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An Empirical Analysis of the Prices of Nigeria's Agricultural Export Commodities

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An Empirical Analysis of the Prices of Nigeria's Agricultural Export Commodities:

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Abstract

The study examines the role of price incentives in expanding agricultural commodity exports. Using the concept of efficiency, based on the theory of opportunity cost, nominal and effective protection coefficients (NPC & EPC) were estimated for cocoa, coffee, cotton, palm kernel, palm oil, rubber and soyabean. Their world market prices served as the efficiency benchmarks in order to determine the pattern of incentives or disincentives to the Nigerian agricultural export sector. The NPC values obtained ranged from 0.47 for cotton to 1.18 for soyabean pre-Structural Adjustment Programme (SAP) and during the SAP the values ranged from 0.63 to 2.14 for the respective crops. This result confirmed that incentives improved substantially for export crop production during the SAP. The result of the EPC analysis complemented that of the NPC which indicated that incentives were more in favour of the production of soyabean, a non-traditional export crop in Nigeria. Consequently, the study concluded that the programme for boosting industrial and export crop production recently launched by the Federal Government should emphasise the production of soyabean in order to diversify our agricultural export base, along with palm produce and rubber particularly now that oilseeds and rubber have better prospects in the world market.

I. INTRODUCTION

Agricultural commodities are classified under primary commodities which currently constitute close to 40 per cent of world trade. Despite the sharp reduction in their share over the last two decades, primary commodities continue to be the mainstay of a large number of developing countries, accounting for about 70 per cent of their total exports. For many developed market economies, including Australia, Canada, and United States, primary products also account for about 30 per cent of their total exports, while constituting 45 percent of total exports in the centrally planned economies. For the large majority of developing countries, the dependence on primary products has decisive effect on their economic conditions. International commodity price trends are of utmost significance especially for those developing countries in which primary exports absorb the bulk of their total domestic production and influence their capacity to import.

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Like other developing economies, in the early 1960s, more than 80 per cent of Nigeria's exports were made up of agricultural commodites and agro-allied products. However, the advent of oil in the early 1970s reduced the share of agriculture in total exports to about 10 per cent. Agriculture now accounts for about 3 per cent of Nigeria's exports of which cocoa beans are the most significant component, while groundnuts and palm oil have disappeared altogether from the list of exported items. This state of affairs is not unconnected with price developments in the input or produce markets or both. Experience of developing and also the developed countries has shown that price incentives play an important role in the development of agriculture. Sustained increases in production are tied to both as assured market and a price sufficiently attractive to keep a farmer in production. As explicitly stated by Tsakok (1990), agricultural price analysis can help policy-makers examine the consequences, intended and unintended, of specific price changes on agricultural markets and assess the broader implications of these market-specific responses for the viability of the overall development strategy.

The objective of this study, is to attempt to establish empirically the role of prices in the development of Nigeria's major agricultural export commodities, such as cocoa, coffee, cotton, palm kernel, palm oil, rubber, and soyabeans, in the last two decades. A partial - equilibrium technique which involves the calculation of coefficients of proctection will be employed. Results of the study are expected to guide policy decision on what commodities should incentives be provided so that the country can exploit lucrative export markets without becoming unduly dependent on the export of a few commodities especially as the non-oil export sector is expected to make more contribution to the economy. The paper is organised into four main sections (includinging this introduction). Section II contains the literature review and methodology for the study. Results of the study are presented in Section III, while Section IV is devoted to summary, conclusion and some policy recommendations.

II. LITERATURE REVIEW AND METHODOLOGY FOR THE STUDY

Agricultural pricing issues are development issues. This is so because agricultural price policy is an integral and key component of overall macro (exchange and interest rates) and trade policies (export and import). As argued by Schuh (1976), agricultural policy must integrate micro, sectoral, macro and external trade considerations, as failure to go beyond the sectoral level can be costly. In what follows summaries of the work of some authors who have been involved in price analysis are presented as a background to this study.

2.1 Literature Review

Trivedi and Akiyama (1992), developed a flexible computational model while evaluating pricing and tax policies with specific reference to cocoa and coffee production in Cote d'Ivoire, over a short and medium run (7 to 15 years). The model was used to calculate the trade-offs in terms of discounted net revenues that would accrue to cocoa producers, coffee producers, and the government under alternative hypothetical pricing policies. Results of the study revealed that the base scenario was characterised by massive deficit in the government cocoa account, rising cocoa production and declining coffee production.

This indicated a need for policy changes if the scenario was to be avoided by the government of Cote d' Ivoire. At an unchanged exchange rate, reducing the cocoa price about 40 per cent and the coffee price about 10 per cent would eliminate the government deficits on cocoa and coffee. Consequently, to generate positive tax revenue, the price cuts would have to be larger. Finally, the devaluation of the CFA franc proved to be a powerful way to reduce government deficits. In conclusion, the study indicated the desirability of a lower tax on coffee than cocoa based on the assumption about the future time paths of world cocoa and coffee prices as the projected outlook for cocoa price was poor.

Obadan (1993), with the aid of an econometric model which was empirically estimated, examined the impact of the Structural Adjustment Programme (SAP) on Nigeria's Natural Rubber Export Supply. The policy instruments of SAP that were examined were the institutional reform entailing the abolition of the commodity boards and exchange rate adjustment. The results confimed that the SAP policies of exchange rate adjustment and abolition of the Nigerian Rubber Board are important factors that positively affect natural rubber export supply as the coefficient of the real exchange rate variable was correctly signed (positive) and highly significant. This meant that a real depreciation of the naira, for example, induces farmers to supply more rubber for export. The world price of rubber was also found to be an important determinant of rubber supply as the average world price variable had the correct sign (positive) in all the equations and statistically significant is six of the nine equations.

Tegene (1990), examined the export performance of 30 African Countries which are primary commodities exporters. Using a regression model he fitted equations with variables such as world demand factor, competitive factor and commodity concentration factor. The results obtained indicated that the world demand condition is an important determinant of export performance. In 28 out of the 30 cases the coefficient of the world demand variable was significant at 99 per cent or better. The result further suggested that exports of oil exporting countries like Gabon, Libya and Nigeria are more dependent on external demand condition's than internal supply factors.

The Organisation for Economic Cooperation and Development Centre (OECD), in association with the World Bank, carried out a study to assess the implications of trade reforms as proposed under the General Agreement on Tariffs and Trade (GATT). A model of global production and trade, known as the Rural/Urban - North/South Model, or RUNS was used to trace the implications of policy reform in a consistent manner. Under the partial reform scenario, world prices for many commodities increased, including those for meats, coarse grains, vegetable oil, sugar and dairy products, on the other hand, the world price of rice, coffee and cocoa decreased while the price of wheat is virtually unchanged. The world prices of cocoa and coffee were said to have decreased significantly, as the producers of these products are also taxed, and they respond positively to an increase in the producer price. The implications of partial reforms on agricultural production using the RUNS model indicated that the structure of production changes significantly, allowing each regions comparative advantage to take precedence over artificial barriers.

2.2 Methodology for the Study

As indicated in the introductory chapter, a partial - equilibrium technique which involves the calculation of coefficients of protection will be used in examining the role of price incentives in expanding agricultural commodity exports in Nigeria.

2.2.1 Conceptual and Analytical Framework

Prices contain two types of information that are central in the task of price analysis. First, prices can reflect relative scarcity; they indicate the value of a resource to the economy. The value of a resource is what the economy must give up to obtain it or what it can earn by exporting it. Second, relative prices can indicate relative incentives to produce, market, and consume different commodities. Price policy affects the economic system by altering incentives and therefore the economic decisions that shape a system. Hence governmenrts use agricultural price policy to pursue a variety of development objectives.

The main analytical technique to be employed in this study is based on the concept of efficiency adapted from Tsakok (1990) and Goldman (1994). Promoting efficiency is not an end in itself, but it is necessary to improve the economic opportunities available to the majority of the population on a sustainable basis. Efficiency, consideration therefore cannot be ignored, for in the long run only the efficient survive. The question then is how to assess the efficiency of the price system imposed or induced by agricultural policy. As indicated by Tsakok (1990), efficiency is assessed through price comparisons. But first, the alternative set of efficient prices which will serve as efficiency benchmark must be defined. These prices reflect opportunity cost.

The opportunity cost of a tradable commodity is the border price. That is, the price of an export or import converted into domestic currency at a given exchange rate. If an export, the border price is the domestic price at the point of export, free on board the carrier (the f.o.b. price). If an import, the border price is the domestic price at the national border, inclusive of cost, insurance, and freight (the c.i.f. price). The relevance of border prices as efficency benchmarks is not dependent on the competitiveness of international markets, (because the international price that a given country faces may be the result of dumping or cartels or some other form of market power) but on the fact that they represent what the country would have to pay or would receive if trading internationally. Thus satisfying the concept of the next best alternative.

Once the principle of opportunity cost pricing is established as an efficiency benchmark, observed prices that diverge from opportunity cost values are said to be distorted, and they contribute to inefficient resource use. Distortion therefore refers to the divergence between the observed price and prices that reflect opportunity cost. Implicit in the argument is that the divergence must be systematic and persistent. These chronic price distortions generate inefficiency.

Protection coefficients compare domestic prices to border prices. These price ratios indicate the extent to which domestic price policy protects domestic producers from the direct influence of foreign markets and in the process generate incentives to domestic production or consumption. The protection or incentives can be positive or negative and, as such, are suggestive of the likely impact of policy - induced incentives on the way

resources are used and the efficiency of that resource use. There are three levels of inferences involved: (1) from price ratios to relative protection; (2) from protection to relative incentives; and (3) from relative incentives to resource use. The three levels of inference clarify the channels through which prices permeate the economic system.

From an assessment of the pattern of incentives one then proceeds to consider the direction the pattern should now take. One major consideration in structuring incentives is the sector's comparative advantage, that is, the international competitiveness of its productive activities. From an efficiency point of view, the sector should produce those outputs for which it is internationally competitive and for which a sufficient demand exists.

2.3 The Model

2.3.1 The Nominal Protection Coefficient (NPC)

The nominal protection coefficient of a commodity is the ratio of its domestic price to its border price. It relates to only output or input prices. The border price is defined as the price in the international market converted into local currency using an exchange rate. Thus

$$\text{Gross nominal protection coefficient (NPC)} = \frac{\text{domestic price}}{\text{foreign price x exchange rate}}$$

$$\text{or Gross NPCi} = \frac{P_i^d}{P_i^b} \qquad (1)$$

where P^b = border price - namely, foreign price x exchange rate; thus the border price is the foreign price in domestic currency

P^d = domestic price

i = commodity i

The exchange rate may be official rate, but it should reflect the opportunity cost of foreign exchange to the economy. If it does, the NPC is called net NPC as opposed to gross NPC.

$$\text{The formula is then} \quad \text{Net NPCi} = \frac{P_i^d}{P_i^{bb}} \qquad (1_a)$$

where P^{bb} is the border price, using the exchange rage benchmark (ERB). The same relationship can be expressed as the nominal rate of protection (NPR). Thus

$$\text{NPRi} = \frac{P_i^d - P_i^b}{P_i^b} \qquad (1_b)$$

which is equivalent to (NPC -1) x 100.

The NPC can assume a range of numerical values. If NPC >1, domestic producers or intermediaries are receiving a higher price after intervention than they would without intervention. This is called positive protection. However, NPC >1 for a consumer denotes negative protection. That is, consumers have to pay a higher price given intervention than they would without it. If NPC <1, then the reverse structure of protection is in force. Protection is negative. The producer or intermediary is being discriminated against, while the consumer in being favoured. Finally, if NPC = 1, the structure of protection is neutral. Producers, intermediaries, and consumers are facing domestice prices that are equal to the border prices they would have faced without intervention. Whatever its numerical value, an NPC is indicative of relative incentives among crops and changes in relative incentives over time.

2.3.2. The Effective Protection Coefficient (EPC)

The effective protection coefficient of a commodity is the ratio of the value added in domestic prices to value added in border prices. The only difference between the NPC and the EPC is that the EPC takes output prices and the cost of traded inputs into account simultaneously - since the EPC includes input, it is potentially a more encompassing assessment of the protective structure of intervention.

The formula for the EPC is the following:

$$\text{Gross EPC} = \frac{V_a{}^d}{V_a{}^b} \qquad (2)$$

where Va^d = value added in domestic prices

Va^b = value added in border prices

$$\text{or} \quad EPC_i = \frac{p_i{}^d - \sum_{j=1}^{k} a_{ij} P_j{}^d}{P_i{}^b - \sum_{J=1}^{k} a_{ij} P_j{}^b}$$

Where Pi^d = domestic price of output i

a_{ij} = units of input j per unit of output i

p_j^d = domestic price of input j

p_i^b = p_i^f x ER, or border price of output equals foreign price x exchange rate.

p_j^b = p_j^f x ER, or border price of input j equals foreign price x exchange rate.

As in the case of NPC, the exchange rate may or may not be the official rate. It should,

however, reflect the opportunity cost of foreign exchange to the economy. Then

P_i^{bb} = P_i^f x ERB, or border price of output equals foreign price x exchange rate benchmark.

P_j^{bb} = P_j^f x ERB, or border price of input j equals foreign price x exchange rate benchmark

Using the exchange rate benchmark (ERB) gives the net EPC.

$$\text{Net EPCi} = \frac{V_{ai}^{d}}{V_{ai}^{bb}} \qquad (2a)$$

$$\text{Effective Protection Coefficient} = \frac{\text{Price per unit of output in domestic price} - \text{total cost of traded inputs per unit of output in domestic prices}}{\text{price per unit of output in border price} - \text{total cost of traded inputs per unit of output in border prices.}}$$

The EPC can also be expressed as the effective rate of protection (EPR):

$$\text{EPR} = \frac{V_a^d - V_a^b}{V_a^b} \times 100 \qquad (2b)$$

Which is equivalent to (EPC - 1) x 100.

Like the NPC, the EPC can assume a range of numerical values. Policy interpretation is similar to that for the NPC.

EPCs significantly greater than one over a considerable period means that substantial excess revenues are being earned. If EPC is less than one, the reverse structure of protection is in force: That is producers could have received a higher return if they faced border prices instead of domestic prices on both output and inputs. In both cases the efficiency of resources allocation can be improved by moving toward border prices.

If EPC <0 (which is not possible for NPC), it means that either value added in domestic prices is negative or value added in border prices is negative. If the former, producers would not stay in business unless they are being subsidised by the government to remain in an unprofitable business. If the latter, the economy is losing foreign exchange by domestic production of the commodity, as the cost of traded inputs exceeds the gross value of output. A change in domestic price policy is needed to solve the first problem. An improvement in productivity is required to solve the second. In the extreme case of EPC <0, where value added at the border price is negative, the productivity is so inefficient that it causes a net loss to the economy in foreign exchange. This is a clear case of waste.

In sum, EPCs indicate relative incentives among crops and give a preliminary view of relative efficiency.

2.4 Empirical Analysis

First, a trend analysis of the world and producer prices and output of the selected agriculatural export commodities is undertaken to begin the process of forming a consistent view of the role of prices in the development of Nigeria's agricultural export sector, prior to and during the Structural Adjustment Programme (SAP). Secondly, coefficients of protection are calculated for the selected commodities so as to assess the relative incentives and efficiency of the pricing policy in the overall economic environment of Nigeria's agricultural export crop production and trade.

The set of alternative prices considered in this study are the world prices of Nigeria's export commodities compared with their producer prices. Seven commodities namely; cocoa, coffee, cotton, palm kernel, palm oil, rubber and soyabean for which these two sets of prices were consistently available for the period 1975 - 1994 were examined.

The nominal protection coefficient was calculated for all the seven commodities and analyzed pre-and during structural adjustment programme for relevant inferences. The effective protection coefficient could only be estimated for three commodities; soyabean, cocoa and rubber and also for only the SAP period due to the problem of obtaining data on cost of production.

The data for the study were obtained and/or derive primarily from the publications of the Central Bank of Nigeria, the Federal Ministry of Agriculture and the Nigerian Export Promotion Council. These were supplemented with data from the publications of the International Trade Division of the World Bank.

III. RESULTS OF THE EMPIRICAL ANALYSIS

3.1. Trends In World Prices of Selected Export Crops

A trend analysis of the world prices (in dollars) of the selected agricultural export commodities showed that generally there has been tremendous decline in the last two decades (1975 to 1994).

Cocoa price for instance which peaked at $3,790.00 per tonne in 1977 declined to $1,161.00 per tonne in 1993, while coffee price fell from the height of $5,170 per tonne in 1977 to $835.00 per tonne in 1992. Indeed, these two commodities have sold on the average for about half their price in recent years (1990 - 1994), compared with their price at the beginning of the last two decades (1975 - 1979).

The world prices of palm kernel and palm oil which averaged $325.4 and $525 per tonne between 1975 and 1979 also declined by 31.3 and 26.3 per cent to an averge of $223.6 and $387 per tonne respectively between 1990 and 1994. Only three of the selected commodities namely, rubber, cotton and soyabean recorded marginal increases of 2.6, 2.0 and 0.7 per cent, respectively in their world prices in 1990 - 1994 (i.e. during SAP) compared with 1975 - 1979 (i.e. before SAP), (Table 1).

3.2 Trends in Producer Prices of Selected Export Crops

Producer prices of all the selected export commodities have increased substantially, during

SAP. Cotton, cocoa and palm kernel producer prices for instance increased by an average of 117.0, 61.7 and 55.0 per cent respectively during SAP (1986 - 1994) compared with the increases of 11.1, 9.6 and 12.0 per cent recorded respectively before SAP (1975 - 1985), (Table 2).

3.3 Trends in Crop Output

Generally, the output of all the selected export crops have trended upwards in the last two decades . In fact cocoa output which declined prior to SAP by 2.3 per cent (1975 - 1985) recorded a growth rate of 15.3 per cent during SAP (1986 - 1994), (Table 3).

3.4 Nominal Protection Coefficients of Selected Agricultural Export Commodities

The NPCs calculated for the selected export commodities indicated that prior to the structural adjustment programme incentives were against the production of most of them, as they recorded NPCs less than one. However, incentives were in favour of the production of palm oil, palm kernel and soyabean as these three commodities recorded NPCs greater than one on the average in the period 1975 -1985.

On the other hand, during the SAP incentives were in favour of the production of most of the selected export commodities. Soyabean, palm oil, palm kernel and cocoa, had NPCs greater than one on the average in the period 1986 - 94 while coffee, cotton and rubber had NPCs less than one. Generally, the export commodities on the average recorded a greater NPC during the SAP period compared to the period before SAP (Table 4).

Using the parallel market exchange rate, net NPCs were estimated for cocoa, rubber and soyabean for a comparative analysis, as gross NPCs overstates the extent of protection given to tradables in the case of overvaluation. In line with a *priori* expectations, the net NPCs were lower than the Gross NPCs estimated for the selected commodities and also less than one, but soyabean still recorded on the average a net NPC greater than one confirming the fact that incentives are highly in favour of soyabean production in Nigeria. The graphical presentation of the NPC results is attached as figure 1.

3.5 Effective Proteetion Coefficients

In order to take the price analysis further, EPCs were estimated for soyabean, cocoa and rubber. The numerical values of the effective protection coefficient estimated for soyabean between 1990 and 1993 ranged from 2.31 in 1992 to 3.59 in 1990 (Table 5). However, EPCs were estimated for only two years for cocoa and rubber due to data problem. The EPC values for cocoa were 1.37 in 1989 and 1.19 in 1993 and for rubber the values were 0.32 and 1.53 in the respective years, (Table 6).

That the EPC values obtained were greater than one indicates that domestic producers are enjoying positive protection.

IV. SUMMARY, CONCLUSIONS AND SOME POLICY RECOMMENDATIONS

4.1 Summary

This study has empirically examined the producer prices of Nigeria's traditional and non-

traditional agricultural export commodities, namely; cocoa, coffee, cotton, palm kernel, palm oil, rubber and soyabean, for which enough data could be gathered. Other commodities such as groundnut, copra, ginger chilli and gum arabic were left out owing to inability to obtain a time series data, for the period 1975 to 1994 that was considered. Guided by the concept of efficiency while using their world market prices as the efficiency benchmarks, nominal protection coefficients were estimated for the seven selected commodities to determine the structure of incentives for or against their production. Furthermore, net NPCs and EPCs were estimated for soyabean (a non-traditional export commodity) cocoa and rubber whose export have been sustained over the years so as to capture the net effect of policies on both input and output prices.

A trend analysis in which the period before SAP (1975 to 1985), was compared with SAP period (1986 - 1994), revealed that though the world prices (in dollars) of most of the selected agricultural export commodities declined during SAP compared to the pre-SAP period, their producer prices (in Naira) have increased significantly in the SAP years. The world price of cocoa, our major export crop, declined by an average of 4.1. per cent during SAP compared with an average growth rate of 10.7 per cent before SAP while the world price of soyabean which is a non-traditional export crop in Nigeria was more stable recording a growth rate of 3.4 per cent during SAP relative to the average marginal growth rate of 0.9 per cent recorded before SAP. On the other hand, the average growth rate of producer prices ranged from 52.6 for soyabean to 117.0 per cent for cotton during SAP compared with the growth rate before SAP which ranged from 2.6 per cent for coffee to 19.1 per cent for soyabeans which therefore implies that farmers earned more naira during SAP for all the selected agricultural export commodities.

The decline in world prices, particularly for cocoa and some other traditional exports has been attributed to the over supply situation as low cost producers like Indonesia have increased their output on the world market while African Countries whose export revenues are highly dependent on cocoa and a few other commodities (about 80 per cent) cannot afford to cut back on export of these traditional export commodities.

The increase in producer prices on the other hand, has been attributed to the substantial devaluation of the naira exchange rate which on average was US$1.00 = N0.7576 before SAP compared to US$1.00 = N10.8022 in the SAP years. Also, the abolition of the commodity boards in 1986 allowed the farmers to earn more, since the commodity boards were no longer there to withhold some of the earnings from the respective commodities for administrative and other expenses.

The output of all the seven export crops have also trended upwards in the SAP years compared to pre-SAP. This increase in output is largely due to the more favourable producer prices brought about by the reforms under SAP and the increasing domestic demand.

The nominal protection coefficients calculated for the seven commodities showed that virtually all of them, on the average, recorded a greater NPC during SAP compared to Pre-SAP. This also corroborated the fact that SAP reforms reduced both explicit taxation (occasioned by low producer prices) with the abolition of the commodity boards and implicit taxation (from overvalued exchange rates) through massive devaluation of the naira, thus linking producer prices to world prices which is a favourable incentive to farmers.

The average EPC value of 2.89 estimated for soyabean implies however that substantial excess revenue are being earned by domestic producers, revenues well above the levels that would have prevailed under competitive conditions. Obviously, the demand for soyabean is higher than supply. From the theoretical framework of EPC estimation, if domestic producers had to face foreign competition, they would have to be more efficient to remain in production. And the efficiency of resource allocation can be improved by moving toward border prices.

4.2 Conclusion

The fact that the world prices (in dollars) of our traditional export commodities have declined in recent years have adverse implications for Nigeria's balance of payments (BOP) position; particularly as it coincides with low crude oil prices. Olisadebe (1995), alluded to the fact that the poor performance of non-oil exports, and the fluctuations in crude oil prices are among the factors contributing to the weakness of Nigerias BOP. Thus, the option that is highly favoured currently is export diversification. But the big question is, what do we diversify into since we have no comparative advantage in manufactures. The alternative therefore is to explore our non-traditional export commodities and light manufactures like textiles and other agro-allied products for which we can find market in Europe and other developing countries in Asia and Africa. As the scope for the study is limited to agricultural commodities a closer look at the results obtained was undertaken to determine those crops for which incentives should be improved so as to take advantage of the more lucrative markets.

The NPCs and EPCs calculated were highest for soyabean, 2.14 and 2.89, respectively during SAP. In addition, its world price was more stable and trended upwards during SAP compared to the persistent decline in world prices recorded for cocoa since the 1980s. Furthermore, world outlook for the demand for primary commodities as projected by the World Bank up to year 2005 indicated that vegetable oil/meal and rubber have higher prospects in view of the increasing demand from the Asia Pacific region while cocoa and coffee prices are projected to decline.

From the foregoing, the policy options at Nigeria's disposal obviously is diversification into those commodities with better prospects in the world market.

4.3 Some Policy Recommendations

The discussion so far is in favour of diversification into non-traditional export crops such as soyabean, while intensifying export of our traditional ones like palm produce and rubber. The pricing policy instruments required to stimulate increased export of these commodities include exchange rate, taxes, subsidies and non-price policy instruments such as quantitative restrictions and public investment policies that stimulate increased production and thus affect price structures and price levels.

As signatory to the recent Uruguay round of multilateral Trade Agreements under the GATT as it affects agriculture, the pricing policy option open to Nigeria for stimulating exports is limited. The Agreement in which members agree to treat one another equally and to reduce barriers to trade does not support price subsidies and quantitative restrictions on international trade which affects domestic price structures and levels respectively.

However, under the aggreement, conditions for exemptions from the commitment to reduce domestic support is provided for. Under domestic support reduction commitments, countries which do not have or have the most minimal trade distortion effects on production are exempted. And all policies for which exemption is claimed conforms with those pursued under Nigeria's agricultural development programmes. Thus, expenditures on research, pest and disease control, training, extension and advisory services, inspection services, marketing and promotion services and infrastructural services are exempted from reduction under the agreement reached at the Uruguay Round.

Taking a cue from this, public investment policy options which can stimulate additional production are highly favoured in the bid to expand exports and so did authors like Ojo et Al (1993), Obadan (1993) and Ojo (1994). Consequently, the National Accelerated Industrial Crops Production Programmed (NAICPP) of the Federal Government launched in 1994 aimed at increasing the domestic industrial and export requirements of eight crops, namely cocoa, cashew, oil palm, soyabean, rubber, gum arabic, groundnut and cotton is a step in the right direction. However, more emphasis should be placed on soyabean, palm produce and rubber under NAICPP as this and other studies (Obadan (1993), have concluded that increase in total output is a prerequisite for increased export supply.

Specifically, improved seeds and seedling of these crops should be made available by government at reasonable prices to farmers on a regular basis, complemented with extensive extension activities. Government investments in research and extension for soyabean, oil palm and rubber should be increased. Also more investment is needed in the area of provision of rural infrastructure, particularly, irrigation for year round production, along with electricity and motorable roads to facilitate processing and marketing respectively. The gains made in the area of marketing of export commodities with the abolition of the commodity boards should be improved upon by speeding up the establishment of a commodity exchange. As commodity exchanges provide insurance opportunities to farmers, produce merchants and processors against the risk of price fluctuations, its establishment will go a long way in stimulating production and export of these agricultural commodities in Nigeria.

Government should continue its pursuit of sound macroeconomic policies in order to create conducive environment for private sector participation in agricultural production and marketing. In addition, the favourable export incentives instituted in the wake of the SAP such as full export retention schemes and access to export credit should be intensified to attract both local and foreign entrpreneurs to the agricultural export sector.

Finally, strengthening of sectoral policy analysis and implementation capacity is very vital. This will entail reconciling planning with implementation and carrying out frequent policy analysis to ensure that programmes such as this laudable NAICPP does not derail. In addition, incentives such as access to land and improved access to institutional credit and other basic inputs such as fertilizer, herbicides and other yield improving inputs should be given prominence.

On the international front, Nigeria should garner the support of other developing countries to ensure the implementation of the trade reforms under GATT by the industrialized countries through constant and effective participation in multilateral Trade Negotiations so as to improve world commodity prices.

TABLE 1

TREND ANALYSIS OF WORLD PRICES OF SELECTED AGRICULTURAL EXPORT COMMODITIES (DOLLARS/TONNE)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
COCOA	1250	2050	3790	3400	3290	2600	2080	1740	2120	2400	2250	2070	1990	1590	1240	1270	1200	1178	1161	1438
COFFEE	1440	3150	5170	3590	3820	3440	2820	3090	2900	3180	3210	4290	2510	3030	2390	1970	1870	835	1049	2424
COTTON	1160	1690	1550	1570	1690	2050	1850	1600	1850	1790	1320	1060	1650	1400	1670	1820	1680	1277	1284	1756
PALM KERNEL	207	230	326	364	500	345	317	265	365	528	291	142	181	267	251	185	220	230	237	246
PALM OIL	434	407	530	600	654	584	571	445	501	729	501	257	343	437	350	290	339	394	379	533
RUBBER	660	870	920	1110	1420	1620	1250	1000	1240	1100	920	950	1120	1290	1120	1020	1010	967	906	1207
SOYABEAN	220	231	280	268	298	296	288	245	282	282	224	208	216	304	275	247	240	263	279	278
GROWTH RATES																				
COCOA		64.0	84.9	-10.3	-3.2	-21.0	-20.0	-16.3	21.8	13.2	-6.3	-8.0	-3.9	-20.1	-22.0	2.4	-5.5	-1.8	-1.4	23.9
COFFEE		118.8	64.1	-30.6	6.4	-9.9	-18.0	9.6	-6.1	9.7	0.9	33.6	-41.5	20.7	-21.1	-17.6	-5.1	-55.3	25.6	131.1
COTTON		45.7	-8.3	1.3	7.6	21.3	-9.8	-13.5	15.6	-3.2	-26.3	-19.7	55.7	-15.2	19.3	9.0	-7.7	-24.0	0.5	36.8
PALM KERNEL		11.1	41.7	11.7	37.4	-31.0	-8.1	-16.4	37.7	44.7	-44.9	-51.2	27.5	47.5	-6.0	-26.3	18.9	4.5	3.0	3.8
PALM OIL		-6.2	30.2	13.2	9.0	-10.7	-2.2	-22.1	12.6	45.5	-31.3	-48.7	33.5	27.4	-19.9	-17.1	16.9	16.2	-3.8	40.6
RUBBER		31.8	5.7	20.7	27.9	14.1	-22.8	-20.0	24.0	-11.3	-16.4	3.3	17.9	15.2	-13.2	-8.9	-1.0	-4.3	-6.3	33.2
SOYABEAN		5.0	21.2	-4.3	11.2	-0.7	-2.7	-14.9	15.1	0.0	-20.6	-7.1	3.8	40.7	-9.5	-10.2	-2.8	9.6	6.1	-0.4

AVERAGE GROWTH RATE	(1975 - 1985)	(1986 - 1994)
COCOA	10.7	-4.1
COFFEE	14.5	7.8
COTTON	3.0	6.1
PALM KERNEL	8.4	2.4
PALM OIL	3.8	5.0
RUBBER	5.4	4.0
SOYABEAN	0.9	3.4

SOURCE: COMPUTED FROM DATA OBTAINED FROM WORLD BANK AND CBN PUBLICATIONS

TABLE 2

TREND ANALYSIS OF PRODUCER PRICES OF SELECTED AGRICULTURAL EXPORT COMMODITIES (NAIRA/TONNE)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
COCOA	660	660	1030	1030	1200	1300	1300	1300	1400	1500	1500	3500	7500	11000	10100	8500	10158	12745	25278	61180
COFFEE	n.a	n.a	1100	1100	1100	1155	1155	1155	1255	1405	1405	1450	5500	6000	7464	6680	8750	25208	25589	52639
COTTON	308	308	330	330	330	400	465	510	560	700	850	1000	4000	4500	2433	2600	4163	3778	28455	45000
PALM KERNEL	150	150	150	150	180	200	200	230	230	400	400	400	850	1000	1800	2000	2525	5692	10567	14374
PALM OIL	265	265	295	355	450	450	495	495	495	600	600	1000	1200	1500	1310	1160	3342	12472	20836	45000
RUBBER	n.a	n.a	365	365	420	485	600	700	700	750	750	1200	1000	1500	2000	1395	5300	12520	24091	34400
SOYABEAN	99	99	130	135	135	150	155	175	230	300	500	550	1500	2000	4030	4920	3960	7225	11688	12756
GROWTH RATES																				
COCOA		0.0	56.1	0.0	16.5	8.3	0.0	0.0	7.7	7.1	0.0	133.3	114.3	46.7	-8.2	-15.8	19.5	25.5	98.3	142.0
COFFEE		-	-	0.0	0.0	5.0	0.0	0.0	8.7	12.0	0.0	3.2	279.3	9.1	24.4	-10.5	31.0	188.1	2.5	105.7
COTTON		0.0	7.1	0.0	0.0	21.2	16.3	9.7	9.8	25.0	21.4	17.6	300.0	12.5	-45.9	6.9	60.1	-9.2	653.2	58.1
PALM KERNEL		0.0	0.0	0.0	20.0	11.1	0.0	15.0	0.0	73.9	0.0	0.0	112.5	17.6	80.0	11.1	26.3	125.4	85.6	36.0
PALM OIL		0.0	11.3	20.3	26.8	0.0	10.0	0.0	0.0	21.2	0.0	66.7	20.0	25.0	-12.7	-11.5	188.1	273.2	67.1	116.0
RUBBER		-	-	0.0	15.1	15.5	23.7	16.7	0.0	7.1	0.0	60.0	-16.7	50.0	33.3	-30.3	279.9	136.2	92.4	42.8
SOYABEAN		0.0	31.3	3.8	0.0	11.1	3.3	12.9	31.4	30.4	66.7	10.0	172.7	33.3	101.5	22.1	-19.5	82.4	61.8	9.1

AVERAGE GROWTH RATE	(1975 - 1985)	(1986 - 1994)
COCOA	9.6	61.7
COFFEE	2.7	70.2
COTTON	11.0	117.0
PALM KERNEL	12.0	54.9
PALM OIL	9.0	81.3
RUBBER	7.8	72.0
SOYABEAN	19.1	52.61

SOURCE: COMPUTED FROM DATA OBTAINED FROM CBN PUBLICATIONS

TABLE 3

TREND ANALYSIS OF OUTPUT OF SELECTED AGRICULTURAL EXPORT COMMODITIES ('000 TONNES)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
COCOA	216	181	193	157	151	153	174	156	140	140	160	148	100	253	256	244	268	292	306	320
COFFEE	3	3	3	3	3	4	3	3	3	4	6	132	139	157	257	303	320	338	358	389
COTTON	313	294	269	211	125	77	48	38	12	108	114	100	195	194	187	276	309	346	192	205
PALM KERNEL	295	295	284	281	280	279	294	310	279	340	360	727	824	545	939	1190	1203	1321	1450	1622
PALM OIL	500	525	528	530	650	650	530	500	500	550	615	650	715	614	770	730	760	792	825	840
RUBBER	68	53	59	58	56	45	60	50	45	58	226	190	180	211	132	147	215	220	225	260
SOYABEAN	65	70	70	72	73	75	78	82	42	43	60	100	107	150	300	218	145	159	163	180
GROWTH RATES																				
COCOA		-16.2	6.6	-18.7	-3.8	1.3	13.7	-10.3	-10.3	0.0	14.3	-7.5	-32.4	153.0	1.2	-4.7	9.8	9.0	4.8	4.6
COFFEE		0.0	0.0	0.0	0.0	33.3	-25.0	0.0	0.0	33.3	50.0	2100.0	5.3	12.9	63.7	17.9	5.6	5.6	5.9	8.7
COTTON		-6.1	-8.5	-21.6	-40.8	-38.4	-37.7	-20.8	-68.4	800.0	5.6	-12.3	95.0	- 0.5	-3.6	47.6	12.0	12.0	-44.5	6.8
PALM KERNEL		0.0	-3.7	-1.1	-0.4	-0.4	5.4	5.4	-10.0	21.9	5.9	101.9	13.3	-33.9	72.3	26.7	1.1	9.8	9.8	11.9
PALM OIL		5.0	0.6	0.4	22.6	0.0	-18.5	-5.7	0.0	10.0	11.8	5.7	10.0	-14.1	25.4	-5.2	4.1	4.2	4.2	1.8
RUBBER		-22.1	11.3	-1.7	-3.4	-19.6	33.3	-16.7	-10.0	28.9	289.7	-15.9	-5.3	17.2	-37.4	11.4	46.3	2.3	2.3	15.6
SOYABEAN		7.7	0.0	2.9	1.4	2.7	4.0	5.1	-48.8	2.4	39.5	66.7	7.0	40.2	100.0	-27.3	-33.5	9.7	2.5	10.4

AVERAGE GROWTH RATES	(1975 - 1985)	(1986 - 1994)
COCOA	-2.3	15.3
COFFEE	9.2	247.3
COTTON	56.3	12.5
PALM KERNEL	2.3	23.7
PALM OIL	2.6	4.0
RUBBER	29.0	4.0
SOYABEAN	1.7	20.7

SOURCE: COMPUTED FROM DATA OBTAINED FROM CBN PUBLICATIONS

TABLE 4

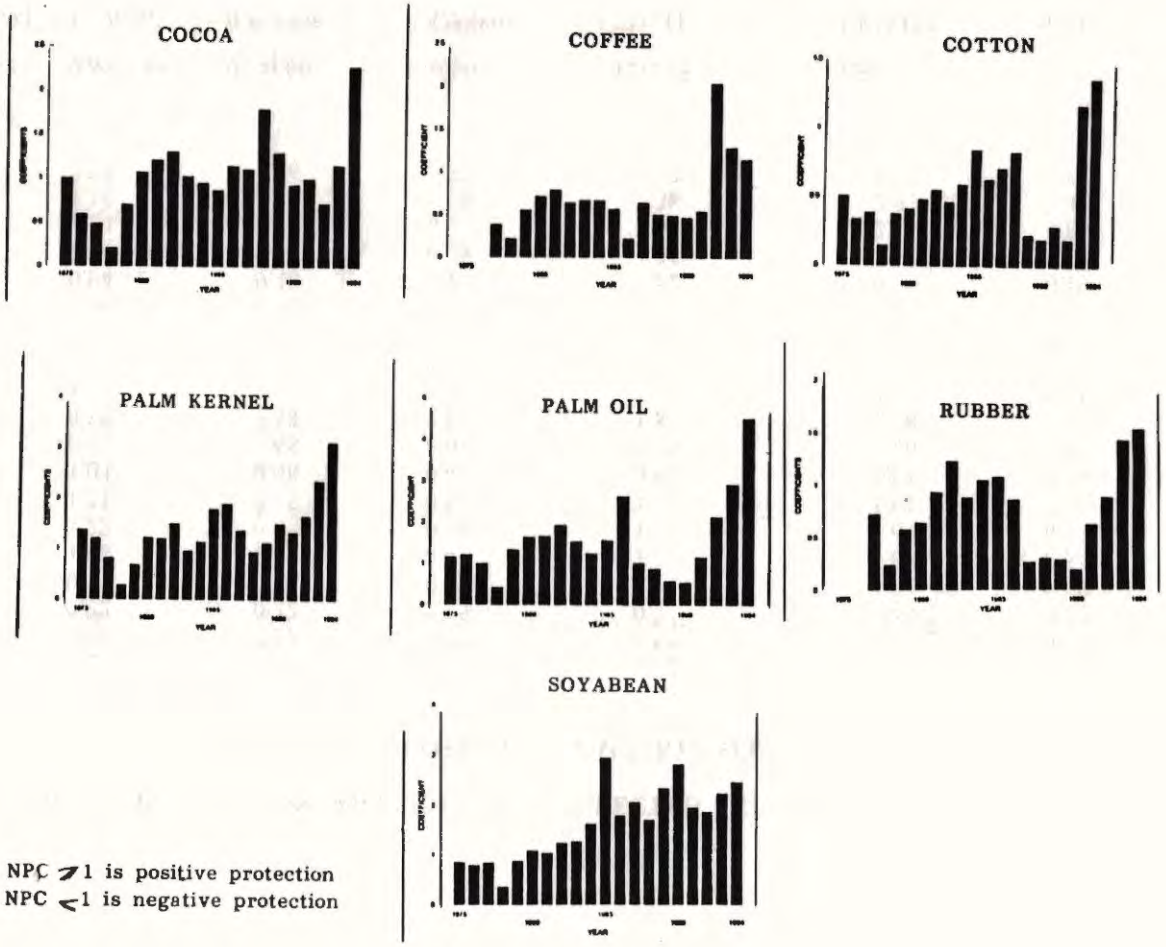
NOMINAL PROTECTION COEFFICENTS OF SELECTED AGRICULTURAL EXPORT COMMODITIES

YEAR	COCOA	COFFEE	COTTON	PALM KERNEL	PALM OIL	RUBBER	SOYABEAN
1975	1.01		0.51	1.38	1.17		0.86
1976	0.6		0.34	1.22	1.22		0.8
1977	0.49	0.39	0.39	0.84	1.01	0.72	0.85
1978	0.22	0.22	0.15	0.3	0.43	0.24	0.37
1979	0.71	0.56	0.38	0.7	1.34	0.58	0.88
1980	1.08	0.72	0.42	1.25	1.66	0.64	1.09
1981	1.22	0.8	0.49	1.23	1.69	0.93	1.05
1982	1.31	0.65	0.56	1.52	1.94	1.22	1.25
1983	1.04	0.68	0.47	0.99	1.55	0.88	1.28
1984	0.96	0.68	0.6	1.16	1.26	1.05	1.63
1985	0.88	0.58	0.85	1.81	1.58	1.07	2.94
1986	1.15	0.23	0.64	1.91	2.64	0.86	1.8
1987	1.12	0.65	0.72	1.39	1.04	0.26	2.06
1988	1.79	0.51	0.83	0.97	0.89	0.30	1.71
1989	1.3	0.49	0.23	1.15	0.6	0.28	2.34
1990	0.94	0.48	0.2	1.52	0.56	0.19	2.81
1991	1.01	0.56	0.29	1.36	1.17	0.62	1.96
1992	0.74	2.05	0.2	1.68	2.15	0.88	1.87
1993	1.16	1.3	1.18	2.38	2.93	1.42	2.23
1994	2.28	1.16	1.37	3.13	4.52	1.52	2.45
AVERAGE							
(1975 - 1985)	0.865455	0.586667	0.469091	1.127273	1.35	0.81	1.181818
(1986 - 1994)	1.276667	0.825556	0.628889	1.721111	1.833333	0.70	2.136667

SOURCE: COMPUTED FROM DATA OBTAINED FROM CBN AND WORLD BANK

FIG. 1

GRAPH OF NOMINAL PROTECTION COEFFICIENTS OF SELECTED AGRICULTURAL EXPORT COMMODITIES



Note: NPC >1 is positive protection
NPC <1 is negative protection

TABLE 5

ESTIMATING EFFECTIVE PROTECTION COEFFICIENT FOR SOYABEAN

	PRODUCER PRICE	COST OF SEED	COST OF SUBSIDISED FERTILIZER	COST OF HERBICIDE	Vai[d]	BORDER PRICE	BORDER PRICE OF FERTILIZER	Vai[bb]	EPC
1990	4920	₦120	₦37	₦233.3	4529.7	1752	135.7	1263	3.595
1991	3960	₦180	₦80	₦466.6	3233.4	2021	200.9	1173.5	2.75
1992	7225	₦200	₦140	₦600.0	6285	3867	350.7	2716.3	2.31
1993	11688	₦200	₦180	₦933.3	10374.7	5233	558.5	3541.2	2.93

Notes:

Seed Rate	=	30kg/hectare
Fertilizer Rate	=	150kg/hectare
Herbicide Rate	=	5 litres/hectare
Average yield	=	1.5 tonnes/hectare

SOURCE: Computed from Data obtained from the Federal Ministry of Agriculture, Central Bank of Nigeria and the World Bank.

TABLE 6

ESTIMATING EPC FOR COCOA AND RUBBER

	DOMESTIC PRICE	PRODUCTION COST	Vai^{d}	BORDER PRICE	PRODUCTION COST	Vai^{bb}	EPC
Cocoa 1986	3500	2906	594	3048	2906	142	4.18
Cocoa 1993	25278	22245	3033	21775	22245	-470	-6.45
Rubber 1986	1200	1056	144	1398.8	1056	342.8	0.42
Rubber 1993	24091	21200	2891	16993	21200	-4207	0.69

Notes: Total production cost estimated at 88 per cent of producer price

	Domestic Price	Working Capital	Vai^{d}	Border Price	Vai^{bb}	EPC
Cocoa 1989	10100	1515	8585	7763	6248	1.37
Cocoa 1993	25278	3792	21486	21775	17983	1.19
Rubber 1989	2000	300	1700	7012	5312	0.32
Rubber 1993	24091	3614	20477	16993	13379	1.53

Notes: Working capital estimated at 15 per cent of producer price

SOURCE: Computed from Data obtained from the Nigerian Export Promotion Council, The Central Bank of Nigeria and the World Bank.

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