# THE EFFECTS OF STRUCTURAL ADJUSTMENT PROGRAMME ON CAMEROON'S MAJOR EXPORTS

## CACAO, COFFEE AND COTTON

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Observatoire du Changement et de l'Innovation Sociale au Cameroun

Observatory of Change and Innovation in the Societies of Cameroon

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## Acknowledgements

**Abstract**

Cameroon's economy heavily depends on agriculture, hence economy recovery would be determined by the agricultural performance. The Structural Adjustment Programme (SAP) was focused on removing the distorsions in the economy with the aim of promoting exports and stopping the economy from deteriorating. The presumption was that SAP would lead to spontaneous investment and growth. The paper assesses the impact of SAP on Cameroon's major export crops. From quantitative and qualitative analysis, the paper concludes that both the agricultural production and productivity have not improved. SAP might have failed to address the fundamental problems which are institutional, deficiencies in resources, infrastructures and structural constraints.

*Keywords* : Cameroon, Macroeconomics, Input and Output Prices, Incentive System, Economic Crisis, Distorsions, Growth, Investment, Structural Adjustment Programme.

**Résumé**

L'économie camerounaise tire une bonne partie de ses ressources de l'agriculture, si bien que toute reprise économique dépendra fortement des performances agricoles. Le Programme d'Ajustement Structurel (PAS) a mis l'accent sur la suppression des distorsions économiques afin de relancer les exportations et d'arrêter la détérioration de l'économie. On supposait alors que la mise en oeuvre du PAS susciterait spontanément la reprise des investissements et ramènerait la croissance. Cet article évalue l'effet du PAS sur les principales cultures d'exportation. Se basant sur une analyse tant quantitative que qualitative, il conclut que ni la production, ni la productivité n'ont augmenté. Le PAS pourrait avoir échoué dans sa volonté d'aborder les problèmes fondamentaux du blocage de la croissance, car ceux-ci sont plutôt d'origine institutionnelle et résultent d'une insuffisance de ressources et de contraintes structurelles.

*Mots clés* : Cameroun, Macro-économie, Prix, Système d'incitation, Crise économique, Distorsions, Croissance, Investissement, Programme d'ajustement structurel.

## Preface

The Cahiers of Ocisca is a regular series of working papers which presents the results of the surveys and studies undertaken by the Ocisca Program (Observatory of Change and Innovation in the Societies of Cameroon). All topics are related to the reaction and behavior of the various economic actors in the current context of economic crisis and structural adjustment. The research work on various issues of development such as the household standards of living, poverty and vulnerability, social innovation, the social impact of adjustment measures, the devaluation, the design of socioeconomic policies will be discussed in this series.

The Cahiers are designed to provide a medium for those who want to disseminate the informations collected in the various observatories and analyzed in the laboratories. They include the results of rapid surveys, the scientific analysis of survey data and also individual research work. The objective is to inform the policy-makers, and the main economic actors, of the on-going research work and, when feasible, to propose appropriate solutions for some of the issues that they have to solve.

It is within this framework that this issue of the Cahiers deals with the problem of the effects of the structural adjustment programme (SAP) on the production, and productivity, of the main export crops i.e. cocoa, robusta and arabica coffee, and cotton.

Cameroon adopted SAP in the late 80s, after the depreciation of the US dollar, the falling of the price of oil, cocoa and coffee, and the consequences of the Dutch disease following the oil boom. All these lead to an increase in macroeconomic imbalances and deep indebtness. In-depth internal reforms were therefore requested to remove the economic distorsions, to make the agriculture and industrial sector more efficient and, consequently, to promote exports.

Before the oil boom, in the late 70s, agriculture represented 32% of GDP. Still now the exports of cocoa, coffee and cotton constitute about 60% of total exports. With a decreasing oil sector, agricultural exports will remain in the future an essential source of revenue. Hence Cameroon's economic development still depends on the improvement of the agriculture sector, with export crops playing a key role.

For these reasons a new agricultural policy was implemented after 1991. It aims at reallocating the State ressources in a better way, by restructuring public institutions and removing subsidies, at trusting on the private sector to ensure a better commercialisation of inputs and productions, and on the market regulation, through prices, to improve the efficiency of producers. Therefore a series of corresponding internal measures were implemented through the SAP.

A few years later, one may ask about the effect of such a policy on the production and productivity of the major export crops. In fact, very little quantitative studies have assessed the effects of the SAP and compared to their expected results. By using a neo-classical production model, where the output supply function is derived from profit maximisation of producing units, the author compares the period before the SAP to the period of the SAP itself. He adds other variables of the supply function (prices, wages, government expenditures, weather, etc.) a dummy variable describing these periods.

The conclusion is that neither production nor productivity for the four export crops were significantly improved by implementing the SAP, as it was expected before. This raises a series of questions, out of which two appear important for policy purposes. Were internal measures insufficient to improve the output and productivity of these crops, and external measures, such as the devaluation of the franc CFA, was strongly needed ? Are prices enough strong signals to the producers to encourage them improving their productivity and increasing their production, or the existing structural and institutional constraints may jeopardise the process ?

In both cases further studies would provide some elements of answer. The assessment of the impact of the CFA franc devaluation itself on export crops, besides the current positive economic price environment, is already a familiar topic. And the analysis of structural changes in the behavior of economic actors within a moving institutional environment is also the topic of several research groups. All of these are bringing new grounds for the design of more efficient agriculture policies.

Jean-Luc Dubois
Ocisca Manager

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## Introduction

Cameroon's economy heavily depends on agriculture. Before the oil boom of the late 1970s, agriculture's share in the Gross Domestic Product (GDP) was 32%. The agricultural sector employed about 75% of the total active population of Cameroon by 1988 and was a source of livelihood for 80% of the total population (MINAGRI, 1990). Agricultural exports constituted about 80% of total exports and these were mostly cocoa, coffee and cotton which made up 75% of agricultural exports. Government revenue from export taxes was large - amounting to some 124 billion FCFA in the 1985/86 fiscal year (World Bank, 1989) from cocoa and robusta coffee only. Hence Cameroon's economic development depends on the agricultural sector, with export crops playing a crucial role. Such that the economic recovery would be determined by the agricultural recovery.

Cocoa is grown mainly in the rain forest region of the Centre, South, Littoral, South West and Eastern provinces. Coffee, particularly arabica coffee, is grown in the upper grassland areas of the Western and North West provinces while robusta coffee is grown mainly in the South West, Littoral, East and to a lesser extent in the West and North West provinces. Cotton is the major occupation of the North and Far North provinces. Cocoa and coffee are usually produced by small scale farmers using labour intensive methods of production. In the Centre and South provinces, SODECAO (Société de Développement du Cacao) is in charge of extension services and research on cocoa.

Cotton on the other hand is produced using relatively more capital intensive methods. SODECOTON (Société de Développement du Coton) manages cotton production in the Northern part of the country. The marketing of these crops, except cotton, had been undertaken by the National Produce Marketing Board (NPMB), the English version of the Office de Commercialisation des Produits de Base (ONCPB) before 1989, but with the implementation of structural adjustment programme (SAP) the NPMB was transformed with the aim of improving agricultural production and productivity.

### Background

Since 1985, the fall in the US dollar dominated prices of Cameroon's export commodities (oil, coffee, cocoa, cotton, etc.) and the depreciation of the US dollar have exposed the major domestic structural weaknesses in the economy. Hence both internal and external problems plunged Cameroon into a deep unprecedented economic crisis.

Between 1985 and 1987, Cameroon's export prices fell by 65% for oil, 25% for cocoa, 11% for coffee and 20% for rubber, causing an overall 47% deterioration in the terms of trade. The balance of payments registered a current account deficit of 8.8% of the Gross Domestic Product (GDP) in 1986/87, compared to a surplus of 3.9% in 1984/85 (Ntangsi 1991). These exogenous factors coupled with domestic factors, which are mainly institutional structures and political, undermined Cameroon's economic and financial viability and caused a slowing down in economic activities. All these have cumulated to sharp decline of the GDP.

It is estimated that GDP fell by 9% in 1987/88 and by 6.5% in 1988/89. Investments were about 50% below the level of the three years that preceded 1988/89 (World Bank 1989). The fall in export earnings together with the overvalued currency made Cameroon's export uncompetitive.

The marketing of main export crops were subjected to government regulations and control. The government established annual price schedules in order to regulate all costs and marketing margins, assigned quotas and zones of marketing to particular cooperatives and market agents.

This system was inefficient as lack of competition led to the development of monopoly power in input distribution and monopsony in the purchase of farmers' products. Government over-control of cooperatives led to the development of bureaucratic tendencies in the cooperatives that characterized the central government and thus delays in the delivery of inputs, even non-payment for farmers' products, etc.

## Restructuring the Economy

Faced with this poor state of the economy, Cameroon embarked on restructuring the economy with the help of the World Bank, the International Monetary Fund (IMF) and other donors. The SAP supposed to be a comprehensive policy reform of the existing policy framework and a response to the country's structural problems and external shocks. Given the fixed parity between the CFA franc vis-avis the French franc external adjustment through the devaluation of the FCFA was (and is) not possible without the agreement of the other members of the Franc zone and France. So initially, SAP was based on internal adjustments with emphasis on increased competition, efficiency and a reduction of costs and prices in the economy. More so SAP was aimed at redefining the role of the state away from direct intervention in the production of goods and services towards a greater reliance on the private sector with the functioning of market forces. It was also supposed to be aimed at removing distortions in the macroeconomic, institutional and regulatory environments by introducing simplicity in the pattern of relative incentives and reducing the anti-export bias, improving the country's economic management and ultimately restoring the major macroeconomic equilibria.

The proponents of SAP believed that the policy distortion in the input and output prices affect the structure of incentives facing the agricultural (export) producers. Hence by liberalizing both input and output markets, distortions could be removed. And by improving the structure of incentives farmers would be stimulated to allocate more resources into farming and consequently increase their production and productivity.

## I. THE STRUCTURAL ADJUSTMENT PROGRAMME

Cameroon adopted SAP only in the late 1980s. Some donors and recipients have agreed on the necessity of adjustment in order to reduce the cost of not adjusting and to revamp the crisis ridden economies. A series of studies undertaken by the World Bank in 1989 showed that countries which adopted adjustment programmes have grown faster than would have otherwise been the case. Serageldin (1989) undertook a similar study and he equally argued that countries which have adjusted have done better than those countries that have not. These studies have mostly dealt with macro-economic aggregates to the neglect of sectoral issues relating to such groups as exports and food crop producers which constitute the crux of macro-economic aggregates. Zuckerman (1989) attributed this neglect to weak institutional framework. Pegatienan (1990) further raised interesting issues on the human resource aspect during the transition to growth. This is greatly influenced by the price levels of outputs and inputs, since these determine incentives for human resource utilization, infrastructure and institutional environment.

While SAP was focused on the removal of the distortion in the economy, not much stress was put on the development of infrastructure, financial institutions and human resource

development and other non-price factors. Instead the concern was to promote export and discourage imports without accompanied structures. Although SAP was also meant to stop the economy from deteriorating.

There was the presumption that SAP would lead to spontaneous investment and growth. Yet this may strongly depend on the sources of growth and the financing of those sources particularly the supply side. There is very little literature on the sources of agricultural growth (Lele 1989). Detailed study at the microeconomic level could greatly improve our knowledge in this area.

## 1. Research Problem

So SAP seemed to have been based on the assumption that problems of internal and external imbalances are due to distortion in the incentive systems. The liberalization of both input and output prices and removal of other restrictions were expected to improve the performance of the economy. Little attention was paid to structural and infrastructural problems. And this liberalization would bring about a long - run situation in output growth, But did these policies completely change the structures of the economy and eliminate distortions? That is the new policy regime was supposed to make the economy more flexible, efficient, and more conducive to growth, by eliminating the distortions which should result to more efficient allocation of resources, maximization of income and consequently lead to sustainable growth.Hence Cameroon SAP should lead to faster sustainable growth. Has agricultural production and productivity been improved due to SAP ? Thus the implementation of SAP in Cameroon as from 1987 and its effects on the economy has become a major concern for those interested in Cameroon's economy. Yet no study so far has rigorously analyzed the impact of this policy change on these major crops. It is crucially important to assess the impact of structural adjustment programme on these export crops. The importance of this cannot be overemphasized, since agriculture is the main support of the economy.

## 2. Objective

The main objective of this study therefore is to assess the effects of policy changes on the overall incentives to producers of Cameroon's major export crops (coffee, Cocoa and cotton ). The study examines the effects on relative prices, costs and resource mobility brought about by SAP and the implication for production of these major export crops.

Specifically (1) we look at the policy measures taken to affect agriculture and consequently affecting the major export crops, (2) we also collect and examine time series data on the relevant variables in order to ascertain their effects on the output, and (3) we further analyse in detail the effects of various (especially price) variables on the output by specifying and estimating the output supply functions.

The secondary data, on which the study is mainly based, are obtained from the Ministry of Planning and Regional Development, the Ministry of Agriculture, the World Bank, the International Monetary Fund, the United Nations Development Program, FAO and the African Development Bank publications. Information is equally obtained from the Marketing Board (now National Cocoa and Coffee Board NCCB), SODECAO and SODECOTON.

## II. MEASURES AFFECTING THE AGRICULTURAL SECTOR

Generally, SAP has helped to redefine the state's interventionist policy including the shifting of some economic activities from the public to the private sector with the hope of reversing the downward trend of the main economic aggregates.

There has been a general reduction in the state's budget, consequently the agricultural budget has been reduced in particularly the budget allocated to agricultural investment. The reduction of agricultural budget has included the removal of subsidies for certain agricultural inputs such as fertilizers and seeds/seedlings.

Some public enterprises have been liquidated and some restructured and maintained in the state's portfolio or privatized. Under the financial institutions, the Cameroon Development Bank, the FONADER - the farmers' bank - and the Cameroon Bank were liquidated. These banks were meant to help farmers although farmers did not benefit very much from them. In fact studies have shown that farmers obtained their capital/loans mostly from the informal financial market where interest rates are usually much higher than in the formal financial market. With these banks out of existence, there is increased demand for the scarce funds in the informal financial market. Hence interest rates tend to be much higher. The money and credit policies seemed not to have favoured the agricultural sector. These measures have led to a tremendous increase in the unemployment of resources including human resources, reduction of financial resources, reduction in public investment in agriculture and pressure on the private sector to assume the vital dominant role in the functioning of the economy.

In the agricultural sector, the stress has been on marketing and extension services. The government has now abandoned the extensive extension services on rural development activities. Many extension services carried out by public enterprises such as SODECAO, SEMRY and also out grower schemes which were carried out by large corporation like SODECOTON, CDC and SOCAPALM have been either abandoned or liquidated. To the extent that the farmers were provided with such services, necessary inputs and subsidized inputs, such as seeds and seedlings and fertilizers, the cost of production would now be higher than before.

The new cooperative law was enacted in February 1993 and cooperatives were from then supposed to be autonomous and farmers could then manage their own affairs as well as have a complete say in their business from production to marketing; a situation which did not exist before this period. Thus making it possible for the farmers to reduce their administrative cost which is part of production cost. Furthermore they would have greater power in negotiating for the purchase of inputs and the sale of output. Although initially it would depend on how fast the farmers learn to properly manage their cooperatives.

The marketing of the principal export crops (cocoa, coffee and cotton) has been liberalized to some extent and the role of the National Produce Marketing Board (NPMB) substantially reduced with its labour force reduced from 3,800 to less than 500 employees. Theoretically, the liberalization and the restructuring of NPMB to National Cocoa and Coffee Board (NCCB) should reduce marketing costs, export tax, price distortion and increase producer prices for the crops concerned. Yet the producer prices are still officially set, for it was set as low as 150 francs CFA per kilogram in 1992/93 cocoa season.

Other policy measures under SAP have partly led to the 1990 investment code which supposes to give many tax advantages, greater competition and utilization of local resources and increased incentives for processing and exporting of primary products. Increased incentives for exporting has meant the removal of export duties and other restrictions especially on agricultural products, although many of the items in the cocoa and coffee price schedule still remain.

The private sector was expected to assume an important role in providing agricultural inputs. MIDEVIV (Mission de Développement des Semences et des Cultures Vivrières) for instance, had been privatized with its seed multiplication schemes. And with the help of USAID, the privatization of the fertilizer scheme and North West coffee has have also being completed.

Fertilizer is an important input in agricultural production particularly in the production of coffee and cotton. With the privatizing of the fertilizer scheme, farmers have to purchase this input from the open market where the forces of demand and supply determine the quantity and the price of fertilizer. Consequently the price of fertilizer would tend to be higher than before when the government did subsidize the purchase of this input. Also as the marketing of these crops has become the sole responsibility of the farmer and their cooperatives, one would expect the marketing cost to be reduced.

The new agricultural policy of 1991 has strengthened the role of the ministry of agriculture particularly in the gathering of data on production and marketing of crops, price, quality and the control of buying agents; who were carrying on unfair practices that helped to reduce the producer price. There has been the encouragement of the formation of marketing cooperatives. Since they are autonomous and they function for the benefit of their members. This may tend to improve the marketing of agricultural products and consequently agricultural profitability. On balance the overall changes should increase agricultural production and productivity, consequently growth.

Finally both the nominal and real exchange rates of CFA franc, has been shown to be overvalued particularly in the 1980s. Amin's (1993) estimates of the real exchange rate (which is given as the ratio of the price of tradable to that of nontradable goods) showed that the real exchange rate was overvalued for over 35% for the 1980s indicating the extent to which Cameroon's agricultural exports were been hurt. A devaluation of the CFA franc relative to French franc was therefore to make Cameroon's exports more competitive. Hence the devaluation of the CFA franc may increase the producer prices, but may also increase the price of imported goods.

So, three months after the 1994 devaluation of the CFA franc, a study of the coffee and cocoa farmers of the Southern region of Cameroon, showed that while the labour input prices doubled, the prices of fertilizers and sprayers were more than doubled. Yet the prices of the output just doubled (Ndembou 1994). And to that extent, farmers who used imported inputs were worse off than before devaluation.

## III. THE THEORETICAL FRAMEWORK AND MODEL

Policy changes were expected to affect both output and input prices as well as non-price variables. In an environment where resources could be shifted easily from one specific activity to another depending on the incentive structure, farmers would tend to adjust to these changes.

We initially examined those variables which have effects on the agricultural crops in both nominal and real terms. We divided the study period into two sub-periods : prior to the SAP, and the SAP period itself.. In our analysis, we try to see how each variable affects output or input prices, and output.

### 1. Formula

Since the variables are examined in real terms, we calculate the real values, for instance by using the formula for real exchange rate (RER).

$$RER = \frac{E(WPI)}{CPI} \qquad (1)$$

where:

E = Nominal Exchange Rate of CFA franc for US dollar;

WPI = World Price Index for Cameroon's major trading partners;

CPI = Consumer Price Index for Cameroon.

The WPI is obtained by using the following formula:

$$WPI = \sum_{i=1}^{n} \frac{W_i PI_i}{n} \qquad (1.1)$$

Where :

$W_i$ = the weight, representing the share of Cameroon's total trade value (export + import) with Cameroon's trading partner i;

$PI_i$ = wholesale Price Index in country i, with i varying from 1 to 8. Unable to obtain wholesale price index, we use consumer price indexes for Cameroon's eight major trading partners to calculate the real exchange rate (RER).

### Table 1 : Real Exchange Rate (RER)

| Year | R* | RER |
|------|------|-------|
| 1974 | 0.16 | 38.56 |
| 1975 | 0.15 | 32.10 |
| 1976 | 0.16 | 38.24 |
| 1977 | 0.14 | 34.44 |
| 1978 | 0.14 | 31.64 |
| 1979 | 0.16 | 34.08 |
| 1980 | 0.14 | 29.54 |
| 1981 | 0.15 | 40.80 |
| 1982 | 0.17 | 55.93 |
| 1983 | 0.13 | 49.53 |
| 1984 | 0.12 | 52.44 |
| 1985 | 0.13 | 58.37 |
| 1986 | 0.12 | 41.52 |
| 1987 | 0.11 | 33.11 |
| 1988 | 0.11 | 32.78 |
| 1989 | 0.11 | 35.09 |
| 1990 | 0.12 | 32.64 |
| 1991 | 0.11 | 31.35 |
| 1992 | 0.10 | 30.50 |
| 1993 | 0.10 | 30.49 |

*Source*: Our estimates

*R compares the average inflation in the Cameroon's major trading partners to Cameroon's inflation rate.

In general the inflation rate has been higher in Cameroon than the average of that of the 8 major Cameroon's trading partners as reflected in the low ratio's for the period 1974-1993.

RER was low in the period 1974-1980, below 40 but increased in the first half of the 1980's to the highest point of 58 in 1985. From then it started declining to as low as 30 in 1993. This means that the Cameroon's currency was overvalued in the 70s and in the later part of the 1980s relative to the period 1981-86. But this overvaluation seems to be due to high domestic general price level. This partly made Cameroon to become uncompetitive.

## 2. Real Producer Price

The real producer price for each commodity is given by:

$$\frac{Pd}{CPI} = \frac{PW}{WP} RER (1 - t_x - M_x)$$  (2)

With :

tx = Export tax (as % of PW);

$M_x$ = Marketing cost (also affected by structural deficiencies);

PP = Producer price (Cocoa: co, Robusta: cer, Arabica: cea, Cotton: cot);

PW = World price (FOB price of export);

Tx = (tx + Mx) which is expected to be declining due to SAP.

### Table 2 : Real Producer Prices

| Year | $PP_{co}$/CPI | $PP_{cer}$/CPI | $PP_{cea}$/CPI | $PP_{cot}$/CPI |
|------|------|------|------|------|
| 1971 | 3.69 | 5.42 | 7.54 | 1.30 |
| 1972 | 3.11 | 5.02 | 6.62 | 1.24 |
| 1973 | 2.73 | 4.55 | 6.36 | 1.13 |
| 1974 | 2.48 | 4.03 | 6.20 | 1.18 |
| 1975 | 2.73 | 3.69 | 5.19 | 1.17 |
| 1976 | 2.98 | 3.60 | 5.84 | 1.07 |
| 1977 | 2.33 | 4.22 | 5.84 | 1.19 |
| 1978 | 3.25 | 4.82 | 6.26 | 1.25 |
| 1979 | 4.24 | 5.06 | 6.51 | 1.17 |
| 1980 | 4.61 | 5.11 | 5.77 | 1.15 |
| 1981 | 4.78 | 4.77 | 5.07 | 1.19 |
| 1982 | 4.47 | 4.34 | 4.60 | 1.84 |
| 1983 | 4.08 | 3.95 | 4.17 | 1.18 |
| 1984 | 3.72 | 3.95 | 4.15 | 1.18 |
| 1985 | 3.14 | 4.60 | 4.50 | 1.30 |
| 1986 | 4.40 | 4.36 | 4.83 | 1.21 |
| 1987 | 4.18 | 4.12 | 4.55 | 1.23 |
| 1988 | 3.94 | 3.71 | 4.19 | 1.13 |
| 1989 | 3.63 | 0.04 | 3.81 | 1.13 |
| 1990 | 3.51 | 1.42 | 2.03 | 0.77 |
| 1991 | 2.03 | 1.26 | 2.03 | 0.77 |
| 1992 | 1.79 | | | |

*Source*: Our estimates

The time series data for export tax and market cost for the period 1971 - 1993 for the four crops were not available except for a few years. We had therefore to use the left hand side of equation (2) PP/CPI for all the four crops. For the few years that the export taxes and market costs were calculated, there was a mark decrease in these taxes and costs especially for cocoa. Hence the nominal producer price should increase. But this was not the case because of government's action and the fall in the world price. The real producer price (Table 2) tend to fall, since the consumer price index was rising during this period.

For the Output price/Input price Ratio, we use only one input - the fertilizer price (Pfe) for all the crops. As a result of SAP this ratio is expected to increase, particularly if the output price, or producer price, increases more than the input price.

In fact the above macroeconomic policy variables and sector specific variables affect the input and output prices of the respective product, in such a way that the input price such as fertilizer would increase, consequently the ratios tend to be much less than one except in cotton (Table 3)

### Table 3 : Output-Input Price Ratio

| Year | $PP_{co}$/Pfe | $PP_{cof}$/Pfe | $PP_{coA}$/Pfe | $PP_{cot}$/Pfe |
|------|---------|---------|---------|---------|
| 1971 | 0.24 | 0.16 | 0.11 | 0.067 |
| 1972 | 0.24 | 0.14 | 0.11 | 0.58 |
| 1973 | 0.51 | 0.30 | 0.22 | 1.23 |
| 1974 | 0.51 | 0.32 | 0.21 | 1.08 |
| 1975 | 0.67 | 0.41 | 0.35 | 1.56 |
| 1976 | 0.39 | 0.32 | 0.2 | 1.09 |
| 1977 | 0.26 | 0.20 | 0.13 | 0.71 |
| 1978 | 0.18 | 0.16 | 0.12 | 0.62 |
| 1979 | 0.15 | 0.14 | 0.11 | 0.60 |
| 1980 | 0.13 | 0.13 | 0.11 | 0.54 |
| 1981 | 0.19 | 0.18 | 0.16 | 0.70 |
| 1982 | 0.11 | 0.18 | 0.17 | 0.70 |
| 1983 | 0.18 | 0.17 | 0.16 | 0.55 |
| 1984 | 0.26 | 0.21 | 0.11 | 0.68 |
| 1985 | 0.23 | 0.22 | 0.23 | 0.79 |
| 1986 | 0.16 | 0.15 | 0.14 | 0.51 |
| 1987 | 0.14 | 0.09 | 0.08 | 0.31 |
| 1988 | 0.16 | 0.13 | 0.12 | 0.44 |
| 1989 | 0.28 | 0.40 | 0.28 | 0.42 |
| 1990 | 0.21 | 0.42 | 0.26 | 0.74 |
| 1991 | 0.28 | 0.36 | 0.25 | 0.68 |
| 1992 | 0.32 | | | 0.59 |
| 1993 | 0.38 | | | 0.56 |
| 1994 | | | | 0.87 |

*Source*: Our estimates

## 3. Model

Using a restricted profit function, derived from production and cost functions, one can derive the demand schedule for each input and the output supply schedule for each crop. That is we generalize a production process with three outputs q (coffee, cocoa and cotton) and inputs x. The production function can be expressed in an implicit form as:

$$F(q_1, q_2, q_3, X_1,....X_m, e) = 0 \tag{3}$$

where e represents environmental variables such as rain, which is similarly to $q = f(x)$

We assume that equation (3) has continuous first and second order partial derivatives which are non zero for "its nontrivial solutions"; where its partial derivatives with respect to outputs are positive, and negative partial derivatives for inputs.

Our supply model is derived from the profit maximization problem of a producing unit.

Profit ($\pi$) is here defined as the difference between total revenues p.q and outlay r.x., where p is the price of the output and q is the quantity of the output, with 3 outputs, r is the price of the input and x is the quantity of the input, with m inputs.

$$\pi = \sum_{i=1}^{3} P_i q_i - \sum_{j=1}^{m} r_j x_j \tag{4}$$

In more compact form we rewrite (4) as :

a revenue function that is: $\sum(pq) = pf(x) = R(px)$

and an outlay function : $\sum r_j x_j = L(r,x)$

The profit maximization problem is therefore written as:

$$\max R(px) - L(r,x)$$

From the first order conditions, we set the partial derivatives of the profit function with respect to each input quantites equal to zero. The result is:

$$\frac{dR(px)}{dx_j} = \frac{dL(r,x)}{dx_j} \tag{5}$$

The left hand side of equation (5) is the price of the output multiply by the marginal product of respective input and the right hand side is the price of the respective input.

We can express these first order profit maximization conditions as follows;

$$P. MP_j(x) = r_j \quad with \quad j = 1....m \tag{6}$$

Where MP(x) is the marginal product of x and P.MP(x) is the value of the marginal product (VMP)

That is we can write (6) as :

$$VMP(x, p) = r \tag{7}$$

The same as equation (6) the value of marginal product should equal to the price of its input.

We derive the input demand for the m inputs as:

$$x = d(p, r, ..., r_m) \qquad (8)$$

since the inputs are demanded because of the demand for output.

We then substitute the input demand function into the production function to obtain the optimal output being a function of input prices r and output prices p.

That is : $\qquad q = f(d_1(p, r), ...., d_m(p, r)) = S(p, r) \qquad (9)$

Cocoa and coffee are perennial tree crops having characteristics different from cotton - an annual crop. The crops take long gestation period to start producing. This means also that the removal of cocoa and coffee trees could be costly. The current output also depends on the current and previous levels of input utilization. The productivity of the trees varies according to age; agricultural husbandry, and variety, such that actual production could be markedly different from production capacity because of agronomic and climatic conditions. But given a stock of these perennial crops, we can specify and estimate the short term output supply of cocoa, coffee; with the same specification used for cotton based on equation 9 above. (Tshibaka 1994). Only output supply functions will be estimated for coffee, cocoa and cotton. A distributed lag model will be used to estimate these output supply functions. The use of this method allows for the estimation of both short and long-run output supply elasticities with respect to different explanatory variables.

The output supply function (9) can then be written as

$$Q = F(P, P_f, P_{Inp}, W, G, R_{ain}, Q_{t-1}, D) \qquad (10)$$

Where : $\qquad \dfrac{\delta Q}{\delta P}, \dfrac{\delta Q}{\delta Rain}, \dfrac{\delta Q}{\delta G}, \dfrac{\delta Q}{\delta D} \succ 0 ; \dfrac{\delta Q}{\delta P_f}, \dfrac{\delta Q}{\delta P_{imp}}, \dfrac{\delta Q}{\delta W} \prec 0$

Q = Output of respective product (cocoa, coffee or cotton);

P = Own price of product;

$P_f$ = Price of competitive product;

$P_{inp}$ = Price of input (such as fertilizer);

W = Wage rate;

G = Government expenditure on agriculture;

R = Weather variable such as rain;

$Q_1$ = Lagged variable of output;

D = Dummy variable which may reflect the policy change, although policy change is reflected also in the other variables.

## 4. Empirical Results and Analysis

**Table 4 - Estimated Parameters in the Output Supply Function for Cocoa**

*$Q_{co}$ = Dependent Variable*

| Eqn. | Const | $Pp_{io}$ | $P_{co}$ | $P_{fe}$ | D | $R_{ain}$ | G | $Q_{co-1}$ | $R^2$ | $R^{-2}$ | DW |
|------|-------|-------|------|------|------|--------|-------|--------|------|------|------|
| 1 | 98.022 | .124 | - .225 | - .201 | 4.952 | - .078 | -.595 | .063 | .478 | .250 | 2.459 |
| ts | 2.622 | 1.890 | - .818 | - .888 | .247 | -1.060 | -.343 | 1.492 | | | |
| 2 | 97.700 | .128 | - .255 | - .233 | NE | - .082 | -.190 | .357 | .476 | .292 | 2.461 |
| ts | 2.691 | 2.087 | -1.063 | - 1.287 | | -1.165 | -.339 | 1.741 | | | |
| 3 | 134.089 | .122 | -.151 | - .260 | | - .084 | -.320 | | .383 | .2118 | 1.686 |
| ts | 4.281 | 1.885 | -.617 | -1.367 | | -1.130 | -.545 | | | | |

*Source*: From our regression estimates

Where :    $Q_{co}$    = cocoa output;

$Pp_{io}$    = Producer Price of cocoa;

$P_{co}$    = Price of competitive crop;

$P_{fe}$    = Price of fertilizer;

$R_{ain}$    = Rainfall;

G    = Government's expenditure on agriculture;

$Q_{co-1}$   = Lagged cocoa output;

D    = Dummy variable : Pre-SAP = 0, SAP = 1

There are 3 equations. In the last two equations we successively drop the dummy and the dependent lagged variable. In general the results did not significantly change. Hence we use the first equation to do our analysis. The coefficients have the expected signs except the G (the government expenditure on agriculture), which is negative. The rain variable which was measured as yearly rainfall in Douala could either be positive or negative depending on the amount of rainfall, too much rainfall may have negative effect on cocoa production. The price of plantain per kilo ($P_{co}$) in Yaounde was taken as the competitive output price in the Southern part of the country where cocoa is produced and plantain seems to be the dominant food crop, as well as an alternative cash crop.

At the 5% level, only the cocoa producer price is significant looking at the t-statistics (ts). The $R^2$ (0.478) is low and the $R^{-2}$ is (0.250) much lower. The Durbin-Watson (DW) test shows that there is no first order serial correlation since DW (2.46) is approximately 2.

The estimated regression coefficient of equation 1 is used to estimate the elasticities.

**Table 5 - Estimated Parameters in the output supply function for robusta coffee**

*$Q_{CER}$ = Dependent Variable*

| Eqn. | Const | $Pp_{co}$ | $P_{co}$ | $P_{FF}$ | $R_{ain}$ | G | D | $Q_{CER-1}$ | R | $R^-$ | DW |
|------|-------|-------|------|------|--------|--------|-------|--------|------|------|------|
| 1 | 56.867 | .169 | -.255 | .548 | .049 | - 2.713 | 6.205 | + .979 | .673 | .509 | 1.737 |
| ts | 1.669 | 4.407 | -1.574 | 1.619 | .609 | - .998 | 2.227 | -2.101 | | | |

| 2 | 64.108 | .161 | - .320 | .076 | .058 | 2.476 | | - .521 | .556 | .379 | 1.467 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ts | 1.681 | 3.735 | 1.784 | .255 | .647 | 1.569 | | -2.080 | | | |
| 3 | 33.282 | .139 | - .282 | .110 | .051 | 1.468 | | | .429 | .250 | 2.533 |
| ts | .862 | 3.030 | -1.439 | .340 | .522 | .890 | | | | | |

Where $Q_{CER}$ = Output of robusta coffee;

$PP_{CER}$ = Producer price of robusta coffee;

$P_{CER}$ = Price of competitive crop;

$P_{fe}$ = Price of fertilizer;

$R_{ain}$ = Rainfall;

G = Government expenditure on agriculture.

Similarly we use equation 1 to do our analysis. In general the coefficients have the expected signs except G that has a negative sign. And it is surprising that the coefficient of fertilizer price ($P_{fe}$) as an input is positive. The price of maize in Buea is taken as the competitive output price. Also the average yearly rainfall in Douala was used as the variable for rain. At 5% level, three coefficients are significant $PP_{cer}$, $P_{cer}$ and D. The $R^2$ is .51. The DW test also shows the nonexistence of first order serial correlation.

### Table 6 - Estimated Parameters in the output supply function for arabica coffee

$Q_{CEA}$ = Dependent Variable

| FORMULA Eqn. | Const | $PP_{CFA}$ | $P_{CFA}$ | $P_{FE}$ | $R_{ain}$ | G | D | $Q_{cFA-1}$ | R | R | DW |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 18.737 | .006 | .031 | -.073 | .026 | -.650 | 1.411 | -.014 | .676 | .513 | 2.091 |
| ts | 1.499 | .670 | .354 | -.983 | .437 | -1.216 | .231 | -.902 | | | |
| 2 | 19.000 | .006 | .031 | -.084 | .024 | - .542 | | -.211 | .674 | .544 | 2.167 |
| ts | 1.577 | .675 | .363 | -1.538 | .423 | -2.166 | | -.959 | | | |
| 3 | 25.679 | .007 | .025 | - .085 | .019 | - .654 | | | .654 | .546 | 1.707 |
| ts | 2.618 | .716 | .301 | -1.552 | .346 | -2.968 | | | | | |

Again we choose the first equation, as it does not differ much from the other two. The rainfall is measured in Yaounde. The price of the competitive product (maize) in Bamenda is used. Maize is very much produced in the North West and West provinces. It has a positive coefficient and G a negative coefficient. We use the average yearly rainfall in Yaounde for rain. Although the R squares are relatively high at 5% level none of the coefficients is significant.

Where: $Q_{CEA}$ = Output of arabica coffee;

$PP_{CEA}$ = Producer price;

$P_{CEA}$ = Price of competitive crop;

$P_{fe}$ = Price of fertilizer;

$R_{ain}$ = Rainfall;

G = Government expenditure on agriculture.

**Table 7 - Estimated Parameters in the output supply function for cotton**

*$Q_{cot}$ Dependent Variable*

| Eqn. | Const | Pp_cot | P_cot | P_fe | R_ain | G | D | Q_cot-1 | R | R̄ | DW |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | -30.107 | .640 | .032 | -.117 | .717 | .944 | 13.096 | .010 | .911 | .873 | 2.104 |
| ts | - .709 | 2.630 | .435 | -.644 | 1.372 | .571 | .704 | 1.372 | | | |
| 2 | -37.760 | .670 | .017 | -.174 | .830 | 1.869 | .009 | | .909 | .876 | 2.132 |
| ts | - 1.050 | 2.840 | .242 | -1.090 | 1.694 | 1.881 | | | .051 | | |
| 3 | -37.315 | .672 | .017 | - .176 | .828 | 1.905 | | | .907 | .883 | 2.121 |
| ts | - 1.1 | 2.959 | .250 | -1.185 | 1.743 | 2.829 | | | | | |

Where:
$Q_{cot}$ = Output of cotton;

$Pp_{co}$ = Producer price;

$P_{cot}$ = Price of competitive crop;

$P_{fe}$ = Fertilizer price;

$R_{ain}$ = Rainfall;

G = Government's expenditure on agriculture.

We use equation 1 to do our analysis. All the coefficients have expected signs except the coefficient of the price of competitive product - price of groundnut per kilogram in Garoua. Groundnut is also widely cultivated as a cash crop. Rainfall in Maroua was taken for the rain variable.

At 5% level, none of the coefficient is significant, but the R squares are quite high.

Also we estimated the output supply function with interaction terms where D is the dummy. The results were not very good. The coefficient of the dummy became very large in absolute terms. We therefore did not use these results to calculate the elasticities for the analysis.

## 5. Data

### a) Dummy

Dummy :Examining the dummies in the four set of equations, it is observed that the coefficients are positive; implying that the policy change during SAP has positively affected the output of cocoa, coffee and cotton. Although at 5% level, the coefficient of D was significant only in the case of robusta coffee where a drastic liberalization programme has been established. Dropping the dummies in the respective equation does not significantly improve the result or the significance of the coefficients. Yet there are some explanatory variables (such as wages) affected by SAP which are not included in the equations. In this respect the dummy may capture such variables.

### b) Fertilizer and Government Expenditure

The price of fertilizer ($P_{fe}$) and government expenditure on agriculture (G) are the two variable which are the same in all the equations. The unit price of fertilizer was obtained by dividing the total value of fertilizer imported by the imported quantity. It is doubtful if the

different imported fertilizer went as input into these four crops. It was impossible to obtain the specific type of fertilizer that went to specific crops. G is measured in billions of francs CFA. In certain years G includes expenditures on stock breeding. It was not possible to obtain expenditures specifically allocated to agriculture or rural agriculture.

In fact it was impossible to find data on agricultural expenditure separated into recurrent and investment expenditures.

## c) Rain

Average yearly rainfall was obtained from Douala, Yaounde and Maroua for the four crops. The rainfall is therefore collected in specific location while the crops grow in given regions. This shows difficulties of seeing how the captured rainfall could affect the different crops which are spread over a wider region.

## d) Price of Competitive Crops

In the case of arabica coffee, the coefficient of $P_{CEA}$ is positive indicating arabica coffee and maize are complementary and not competitive. It would seem another crop is competitive. But what is observed in the field is that different areas are allocated for maize and coffee. In this case the result may not come out as expected.

## e) Elasticities and Change in Output

We calculated the yearly elasticities of all the explanatory variables based on the estimates of the coefficients of the first equation of the above sets of equation, although not all the coefficients are significant. These elasticities are used in obtaining the yearly changed in output due to each explanatory variable. Having done that, we calculated the yearly contribution of each explanatory variable. Of particular interest, we calculated the average annual percentage change in output for each subperiod, pre-SAP and SAP period, and then compare the two periods. The results seem to be interesting.

All the elasticities of the explanatory variables in the four crops were less than one. The long run elasticities seem to be slightly higher than the short run elasticities.

The yearly change in output were very small and even showing negative changes in most years, such that the total of the explanatory variables were negative.

The contribution of each variable were again mixed. Some variables had positive contribution in the various crops in certain years and negative in others. It is therefore difficult to have an answer on which variables were clearly sources of growth through their contribution.

Average change in output for each of the two periods are as follows:

a)  Cocoa :           Pre-SAP is 0.0049
                      SAP      is - 0.03

b)  Robusta coffee :  Pre-SAP is 0.1771
                      SAP      is - 0.560

c)  Arabica coffee :  Pre-SAP is 0.0032
                      SAP      is - 0.0845

d)   Cotton :          Pre-SAP  is 0.078
                       SAP      is 0.012

In all the four crops the average yearly percentage change in output was greater for the pre-SAP period than the SAP period. The changes were very small in the pre-SAP period and really negative for the SAP period except in the case of cotton which has a small positive change in the SAP period. The results show clearly that during the period of SAP, the outputs of these four crops have instead decreased. Output may increase after the devaluation depending on the input prices.

## IV. FACTORS AND PRODUCTIVITY

### 1. Productivity of cocoa inputs

Productivity is considered here with two inputs: land productivity and labour productivity. Cocoa production is generally undertaken by small scale farmers, a majority of them using little or no modern production techniques. It is a mono crop and characterized by labour intensive methods. Labour as well as land productivities are low generally compared to other producing countries. A study undertaken by MINAGRI in 1990 showed that yield was about 248 kg/hectare as against 600 kg/hectare for Côte d'Ivoire and 1,000 to 3,000 kg/hectare in Malaysia. In 1985/86, labour productivity was 519 kg/person whereas land productivity in the same year was about 283 kg/hectare. These dropped to 506/person and 248 kg/hectare in 1990/91 respectively. This can be partly explained by the fact that there is diversification of production with more attention on to food crop which has also become cash crops rather than export crop production. This behaviour is justified by the falling FOB and producer prices which have been acting as a disincentive to cocoa producers. Old cocoa trees are not being replaced; neither is much been done to improve the existing cocoa farms.

Land under cocoa cultivation declined from a maximum of 452,000 hectares in 1988/89 to only 400,000 in 1992/93. Labour in the cocoa sub-sector equally reduced from 215,270 to 184,320 man labour days. From this therefore the policy change has not positively affected cocoa production.

### 2. Productivity of coffee inputs

As considered in the cocoa sub-sector, land and labour productivity is used. The production process of coffee is similar to that of cocoa in many aspects. First, production is undertaken by small scale farmers using labour intensive methods of production and coffee is not produced with other crops on the same piece of land. Second, land and labour productivities are low compared to other coffee producing countries. A study undertaken by MINAGRI in 1990 showed that yields for arabica coffee was less than 170 kg/hectare as against 1000kg/hectare in Latin American Countries. Yields fluctuated between 129 kg/hectare in 1987/88 and 231 kg/hectare in 1988/89 for arabica coffee. But yields increased from 167 kg/hectare in 1989/90 to 196 kg/hectare in 1990/91. The labour productivity in both arabica and robusta coffee has been declining since 1986. Arabica coffee shows a fall from 115 per labour in 1986 to 84 kg per labour in 1991 while robusta shows a decline from 558 kg per labour in 1986 to 460kg per labour in 1991. So within SAP period these inputs have both negatively affected coffee production.

Chemical fertilizer which has been heavily subsidized before 1988 is now applied at irregular basis. In fact few farmers did apply the recommended dose at the right time. The 1984 farm survey showed that 55% to 60% of smallholders used chemical fertilizer. The 1984 Census also revealed that 30% of smallholders use pesticides. In these coffee farms, weed control is

important especially during initial growth phase of young coffee plants, since weeds may compete with the young plants. But weeding is labour intensive, so it is rarely done.

In a sample we took in the robusta coffee producing region, we found that fertilizer were no longer used on coffee farms. Instead fertilizers were applied on food crops. In fact 68% of our informants told us that they started replacing coffee plants with food crops some few years ago. And much attention is now put on food crop production, although coffee is still being produced.

## 3. Inputs Productivity of Cotton

Cotton production under the supervision of SODECOTON with headquarters in Garoua is the most mechanized export crop production in Cameroon. In the early 1970s, the Compagnie Francaise pour le Développement des Fibres Textiles (CFDT) in an attempt to improve production of cotton laid emphasis on heavy application of chemicals (pesticides and herbicides) and plot consolidation to encourage mechanization.

In fact SODECOTON has been acting as an agent of government in development such that its activities are not limited to cotton production and marketing. Instead it has also been carrying out applied research, supporting extension services, giving rural credit, providing agricultural inputs, partly owning and operating commercial ginneries. It has equity in CICAM. Furthermore SODECOTON has been promoting foodcrop production particularly maize, groundnut and rice, separately from cotton production. In other words these crops tend to be complementary to the production of cotton.

The mechanization, high input use and consolidation of pieces of land have encouraged the growing of cotton alone, Thus discouraging intercropping. Cotton production is technology-led intensification rather than extensive cultivation as practiced in the other two crops. Cotton yield in Cameroon is among the highest in Africa. In 1980/81, yields were about 1,293 kg per hectare as against 55 kg/hectare for Nigeria, 689 kg per hectare for Senegal, 200 kg per hectare for Kenya, 722 for Malawi and 398 for Tanzania (Uma Lele 1989). Yields have been stable, even the implementation of SAP in 1988 has not changed land productivity (Table 7). Labour productivity has also been relatively high. Generally, resource productivity in the cotton sub-sector is the highest in Cameroon as compared to other subsectors. In 1988/89, it exceeded that of cocoa and coffee and the gap had been maintained. This is partly because of the heavy mechanization of this subsector and large-scale production as against labour intensive methods and small holder schemes for the cocoa and coffee sub-sectors.

## 4. Cotton Production and Export

Cotton is Cameroon's third largest agricultural export crop by value.

Production is concentrated in the Northern provinces. Cotton production was highest in 1988/89 with about 165,431 metric tons produced. The influx of some 1000 tons from neigbouring Northern part of Nigeria resulted to this sharp increase. Hence, in 1989/90, there was a sharp fall of about 37% from that of the previous year. The main reason seems to be the fall in producer prices from 140 FCFA per kilogram in 1988/89 to less than 100 FCFA in 1989/90 and the restriction in the flow of cotton lint from Northern Nigeria'.

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(1) The three Northern provinces are Far North, North and Adamaoua. Formerly, cotton production was concentrated mostly in the Far North but there has been Southwards extension of cotton production.

Production is undertaken in plantations and also by small holder producers. Average acreage per farmer is about 0.51 hectare. There is heavy application of fertilizers, insecticides and herbicides. The consolidation of holdings have resulted to massive use of machinery. Farmers have access to credit in order to improve on their production methods. SODECOTON manages cotton production and marketing in Cameroon. The trend of cotton production and exportation in Cameroon since 1970 is positive. It is also observed that there is a very wide gap between cotton production and exportation. This is because cotton lint is transformed locally into textiles. The major internal consumer of cotton lint is CICAM (Cotonière Industrielle du Cameroun). However, since 1987 the ratio of exports to production has increased. In 1986/87, exports to production ratio was about 1:5 i.e. a ton out of every five tons was exported. With the coming of SAP, the ratio decreased to about 1:2.5 meaning that a ton out of every two and a half tons was exported in 1991/92 representing a 50% increase in exports in real terms. This demonstrate SAP's implication for the transformation of primary products and Cameroon remaining a producer and exporter of primary products.

## 5. Costs of Productivity Increases and Supply Factors

There are costs to productivity increases, since such increases are obtained from improvement in technology, organization and quality of resources used in production. All these are conditioned on investments in human and other factors of production. Human resources are crucial and so require investments in training, health, education and mobility. Research efforts are necessary to discover new production techniques. SODECOTON, among other things, invest much in research, it gives additional support to cotton growers (Lele 1989, SODECOTON 1990/91). While similar support systems are lacking for the other crops. In fact the production technique for cocoa and coffee has not changed for decades although there has been introduction of some improved varieties in the crops. These are factors that SAP failed to emphasize. Yet in developed countries the growth of agricultural output has been sustained partly by technological improvement which have also been reflected in increase in labour and land productivity (Hobbs and Taylor 1987).

Price incentives are very important in encouraging farmers either to adopt a new technology or carry out any investment to improve agricultural production. Cameroon farmers as price takers can only increase their output and productivity and reduce production and marketing costs in order to be competitive.

## Implications and Conclusion

While Cocoa and Coffee production are still cultivated under traditional low input/low yield extensive production method, cotton is produced under modern high input/high yield intensive technology. The use of traction of animal and fertilized has produced substantial cotton yields either per hectare or per labour. These yields are much higher than from alternative crops. Even the results from percentage annual change in output show slight positive changes only in cotton.

The effects of SAP could be more profound after many years partly because of the nature of the crops. But higher yields can be obtained through pruning, mulching, better weeding and proper harvesting. Yet, low producer prices, resulting from low world prices, late payment and little institutional support (in cocoa and coffee) have been a disincentive to producer of these crops, since these crops are supply responsive, as shown by our regression estimates.

Presently it is doubtful whether with the importance of non price factors which are neglected and high input prices in production, it would be profitable to continue production. But the importance of the high level technology as in cotton cannot be overstressed. As a price taker, more output would not affect the world market, also because of increased transformation of these crops more output could be absorbed by the domestic market. Yet devaluation tends to increase the producer price and quantity exported. With a weak industrial base and devaluation, Cameroon may remain a primary producer. Thus devaluation puts into question the question of transformation of the primary products.

Adjustments or liberalization is not helped by the fact that they are taking place in the context of an acute financial crisis both for the state and the private sector. The state is not in the position to pay all its arrears to the private sector and carry out the necessary investment in agriculture and other sectors nor does the problems in the banking sector permit it to grant loans to the private sector, particularly long-term loans for agricultural investment and industrial take-off.

For the programme to succeed fully in Cameroon as in other Sub-Saharan African Countries the government has to play a greater, redefined role in adjustment, where there is more improved public investment in agricultural technology, infrastructure, human capital, improving the system of incentives facing the farmers, so as to increase their incomes. In fact more stress has to be put in the improvement of non price factors. This would encourage farmers to improve their production techniques. etc. in order to generate a supply response needed for economic recovery. Also policy has to be made credible. Improvement of programme implementation enabling environment for investment.

SAP was aimed at reversing the deteriorating economic situation. But our results show that (except for slight change in cotton sector) there has been no overall positive change in production productivity, exports of the crops examined. SAP might have failed to address the fundamental problems which are institutional and deficiencies in resources and infrastructure and structural constraints.

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