"An Econometric Analysis of the Impact of Structural Adjustment Programme on Nigeria's Natural Rubber Export Supply"

by: Mike I. Obadan
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The paper examines the impact of government policies (exchange rate devaluation) under the Structural Adjustment Programme, (SAP) on Nigeria's natural rubber export supply. The author confirms that SAP policies of exchange rate adjustment and abolition of the Nigerian Rubber Board are important factors that positively affect natural rubber export supply. He also found the world price of rubber and local demand for rubber as having positive and negative effects, respectively. While rubber export supply is inelastic with respect to "the world price liberalization of rubber marketing and domestic demand, it is elastic with respect to the real exchange rate and total production of rubber".

The article is organised into five sections. Part I is the introduction. part II discusses the economic background, while part III contains the conceptual and theoretical framework of the study as well as the formulation of a model of natural rubber export supply. Part IV presents the empirical findings; and part V summarizes and concludes the paper.

Summary of Article

In the introduction, the author reviews the contribution of Natural rubber to Nigeria's export earnings. It was observed that the contribution declined due to the effect of civil war in 1967 - 1970 and the labour movement out of rubber industry following the discovery and exploitation of crude petroleum. There was neglect of the rubber plantations to the extent that the small-holdings established in the 1950s and early 1960 were not replaced after they had reached their peak yield. However, the Nigerian Rubber Board (NRB) , the Rubber Research Institute of Nigeria and the Government made unsuccessful efforts to revive the rubber industry.

The abolition of the Natural Rubber Board (NRB) on the inception of the Structural Adjustment Programme (SAP) instituted the free-market pricing of rubber. The SAP, which was in operation for eight years, did make some impact on the rubber industry especially on export supply. This impact was the issue the author set out to examine in the paper.

Section two of the paper presents the background to the decline in agricultural exports and the objectives of SAP for export crop development.

The author observed that there were significant contributions of the agricultural sector in the post-independence period which were not sustained in the 1970s to early 1980s - a period which coincided with the oil boom. This situation did not come as a result of inaction on the part of the government. The author observed that indeed there were more active agricultural policies in the 1970s than in 1960s while programmes such as the National Agricultural Food Production Programme (NAFPP), Operation Feed the Nation (OFN) and Green Revolution Programme were implemented. Also established were the River Basin Development Authorities (RBDAS) and the World Bank Assisted Agricultural Programme (ADPs/ ADAS). There was also a policy of direct production by government agencies such as the National Root and Grains Production Companies, the Nigerian Diaries Limited, etc.

The author observed that these policies failed to address the problem of production, marketing, input supply and so on. The initiation of the SAP was seen to be a policy that would enhance the performance of the agricultural sector. The SAP export policy on non-oil was primarily to promote and boost production of non-oil export through price incentive to producers. This was to be achieved with the package of macro-economic policy instruments and export incentives.

The policy instruments adopted to pursue the goal of increase in non-oil export under the SAP were fiscal, monetary and external sector instruments as well as institutional and pricing reforms. Out of these policies, the author noted the important effects of abolition of the commodity boards and the exchange rate adjustment. The abolition of the commodity boards has helped to eliminate the excessive implicit taxation of farm incomes which was inherent in the operations of the commodity board system, while the reform of the exchange rate system was to eliminate the overvaluation of the naira exchange rate. Other complementary policy instruments discussed were the retention by the non-oil exporters of 100 per cent of foreign exchange earned from exports in the foreign currency domiciliary account, abolition of export licenses and the provision of various financial incentives.

Under conceptual and theoretical framework in section 3, the author discusses the doctrine of economic liberalization, exchange rate adjustment and export growth as well as the main elements of his economic model. The author indicated that the main theoretical underpinning behind the SAP is the neoclassical theory with the dominant variant being monetarist. Therefore, the main doctrine of the SAP is the economic liberalization or laissez-faire capitalism. The doctrine contends that economic welfare will be improved by freeing all types of government controls on economic and business activities. He took the discussion further to explain that under competitive pricing, policy flowing from the liberalization doctrine policy recommendations, such as deregulation of economic activities, free trade or liberalized trade regimes, free market pricing in commodity and factor markets, and decontrol of the resource allocation process, will be optimized.

The author argued that the validity of the doctrine of liberalization in the economics of developing countries is doubtful because conditions for the efficient functioning of the free market, simply do not exist. Among these are perfect competition, availability of correct and full information about present and future price and non-price variables, capital divisibility increasing returns to scale, etc. Consequently, the author, cited Todaro (1977), that the government has to intervene for efficient allocation of present and future resources, otherwise complete non intervention, in the long- run, may not be in the best interest of society. He cited other writers whose arguments are not in support of government intervention. For example, Hamilton (1989), argued forcefully that government intervention stifles entrepreneural initiative and constrains the pursuit of profitable opportunities, which originated from the western economics but inappropriate to the Third World economies.

Other criticisms of the SAP were that contrary to expectation, domestic production is usually not readily transformed into exports because of supply rigidities; and where exports are not sufficiently responsive to the beneficial effects of devaluation of the currency, inflation and, therefore a reduction in real domestic expenditure could be exacerbated.

On exchange rate adjustment and export growth, the author listed the reasons behind the adjustment of the naira exchange rate. He mentioned that currency depreciation/devaluation policy could bring about improved profitability and provide incentives to the production of new tradables, and also turn the terms of trade in favour of the domestic goods. He mentioned that the exchange rate policy is of immediate relevance to agricultural products and entrepreneurs in the non-agricultural sectors of the economy. The exchange rate can influence decision on product mix and resource allocation both on the farms and firms.

The study used the concept of real exchange rate (RER) or real effective exchange rate to investigate the effects of SAP on natural rubber export supply. Apart from the exchange rate, the study also ascertained the effects of world prices, abolition of commodity boards and local consumption of rubber in relation to total production on the supply of rubber for exports. A priori, assumption of the author is that the supply of rubber is expected to vary directly with the export price and abolition of commodity boards. On the other hand, he indicated that increased local demands in relation to total production is expected to have negative effect on supply of rubber for exports. He expected that export supply should be positively correlated with total rubber output.

The basic models used are expressed in functional forms as follows:

NRX = F(WPR, BER, TRP, LCR, ARB) - (1)
NRX = G(WPR, BER, LCR, ARB) ------(2)

NRX = H(WPR, BER, TRP, ARB) ------(3)

Where : NRX = quantity of natural rubber export ('000 tonnes).
WPR = index of average world price of rubber 1975=100.
BER = real exchange rate index (1985=100).
LCR = proportion of total output of rubber consumed locally (per cent).
ARB = dummy variable for the effect of the abolition of the Nigerian Rubber Board; it has a value of 1 for each year of the board's existence and 0 otherwise.
TRP = total output of rubber ('000 tonnes).

In section four, the author examines issues of methodology and tests of significance and also analyses the estimates. Under the methodology and significance tests, the model (specified in section three) was empirically estimated with annual data for the period 1970-1990 using ordinary least square multiple regression method. A regression table was produced and the result of the linear equations are presented and discussed while the log-linear equations are presented as Annexure but not discussed. The results of the model confirmed that the real depreciation of the naira induced farmers to supply more rubber for export, the abolition of NRB had a positive sign in all the equations indicating that the free-marketing of rubber had positive effect on rubber supply for export. Overall result showed that SAP policies had positive impact on rubber export supply and in effect, the empirical results were very supportive of the maintained hypothesis.

On the elasticity analysis and policy implications, the author's findings showed that export supply is inelastic with respect to domestic demand for rubber. On the other hand, export supply was generally elastic with respect to total output of rubber. The implication of these findings relate to the need to boost the production of natural rubber by implementing appropriate policies and incentives especially as export supply is inelastic with respect to domestic consumption. Another finding was that export supply was generally responsive to changes in the bilateral real exchange rate (BER). In conclusion, the SAP has a positive impact on rubber supply for export. The impact was not particularly large as indicated by the elasticity values which were all below unity.

In the last section of the paper, the author presents his summary and conclusions. He maintains that the effect of SAP was ascertained through the effect of exchange rate changes and the free marketing of rubber as reflected in the abolition of the Nigerian Rubber Board. The study showed that the real naira exchange rate was a significant determinant of rubber export supply. However, increased domestic consumption of natural rubber negatively affected export supply. This implies that increases in export supply occasioned by a rise in total production will more than offset decreases in export supply arising from increased local consumption. Therefore, policy measures to boost total supply will result in a significant increase in export supply relation to what will be available to meet domestic demand. Such measures will have to attend to the production needs and problems of farmers, especially replanting and maintenance of plantations, supply of credit, planting materials and inputs, and problem of high cost of production which erodes profitability. Finally, the results suggested that the free-marketing of rubber has had a positive impact on rubber export supply.

REMARKS

The author has been able to confirm with empirical evidence that the abolition of the commodity boards did help to eliminate the excessive implicit taxation of farm income which was inherent in the operations of the commodity board system. He observed in his analysis that the naira prices of the commodities rose sharply in response to the free-marketing system, although there were problems with the new marketing arrangement such as sharp price fluctuations, low quality of exported rubber, etc. The author also recognised that the reform of the exchange rate system through the Second-Tier Foreign Exchange Market (SFEM) in September, 1986 provided farmers the opportunity to compete effectively both in the product and factor markets including labour market. The retention of 100 per cent of the foreign exchange earned by non-oil exporters, abolition of export licenses and the provision of various financial incentives led to improved earnings from non-oil export compared to what was observed pre-SAP. For example, a total of N2,058.1 million was realized from non-oil during 1986 to 1992 compared with N1,591.9 million from 1981 to 1985, indicating an increase of 77.3 per cent.

The model used the concept of real exchange rate (RER) which is a measure of the relative prices of tradables and non-tradables, and thus measures the rate at which goods and services exchange between the domestic economy and the rest of the world. The author used different base period in the specification of the indices of world price of rubber and exchange rate. The author should have brought the two variables to the same base period, preferably 1985 in order to have similar observation within the same prevailing conditions. Secondly, the error terms V, and W, discussed in the explanatory notes to the equation were not reflected in the equations nor in the linear regression results.

The author in his empirical analysis showed that during SAP the increased domestic demand for rubber decrease export supply, that a real depreciation of the naira induced farmers to supply more rubber for export. Although this is in consonance with the expectation of SAP, under which a policy of continued depreciation of the naira was pursued, this conclusion appears to contradict the observation that "increased domestic demand for rubber decreases export supply". In actual fact, the domestic value added policy of most agro-allied manufacturing industries encourage farmers to produce for the industries rather than export. The export market became a specialized sector since the abolition of the marketing boards and it takes those with survival instinct to operate in that market. Most Nigerian farmers are not literate and the traders who turned exporters took undue advantage of these farmers to export their goods. But when it became clearer that manufacturing industries such as Michellin and SCOA, were ready to pay positive price for their supply of rubber, most producers were inclined to supply locally. However, it was still evident in spite of this development that SAP policies had positive impact on rubber export supply with average growth rate of quantity exported put at 30.0 per cent compared to 2.5 per cent before SAP.

In effect, the author's empirical results support the hypothesis that factors such as the world price of rubber, local consumption, output, real exchange rate and free marketing and pricing arrangement are all important determinants of rubber export supply. While the author attributed the improved export supply of rubber to the real exchange rate, he concluded that the impact was not particularly large as indicated by the elasticity values which were all below unity.

From the foregoing, it is clear that Government Policy will have to focus on other measures that could increase production and export supply of rubber. This will be in the area of improved rubber plantation with improved yield, because, nothing has changed fundamentally in the short period of SAP. The quantum depreciation of naira painted the picture of improved performance. The farms have not been improved, the old trees are still being tapped, the activities in the areas of agricultural extension, adaptive research, input supply and provision of rural infrastructure and development are still very inadequate. Certainly, policy of restructuring would go a long way to give a push to the agricultural sector and improve export of non-oil if properly implemented. Policy implementation in Nigeria has been very poor. Generally, agricultural policy implementation under SAP has been fairly satisfactory, but it has not been without its problem. The problem of the local processors who could not compete favourably in the world markets in spite of the depreciated naira was compounded with the low demand for the basic primary commodities in the world market. In conclusion, the Nigerian experience under the Structural Adjustment Programme showed that non-oil export list expanded considerably with more non-scheduled, non-traditional exports responding strongly in volume and value terms.

Mrs. O. O. Akanji
DeputyDirector
Research Department.