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MACROECONOMIC ADJUSTMENT, TRADE AND GROWTH: POLICY ANALYSIS USING A MACROECONOMIC MODEL OF NIGERIA

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Monetary Harmonization in Southern Africa by C. Chipeta and M.L.C. Mukandwire, Research Paper 30.

Tanzania's Trade with PTA Countries: A Special Emphasis on Non-Traditional Products by Flora Mndeme Musonda, Research Paper 31

Macroeconomic adjustment, trade and growth: Policy analysis using a macroeconomic model of Nigeria

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Contents

List of tables

List of figures

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Abstract

This research paper presents a medium-sized macroeconomic model of the Nigerian economy that incorporates both forward-looking, model-consistent expectations and, backward-looking, adaptive expectations in the assets and goods markets. The model is designed for use in evaluating alternative policy regimes under the structural adjustment programmes in Nigeria. It is shown to have sensible short- to medium-term simulation properties, and can be applied to analysis of a wide range of policy issues of the 'what if' kind. In this report, only demonstrative simulations are run to shed light on the implications of alternative expectations regimes, and domestic monetary and fiscal policies under SAP for Nigeria's trade performance and growth prospects in the 1990s. It is shown that key proposals for 'fiscal discipline' and enforcing a regime of 'stabilization with sterilization' in respect of windfalls from oil exports are consistent with the other SAP objectives of promoting macroeconomic stability, trade and growth in the medium and long runs.

I Introduction

Introduction/statement of the problem

Macroeconomic stability and growth are the two principal objectives of the World Bank/IMF supported Structural Adjustment Programmes (SAP). These programmes constitute a logical response to the debt and development crises experienced by most of the developing countries, especially since the early 1980s. The specific contents of the programmes, the choice of instruments and the timing and sequencing of the implementation depend or should depend on the stage of development of a country's economic institutions, the size of its debt burden, the nature of the existing macroeconomic imbalances and policy distortions and political sensitivities. In a broad sense, the programmes often involve the integration of traditional short-term stabilization essentially the correction of external and internal imbalances through aggregate demand management with medium to longer-term structural measures aimed at stimulating the supply side of the economy.

The basic elements of the programmes generally involve:(i) Monetary restraint aimed at reducing the growth of absorption and the rate of inflation; (ii) Interest rate policies aimed at keeping real interest rates positive but low; (iii) Fiscal restraint to reduce the fiscal deficit to a sustainable level and thereby restrain aggregate demand pressures; (iv) Exchange rate action to ensure a real exchange rate that improves international competitiveness and creates the incentive for expanding the production of internationally traded goods; (v) External financing policies to reduce the stock of external debt if it is perceived to be currently unsustainable, or to limit foreign borrowing if it is likely to become so in the future; (vi) Structural reforms (such as financial sector reforms, producer pricing policies, trade liberalization, and tax reforms) to make the economy flexible and efficient[1].

About 30 countries in Africa began implementing SAPs in the early 1980s. Their experiences have varied, depending on the peculiar structure of the economy, and the nature of their macroeconomic imbalances. In Nigeria, for instance, the results of SAP policies since their introduction in 1986 have not been salutary. In spite of the conscious efforts to implement most aspects of the basic elements of SAP as outlined above, Nigeria's external debt has increased from about $18 billion in 1986 to over $33 billion in 1992. Government's annual budget-deficit has exceeded 10% of GDP, price inflation has been very high, and capacity utilization has been very low even though the annual growth rate of GDP has been modest. Controversies have raged among policyanalysts and policymakers as to what went wrong, and what other viable macroeconomic policies could be implemented to ensure the success of structural adjustment. In the course of the debates, and in the light of the structure of the economy, the nature of external shocks that affect it and the results of the adjustment process so far, certain issues and questions have been raised about the prospects of SAP policies in Nigeria:

1. Given the nature of such external shocks, the structure of the Nigerian economy and its fiscal federalism, can the government realistically avoid persistent budget deficits without sacrificing the growth objectives of the adjustment programme?

2. In view of the institutional practice of active monetization of foreign exchange earnings, persistent budget deficits in the face of rising debt interest payments and moderate current account surpluses, can the Central Bank of Nigeria successfully control money supply and inflation, and hence stabilize the exchange rate? Are there significant crowding-out effects of the public sector deficit financing on the private sector?

3. To what extent can the liberalization of the foreign exchange market, and thus the expenditure-switching effects stemming from exchange rate changes, reduce the stress on the current account and also boost the non-oil export sector? Furthermore, given the structure of Nigeria's tradeable goods sector, what are the prospects of the external sector (mainly exports) leading the economy to sustainable growth in the medium to long-term?

4. In the absence of debt forgiveness or equivalent operations, and in the face of declining oil prices, are the present adjustment processes sustainable in terms of ensuring macroeconomic stability with growth even in the long run? Or are the basic elements of stabilization and liberalization in conflict, therefore requiring, as Sachs (1987) argues, 'different sequencing and timing procedures between stabilization and liberalization measures'?

5. What other structural and institutional reforms should the government embark on to aid a 'growth-oriented-adjustment' process?

The foregoing are certainly issues and questions that are central to a critical evaluation of the on-going adjustment efforts in Nigeria. Such an evaluation exercise, or even the design of the adjustment programme for that matter, needs a formal model framework, either implicitly or explicitly. An explicit, formal model framework, in spite of its shortcomings, is preferred to implicit models. A quantitative model, for instance, not only provides a theoretical structure for understanding the linkages among principal macroeconomic variables but also provides, in broad order of magnitudes, a systematic sense of the signs and magnitudes of the relevant parameters and the transmission of shocks from one sector to others and the feed-back effects to the originating sector. In essence, the dynamic properties of the adjustment process can be meaningfully studied with formal models.

This study is therefore motivated by two driving needs. The first is the absence of an operational macroeconomic model of the Nigerian economy that captures the current SAP environment. A major objective of this research is to develop such a model. The second need is to use the model to evaluate the internal consistency of some of the proposals for fiscal and monetary discipline in Nigeria. In particular, we use some standardized shocks to evaluate the potentials of budget-deficit reduction policy in promoting macroeconomic stability, trade and growth in the short and medium runs. Also, the implications of a positive oil price shock under a regime of stabilization with sterilization are evaluated. This is designed to shed light on the consistency of the proposals for oil stabilization account and sterilization of oil windfalls with the objectives of SAP in Nigeria.

Objectives of the research agenda

The basic, short-run goals of the research agenda are to build and maintain a general-equilibrium economic model of the Nigerian economy that captures the essential elements of the current SAP environment in Nigeria. Over the medium and longer-runs, the model is to be maintained alongside, and used interactively with, some global models (such as the IMF's MULTIMOD) so as to permit the simulation of the dynamic paths of the external shocks that affect the Nigerian economy. The Nigerian model, together with its ad hoc linkages to the global models, is to be maintained for policy analysis of the Nigerian economy, and could be applied to illuminate a variety of important policy issues. Over a longer-run, global empirical models such as MULTIMOD will be further refined. It will ultimately be desirable to disaggregate MULTIMOD's current developing country region (DC) into several separate developing country regions, including an African region. The more progress that is made in successfully disaggregating the MULTIMOD DC region, the more it will be possible to refine estimates of the linkages between the Nigerian economy and the rest of the world. Alternatively, the Nigerian model may provide an important starting point toward a future construction of a sub-regional model of the Economic Community of West African States (ECOWAS) or even an African regional model.

The specific objectives of the present research are:

1. to build a medium-sized macroeconomic model of the Nigerian economy that captures the basic elements of the SAP policy environment to verify the model's consistency and statistical properties, and to simulate it under alternative assumptions

about the expectations formation process of private economic agents in Nigeria (adaptive and model-consistent expectations).

2. to use standardized shocks that are consistent with various fiscal and monetary policy proposals under SAP to shed light on the implications of these proposals for Nigeria's trade, economic growth and macroeconomic stability in the short and medium runs.

3. to make policy recommendations on the basis of the simulation results.

Overview of major macroeconomic trends during the SAP regime in Nigeria

For several years prior to the introduction of SAP policies in 1986, the Nigerian economy was in deep crisis. This was precipitated mainly by the collapse of the oil prices and the gross mismanagement of the economy in general. The oil boom era of the of mid 1970s to 1980 witnessed a massive expansion in the size of government and most of the oil revenues were spent to expand physical infrastructure; finance increases in recurrent expenditures resulting mainly from the sharp rise in wages and salaries, expansion of the import-based consumer goods industry and import-substitution industrialization programmes; and inefficient and sometimes bogus manufacturing industries. The policy direction also led to the deterioration of the agricultural sector and non-oil export sector, and maintained a highly overvalued exchange rate. Price controls were generally enforced and both quantitative and tariff-based import restrictions were frequently applied to correct perceived imbalances in the current account.

Following the collapse of the oil prices, export receipts declined from $26 billion in 1980 to $9.4 billion in 1989. In real terms, oil export revenues fell below their pre-oil boom era, and the resulting external and fiscal imbalances became unsustainable. The current account deficit reached 6% of GDP in 1983, and the fiscal deficit was double that figure. Between 1981 and 1986, real aggregate demand fell by 35%. The situation continued to worsen and in 1989, per capita GDP had dropped to around $250 compared to $1090 in 1980. During the oil boom era, the major mechanism of government's patronage was public expenditure; during the slump this source was replaced by rents from foreign exchange allocation. An indication of the growth in such rents and from the implicit tariff rates generated by import restrictions can be obtained by examining the parallel market premium over the official rate. In early 1981, this premium was only 37%; during 1983 it exceeded 200% and by 1986 it was 330% (Bevan, et al, 1992:23). No doubt this policy reduced the income of the export sector - a cumbersome and rationed access to imports was imposed - and thus handicapping firms that depended on imported inputs. It was obvious to policy analysts that urgent policy responses were needed but up to the mid-1980s, there was no consensus as to what should be done.

When the Babangida regime came into office in August 1985, it was faced with even deeper economic crisis. Oil prices crashed to their all-time low level, and by the time the government had spent one year in office, real income had fallen by more than 20%, an unprecedented decline even by the harsh standards of the preceding years. The inevitability of a fundamental economic restructuring policy response became urgent and the Babangida regime embarked on the World Bank/IMF supported structural adjustment programme in September 1986. The most important elements of the adjustment programme were:

- abolition of the import-licensing regime and the liberalization of the foreign exchange market;

- rationalization and restructuring of tariffs in order to aid industrial diversification;

- introduction of measures to stimulate domestic production and broaden the supply base of the economy;

- deregulation of the monetary and financial system while aiming to maintain tight control over budgetary deficits;

- substantial liberalization of trade and payments;

- adoption of appropriate pricing policies, especially for petroleum products and public enterprises; and,

- encouragement of rationalization and privatization of public sector enterprises.

It is one thing to articulate sound economic policies; it is another to effectively implement them. Effectiveness in the implementation of specific adjustment programmes by the government is crucial in determining general economic performance. This is especially true in the peculiar circumstances of such economies as Nigeria, where the public sector is the dominant economic agent. The mainstay of the economy - the oil sector - is owned by the federal government and accounts for over 90% of Nigeria's foreign exchange earnings and over 70% of government revenues, and represents about 13% of the GDP. Almost all of Nigeria's external debts are the obligations of the federal government, with a large proportion owed to external private creditors at variable interest rates. Nigeria is a price taker in both the oil and the primary commodity (agricultural export) markets. In the case of oil, the quantity of output is also exogenously determined by OPEC. These characteristics of the public sector have important implications for the success of the adjustment process.

Table 1: Some economic and financial indicators

	GDP %	Ex. Rate Naira/ US$	Inflation	Lending rate (prime)	Mini. rediscount rate	M1%	GOV. TOT	CBN/ GOV	DDBT %
1986	3.13	1.73	5.40	17.50	10.00	5.23	0.53	0.85	1.79
1987	1.70	3.97	10.20	20.50	13.86	13.70	0.53	0.73	29.31
1988	4.20	4.54	38.30	18.40	12.75	41.90	0.52	0.84	27.83
1989	5.20	7.37	50.50	25.70	18.50	21.51	0.41	0.92	21.31
1990	5.20	8.35	7.50	26.50	18.50	44.90	0.45	0.80	47.40
1991	4.60	10.87	13.00	21.00	15.50	32.60	0.46	0.89	38.20
1992	4.10	19.47	44.60	31.20	17.50	66.40	0.52	0.87	39.00

Sources: Computed from Central Bank of Nigeria's *Annual Report and Statement of Accounts* (various years)

CBN's *Statistical Bulletin, 1992*

Notes:

GDP = Growth rate of GDP
CBN = Total credit granted by the Central Bank of Nigeria
DDEBT = Domestic debt of the Federal government (growth rate)
TOT = Total credit to the domestic economy by the banking system

A review of some economic indicators shows that the adjustment programme has had mixed results in Nigeria. As Table 1 shows, the annual growth rate of the GDP (at 1984 constant factor cost) has been modest, recovering from a mere 1.7% in 1987 to an average annual growth rate of over 4% since 1988. This appears an impressive performance especially when the general macroeconomic instability occasioned by government's fiscal and monetary policies is considered. For example, as is evident from Table 1, the government has not been successful in controlling the growth rate of money stock and consequently the inflation rate has been quite high over the years. The narrow money stock has been growing quite rapidly, reaching an unprecedented high rate of 66% in 1992. These increases in monetary aggregates are often blamed on the unsustainably high rate of monetization of foreign exchange earnings of the public sector and the sharp rise in credit to the domestic economy. High growth in credit to the domestic economy was attributed to the huge federal government deficit, which was mainly financed by the Central Bank of Nigeria. The federal government's budget deficit has been around 10% of GDP for most years of the adjustment programme. As also indicated in Table 1, the banking system's credit to the government as a proportion of total credit to the domestic economy has exceeded 40%, while the proportion of government's total credit financed by the Central Bank has increased from about 55% in 1985 to about 90% in 1991. Correspondingly, government's total domestic debt obligations have been growing at very high rates.

It should be observed that in most of the years since the adjustment programmes started in 1986, the annual budgets proposed by the federal government have often been in slight surplus or, at worst, in balance, perhaps in order to keep to the requirement of 'fiscal discipline'. But also, in most years, the ex post annual budgets have tended to be in huge deficits. This is often attributed to, among other things, the unanticipated increases in interest payments on the government's external debt and/ or shortfalls in oil revenues as a result of unanticipated falls in oil prices. According to the Central Bank of Nigeria's *Annual Report and Statement of Accounts* (1992, p.3):

> The larger deficit, in absolute terms, was due mainly to large external debt service payments, as well as on the execution of the political programmes and economic development projects. Public debt outstanding increased substantially by 58.9 percent over the 1991 level.... Of the total amount expended, debt service payments constituted 61.1 percent, while expenditures on non-debt recurrent and capital expenditures absorbed 38.9 percent. Consequently, government fiscal operations resulted in an overall deficit of N44,158.5 million or 9.8 percent of GDP which was financed mainly by the Central Bank of Nigeria.

The huge budget deficits and the consequent rapid monetary expansion exerted pressures on the naira exchange rate, which depreciated persistently. Indeed, between January and March 1992, the naira depreciated by over 60% against major currencies. Domestic market interest rates have continued to rise since the adjustment programme due, in part, to the liberalization of the financial sector, and in spite of the excessive growth of money stock. It might seem paradoxical that interest rates should be rising instead of falling when budget deficits are financed by printing money, which generally increases the liquidity of the economy. In Nigeria however, the only handle that the monetary authority has in controlling the money supply is the credit to the private sector. Thus, given the helplessness of the monetary authority to control government's overdraft with the Central Bank, and in an attempt to stem the growth of the money supply, it tries to peg the maximum growth rate of credit to the private sector. As banks try to make profits from the limited lending activities permitted by the Central Bank, the spread between the deposit and lending rates continues to widen. The rising interest rates combined with the rapidly depreciating local currency and high inflation have tended to slow the growth of output, especially in the non-oil sectors.