

As part of the ERP, the government lowered income tax rates and raised sales and excise taxes as a more important source of revenue.

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most of 1987, and excess credit to some agricultural marketing boards (particularly NMC and TCMB) reduced the money supply to the rest of the economy. Credit to NMC accounted for nearly one third of total National Bank of Commerce lending in 1987. Interest rates rose as part of the government policy of achieving real positive interest rates by mid-1988. (TAS, 1988)

2. Agricultural Sector

a. Institutions

The Tanzanian government intervened heavily in the agricultural sector through a wide range of parastatal marketing boards, affecting both domestic food marketing -- the National Milling Corporation (for grains and food crops), the Sugar Development Corporation, and Tanzania Dairies Limited -- and major export crops including the Coffee Authority of Tanzania, the Tanzania Tea Authority), the Tanzania Cotton Authority, the Tanzania Sisal Authority, the Tobacco Authority of Tanzania, and the Tanzania Pyrethrum Board. (Currie)

The National Milling Corporation (NMC) was created in 1968 from the nationalization of 8 private companies. Its mandate included the procurement, milling and distribution of wheat, maize and rice, grain storage. Its marketing role was supported by internal restrictions on movements of grain within the country. (Currie)

The Coffee Authority of Tanzania (CAT) operated village buying posts and processing centers, as well as maintaining coffee stocks. (Currie)

The Tanzania Cotton Authority (TCA) has overall control of the cotton industry. It is the sole legitimate purchaser of cotton, controls ginning and oil milling, and sells export cotton. It also provides seeds and allocates fertilizers, insecticides and other inputs. (Currie)

Cooperatives, which were disbanded in the 1970's, have been reestablished, and are taking a larger role in marketing as parastatal

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b. Prices

The government has traditionally been heavily involved in setting producer prices. Producer prices for food crops were set by the Economic Committee of the Cabinet, with input from the Marketing Development Bureau and the Ministry of Agriculture. The government also established prices for coffee, tea, sisal, cashews, tobacco, pyrethrum, sugar and milk. (Currie)

Prices were reviewed annually, but were frequently not adjusted annually. Cash crop prices were generally low, as were prices for official food marketing, which led to declining production of export crops and massive informal marketing of foodcrops. (Currie)

The government now establishes prices annually, and has significantly increased producer prices. There were substantial price increases in 1984/5 for corn (80%), wheat (50%), and other food staples (at least 50%). Most export crop prices doubled in nominal term between 1983/4 and 1985/6. In addition, there were substantial price increases in 1986/7 for coffee (80%), tobacco and cotton (30%) and cashews and tea (50%). (TAS, 1988) Price increases slowed in 1987/8 (up 15%), reflecting weak international prices, large cotton stockpiles and ginning constraints. (TAS, 1988)

c. Inputs

Cooperatives are now effectively in charge of procuring and distributing inputs, while the parastatals concentrate on crop processing and marketing. The shift has added flexibility, but problems exist as cooperatives suddenly expand their responsibilities. (TAS, 1988)

The problem of inadequate supplies of fertilizer and shortages of agro-chemicals which plagued Tanzania before ERP have eased, due to reforms and donor provided supplies. Past restrictions on the distribution of fertilizer have been replaced. Retail distribution channels are now dominated by cooperatives, farmer organizations and big

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the availability of fertilizer has improved, there are continued problems of logistics and credit for farm purchases. (TAS, 1988)

The costs of fertilizer, pesticides, farm implements and other important imported inputs have risen significantly and will rise more with currency devaluation. Costs have been held down to some extent by donor's willingness to provide inputs on concessional or grant bases. (TAS, 1988)

e. Land/land tenure

Production is predominately on smallholder farms, with a few state farms and plantations for export crop and wheat production. Performance of state operations has generally been poor.

f. Marketing

In March, 1987 the government abolished permit requirements for internal food grain movement, liberalizing domestic trade in food grains. Private traders already (1988) handle the bulk of the country's corn marketing. (TAS, 1988)

3. Inter-sectoral Biases

4. Trade

Imports.

The Tanzanian government liberalized import policy, allowing Tanzanians with access to their own foreign exchange to import from an expanding list of permissible goods (including consumer goods, spare parts and intermediate goods). These imports are conducted at the parallel market exchange rate, and are credited with an improved supply of essential goods. (TAS, 1988)

Exports.

The government now allows many exporters to retain a percentage of their hard currency earnings to use for imports. It has also allowed for more private trade. (TAS, 1988)

Cooperatives and large scale producers are allowed

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to to .ded added incentives for expanded production, and to circumvent the problem of marketing intermediaries. (TAS, 1988)

B. Policy Reform Initiatives

1. WB

In November, 1986 the WB approved a $180 million multisectoral rehabilitation credit in support of policy reforms in agriculture, transport and foreign exchange allocations. It was considering (has approved) a $105 million industrial and trade credit, a $30 agricultural export rehabilitation program in addition to a $100 million follow on to the first multisectoral rehabilitation credit. (TAS, 1988)

2. IMF

Tanzania concluded a 64.2 million SDR standby arrangement with the IMF in 1986. Its components closely parallel the ERP. In November, 1987 it approved a 3 year 69 million SDR structural adjustment facility, and was considering (circa March 1988) an enhanced structural adjustment facility. The new facility would likely include further reforms in parastatal subsidies, export crop marketing, the banking system, import controls, devaluation and foreign exchange allocation. (TAS, 1988)

3. USAID

III. Constraints/Distortions

1. Policy-based

Agriculture, like the rest of the economy, is starved for foreign and local funds. This problem is compounded by excessive government involvement through financially crippled parastatals. Parastatals cannot honor their financial commitments because of their high indebtedness. Excessive government credit to these institutions, in turn, has created serious shortages of finance for the economy as a whole. (TAS, 1988)

Weak transportation and physical (eg. ginning) infrastructure, combined with a strong response to market liberalization and higher prices, created

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. . . . . ks, and frustrated attempts to lower the costs/losses of parastatals. (TAS, 1988)

Transportation costs have risen due to the impact of devaluation (fuel, spare parts, vehicles). (TAS, 1988)

The slow implementation of some of the key economic reforms was noted as a difficulty, although it was attributed to the difficulty of overcoming constraints, not a lack of commitment to the economic reform program. (TAS, 1988)

2. Other

a. Infrastructure

Transportation problems are a (perhaps the) most significant constraint to increased growth. It "holds the key to the success of the recovery effort". (TAS, 1988)

b. Physical

The poor condition of the transportation fleet, as will as ginning constraints, are a significant limitation to increased export production and marketing. (TAS, 1988)

c. Lack of foreign exchange continues to undermine productivity levels by preventing the purchase of essential inputs and the renovation and use of farm equipment due to lack of spare parts and fuel. In some cases, modern farming techniques have given way to traditional farming, with a corresponding decline in output and productivity levels. (TAS, 1988)

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Macro Format Tanzania

Year	GDP current (local) millions	Imp. GDP deflator	real GDP (local) millions	real GDP ($) millions	CPI	exchange official (local/$)	exchange unofficial (local/$)	Merch. Exports	Merch. Imports	BOT	Net Services	Net Transfers	Current Account	Food Imp.	Ag. Imp.	Foreign Exchange Reserve	Total Outstanding Debt	Total Debt Service	Food as % of Total Imports	Debt Service Ratio	($US Mi Main Expo Coffe
								$US Million													
1966	7,042	31.9	22,071	3,089.9	17.3	7.1	8.6	259.2	219.1	40.1	(44.8)	(1.3)	(6.0)	25.4	30.3	57.3	97.2	6.5	11.6%	2.5%	42.4
1967	7,343	32.0	22,962	3,214.7	19.4	7.1	8.8	244.4	212.5	31.9	(41.6)	7.3	(2.4)	23.2	28.5	57.7	139.8	7.3	10.9%	3.0%	33.5
1968	7,874	32.6	24,152	3,381.3	22.5	7.1	8.3	238.0	229.9	8.1	(23.4)	9.2	(6.1)	23.4	26.7	73.3	143.2	9.3	10.2%	3.9%	37.1
1969	8,271	33.6	24,596	3,413.4	26.2	7.1	9.1	240.4	218.1	22.3	(7.6)	10.5	25.2	22.4	26.1	75.9	188.7	15.9	10.2%	6.6%	36.0
1970	9,173	35.3	26,022	3,643.1	27.1	7.1	10.1	246.9	283.5	(37.6)	(10.8)	12.8	(36.6)	27.3	32.1	56.2	264.7	16.1	9.6%	6.5%	43.7
1971	9,814	36.2	27,110	3,795.4	28.3	7.1	11.6	262.0	345.3	(83.3)	(22.2)	5.8	(99.7)	27.1	30.5	45.9	285.0	18.5	7.8%	7.1%	31.8
1972	11,172	38.6	28,933	4,050.6	30.5	7.1	15.2	316.2	359.8	(43.6)	(18.0)	(4.1)	(65.7)	46.2	52.6	104.8	369.6	47.7	12.8%	15.1%	53.6
1973	13,103	43.9	29,817	4,246.5	33.7	7.0	14.5	363.6	437.8	(74.2)	(38.2)	4.9	(107.5)	41.0	49.1	124.0	463.7	35.0	9.4%	9.6%	70.5
1974	15,994	52.3	30,562	4,283.4	40.2	7.1	13.5	399.2	660.4	(261.2)	(73.3)	49.2	(285.3)	154.0	162.7	48.2	646.5	27.6	23.3%	6.9%	52.6
1975	19,011	58.9	32,301	4,367.1	50.8	7.4	20.6	372.9	670.0	(297.1)	(36.2)	102.3	(230.0)	146.9	153.4	64.1	857.0	36.6	21.8%	9.8%	65.2
1976	23,412	68.0	34,436	4,109.5	54.3	8.4	21.9	490.4	556.6	(65.2)	(23.9)	55.4	(33.7)	64.1	73.4	106.4	974.5	39.1	11.5%	8.0%	153.1
1977	29,740	75.3	39,497	4,765.0	60.6	8.3	21.5	538.9	647.3	(108.4)	(78.0)	116.1	(70.3)	75.8	87.6	275.0	1,247.4	39.6	11.7%	7.3%	224.0
1978	33,144	86.9	38,129	4,944.1	67.5	7.7	13.1	476.9	995.7	(518.8)	(121.9)	164.9	(475.8)	77.9	91.1	91.9	1,376.7	43.0	7.8%	9.0%	169.0
1979	36,418	85.0	42,829	5,212.2	76.8	8.2	12.0	545.7	960.7	(415.0)	(106.3)	176.1	(346.2)	48.3	60.8	64.3	1,551.9	65.4	5.0%	12.0%	148.0
1980	43,188	100.0	43,188	5,268.8	100.0	8.2	21.0	507.6	1,068.7	(561.1)	(134.2)	162.0	(533.3)	154.6	164.6	20.3	2,041.6	74.5	14.5%	14.7%	136.5
1981	50,839	119.0	42,712	5,156.0	125.6	8.3	27.6	214.9	1,037.5	(822.6)	50.9	130.0	(641.7)	114.2	121.8	18.8	2,210.1	77.2	11.0%	35.9%	165.1
1982	60,508	139.9	43,264	4,660.6	162.0	9.3	32.9	413.0	983.5	(570.5)	12.4	119.1	(439.0)	122.3	130.1	4.8	2,384.7	63.3	12.4%	15.3%	133.5
1983	65,976	153.2	43,075	3,866.7	205.8	11.1	39.6	378.8	692.7	(313.9)	(14.6)	103.3	(225.2)	94.2	101.1	19.4	2,670.6	57.1	13.6%	15.1%	130
1984	75,658	171.4	44,143	2,886.7	279.5	15.3	60.0	388.8	758.7	(369.9)	(43.2)	159.5	(253.6)	118.5	133.6	26.9	2,681.9	62.3	15.6%	16.0%	144.9
1985	108,091	245.4	44,044	2,521.1	365.0	17.5	90.0	326.1	804.3	(478.2)	(69.0)	234.5	(312.7)	142.8	90.0	16.0	3,075.0	60.9	17.8%	18.7%	118.5
1986	144,682	310.4	46,604	1,425.3	450.9	32.7	140.0	369.0	776.5	(417.5)	(86.0)	250.0	(252.5)			61.1	3,649.7	69.2		19.3%	184.7
1987								411.3	1150.0	(738.7)								274.7			119.5
	66-86: IFS		86: IMF Aug 86		IFS	IFS	Pick's 84-86: IMF		66-81: IFS 84-86: IFS 87: IMF 10/87					FAO: fd/animals oilseeds f veg oils proc. oils	FAO	IFS- foreign exchange	66-86 IBRD Debt tables	66-87 IBRD Debt tables			IFS 81-86: IMF 86-87: IMF 4/28

Source: Economic Research Service, U.S. Department of Agriculture

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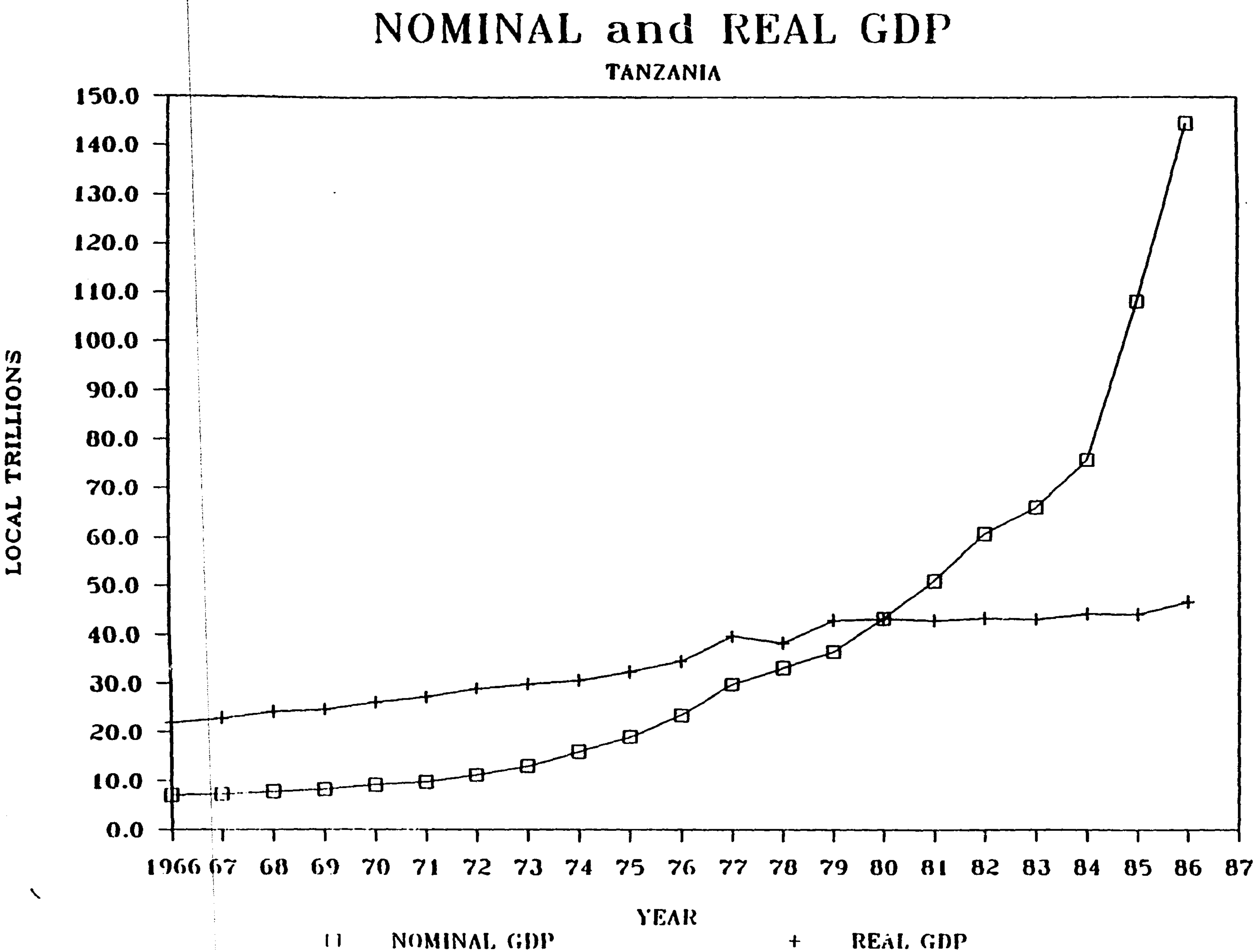
Tanzania--Total Grains

Year	Area 1000 ha	FAO Prod. 000 MT (T-1)	ERS Prod. 000 MT (T-1)	ERS Milled 000 MT (T-1)	Calc. Yield ton/ha	Beg. Stocks	End Stocks	Aid Imports	Total Imports	Exports	Total Avail. 1000 MT	Feed Use	Seed Use	Waste	Non-Food	Consumption	Prod. Price (govt) local/ton	Indices Population 1,000	Growth Rate (%)	Per cap. Consump. kg	Mktg. Year	Imports 000 MT	Exports 000 MT
1966	1,781	1,346	1,365	1,310	0.74				34		1,344		47	85	132	1,213	NA	12,620	—	96.1	1966/67	34	
1967	1,651	1,160	986	960	0.58	0			42		987		34	64	98	888	NA	12,952	2.60	68.6	1967/68	37	
1968	1,696	1,227	1,119	1,075	0.63	0			66		1,094		40	70	110	985	NA	13,296	2.62	74.1	1968/69	19	
1969	1,701	1,190	1,149	1,103	0.65	0		4	51		1,113		42	70	111	1,002	NA	13,657	2.68	73.3	1969/70	10	
1970	1,748	1,460	1,368	1,300	0.74	0		5	69	20	1,318		51	80	131	1,187	NA	14,038	2.75	84.6	1970/71	18	
1971	1,736	1,407	1,414	1,352	0.78	0		9	93	27	1,390		54	83	138	1,253	NA	14,430	2.75	86.8	1971/72	38	
1972	1,796	1,473	1,461	1,406	0.78	0		6	184	4	1,425		56	87	142	1,283	NA	14,843	2.82	86.4	1972/73	19	
1973	1,740	1,349	1,308	1,249	0.72	0		8	43	11	1,311		50	77	127	1,184	NA	15,321	3.17	77.3	1973/74	62	
1974	1,799	1,410	1,376	1,303	0.72	0		4	431	0	1,424		52	82	134	1,290	NA	15,792	3.03	81.7	1974/75	121	
1975	2,030	2,149	2,164	2,072	1.02	0		138	461	0	2,151		78	133	211	1,941	NA	16,250	2.86	119.4	1975/76	79	
1976	2,366	2,514	2,334	2,215	0.94	0		79	115	0	2,249		88	136	223	2,026	NA	16,704	2.76	121.3	1976/77	34	
1977	2,63[illegible]	2,795	2,817	2,7[illegible]0	1.02	74	169	90	166		2,756	54	99	178	331	2,425	NA	17,195	2.90	141.0	1977/78	151	0
1978	2,750	2,696	2,677	2,553	0.93	169	160	55	133	23	2,564	59	95	170	324	2,240	NA	17,713	2.97	126.5	1978/79	102	100
1979	2,832	2,926	3,036	2,903	1.03	160	86	51	87	49	3,023	73	107	192	372	2,651	NA	18,245	2.96	145.3	1979/80	105	59
1980	2,836	3,122	2,793	2,677	0.94	86	120	177	417	1	3,030	70	96	183	349	2,681	NA	18,804	3.02	142.6	1980/81	367	0
1981	2,860	2,944	2,[illegible]	2,[illegible]	0.94	120	86	248	294	0	3,082	70	102	179	352	2,730	NA	19,393	3.08	140.8	1981/82	364	0
1982	2,736	2,941	2,592	2,471	0.90	86	20	280	324	0	2,676	65	93	170	328	2,348	NA	20,006	3.11	117.4	1982/83	217	0
1983	2,842	2,842	3,007	2,876	1.01	20	34	201	232	0	3,217	60	105	197	362	2,866	NA	20,661	3.18	138.3	1983/84	366	0
1984	2,350	3,282	3,276	3,144	1.34	34	37	160	367	0	3,376	60	117	208	379	2,997	NA	21,327	3.22	140.5	1984/85	236	0
1985	2,973	3,627	3,660	3,513	1.18	37	47	137	[illegible]46	0	3,718	72	125	236	433	3,286	NA	22,021	3.20	149.2	1985/86	215	0
1986	2,979	3,884	3,670	3,528	1.18	47	181	0	234	0	3,598	77	127	233	437	3,161	NA	22,745	3.23	139.0	1986/87	204	0
1987	2,480		3,869	3,710	1.51	8					3,320	25	134	244	403	2,917	NA	23,502	3.27	124.1	1987/88		0
1988					0.00	0											NA	24,295	3.32				
1989					0.00												NA						

Source: Economic Research Service, U.S. Department of Agriculture



Source: Economic Research Service, U.S. Department of Agriculture

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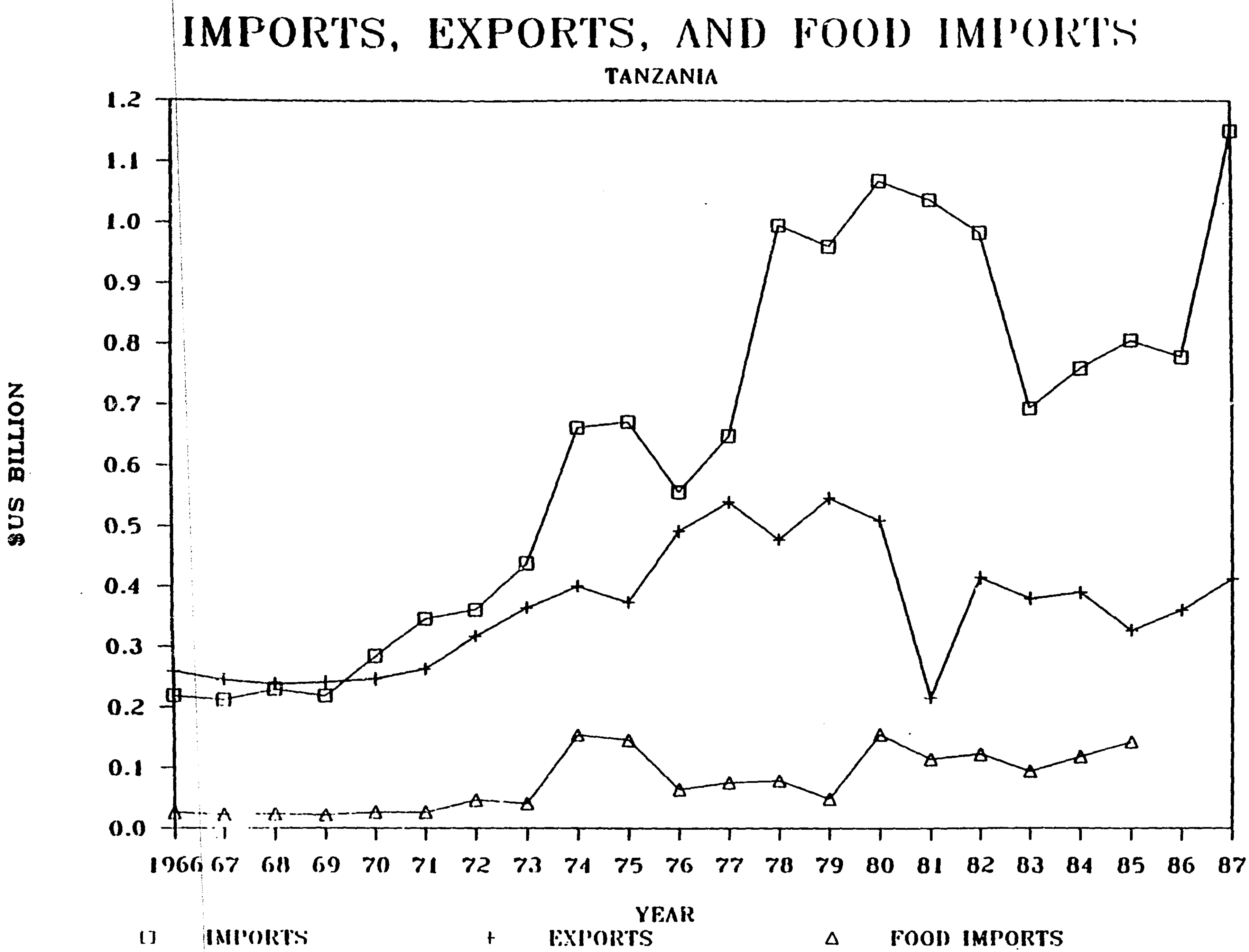

Source: Economic Research Service, U.S. Department of Agriculture

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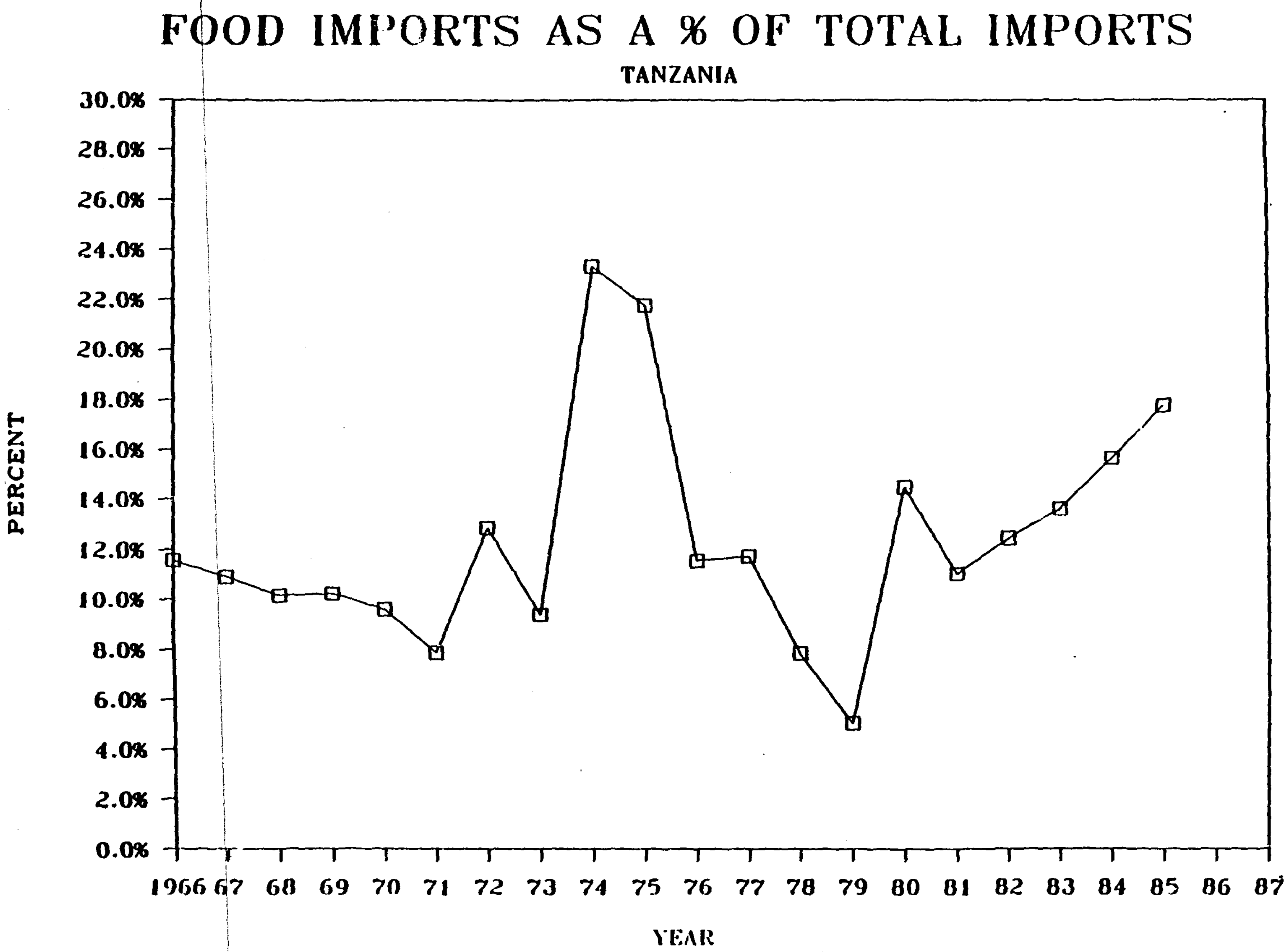
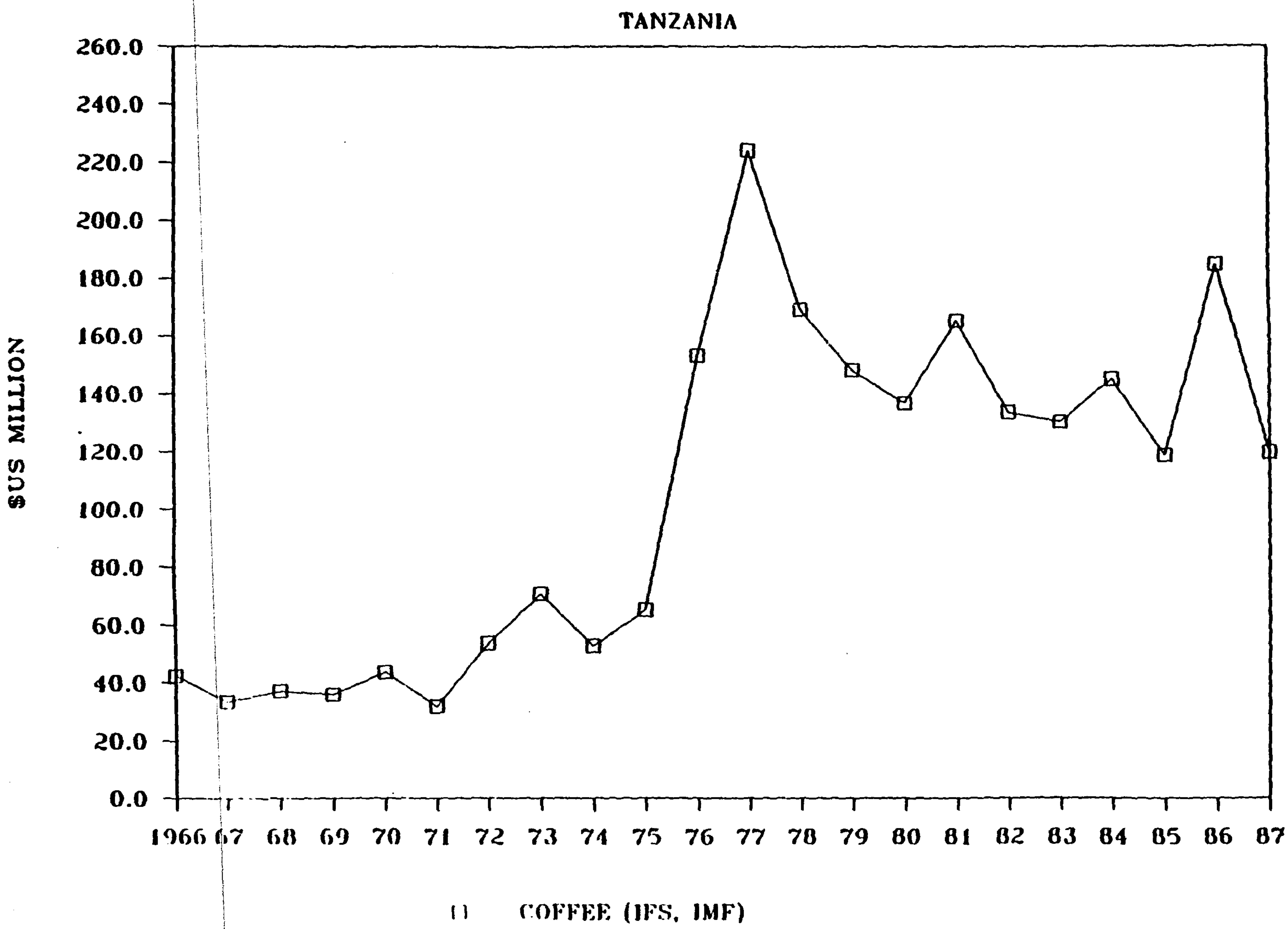


Source: Economic Research Service, U.S. Department of Agriculture

EXPORTS OF MAJOR SOURCE OF FOR.EXCHANGE



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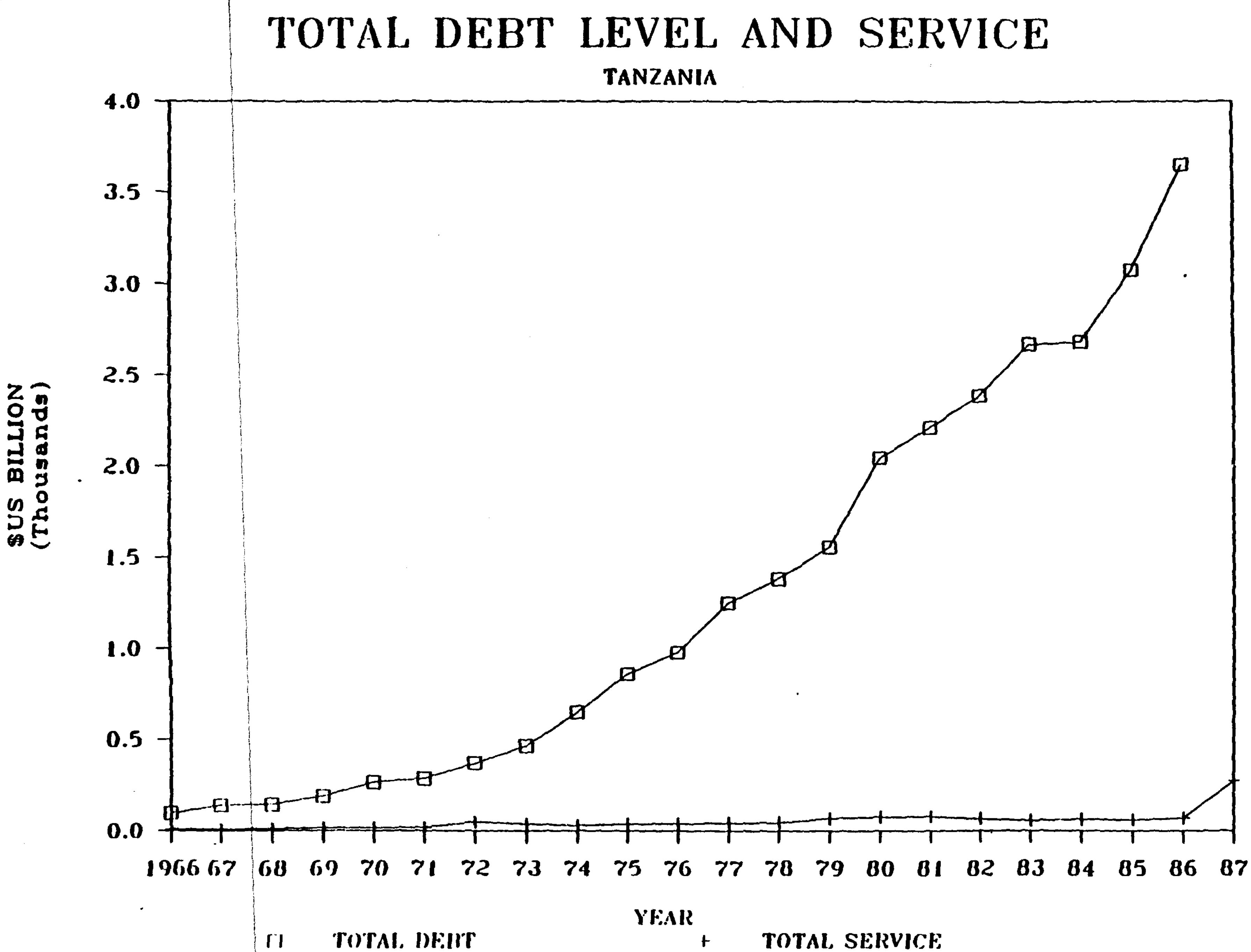

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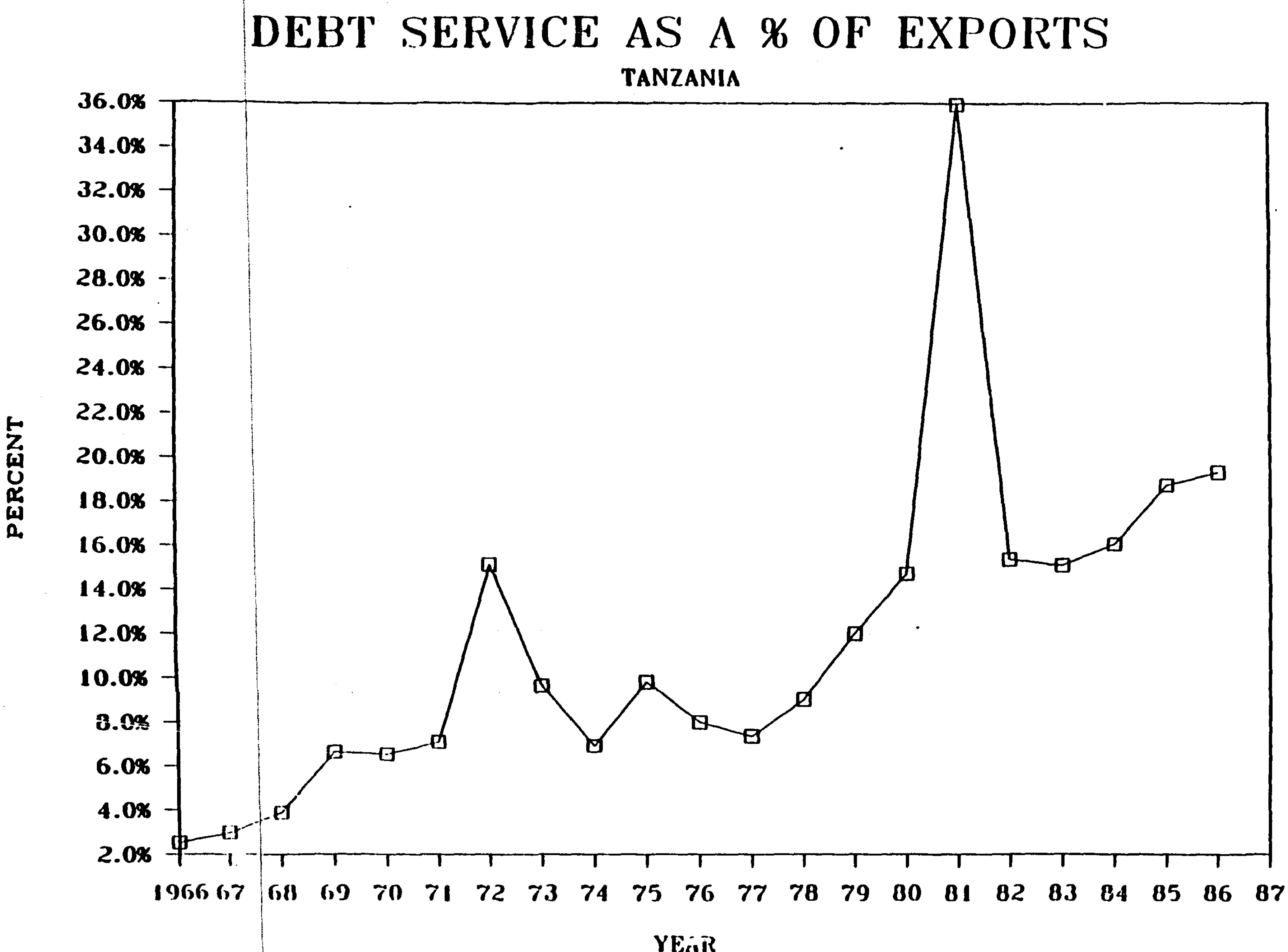
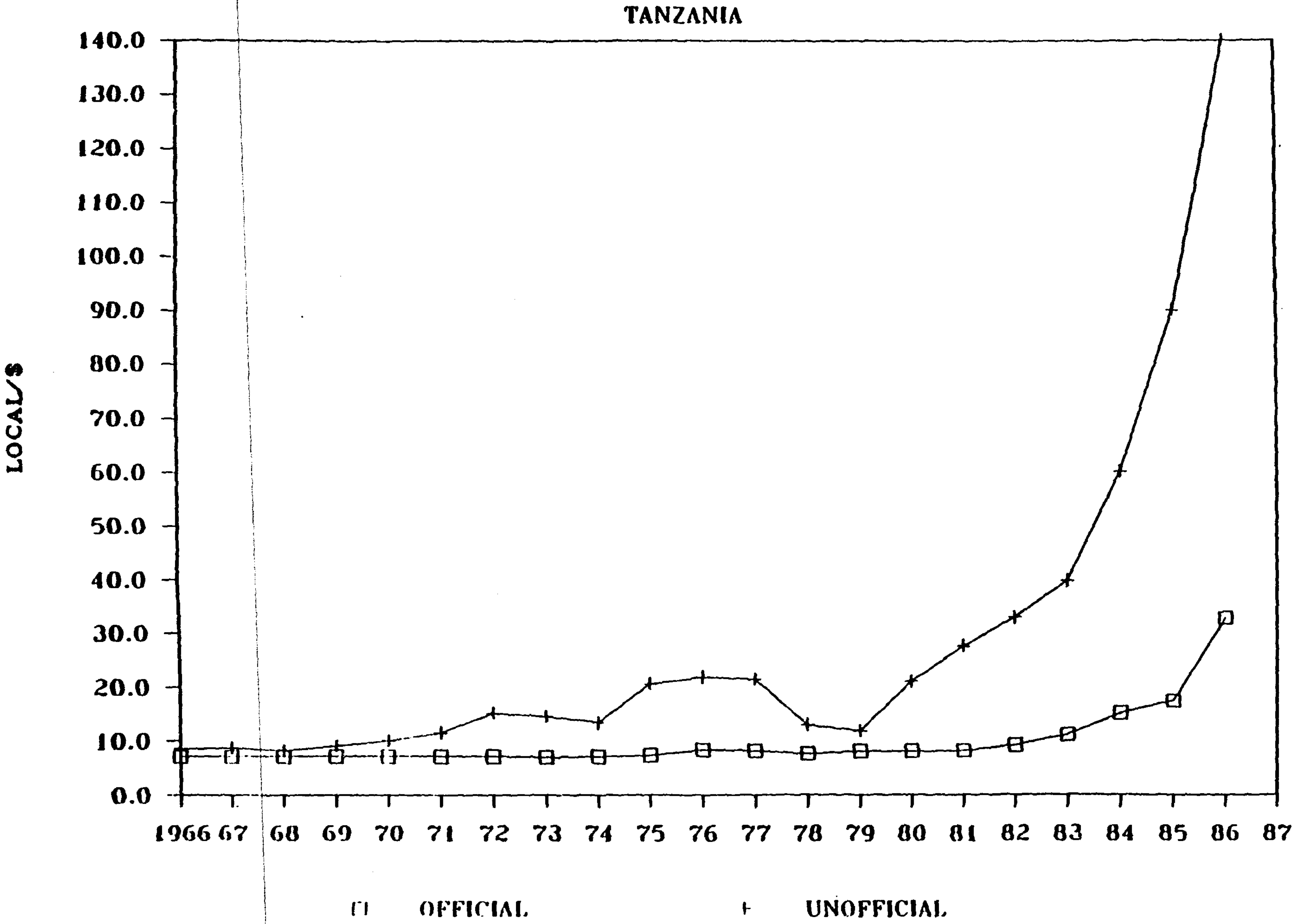


Source: Economic Research Service, U.S. Department of Agriculture

OFFICIAL and UNOFFICIAL EXCHANGE RATES



Source: Economic Research Service, U.S. Department of Agriculture

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APPENDIX G

Country Policy Appendix
Kenya

I. Background

A. General development strategy

B. Demographic/geographic features

Kenya has a land shortage problem. Only 20% of its 57 million hectares is good quality agricultural land, with the remaining land is either semi-arid (75%) or barren (5%). Kenya's 3.9% (perhaps even higher) population growth rate is putting pressure on the land base. By then end of this decade, there will be only .2 hectares of high potential land per person. Cultivation has already been extended to more marginal and environmentally fragile areas. (KAS, 1989)

C. Crop production

Kenya produces a variety of agricultural crops for export and domestic consumption. Its staple food crop is maize, in which Kenya has been broadly self-sufficient. The country also produces wheat, but its production is limited by climate. Non-grain food crops include beans, potatoes and other roots and tubers, which appear to be providing a larger share of the diet. (IFPRI?) Kenya is also committed to domestic sugar production and processing.

Kenya's major agricultural export crops are coffee, tea, horticultural crops, with smaller exports of sisal, cashews, cotton and tobacco.

II. Economic Performance

A. GDP/capita

Kenya's economic performance is among the best is sub-Saharan Africa. Kenya has experienced real per capita GDP growth over the 1985-88 period, after declines throughout most of the 1970's. (See MACRO spreadsheet and GDP graph) (KAS, 1989)

B. Agricultural performance

1. Production (if possible food and export crops)

Agricultural production has been strong, both for food and export crops, although food crop production has slowed in recent years.

2. Sector income/share of GDP

Agriculture employs over 70% of the population. It accounts for approximately a quarter of GNP. (circa 1984, Currie).

C. Trade Performance

Throughout the 1970's and 1980's, coffee and tea were Kenya's major sources of foreign exchange. In 1988, tourism replaced coffee as Kenya's major foreign exchange earner. (KAS, 1989)

1. Balance of trade

Kenya has experienced a persistent balance of trade deficit, which has narrowed significantly since 1981. (See MACRO spreadsheet and TRADE graph)

Kenya has received, and remains dependent on, signifcant financial support from donors and intenational financial institutions. This includes both balance of payments support and development assistance. Both the IMF and the WB have significant programs (see pages ___). Japan is now Kenya's largest bilateral donor, followed by the EC. (KAS, 1989)

2. Agricultural trade

Imports (concessional and food aid)

Kenya's food imports accounts for 10-12% of Kenya's total import bill. (See FOOD IMPORTS graph) Kenya has generally imported significant quantities of wheat (200-240,000 tons per year), and has been a recipient of regular US food aid. There were imports of corn during the drought in the mid-1980's, including both food aid and commercial purchases.

Exports

Kenya's agricultural exports have performed well by sub-Saharan African standards. (See EXPORTS/FOREIGN EXCHANGE graph) Coffee exports remained steady

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between mini-boom periods (1979, 1986, 1988) when international prices rose. Tea production and exports have increased. Horticultural exports have grown significantly, and horticultural exports are now Kenya's fourth largest source of foreign exchange (after tourism, coffee and tea). (KAS, 1989)

D. External Debt/Reserves

Kenya has a significant external debt burden, some $3.5 billion in 1986 and $4 bilion in 1988. (See DEBT graph) (KAS, 1989) Its debt service burden has also grown significantly, and has been between 35-40% of export earnings. (See DEBT SERVICE graph) (KAS, 1989) Kenya has a good record on meeting its debt service obligations, and has not undergone debt rescheduling. In January, 1989 the US announced that it would forgive some $____ in bilateral debt to Kenya. (WP)

III. Policy Environment

A. Policies

1. Macroeconomic

a. Exchange rates

Since 1982, Kenya has followed a flexible exchange rate regime under which the shilling has fluctuated against the SDR currency basket (US dollar, British pound, Frenc franc, Japanese yen). The shilling was depredиated significantly during this period, although there was still on occasion a significant difference between official and parallel market rates. (see EXCHANGE RATE graph) By 1989, the shilling has depreciated 108% against the SRD and 115% against the US dollar. (KAS, 1989)

b. Domestic macro

Kenya's budget deficit is large and growing. The poor performance of public enterprises, requiring large budget subsidies, coupled with a recent expansion of government ministeries, the doubling of university intake and public sector wage increases all contribute to the deficit. About 25% of the budget deficit was covered by external financing (including

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grants) in 1988. (KAS, 1989)

Public sector borrowing constitutes 47% of the total assets in the banking system. In 1987 government borrowing from the banking system rose by 30%, contributing to a 21% growth in the money supply, squeezing credit availability for the private sector, and fueling inflationary pressures. The government plans to finance 1/3 of its 1988/89 deficit from external sources to avoid crowding out the domestic private sector. (TAS, 1989)

Kenya has a relatively well developed financial system, which had experienced rapid growth during the 1970's and early 1980's. Kenya's financial sector experienced a major crisis in 1986, that led to the collapse of two banks and four near-bank financial institutions. The crisis led to new policies (which went into effect in mid 1987) to correct the weak capitalization of financial insitutions. The future stability of the deposit and credit base depends on the extent to which compliance with the new practices is monitored and enforced. (KAS, 1989)

2. Agricultural Sector

Kenya has traditionally intervened heavily in the agricultural sector through a variety of parastatal oranizations which have been involved in commodity marketing for food crops such as maize. Unlike many African countries, however, Kenya has maintained a commitment to encouraging export crop production, and transmitted international prices to farmers.

In 1986, the government undertook an agricultural adjustment program designed to encourage growth. The adjustment program focuses on improving the distribution and use of inputs among smallholders, reducing the public sector role in marketing, reforming and/or divesting selected parastatals, maintaining attractive producer price incentives speeding up farmer payments and improving agricultural credit policies. (KAS, 1989)

a. Institutions

Considerable progress has been made in reforming the National Cereals and Produce Board (NCPB), the parastatal responsible for domestic marketing and trade in food crops to eliminate its monoploy on grain marketing and contain the drain on the government budget. NCPB is being redefined and reorganized to ultimately limit its role (and budgetary authorization) to maintaining food security and stabilizing markets by maintaining stocks and acting as a buyer of last resort. (KAS, 1989)

b. Prices

The government controls producer prices and sets consumer prices for a variety of commodities, including wheat, maize meal, sugarcane and cotton. With the exception of cotton, producer prices approximate world market prices. (KAS, 1989)

The official policy on price controls is changing in favor of relaxing them on non-essential foods. In 1986 babyfoods and fruit drinks were decontrolled. In 1987 meat was deregulated. In 1988 the subsidy on retail tea prices was reduced by 50%. Maize meal, vegetable oil and flour prices are still being kept low (in favor of urban consumers). (KAS, 1989)

The government does not set prices for coffee and tea exports. Growers receive the world market price, minus marketing costs and export taxes. (KAS, 1989)

c. Inputs

In 1987 the government raized the retail price of fertilizer to world market levels (an average of 20%) and increased the number of distributors and other end users receiving fertilizer allocations. The government licenses established dealers. KGGCU handled about half the distribution in 1988, with the second largest importer/distributer MEA Ltd handling about 15%. The availability of fertilizers at the farm level is estimated to have increased by about 40% since 1984. (KAS, 1989)

The government also approved a fertilizer policy providing for long-term development of marketing and pricing arrangements. The policy measures aim at gradually liberalizing the fertilizer allocation system, continued setting of domestic prices based on international prices, and adopting standard guidelines for pricing and distributing donor financed fertilizer. (KAS, 1989)

All fertilizers are imported, about 60% commercially and 40% through donors, except in 1987/8 when donors supplied 63% of Kenya's fertilizer imports. (KAS, 1989)

e. Land/land tenure

f. Marketing

In 1987 65% of NCPB's buying centers were closed, and redundant personnel dismissed. Responsibility for purchasing wheat was transferred to the Kenya Grain Growers Cooperative (KGCC). In July, 1988 the KGCC and small traders were permitted to purchase up to 20% of the maize crop for sale to millers. Priority purchases of maize will be the responsibility of KGCC and NPBC to assure adequate stocks. NPBC retains its monopoly on the import and export of grains and beans. (KAS, 1989)

3. Inter-sectoral Biases

4. Trade

The Kenya government has shifted from an import substitution to an export promotion industrialization strategy. It has introduced an export compensation scheme to encourage exports. The exporter of a manufactured product is intitled to 20% of the FOB value of his goods or the received foreign exchange, whichever is less. Exporters continue to complain about the low compensatory rate and delayed payments, however. (KAS, 1989)

Kenya does not rely heavily on export taxes for revenue. Coffee and tea are subject to export taxes. Coffee and tea export duties are pegged to the auction price. (KAS, 1989)

The government of Kenya is slowly liberalizing the import licensing and tariff structures to reduce the extent of direct control. Specific rates of duty vary depending on whether the import is considered essential or a luxury. (KAS, 1989)

B. Policy Reform Initiatives

1. WB

Kenya has had two structural adjustment loans (SALs) with the World Bank, one in 1980, the other in 1982.

In 1986, Kenya had a major World Bank sectoral adjustment loan in agriculture.

In June, 1988 Kenya received approval for a major World Bank industrial sector adjustment loan, and received $61.5 million from IDA ($20 million earmarked for the agricultural sector). (KAS, 1989)

2. IMF

Kenya had four IMF agreements between 1981 and 1987, with a total value of 654 million SDRs. (ADJUST1)

Kenya entered a new $225 million 3-year IMF program in 1988 to help cover a chronic balance of payments deficit. (KAS, 1989)

3. USAID

4. Other

The African Development Bank (ADB) and the African Development Fund (ADF) intend (1989) to lend Kenya $63.5 for the Industrial Sector Adjustment Program (ISAP) designed to improve the efficiency of the industrial sector through trade liberalization, tariff reform and improved incentives for new investment in export manufacturing. Policy changes anticipated are tax reforms, price decontrol, divestiture of industrial and financial public enterprises, capital market reforms, and streamlining investment procedures and regulations. (KAS, 1989)

The Kenyan government estimates the total external financing requirement for ISAP at $500 million over the 1988-92 period, and has approached the WB, European Investment Bank, USAID, the Japanese OECF and the British ODA regarding funding. (KAS, 1989)

III. Constraints/Distortions

1. Policy-based

2. Other

   a. Infrastructure

   b. Physical

   c.

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Macro Format Kenya

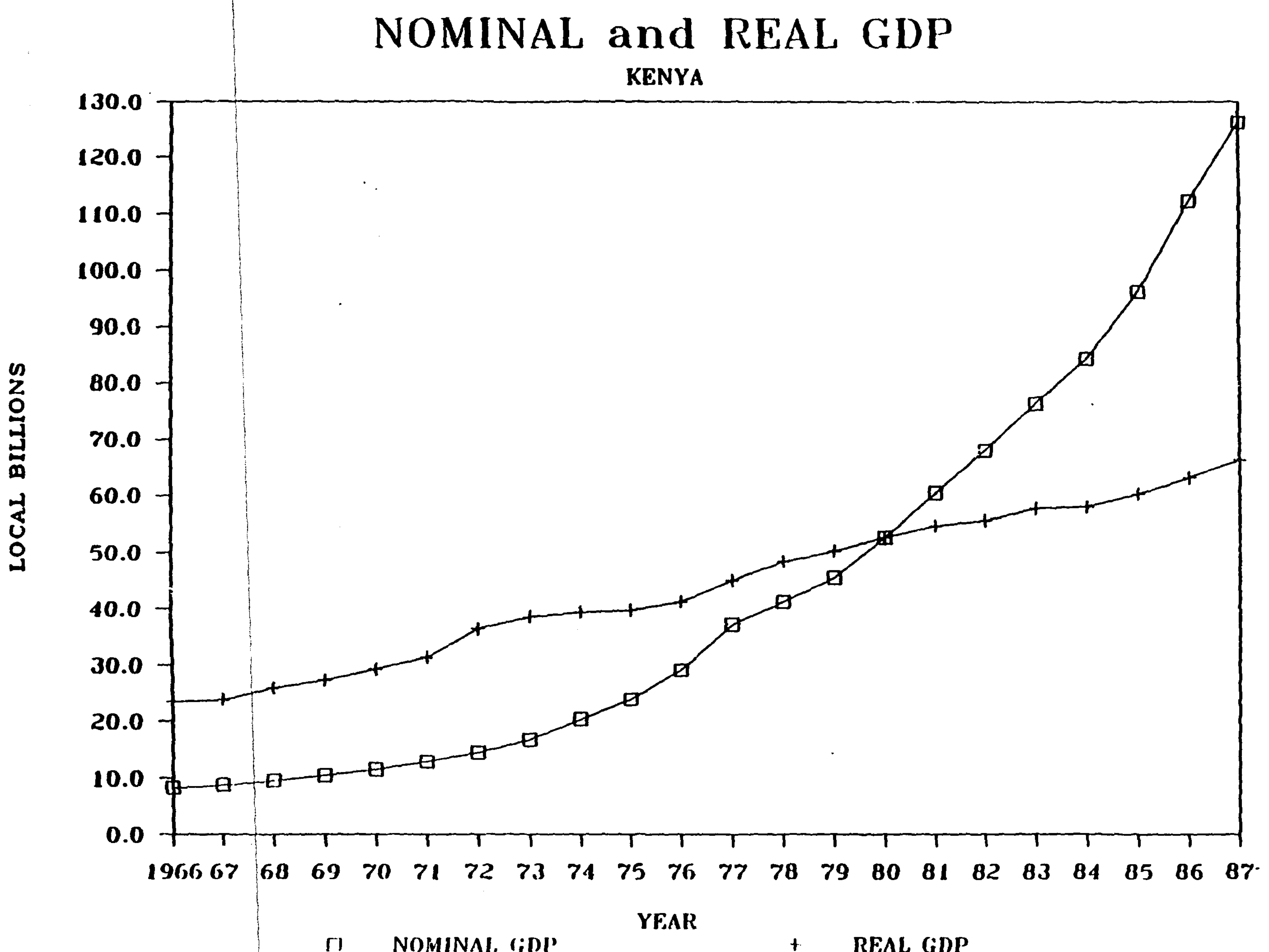
Year	GDP current (local) billions	imp. GDP deflator	real GDP (local) billions	real GDP ($) millions	CPI	exchange official (local/$)	exchange unofficial (local/$)	Merch. Exports	Merch. Imports	BOT	Net Services	Net Transfers	Current Account	Food Imp.	Ag. Imp.	Foreign Exchange Reserve	Total Outstanding Debt	Total Debt Service	Food as % of Total Imports	Debt Service Ratio	($US Mil.) Main Exports: Coffee	Tea
								---------------------$US Million					------------------------									
1966	8.2	34.9	23.5	3,296.6	31.0	7.14	8.64	243.6	276.8	(33.2)	5.8	8.8	(18.6)	47.4	57.9	48.4	210.5	18.4	17.1%	7.6%	52.6	25.8
1967	8.8	36.7	23.8	3,336.1	31.5	7.14	8.68	221.9	283.9	(62.0)	(1.1)	2.9	(60.2)	32.0	41.2	71.8	219.6	19.5	11.3%	8.8%	44.0	22.0
1968	9.6	37.1	25.9	3,621.9	31.7	7.14	8.25	236.3	294.2	(58.9)	(6.3)	25.0	(40.2)	31.9	40.7	96.0	247.2	17.9	10.8%	7.8%	36.0	28.8
1969	10.4	38.2	27.3	3,821.4	31.6	7.14	9.10	253.3	295.8	(42.5)	11.7	22.7	(8.1)	38.8	47.8	165.6	267.3	19.2	13.1%	7.6%	47.2	32.8
1970	11.5	39.2	29.3	4,103.5	32.2	7.14	9.71	286.5	371.8	(86.3)	11.7	25.6	(49.0)	36.5	50.0	202.0	283.7	18.8	9.8%	6.6%	62.4	37.0
1971	12.8	41.0	31.3	4,384.6	33.4	7.14	9.61	298.7	478.6	(184.9)	14.9	58.3	(111.7)	54.2	73.1	144.9	307.5	20.0	11.3%	6.8%	54.7	34.2
	14.4	39.7	36.4	5,091.5	36.5	7.14	9.44	337.4	464.3	(116.9)	10.6	38.1	(68.2)	54.4	70.7	170.4	373.0	25.5	12.0%	7.6%	69.3	46.2
	16.8	43.5	38.5	5,503.1	38.8	7.00	10.65	469.9	544.8	(74.9)	(81.1)	29.9	(126.1)	60.8	79.8	197.6	446.8	29.8	11.2%	6.3%	102.3	48.
	20.3	51.7	39.4	5,509.2	46.7	7.14	8.57	581.0	897.9	(316.9)	(22.4)	31.4	(307.9)	66.3	95.6	191.0	569.5	37.4	7.4%	6.4%	107.5	54.
	23.8	60.1	39.7	5,401.5	54.4	7.34	8.76	633.2	846.9	(213.7)	(55.2)	50.4	(218.5)	47.5	77.1	169.0	566.0	37.4	5.6%	5.9%	95.9	62.
	29.1	70.6	41.2	4,923.9	60.6	8.37	9.38	746.9	809.7	(63.8)	(74.9)	14.5	(124.2)	55.7	86.1	272.3	764.0	53.6	6.9%	7.2%	223.0	75.
	37.2	82.5	46.1	5,444.6	69.6	8.28	8.63	1,130.9	1,112.8	18.1	(57.0)	66.5	27.6	58.2	92.9	504.9	1,361.1	65.4	5.2%	5.9%	493.9	173.
	41.2	85.2	48.3	6,252.7	81.4	7.73	8.40	956.0	1,631.8	(675.8)	(75.7)	91.0	(660.5)	84.5	130.8	338.3	1,815.5	136.9	5.2%	14.2%	322.8	163.5
	45.5	90.6	50.2	6,720.0	87.9	7.48	8.51	1,031.4	1,594.2	(562.8)	(26.9)	89.5	(500.2)	75.4	107.7	519.6	2,247.1	157.7	4.7%	15.3%	296.2	168.2
	52.6	100.0	52.6	7,095.4	100.0	7.42	8.18	1,261.4	2,344.8	(1,083.4)	50.0	146.0	(887.4)	176.4	213.5	466.0	2,214.3	251.2	7.5%	19.9%	291.6	156.3
	60.5	110.5	54.7	6,048.7	111.8	9.05	10.87	1,081.3	1,834.0	(752.7)	(23.8)	216.2	(560.3)	112.2	139.1	220.0	2,330.5	292.5	6.1%	27.1%	242.8	136.4
	68.0	122.1	55.7	5,096.2	134.7	10.92	14.33	935.5	1,467.7	(532.2)	94.6	132.9	(304.7)	126.5	144.7	194.6	2,438.5	336.6	8.6%	35.9%	264.9	142.0
	76.4	132.3	57.7	4,337.1	150.2	13.31	16.24	926.6	1,197.9	(271.3)	43.6	179.7	(48.0)	123.9	139.1	348.5	2,436.3	314.6	10.3%	34.0%	240.5	186.5
	84.4	146.5	58.0	4,024.1	166.4	14.41	NA	1,034.5	1,348.2	(313.7)	10.8	176.6	(126.3)	180.0	201.5	377.0	2,618.8	364.9	13.4%	34.3%	282.7	279.9
	96.2	159.7	60.2	3,665.6	187.0	16.43	NA	943.2	1,276.0	(332.8)	42.8	191.6	(98.4)	146.0	174.2	376.4	2,877.3	396.3	11.4%	42.0%	282.5	234.6
	112.3	175.1	63.2	3,896.0	196.4	16.23	20.00	1,171.2	1,462.1	(290.9)	(17.8)	206.5	(102.2)			386.3	3,437.9	429.8	0.0%	36.7%	478.6	213.5
	126.3	187.3	66.4	4,024.2		16.50		930.8	1,621.1	(690.3)			(690.3)					469.4	0.0%	50.4%	253.5	204.1
	66-86: IFS 87: IMF 1/88		66-86: IFS 87: IMF 1/88		IFS	IFS	(Pick's)	66-86: IFS 87: IMF 1/88			66-86: IFS			FAO: fd/animals oilseeds f veg oils proc. oils	FAO	(IFS- foreign exchange)	66-86 IBRD Debt tables	66-87 IBRD Debt tables			86-87: IMF 1/88	

~rce: Economic Research Service, U.S. Department of Agriculture

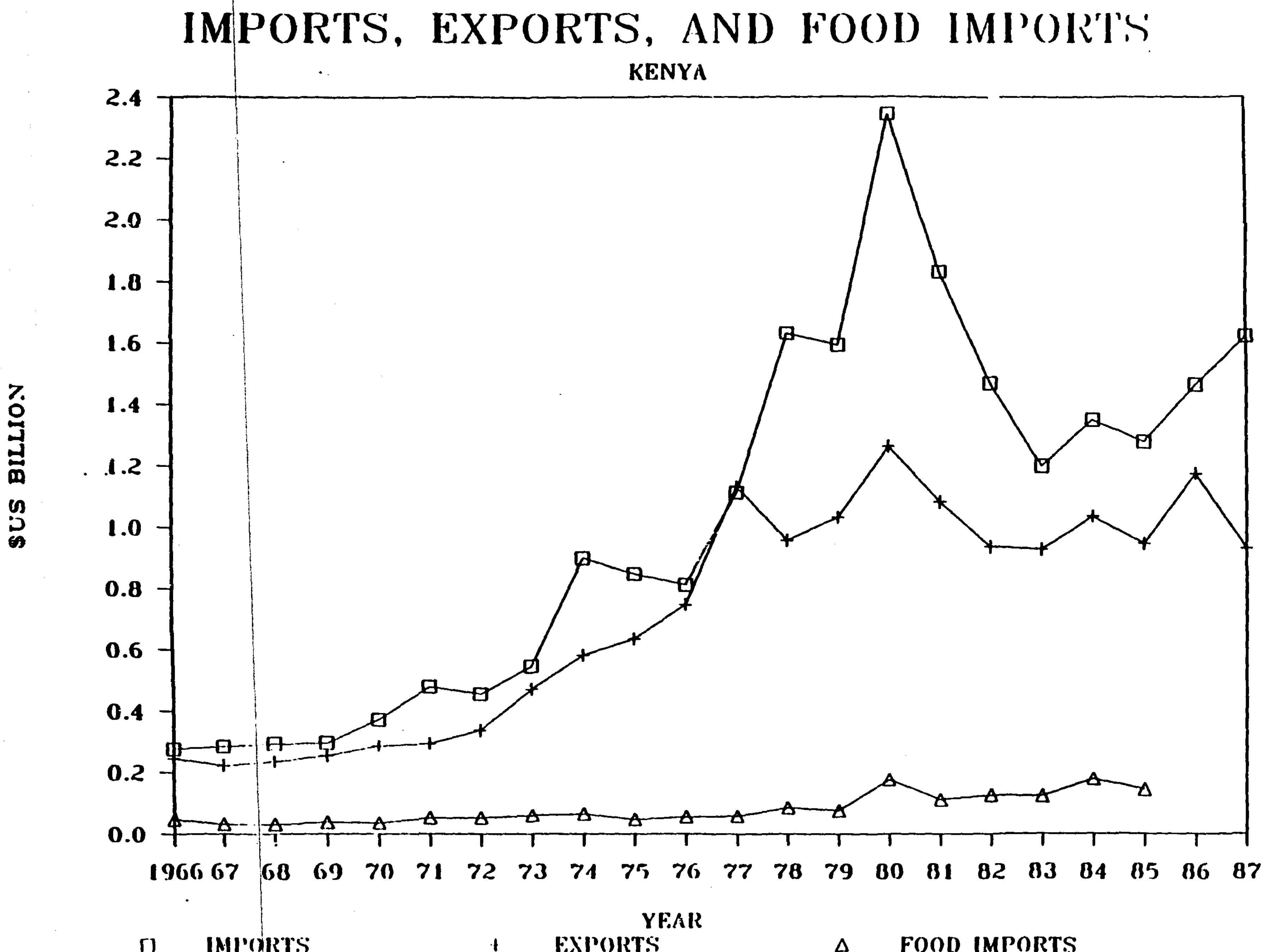
_=Total Grains

—	Area 1000 ha	FAO Prod. 000 MT	ERS Prod. 000 MT	ERS Milled 000 MT	Calc. Yield ton/ha	Beg. Stocks	End Stocks	Aid Imports	Total Imports	Exports	Total Avail. 1000 MT	Feed Use	Seed Use	Waste	Non-Food	Consumption	Prod. Price (govt) local/ton	Indices Population 1,000	Growth Rate (%)	Per cap. Consump. kg	Mktg. Year	Imports	Exports
166	1,619	2,106	1,978	1,972	1.22			147	186	3	2,351	56	32	241	328	2,023	NA	9,864	---	206.0	1966/67	425	53
	1,589	2,374	2,198	2,192	1.38			1	27	157	2,074	61	33	225	318	1,756	NA	10,192	3.22	172.3	1967/68	32	165
B	1,641	2,617	2,193	2,186	1.33			3	17	252	1,888	59	34	221	314	1,574	NA	10,532	3.23	149.4	1968/69	12	319
9	1,679	2,750	2,001	1,992	1.19			0	15	202	1,735	53	34	201	288	1,448	NA	10,888	3.27	133.0	1969/70	2	265
170	1,684	2,696	2,117	2,106	1.25			2	39	77	2,061	57	34	216	306	1,755	NA	11,272	3.41	155.7	1970/71	22	84
171	1,680	2,554	1,906	1,894	1.13			3	68	152	1,897	51	33	197	281	1,616	NA	11,686	3.53	138.3	1971/72	52	61
	1,646	2,731	2,284	2,273	1.38			2	81	25	2,319	64	33	236	333	1,987	NA	12,126	3.64	163.8	1972/73	75	32
1973	1,654	2,938	2,182	2,169	1.31			1	87	162	1,921	61	33	222	316	1,605	NA	12,594	3.72	127.4	1973/74	32	286
1974	1,667	2,834	2,163	2,151	1.29			0	17	56	2,140	60	34	223	317	1,823	NA	13,090	3.79	139.3	1974/75	63	76
	1,673	3,069	2,469	2,457	1.47			0	86	130	2,408	69	34	255	358	2,050	NA	13,615	3.86	150.6	1975/76	74	126
	1,694	3,228	2,796	2,781	1.64	115	905	7	57	111	1,937	79	34	286	398	1,538	NA	14,171	3.92	108.6	1976/77	63	118
	1,714	3,168	2,824	2,808	1.64	905	864	7	39	10	2,836	114	32	284	431	2,405	NA	14,762	4.00	162.9	1977/78	17	31
	1,625	2,773	2,510	2,496	1.54	864	376	9	96	15	2,915	86	36	259	380	2,535	NA	15,386	4.06	164.8	1978/79	77	148
	1,847	2,371	2,063	2,048	1.11	376	101	7	37	104	2,530	61	39	232	332	2,198	NA	16,043	4.10	137.0	1979/80	254	50
	1,991	2,216	2,357	2,342	1.18	101	231	91	461	10	2,708	70	41	285	396	2,312	NA	16,710	3.99	138.4	1980/81	494	
	2,082	2,223	2,680	2,665	1.28	231	602	206	516	5	2,645	81	41	303	436	2,220	NA	17,409	4.02	127.5	1981/82	340	0
	2,092	2,938	2,774	2,760	1.32	602	744	122	280	6	2,723	86	38	296	420	2,303	NA	18,141	4.04	127.0	1982/83	173	77
	1,896	2,578	2,386	2,373	1.25	744	441	126	167	39	2,762	71	41	258	370	2,392	NA	18,910	4.07	126.5	1983/84	189	107
	2,053	1,756	2,014	2,001	0.97	441	531	152	621	0	2,812	72	45	292	408	2,405	NA	19,717	4.09	122.0	1984/85	902	0
	2,261	3,079	3,171	3,158	1.40	531	1,053	310	503	0	2,736	87	44	342	473	2,262	NA	20,566	4.13	110.0	1985/86	245	150
	2,224	3,035	3,368	3,344	1.50	1,053	1,217	0	309	250	3,135	108	38	363	509	2,626	NA	21,453	4.13	122.4	1986/87	266	315
	1,949		2,697	2,682	1.38	1,217	854	76	166		3,164	109	71	293	473	2,691	NA	22,378	4.13	120.3	1987/88	229	110
	1,800		2,840	2,840	1.58	864			15		3,735	100			75	3,125	NA	23,342	4.13			235	150
					0.00												NA					26	

_e: Economic Research Service, U.S. Department of Agriculture



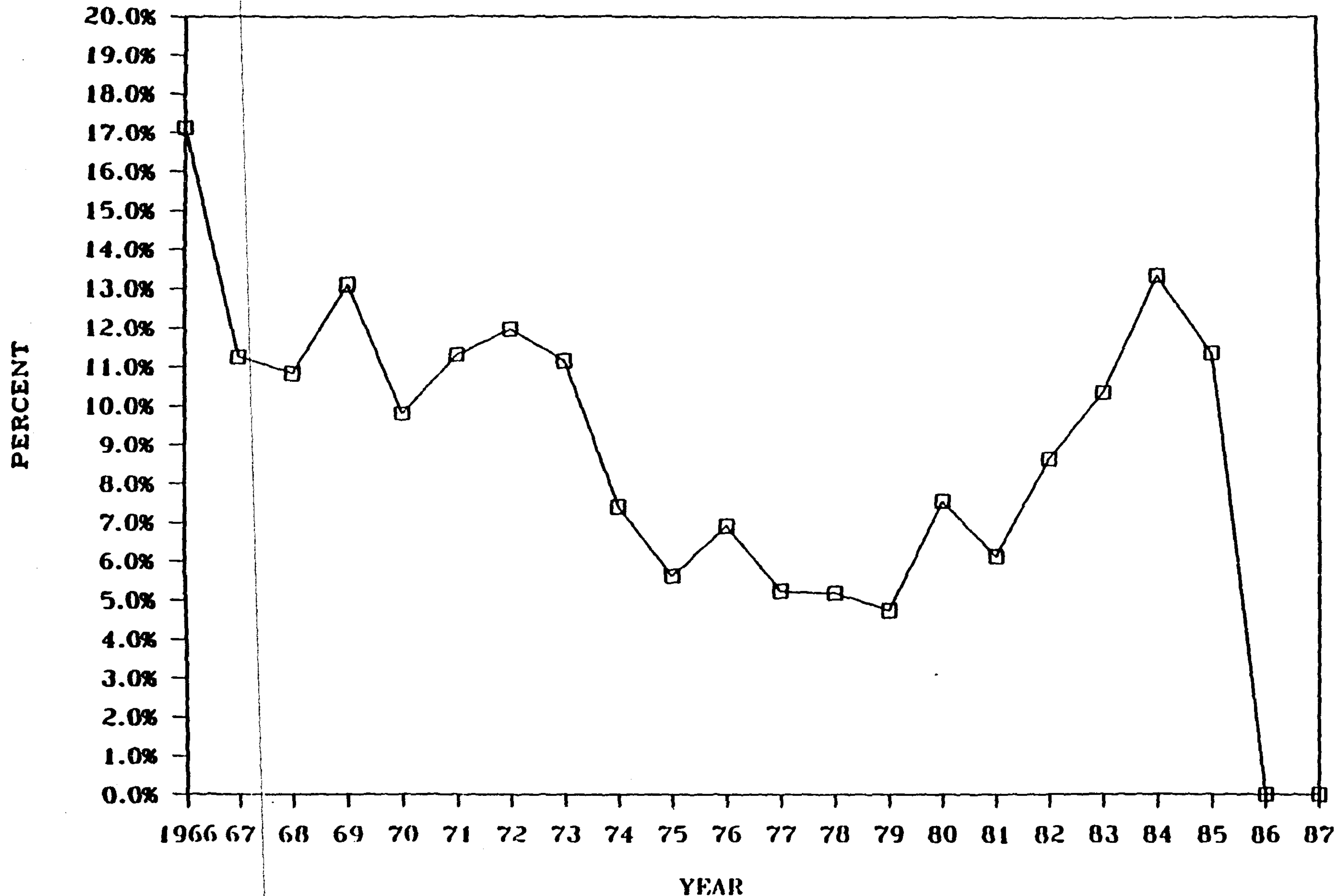
Source: Economic Research Service, U.S. Department of Agriculture



Source: Economic Research Service, U.S. Department of Agriculture

FOOD IMPORTS AS A % OF TOTAL IMPORTS

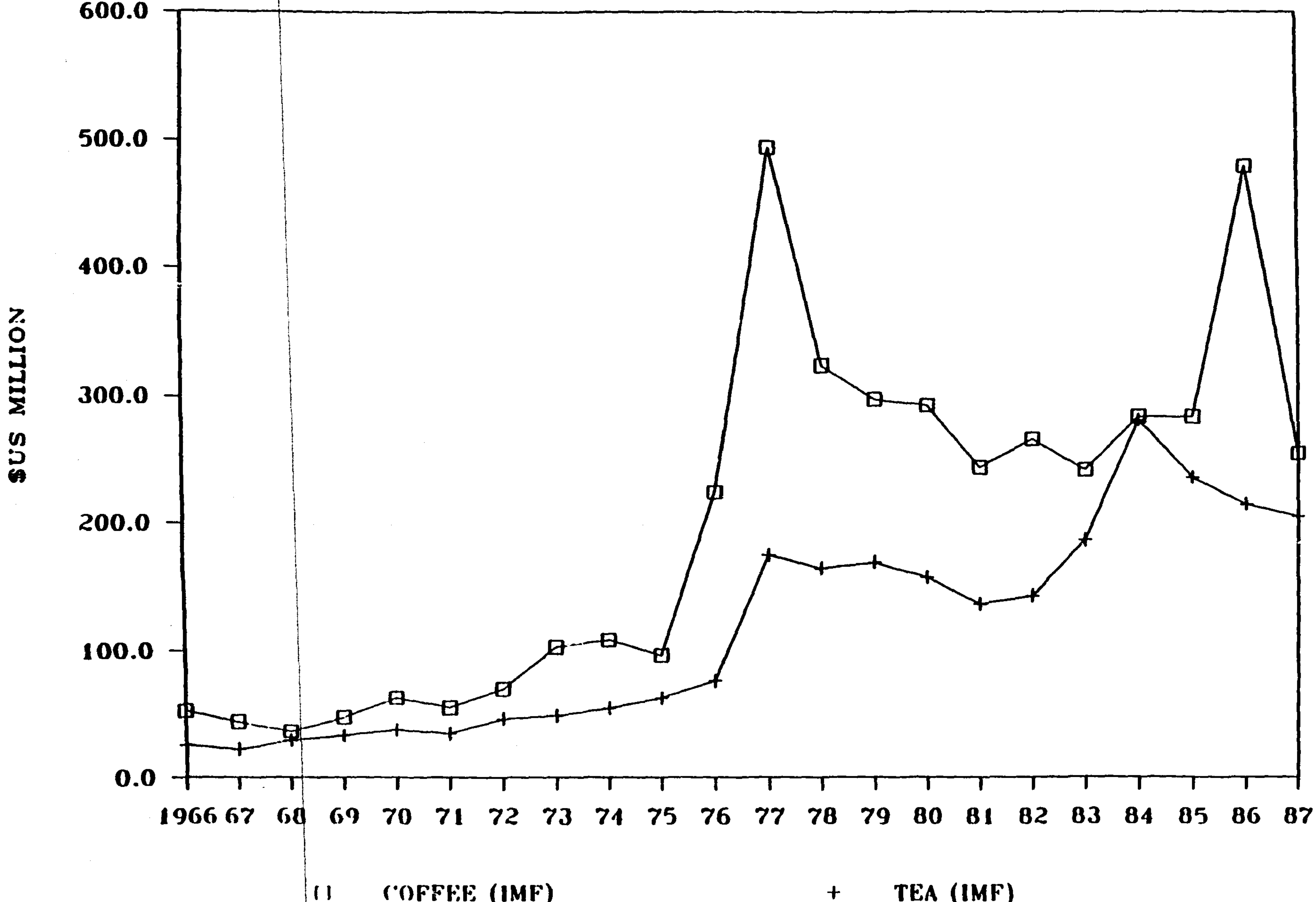
KENYA



Source: Economic Research Service, U.S. Department of Agriculture

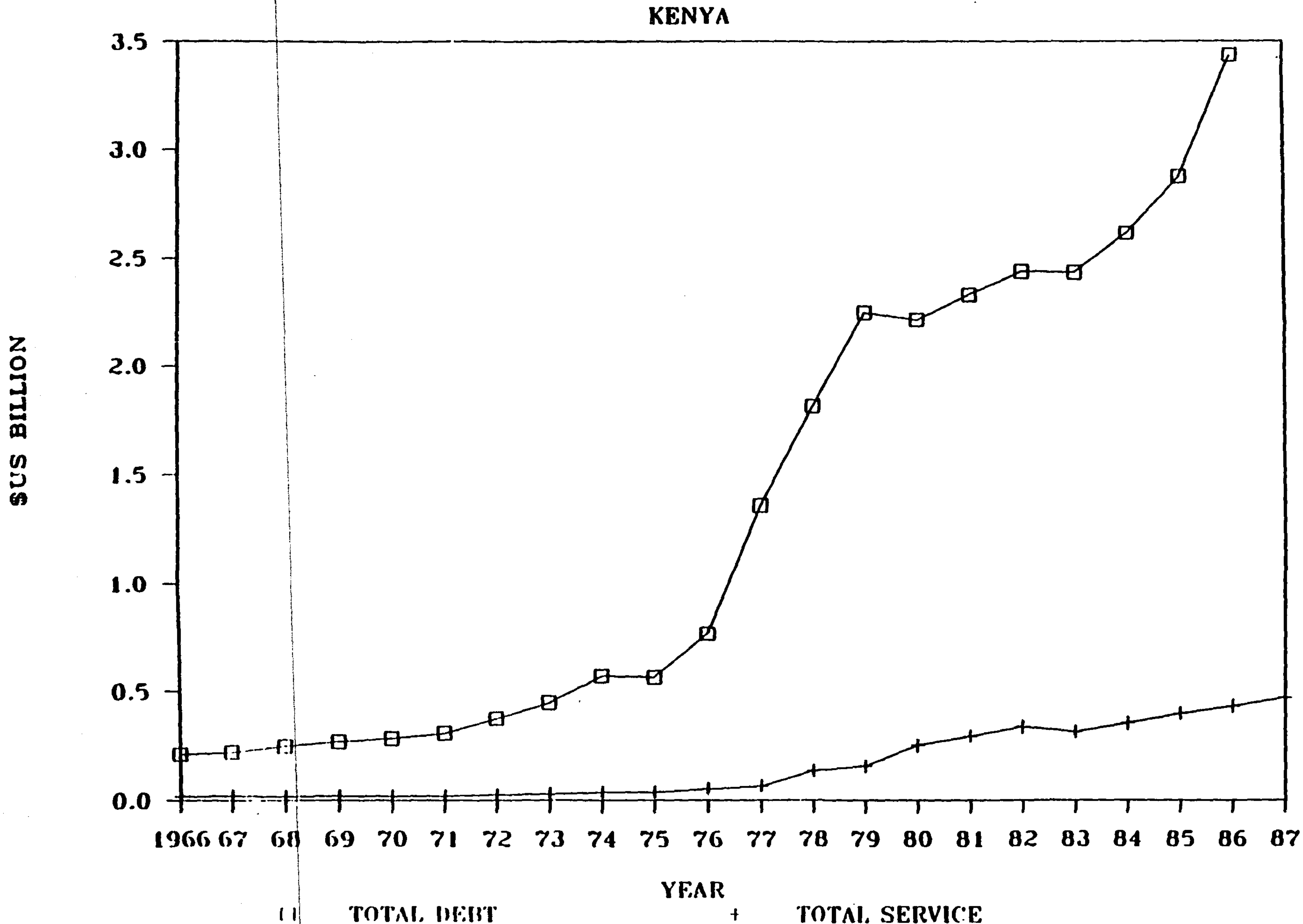
EXPORTS OF MAJOR SOURCE OF FOR.EXCHANGE

KENYA



Source: Economic Research Service, U.S. Department of Agriculture

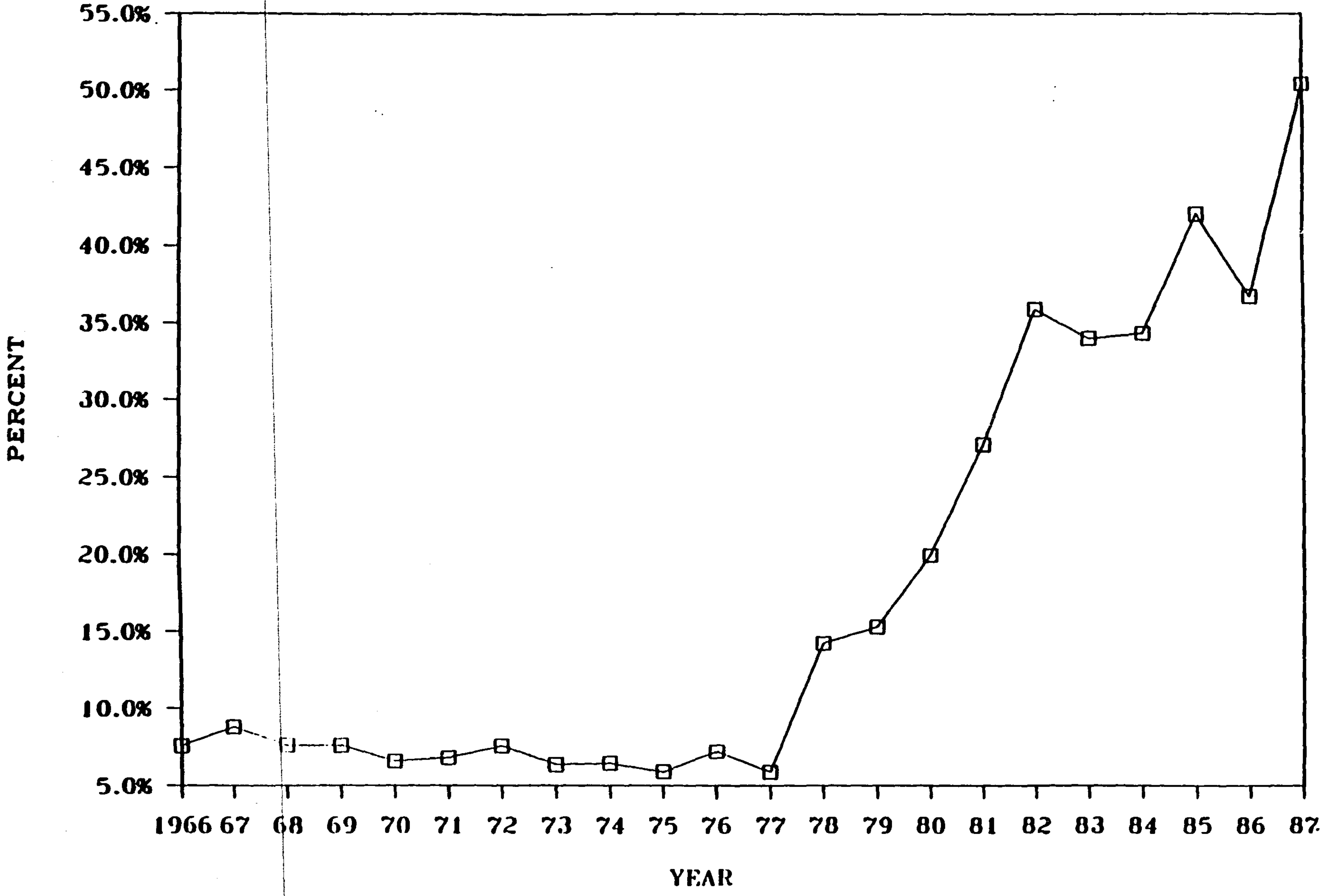
TOTAL DEBT LEVEL AND SERVICE



Source: Economic Research Service, U.S. Department of Agriculture

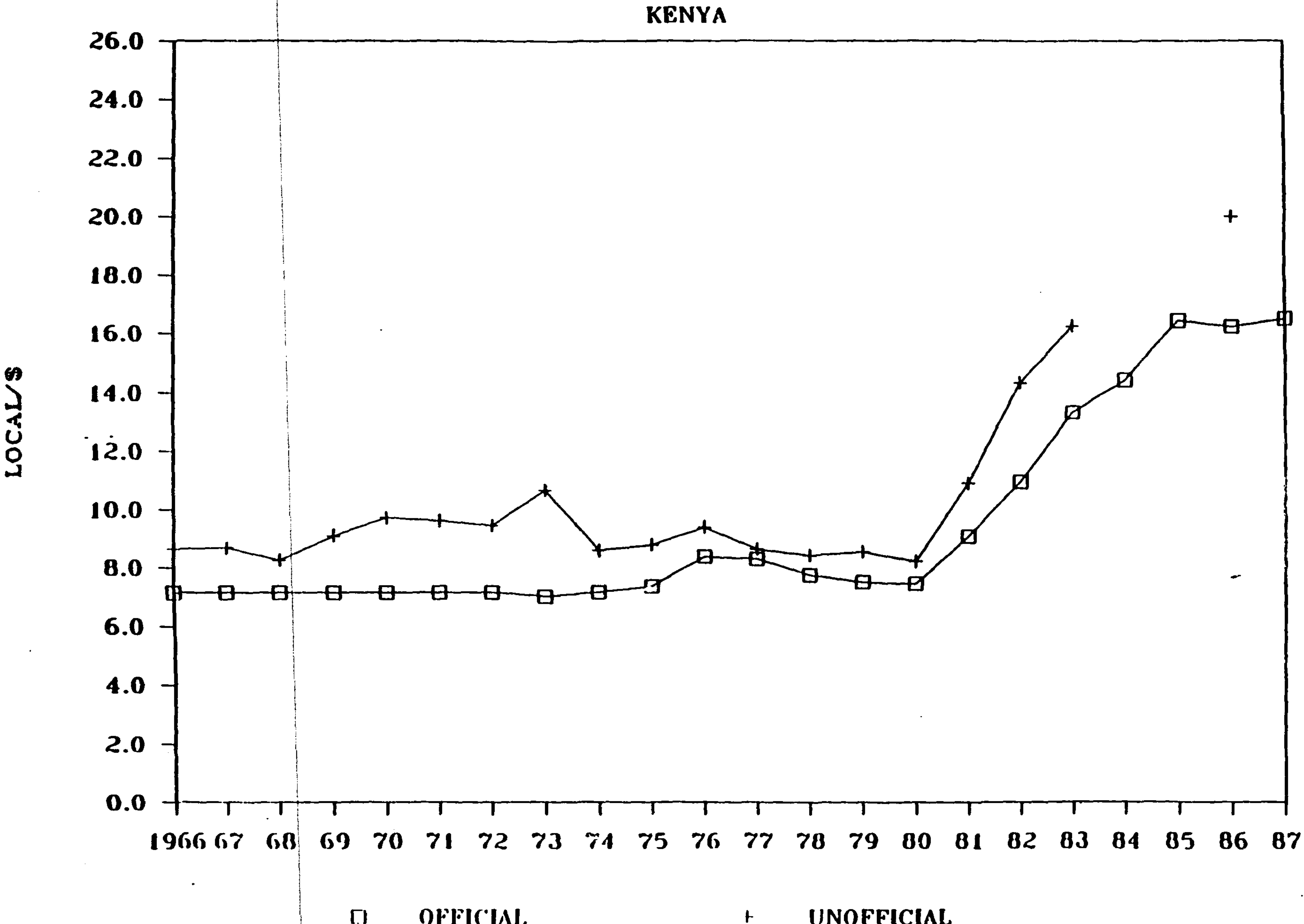
DEBT SERVICE AS A % OF EXPORTS

KENYA



Source: Economic Research Service, U.S. Department of Agriculture

OFFICIAL and UNOFFICIAL EXCHANGE RATES



Source: Economic Research Service, U.S. Department of Agriculture

APPENDIX H

Country Policy Appendix
Senegal

I. Background

A. General development strategy

Senegal has been politically stable. The country's second president Abdou Diouf assumed office when Leopold Senghor voluntarily left office in 1981. Diouf introduced an unrestricted multiparty system. Senegal has good relations with the West, particularly with France. (ATAD)

B. Demographic/geographic features

Senegal is a Sahelian country, with the wide variability in production and yields associated with that drought prone region. It has a population of about 7 million people, with a 3% population growth rate.

C. Crop production

The major food crop grown is millet/sorghum, accounting for almost half the country's planted area. Grains (sorghum, millet, rice, wheat) supply two thirds of the calories in the diet. Groundnuts are the major export crop; they account for 40% of the country's planted area. (ATAD) They are processed into oil and meal for export. The oil milling industry represents about 12% of total industrial output.

Senegal is heavily dependent on dryland cultivation, and has been subject to both intermittent and prolonged drought. (ATAD)

II. Economic Performance

A. GDP/capita

Senegal's GDP per capita is about $450--placing it in the mid-range for Sub-Saharan Africa. (ATAD)

Senegal faces a continuing economic and financial crisis. Since independence, GDP growth has averaged 2.3% per annum, the lowest rate of any country not affected by war or political strife. (AID/CP) (See MACRO Spreadsheet and GDP graph)

B. Agricultural performance

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1. Production

Senegal's agricultural sector has not performed well, in part due to serious drought and to government policies. Total cereal production grew by less than 3% throughout the 1970's and 1980's, translating into falling per capita production. (See GRAINS spreadsheet)

2. Sector income/share of GDP

Agriculture accounts (circa 1985) for about 20% of GDP. It employs approximately 70% of the population. (ATAD)

C. Trade Performance

1. Balance of trade

Senegal has experienced a persistent balance of trade deficit, despite a significant reduction in imports since 1981. (See MACRO Spreadsheet and TRADE graph) Exports have fluctuated, but with no appreciable growth between 1976 and 1986.

2. Agricultural trade

Imports (concessional and food aid)

Food imports account for 27% of total imports. (See FOOD IMPORTS graph) Grains account for the bulk of the imports. Rice imports, primarily from Thailand, are the major commercial import. Senegal is a major recipient of food aid.

Exports

Agriculture accounts for about three quarters of the country's export earnings. (TAS, 1988)

Foreign exchange earnings from groundnuts, the country's major export, have declined since 1979 (see MACRO spreadsheet).

D. External Debt/Reserves

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Senegal has a large external debt, which increased signifcantly from the mid-1970's through the mid 1980's to reach $2.4 billion in 1986. (See MACRO Spreadsheet and DEBT graph) Senegal's debt service ratio is high, reaching 31% in 1986. (See DEBT SERVICE graph)

III. Policy Environment

A. Policies

1. Macroeconomic

a. Exchange rates

Senegal is a CFA country. Its exchange rate, therefore, follows the franc. (See EXCHANGE RATE graph)

b. Domestic macro

2. Agricultural Sector

The government's long term objective in the agricultural sector is to attain food self-sufficiency, while promoting increased production of export crops. (ATAD)

The government has had a tradition of heavy intervention in the agricultural sector. In 1984, however, it announced a new agricultural policy committed to cutting state involvement sharply and transferring more responsibility to farmer organizations and the private sector. The major components of this policy are: (1) reform of the cooperative system to shift decisionmaking on production, marketing and distribution to farmers; (2) reduced roles for rural development agencies; (3) strengthening the input supply system; and (4) pursuing appropriate pricing policies, especially shifting consumer prices in favor of domestic cereal production. (ATAD)

a. Institutions

Prior to August, 1980, government assistance to the agricultural sector was carried out through the Office National de Cooperation et d'Assistance pour le Development (ONCAD). After this agency was disbanded, government intervention was decentralized by assigning different tasks to a number of rural development agencies. (ATAD)

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b. Prices

The government sets producer prices for groundnuts. Its price increases in 1985 (from 75 to 90 CFA per kilogram) was followed by a 50% decline in world market prices for groundnut oil (1985-8). The government has continued to maintain its official price, however, and is experiencing large losses (estimated at 30 billion CFA for 1986/7) on exports of groundnut products. (SAS, 1988)

The government has historically intervened heavily in rice production. It sets producer and retail rice prices. Producer prices are "floor" prices. In setting retail prices, the government aims to provide minimal nominal protection to domestic producers of 25% over the import cost. (ATAD)

c. Inputs

The government reduced fertilize subsidies from 71% in 1982/3 to 23% in 1985/6. Fertilizer use declined during this period. (ATAD)

e. Land/land tenure

f. Marketing

The country's two domestic oil milling companies had a monopoly of purchasing peanuts and selling the oil and meal on domestic and foreign markets. Profits and losses accrued to the government. As part of the 1984 policy reform, the oil mills were made fully responsible for financing any deficit resulting from groundnut marketing. Millers are now free to make their own marketing arrangements, and private firms are authorized to buy peanuts directly from farmers and sell them to the mills. (ATAD)

Government controlled mills had operated at about 40% of capacity, primarily because a large share of the groundnut crop was marketed unofficially. While higher prices (circa 1984-6) did boost official purchases, the removal of input subsidies and falling world vegetable oil prices made further price increases unlikely. (ATAD)

Government intervention in rice marketing was eliminated (circa 1989 if accomplished yet) when markets were liberalized and the CPSP role was reduced to managing a 60,000 buffer stock. (ATAD, SAS indicate that liberalization is scheduled but not yet accomplished)

3. Inter-sectoral Biases

4. Trade

B. Policy Reform Initiatives

In 1983 the government adopted a comprehensive economic reform program to improve its fiscal and financial situation, increase agricultural output and productivity, and make domestic industry competitive with foreign producers. (AID/CP)

1. WB

2. IMF

3. USAID

Non-project assistance is provided through Economic Support Funds (ESF), African Economic Policy Reform (AEPRP) (August, 1986) and PL 480. Under the AERPR emphasis has been placed on tax system simplification, trade reform and a new investment code. (AID/CP)

In conjunction with the WB and the IMF, AID has encouraged agricultural reform under the Agricultural Sector Grant Program . Inefficient parastatals have been eliminated, and the remaining ones reduced in size and placed made subject to formal performance reviews. Coarse grain markets have also been liberalized. Fertilizer subsidy removal and the limitation of the role of the Food Security Commission (FSC) to managing food aid and buffer stocks are reform initiatives supported by PL 480. (AID/CP)

III. Constraints/Distortions

1. Policy-based

2. Other

a. Infrastructure

~~b. Physical~~

c.

Low productivity, an acute shortage of public sector

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investment funds also limit recovery prospects for the agricultural sector. (SAS, 1987)

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Macro Format Senegal

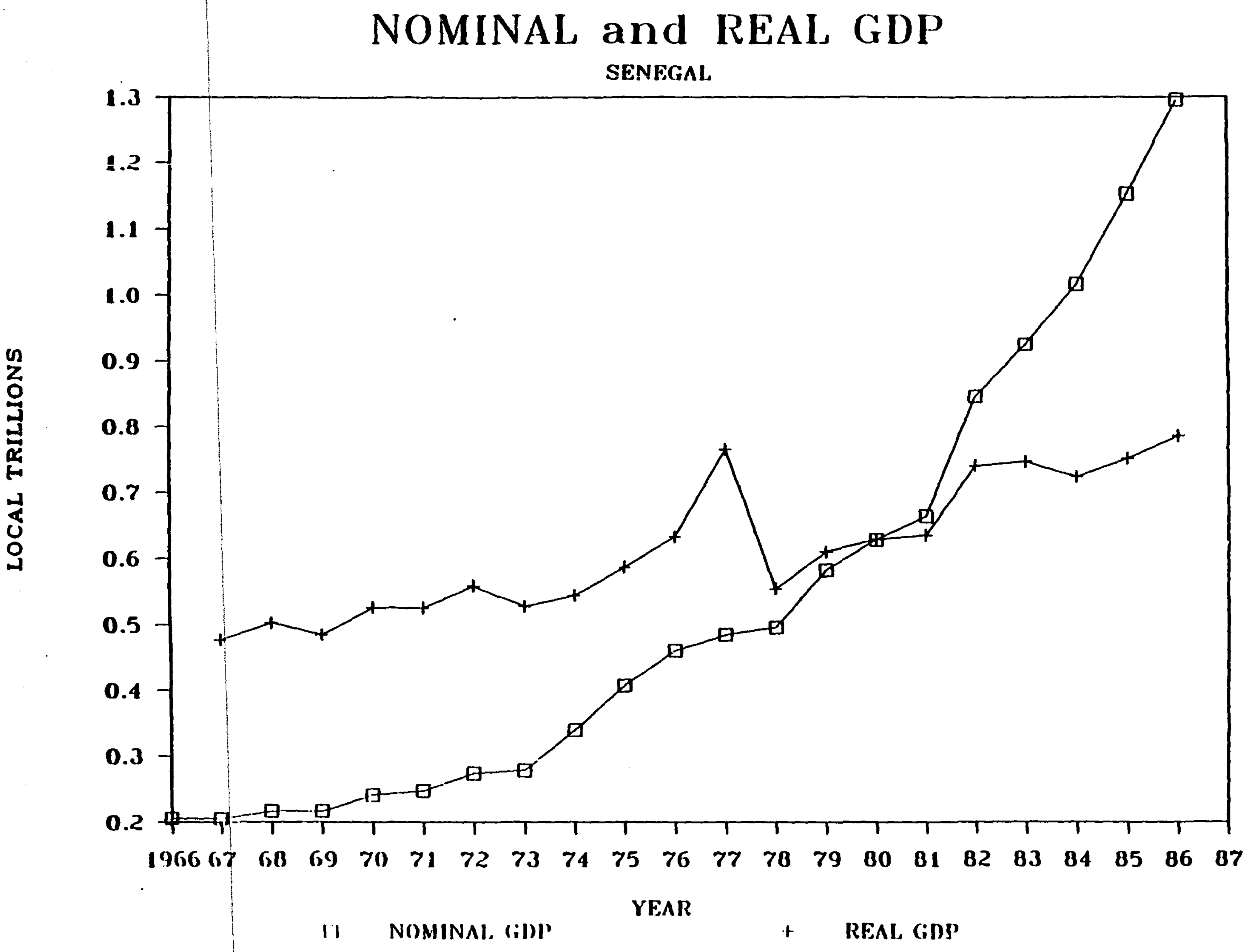
	GDP current (local) billions	Imp. GDP deflator	real GDP (local) billions	real GDP ($) millions	CPI	exchange official (local/$)	exchange unofficial (local/$)	Merch. Exports	Merch. Imports	BOT	Net Services	Net Transfers	Current Account	Food Imp.	Ag. Imp.	Foreign Exchange Reserve	Total Outstanding Debt	Total Debt Service	Food as % of Total Imports	Debt Service Ratio	($US Mil. Main Expo Peanuts
								------------	------------	-$US Million-	------------	------------	------------	------------							
166	205.3	NA	NA	NA	NA	246.9	NA	150.0	161.0	(11.0)	NA	NA	NA	65.1	74.2	46.2	59.1	3.6	40.4%	2.4%	
167	205.5	43.1	476.8	1,931.5	35.7	246.9	NA	139.0	159.0	(20.0)	NA	NA	NA	67.1	76.3	37.2	63.5	4.0	42.2%	2.8%	
	217.2	43.2	502.8	2,036.8	35.8	246.9	NA	146.3	192.8	(47.5)	(26.4)	36.3	(37.6)	73.7	83.3	16.0	64.9	4.8	38.2%	3.3%	103.6
	216.6	44.7	484.6	1,865.8	37.2	259.7	NA	149.5	199.3	(49.8)	(24.7)	26.2	(48.3)	73.3	82.4	6.2	88.7	5.4	36.8%	3.6%	66.0
	240.1	46.7	525.4	1,891.8	38.2	277.7	279.9	158.7	203.7	(45.0)	(4.1)	33.0	(16.1)	59.2	67.9	22.1	102.8	6.0	29.1%	3.8%	
	247.2	47.1	524.8	1,893.8	39.7	277.1	273.8	135.5	221.9	(86.4)	12.5	48.3	(25.6)	70.0	80.8	29.3	126.0	12.2	31.5%	9.0%	
	273.6	49.0	558.4	2,211.5	42.2	252.5	246.5	225.3	283.9	(58.6)	4.8	64.5	10.7	74.3	86.2	38.5	139.6	13.5	26.2%	6.0%	114.
	278.3	52.8	527.1	2,364.8	46.9	222.9	224.5	214.2	374.7	(160.5)	2.1	57.0	(101.4)	131.9	145.3	12.1	193.8	29.4	35.2%	13.7%	63.
	338.8	62.3	543.8	2,259.3	54.7	240.7	239.6	417.2	553.0	(135.8)	6.6	63.5	(65.7)	169.4	181.5	6.3	263.3	33.5	30.6%	8.0%	141.2
	406.4	69.3	586.4	2,736.4	72.1	214.3	215.3	503.0	611.5	(108.5)	(61.1)	83.9	(85.7)	136.8	162.6	31.1	313.6	39.4	22.2%	7.8%	188.1
	469.3	72.6	632.6	2,647.6	72.8	239.0	236.7	513.8	669.5	(146.7)	(53.4)	106.4	(92.7)	161.1	179.7	25.2	366.5	42.5	24.4%	8.3%	269.8
	483.6	63.3	764.0	3,109.7	81.1	245.7	246.6	667.2	772.5	(105.3)	(69.0)	106.8	(67.5)	168.9	190.5	33.7	434.6	56.4	21.9%	8.5%	302.
	494.7	89.4	553.4	2,462.2	83.8	225.7	217.2	401.8	744.3	(342.5)	(13.3)	120.0	(235.8)	168.2	191.1	18.8	639.8	100.3	22.6%	25.0%	104.
	581.9	95.4	610.0	2,867.4	92.0	212.7	216.1	547.2	862.3	(305.1)	(30.9)	86.6	(249.4)	213.6	236.0	19.1	822.4	123.6	25.1%	22.6%	212.
	627.6	100.0	627.6	2,970.5	100.0	211.3	209.5	421.7	875.1	(453.4)	(53.2)	119.9	(386.7)	234.9	254.9	8.1	958.3	179.0	26.8%	42.4%	
	662.8	104.5	634.3	2,334.1	105.9	271.7	274.7	560.6	1,020.3	(459.7)	(168.9)	166.4	(462.2)	278.1	297.2	8.7	1,003.1	90.1	27.3%	16.1%	
	844.3	114.3	738.7	2,247.9	124.2	328.6	332.8	501.9	815.1	(313.2)	(130.0)	176.6	(266.6)	227.5	243.3	11.4	1,234.8	43.1	27.9%	8.6%	134.8
	924.9	124.0	745.9	1,957.4	138.7	381.1	400.3	605.8	917.2	(311.4)	(132.3)	154.3	(289.4)	233.6	251.5	12.2	1,495.0	56.9	25.5%	9.4%	156.1
	1,015.5	140.5	722.8	1,654.1	155.1	437.0	NA	597.6	818.9	(221.1)	(190.1)	137.3	(273.9)	272.6	296.1	3.7	1,544.4	83.8	33.3%	14.0%	124.6
	1,152.0	153.6	750.0	1,669.4	175.4	449.3		480.6	789.7	(309.1)	(158.4)	150.4	(317.1)	209.9		5.1	1,983.4	88.7	26.6%	18.5%	52.7
	1,295.0	165.1	784.4	2,265.0	188.6	346.3		666.4	862.0	(205.6)	(191.7)	192.3	(205.0)			9.4	2,466.2	208.8	0.0%	31.8%	77.8
				0.0														267.4			
	67-84: IFS 85-86: IMF 3/87		67-80: IFS 81-86: IMF 3/6/87 (% growth)		IFS	IFS	Pick's	66-84 : IFS 85: IMF 9/86			66-84: IFS 85-86: IMF 3/6/87			FAO: fd/animals oilseeds f veg oils proc. oils	FAO	(IFS- reserves -gold)	66-86 IBRD Debt tables	66-87 IBRD Debt tables			66-69BCEAO 70-74IBRD 75-79BCEAO 80-83IMF 84-86:IMF 3/87

ce: Economic Research Service, U.S. Department of Agriculture

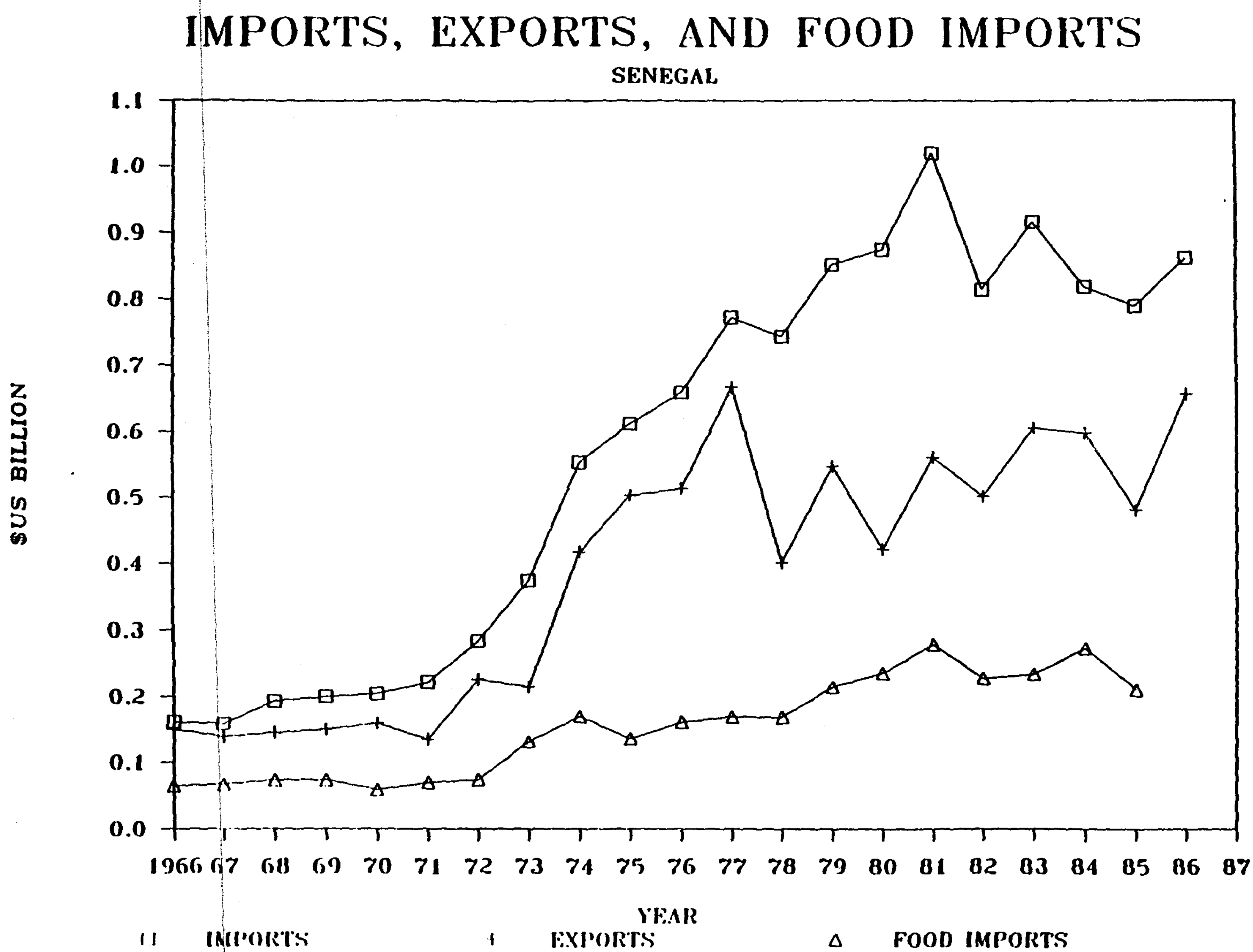
Senegal-Total Grains

Year	Area 1000 ha	FAO Prod. 000 MT	ERS Prod. 000 MT	ERS Milled 000 MT	Calc. Yield ton/ha	Beg. Stocks	End Stocks	Aid Imports	Total Imports	Exports	Total Avail. 1000 MT	Feed Use	Seed Use	Waste	Non-Food	Consump-tion	Prod. Price (govt) local/ton	Indices Popula-tion 1,000	Growth Rate (%)	Per cap. Consump. kg
1966	1,138	591	591	549	0.48	0	5	18	335	28	294	1	44	7	67	251	NA	3,857	---	65.1
1967	1,329	849	846	801	0.60	5	0	53	346	25	875	17	38	43	112	763	NA	3,966	2.75	192.4
1968	1,167	534	535	515	0.44	0	135	24	368	13	1,022	21	40	59	134	887	NA	4,074	2.65	217.8
1969	1,196	840	824	777	0.65	135	95	23	441	23	972	6	37	40	109	863	NA	4,193	2.84	205.8
1970	1,107	530	508	477	0.43	95	150	19	292	24	990	9	36	57	129	861	NA	4,318	2.89	199.4
1971	1,103	729	729	693	0.63	150	40	16	370	29	928	7	33	38	98	830	NA	4,450	2.97	186.5
1972	1,021	380	380	367	0.36	40	130	33	371	7	967	9	39	51	120	846	NA	4,589	3.03	184.4
1973	1,207	609	609	587	0.49	130	90	24	517	0	925	14	42	30	99	825	NA	4,727	2.92	174.6
1974	1,279	955	959	919	0.72	90	75	72	413	12	1,004	20	37	43	109	895	NA	4,872	2.98	183.7
1975	1,109	786	790	747	0.67	75	110	19	219	8	1,095	25	36	64	133	962	NA	4,989	2.35	192.8
1976	1,085	726	678	636	0.59	110	165	16	431	1	1,122	28	34	54	121	1,001	NA	5,101	2.20	196.2
1977	1,060	539	456	435	0.41	165	140	19	419	8	1,072	28	39	48	119	953	NA	5,253	2.89	181.4
1978	1,202	1,004	952	903	0.75	140	20	110	474	29	1,001	31	36	35	103	897	NA	5,409	2.88	165.9
1979	1,115	664	664	632	0.57	20	175	21	471	11	1,208	31	40	64	137	1,071	NA	5,571	2.91	192.3
1980	1,262	674	667	645	0.51	175	160	41	564	0	1,210	31	42	47	122	1,088	NA	5,738	2.91	189.6
1981	1,302	958	924	884	0.68	160	95	84	493	0	1,203	33	37	47	117	1,086	NA	5,909	2.89	183.7
1982	1,145	780	762	730	0.64	95	195	55	499	0	1,283	37	29	63	128	1,154	NA	6,086	2.91	189.6
1983	907	521	521	485	0.53	195	175	71	561	0	1,311	34	37	53	124	1,188	NA	6,269	2.92	189.5
1984	1,151	706	706	661	0.57	175	122	201	674	0	1,212	34	48	39	121	1,091	NA	6,458	2.93	168.9
1985	1,524	1,243	1,244	1,195	0.78	122	247	102	581	0	1,116	35	37	50	122	995	NA	6,653	2.93	149.5
1986	1,166	923	884	835	0.72	197	67	25	476	0	1,668	18	40	75	133	1,535	NA	6,855	2.95	224.0
1987	1,244	1,003	1,053	1,007	0.81	67	66		340		1,176	6	0	6	13	1,163	NA	7,064	2.96	164.7
988					0.00												NA	7,281	2.98	
989					0.00												NA			

urce: Economic Research Service, U.S. Deparment of Agriculture



Source: Economic Research Service, U.S. Department of Agriculture



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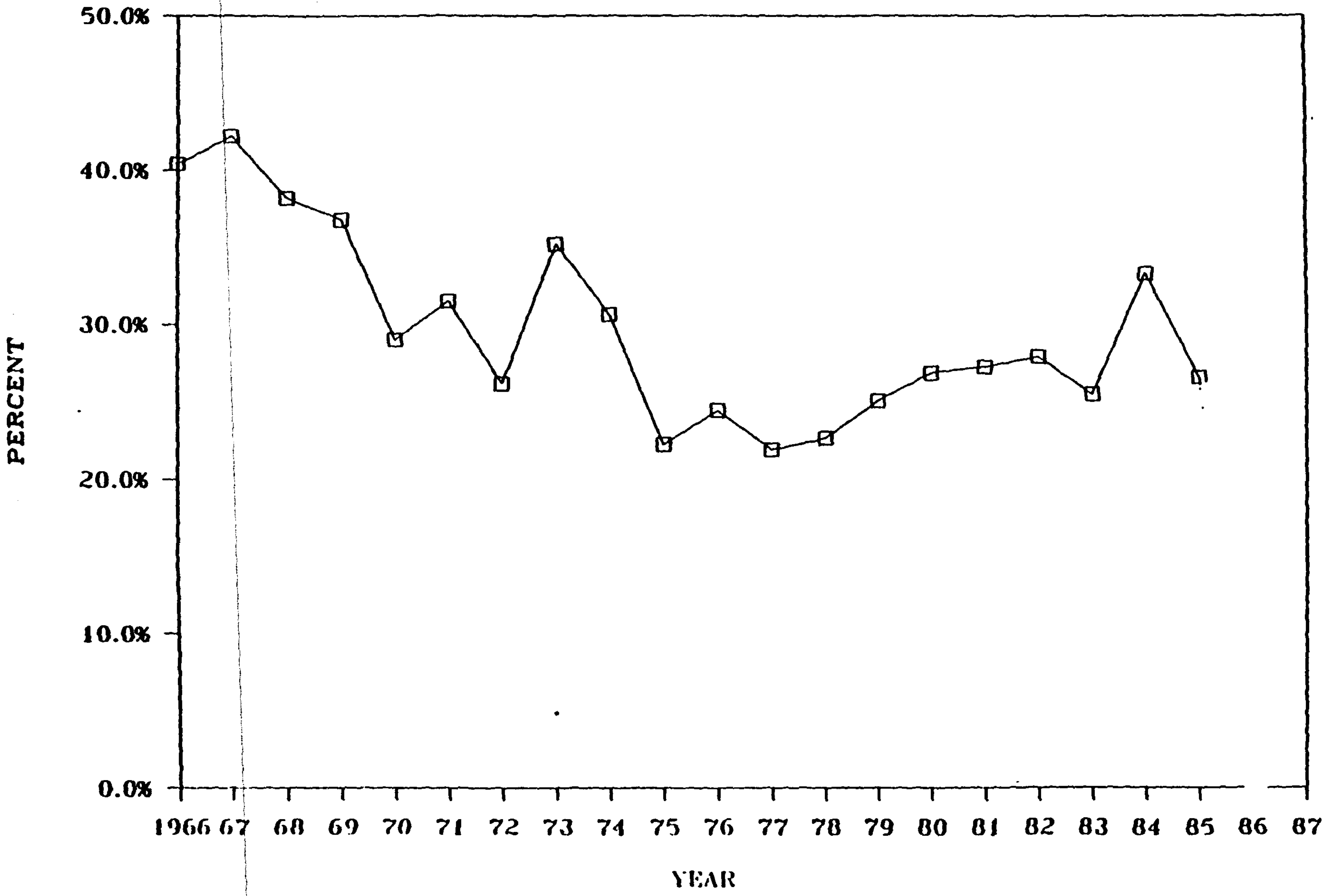
FOOD IMPORTS AS A % OF TOTAL IMPORTS

SENEGAL



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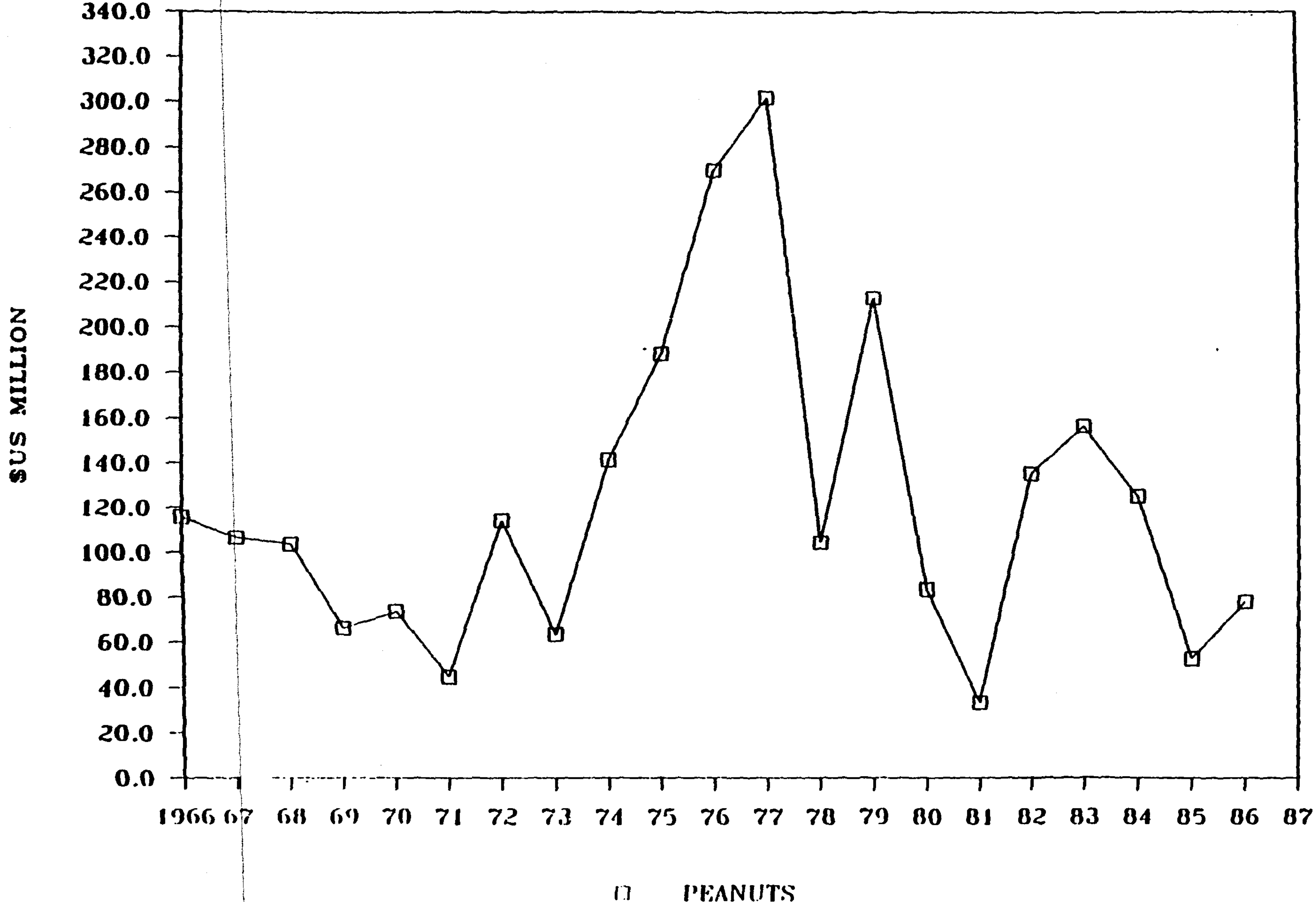
EXPORTS OF MAJOR SOURCE OF FOR.EXCHANGE

SENEGAL



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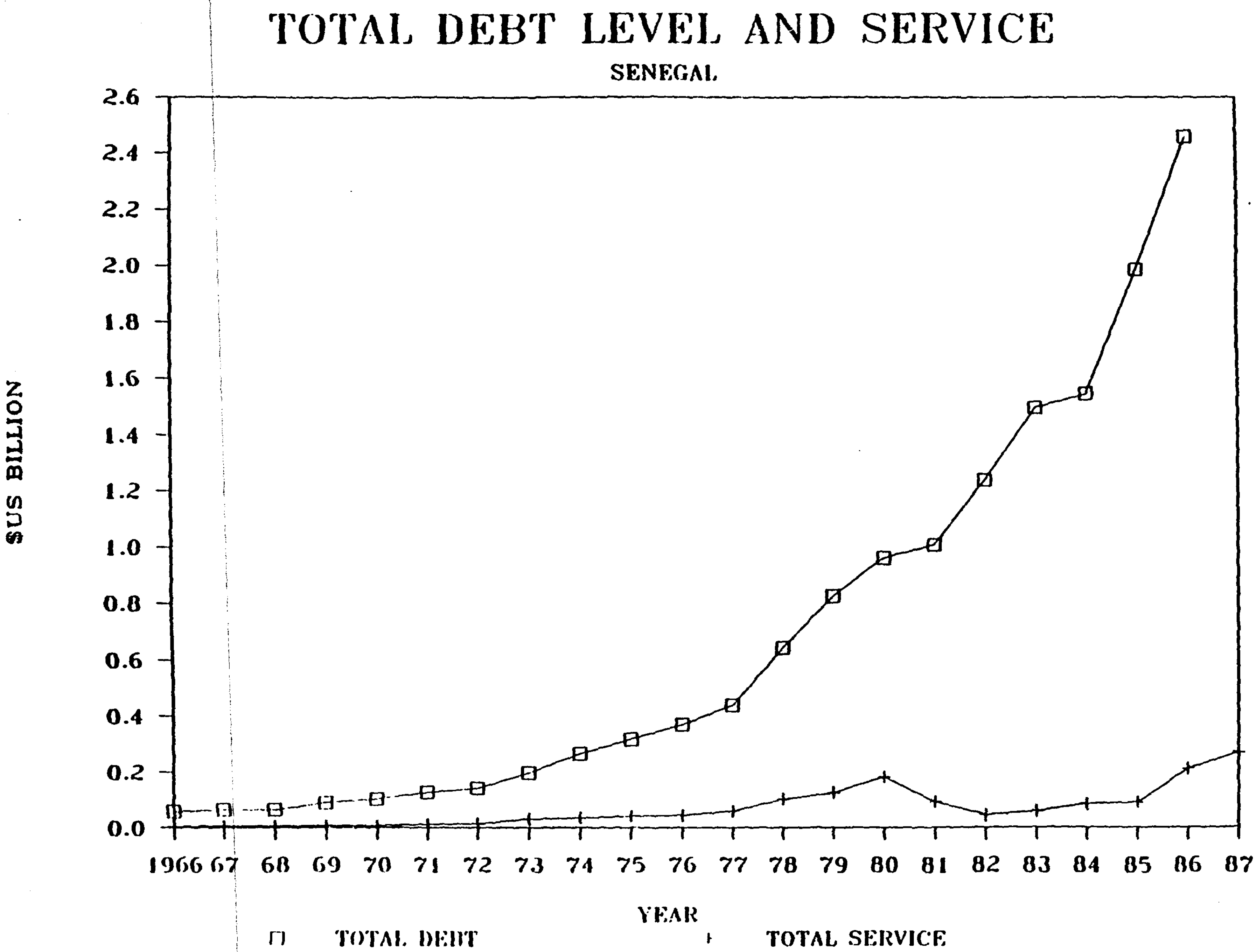

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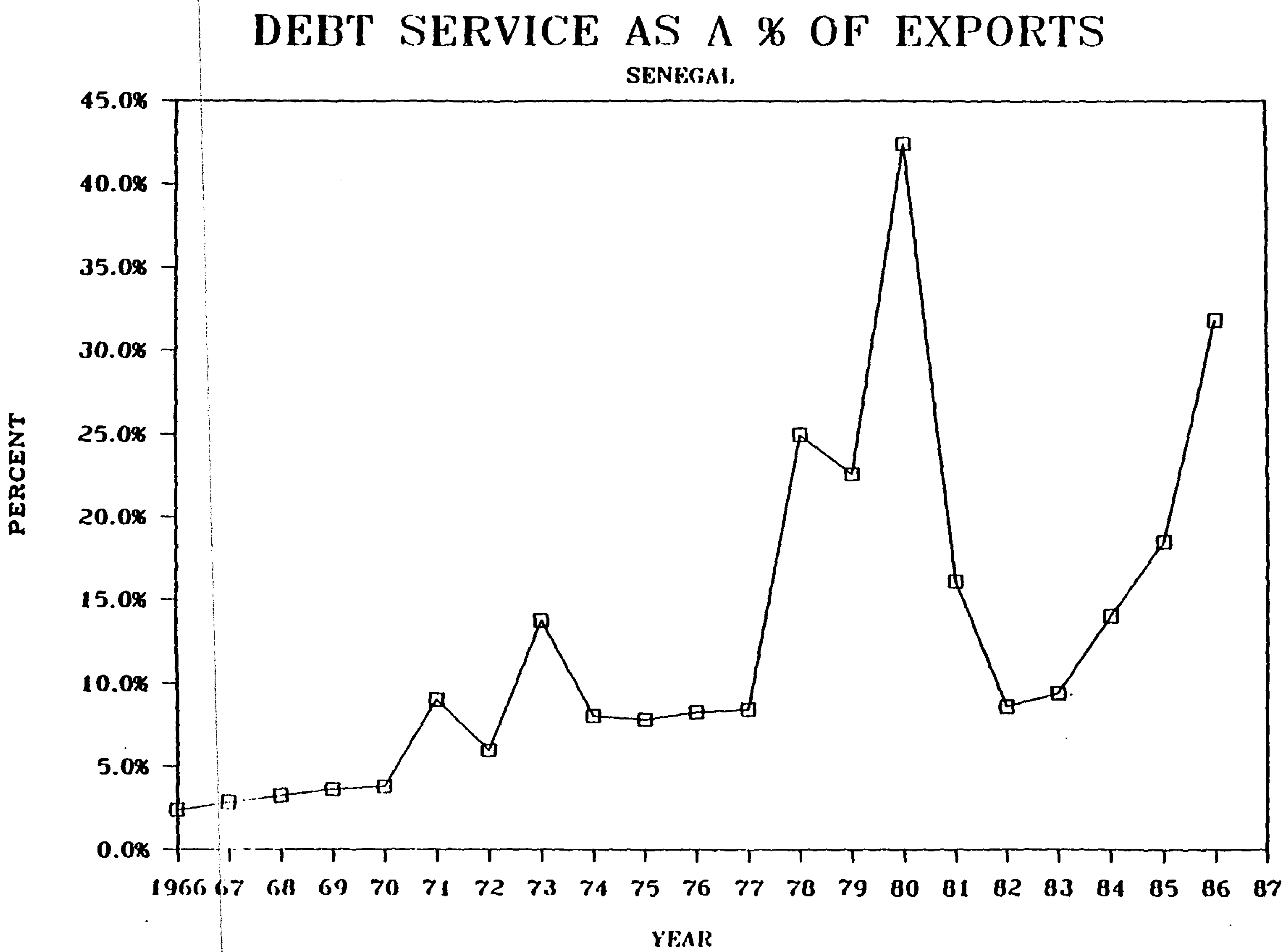

Source: Economic Research Service, U.S. Department of Agriculture

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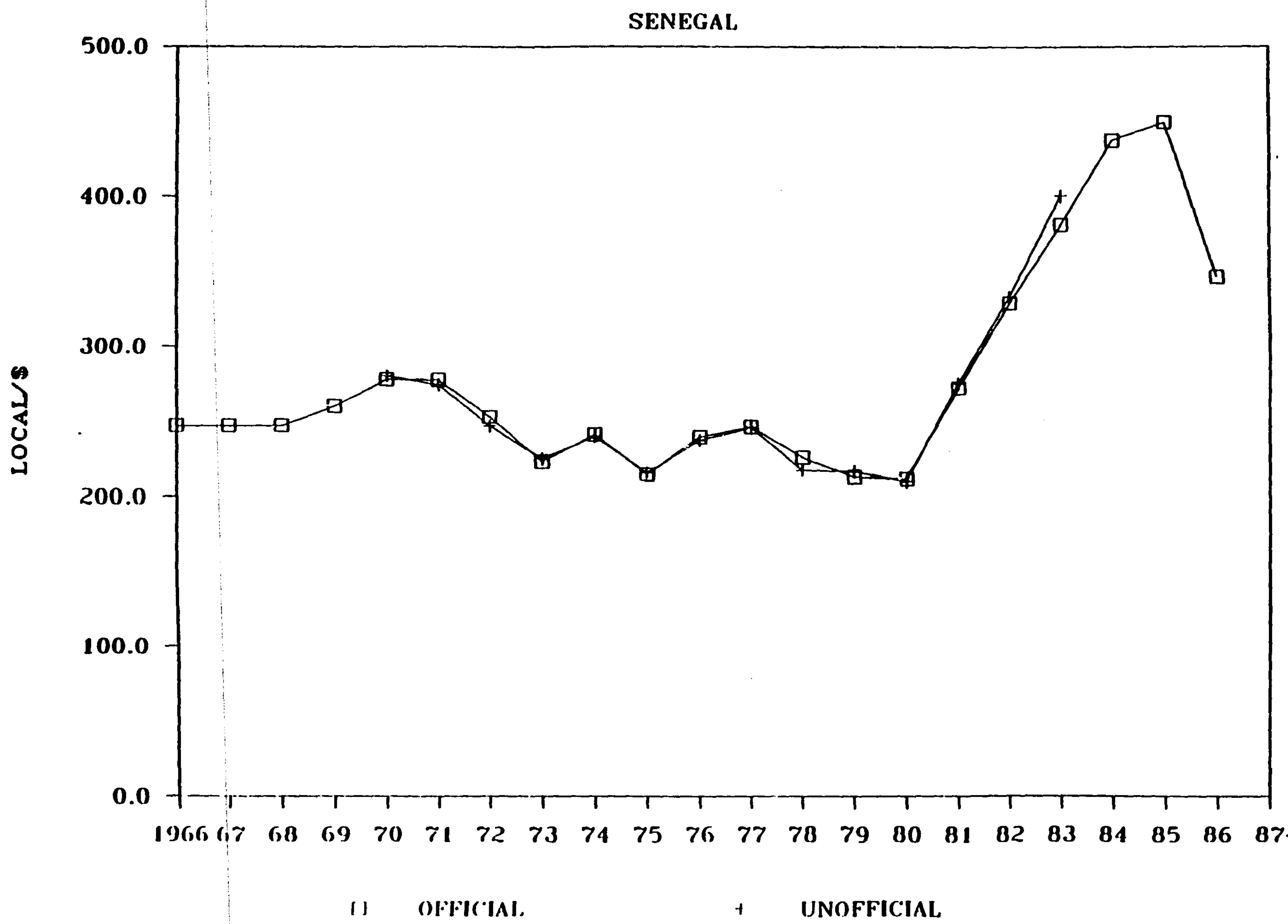
OFFICIAL and UNOFFICIAL EXCHANGE RATES



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