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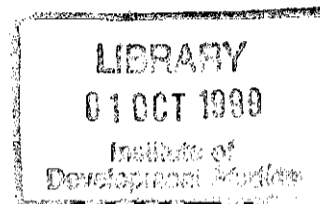
**MACROECONOMIC EFFECTS
OF VAT IN NIGERIA:
A COMPUTABLE GENERAL
EQUILIBRIUM ANALYSIS**

D. OLU AJAKAIYE

AFRICAN ECONOMIC RESEARCH CONSORTIUM

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**Macroeconomic effects of VAT in
Nigeria: A computable general
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**Macroeconomic effects of VAT in
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equilibrium analysis**

By

Prof. D. Olu Ajakaiye

*Economic Development Department
Nigerian Institute of Social and
Economic Research (NISER)
Ibadan, Nigeria*

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Abstract

This study analyses the impact of value added tax on key sectoral and macroeconomic aggregates, using a CGE model considered suitable for Nigeria. A survey of VATable Nigerian manufacturers, distributors, importers and suppliers of goods and services, organizations was conducted to gain insights into the way VAT is treated by these organizations. The survey shows that a majority of the VATable organizations treat VAT in a price cascading manner by regarding it as cost contrary to expectations. Evidence from the way VAT revenue is being shared among the three levels of government in Nigeria suggests that this revenue is being re-injected into the economy. Against this background, model simulations were run for three scenarios.

The simulation results shows that if VATable organizations treat the VAT in the expected non-cascading manner and the VAT revenue is re-injected via increases in sectoral government consumption expenditure, the general price level will increase by 5%, total private consumption expenditures will fall by over 12%, total consumption expenditure inclusive of government component will fall by only 6.7%, total gross output and GDP will fall by about 3% and 5% respectively, but the share of wages in total factor income will increase slightly. Private savings will increase by over 14% in order to secure the savings-investment balance because government and foreign savings will fall by about 4% and 11.6% respectively. If the VATable organizations treat the VAT in a non-cascading manner but the VAT revenue is sterilized the results show that although the price effects will be the same, the effects on the other sectoral and macroeconomic aggregates will be more deleterious than in the first scenario. Finally, when VAT is treated in a cascading manner by the VATable organizations and the VAT revenue is re-injected into the economy the price, consumption expenditure, output and income effects will be most deleterious. It turns out that this scenario where VAT will have the most adverse effects on price, consumption, output, employment and income best approximates the Nigerian situation. It will, therefore, be necessary to consider strategies for securing appropriate treatment of VAT by the VATable organizations while taking steps to ensure that the VAT revenue is targeted at sectors most likely to ameliorate the inadvertent adverse effects of VAT on consumer welfare, production, employment and income.

I. Introduction

Value added tax (VAT) has become a major source of revenue in many developing countries. In sub-Saharan Africa, for example, VAT has been introduced in Benin, Côte d'Ivoire, Guinea, Kenya, Madagascar, Mauritius, Niger, Senegal, Togo and, lately, Nigeria. Evidence suggests that in these countries, VAT has become an important contributor to total government tax revenues. Shalizi and Squire (1988) find that VAT accounted for about 30% of total tax revenues in Côte d'Ivoire, Kenya and Senegal in 1982. The oil producing countries are not excluded from the list of countries introducing this tax handle. Tait (1989) shows that VAT has been in effect in Ecuador and Mexico since at least 1973, and by 1983 accounted for 12.35% and 19.71% of total government revenues in these countries, respectively. Indonesia introduced VAT in 1983 and by 1988, the ratio of VAT revenue to GDP had risen to 4.5% (Bogetic and Hassan, 1993).

This impressive performance of VAT in virtually all countries where it has been introduced clearly influenced the decision to introduce VAT in Nigeria in January 1994. Specifically, the Federal Inland Revenue Service (FIRS) pointed out that VAT is a consumption tax that is relatively easy to administer and difficult to evade and it has been embraced by many countries world-wide (FIRS, 1993: 4). Evidence so far supports the view that VAT is already a significant source of revenue in Nigeria. For example, actual VAT revenue for 1994 was ₦8.194 billion, which is 36.5% higher than the projected ₦6 billion for the year. Similarly, actual VAT revenue for 1995 was ₦21 billion compared with the projected ₦12 billion. In terms of contributions to total federally collected revenue, VAT accounted for about 4.06% in 1994 and 5.93% in 1995. For 1996, VAT is expected to yield ₦25 billion and on the basis of past experience, it is quite possible that the actual VAT revenue will be much larger. The indication is that Nigeria may soon join the growing list of developing countries where VAT contributes at least 20% of total government revenue, thereby assisting in the diversification of revenue sources and reducing dependence on oil for revenue.

While the performance of VAT as a source of revenue in these sub-Saharan African countries is clearly encouraging, it remains difficult to find attempts to systematically assess the impact of VAT on these economies. Nevertheless, policy makers considering the adoption of a VAT should be interested in the macroeconomic impact, especially on prices, output, income and consumption (McLure, 1989). This concern over the economy-wide impact of VAT is all the more important because of the possibility that the tax may cause consumers to reduce their consumption of certain commodities that have direct and/or indirect effects on labour productivity (Shoup, 1989).

The primary objective of this study, therefore, is to investigate the likely macroeconomic effects of VAT recently introduced in Nigeria to provide a basis for

suggesting ways of minimizing the adverse effects while consolidating the beneficial ones. Ideally, this type of analysis should have been carried out prior to the introduction of VAT in Nigeria as this would have influenced the design and implementation of the policy. Still, it is hoped that the insights to be gained from this analysis provide a useful guide to the policy makers in their ongoing attempts to fine-tune the policy.

The inadequacy of a partial equilibrium analysis for this purpose was highlighted by Mclure (1989). Specifically, the traditional incidence studies tend to concentrate on the issue of who pays the tax, so that the question of who gains or loses from the tax, whose income and welfare are reduced or increased, and whose employment opportunity is threatened or promoted are not sufficiently considered. In order to consider these issues systematically, Mclure (1989) has pointed out that a computable general equilibrium (CGE) analysis leads to a more satisfactory analysis of tax policy. This is because a CGE model is an economy-wide framework that incorporates the interactions and feedback among demand, production and income within which the relevant variables adjust until production and consumptions decisions are consistent. Depending on the closure rule chosen, such adjustments can take place either through flexible prices under full employment or through fixed prices under excess labour and capital, with savings adjusting to equalize the nominal value of fixed real investment. See Drud, Grais and Pyatt (1985), Rattso (1982), Dewatripont and Michel (1987), and Decaluwe, Martens and Monettee (1988) for additional insights into these issues.

In this paper, therefore, the analysis of the economy-wide effects of VAT in Nigeria is done with a computable general equilibrium model considered suitable for the Nigerian situation. The disposition of the paper is as follows. In the next section, certain basic information about the Nigerian VAT is provided. In order to gain a clearer insight into the salient features of VAT in Nigeria as far as its effects on key economic variables are concerned, the findings from a quick survey of a cross section of VATable organizations, defined to mean all existing manufacturers, distributors, importers and suppliers of goods and services, in the Lagos area are presented in Section III. These features of the Nigerian VAT along with certain objective conditions of the Nigerian economy have informed the specification of the model presented in Section IV. In Section V, the model simulation results are analysed and the last section contains the summary and recommendations for further fine-tuning the policy.

II. Key features of the Nigerian value added tax

According to the Federal Inland Revenue Service (FIRS), the idea of introducing VAT in Nigeria originated from the report of a study group set up by the federal government in 1991 to review the entire tax system. Subsequently, a committee was set up to carry out feasibility studies of its implementation. It should be noted that the committee was not requested to carry out any analysis of the impact of the tax. Neither was there an active debate among the various interest groups such as the organized private sector, labour unions and academics as well as other professionals through which certain aspects of the impact might have been considered and taken into account in its design and implementation.

Eventually, government agreed to introduce VAT but the actual implementation did not commence until January 1994 after the promulgation of the Value-Added Tax Decree No. 102 of 1993. According to the decree, a VATable organization is an existing manufacturer, distributor, importer or supplier of goods and services. The following are the main features of the Nigerian VAT. First, it is a single rate (5%) VAT, which makes it easier to administer. Second, it adopts the input-output tax mechanism, which makes it self policing. Specifically, although it is a multiple stage tax, it is expected to have a single effect on consumer prices and should not add more than the specified rate to the consumer price no matter the number of stages at which the tax is paid. In essence, it is the official view that the VAT should not be cascading whatsoever since the tax liability of a VATable organization is the difference between VAT on output and VAT on inputs. In other words, the credit method of collection should eliminate any cascading effects.

Third, all goods are VATable with the exception of the following:

- Medical and pharmaceutical products;
- Basic food items such as peas, beans, yam, cassava, maize, rice, wheat, milk and fish;
- Infant food items;
- Books, newspapers and magazines;
- Educational materials (laboratory equipment);
- Baby products such as carriages, clothes and napkins, as well as sanitary towels;
- Commercial vehicles and spare parts, tractors, public transport passenger vehicles, motorcycles, tanks and other armoured fighting vehicles, and bicycles;
- Agricultural equipment such as those for soil preparation or cultivation, harvesting or threshing, milking and dairy machinery, and poultry keeping machinery;
- Veterinary medicine equipment; and
- Fertilizers and farming transportation equipment.

Similarly, all services are subject to VAT except:

- Medical and health services;
- Services by community banks, people's banks and mortgage institutions (interest earnings on loans by commercial banks and premiums paid to insurance companies are not VATable);
- Performances conducted by educational institutions as part of learning;
- Social services such as orphanages, charities and fire fighting;
- Pure postal services;
- Religious services;
- Non-commercial cultural services;
- Overseas air transportation; and
- Public telephone and telegram services (excluding business or commercial services).

The following other goods and services are also exempted from VAT: salt, water, salary or wages from employment, director's emoluments, hobby activities, private transactions such as sale of domestic or household articles, vehicles, personal effects or private motor vehicles, and residential house rent. For avoidance of doubts, these goods and services are exempted from VAT but their inputs are VATable and they cannot claim credit for such input taxes. On the other hand, all exports are zero-rated, implying that exporters do not collect VAT on exports but they can claim credit for VAT paid on their inputs.

All imports are VATable, whether imported raw materials or finished goods. Moreover, VAT on imports is calculated on the total value of the total cost, insurance and freight (CIF) plus customs duties and all other charges on imported goods. Amounts expressed in foreign currency are converted into naira using the exchange rate adopted by the Nigerian Customs Service (NCS). Between January 1994 and August 1995, the NCS used the exchange rate prevailing on the date the good was cleared from the ports. In this connection, it is recalled that by the beginning of 1995, when the exchange rate depreciated by over 70% in the autonomous foreign exchange market (AFEM), the organized private sector put enormous pressure on the government to review this procedure for computing VAT liability on imports so that by August, the NCS was directed to use 65% of the prevailing exchange rate on the date of clearance of imports to determine the VAT liability on all categories of imports.

Fourth, with effect from 1 January 1995, all ministries, parastatals and other agencies of government as well as religious and other organizations and similar persons that are normally exempted from income tax are expected to pay VAT on their consumption in addition to the contract price of items consumed by them. For the contractors to render monthly returns, all government agencies must obtain receipts from the FIRS for the VAT paid on behalf of the contractors. It may be pertinent to mention that this way of broadening the base of VAT is consistent with the policy of exemptions, especially the provision that all inputs used for the production of VAT exempted goods are themselves VATable.

Finally, in 1995, the VAT revenue distribution formula was modified as the share of federal government increased from 20% to 50%, while the share of the state governments decreased from 80% to 25% and the share of local governments increased from 0% to 25%. However, probably in response to complaints by State Government officials, the VAT distribution formula was modified later in the year when the federal government share was reduced to 40% while that of state governments was increased to 35%. In 1996 the share of the federal government was further reduced to 35% while that of the state government increased to 40% leaving that of local governments unchanged.

It should be clear that the Nigerian VAT has a very wide base with relatively few exemptions and only exports are zero-rated. Moreover, VAT is not a replacement of any of the usual indirect or income taxes. Rather, it replaced the sales tax introduced in 1986, which had a narrow base and discriminated against locally produced goods and services as it excluded imports. The sales tax revenue accrued exclusively to the state governments while the VAT revenue is now shared by all levels of government. As such, it can be assumed that the VAT revenue is not sterilized but injected through increased government final consumption expenditure. Moreover, the VAT is paid on virtually all goods and services but the credit system implies that the VAT revenue received by government should be devoid of any cascading. In the absence of cascading effects, the increase in prices of final goods and services should not be more than the VAT rate of 5%.

Meanwhile, there are increasing complaints from various quarters, especially the organized private sector, about the effects of the VAT on their operating costs and the prices of their products. These complaints about the effects of VAT under a system that allows VATable organizations to claim credit for the input VAT suggests that there is some problem with the ways the VATable organizations are treating their VAT liabilities, especially the VAT they pay on their inputs.

III. Analysis of survey results

In order to find out precisely how the VATable organizations are treating their input VAT liabilities, a short questionnaire was designed and lodged with 100 VATable organizations in the Lagos area in October 1995. The sample was drawn from the list of registered VATable organizations as at October 1995, obtained from the Federal Inland Revenue Service (FIRS). The listing was arranged by sectors including the date of registration. The sample included 30 manufacturing organizations and 70 service organizations all of which had registered by March 1994. A total of 70 questionnaires were retrieved by January 1996, 61 of which were found suitable for analysis. (See Appendix A for a copy of the questionnaire.) Of the 61 questionnaires analysed, 21 or 34.4% are in the manufacturing sector; the remaining 40 (65.6%) are in the service sectors, ranging from financial to business services. Furthermore, 49 of these organizations pay VAT on inputs; 20 of them are in the manufacturing sector and the remaining 29 are in the service sector.

Some 36.4% of the responding organizations claimed that the 5% VAT on their inputs caused their production cost to increase by over 5% (Table 1a). Another 38.6% claimed that it caused their production cost to increase by just 5%, while 11.4% claimed that the input VAT caused their production cost to increase by less than 5%. Notice that only 13.6% claimed, as expected that the input VAT had no effect on their production cost. Clearly, a situation in which 86% of the responding VATable organizations say that the VAT on their inputs caused their production cost to increase at all suggests that an overwhelming majority of these organizations treat input VAT as a cost. This implies that there is some misunderstanding about the efficacy of the credit system of rendering VAT returns. Under the credit system, VATable organizations are not supposed to regard the VAT on inputs as a cost because they are supposed to deduct these from the VAT accruing on outputs and only the balance should be remitted to the VAT office.

However, earlier in-depth interviews with a few of the VATable organizations indicate that input VAT may indeed cause production costs to increase because of the increase in working capital associated with the inevitable time lag between the time the input VAT is paid and the time the output VAT accrues. And Table 1b shows that 62% of the responding organizations do claim that input VAT actually caused their working capital requirements to increase. Nevertheless, this factor alone is not sufficient to explain the claim by about 75% of the organizations that input VAT caused their production cost to increase by at least 5% (Table 1a). Therefore, the argument that the system is not properly understood by the VATable organizations remains.

Table 1c shows that 76.9% of responding organizations claimed that input VAT caused their product prices to increase by at least 5%. This is quite consistent with the results in

Table 1a, indicating the prevalence of markup pricing. Moreover, this result suggests that the markup rates are quite high. Table 1d showing that over 60% of the organizations claimed that input VAT caused the demand for their product to fall suggests that the consumers are not completely insensitive to the price increase. On the other hand, the fact that 51.2% of the organizations (see Table 1e) also claimed that the input VAT caused their production level to fall suggests that the producers' response was to reduce output rather than reduce price in the face of weakening effective demand. The indication is that serious market imperfections are prevalent in Nigeria.

Meanwhile, an overwhelming majority (82%) of the VATable organizations indicated that they complied with the credit system in rendering their returns to the VAT office (Table 1f). From Table 1g, it is also clear that very few organizations have had occasion to successfully request a refund from the VAT office, implying that the VAT accruing on output normally exceeds VAT paid on inputs for the majority of the VATable organizations. Consequently, the results in tables 1h and 1i should not be surprising. In other words, the opinion expressed by about 59% of the responding organizations that VAT has caused prices to rise generally by more than 5% is consistent with their own practice. Correspondingly, about the same percentage opined that the 5% VAT is too high.

These results are quite incisive. Foremost, they point to the fact that although the VATable organizations deduct the VAT paid on inputs from the VAT accruing on their outputs before remitting the balance to the VAT office, they still regard their input VAT as cost. Moreover, given the pervasive markup pricing regime, the VAT on inputs is magnified by the markup rates, leading to considerable cascading contrary to expectations. Finally, although consumers are responding to the price increases by reducing demand, producers also respond by reducing output rather than reducing their markup rates in a bid to lower prices. The indication is that the markup pricing regime is quite rigid downwards, a finding that points to the existence of highly organized producer groups that sustain the serious and pervasive market imperfections. As will be seen momentarily, these findings have provided useful guides to the model specification presented next as well as the simulation exercises analysed subsequently.

Table 1: Analysis of the survey of responding VATable organizations in Lagos area of Nigeria, 1995

1a. Effects of input VAT on production cost		
	No.	%
Over 5% increase	16	36.36
Just 5% increase	17	38.64
Below 5% increase	5	11.36
No increase	6	13.64
Total	44	100.00
1b. Effects of input VAT on working capital requirements		
	No.	%
Increased	26	61.90
Unchanged	16	38.10
Total	42	100.00
1c. Effects of input VAT on product prices		
	No.	%
Over 5% increase	12	25.53
Just 5% increase	24	51.06
Below 5% increase	4	8.51
No increase	7	14.89
Total	47	100.00
1d. Effects of input VAT on demand		
	No.	%
Decrease	26	63.41
No effect	15	36.59
Total	41	100.00
1e. Effects of input VAT on production level		
	No.	%
Decrease	22	51.16
No effect	21	48.84
Total	43	100.00
1f. Compliance with deduction principle		
	No.	%
Yes	36	81.82
No	8	18.18
Total	44	100.00
1g. Firms reporting successful requests for refund of VAT returns		
	No.	%
Yes	4	11.43
No	31	88.57
Total	34	100.00
1h. Opinion on effects of VAT on general price level		
	No.	%
Over 5% increase	34	58.62
Just 5% increase	22	37.93
Below 5% increase	2	3.45
Total	58	100.00
1i. Opinion about the VAT rate		
	No.	%
Too high	35	57.38
Adequate	21	34.43
Too low	5	8.20
Total	61	100.00

Source: Survey results.

IV. The model

For the present purposes the following main features of the Nigerian VAT system are pertinent. First, the VAT is essentially a new tax handle aimed primarily at generating additional revenue for government. Second, although it is a consumption tax, there are indications of considerable cascading because the VATable organizations treat the input VAT as a part of the cost under a generalized markup pricing regime. Third, although exports are zero-rated, all goods are subject to VAT, so that prices tend to rise if input VAT is treated as cost by the VATable organizations including the exporters. Fourth, all manufacturers, distributors, importers and suppliers of VAT exempted goods pay input VAT, which is also treated as cost even though they are eligible to seek a refund.

Turning to the relevant features of the economy, the first important feature is that there is already a considerable degree of interdependence in production, and production in every sector of the economy depends directly or indirectly on imported intermediate inputs. Second, prices are determined on the basis of markups on costs where costs include costs of local and imported intermediate inputs, per unit wage cost, depreciation allowance, and net indirect taxes. In essence, profit is endogenously determined by these costs and the markup rates. In virtually all markets, the suppliers are formally or informally organized and one of the most important functions of these suppliers associations is indirect price fixing by fixing the markup rates. This situation implies that the neoclassical closure rule where prices are flexible both ways, as assumed by Bovenberg (1987) in his experiments for Thailand, is not a good approximation of the Nigerian situation.

Model equations

Against this background, the model equations have been specified and are presented in Table 2. As can be seen from the table, the model has the following main blocks:

- Production and output determination
- Price determination
- Private household transactions
- Government transactions
- External trade
- Savings-investment balance
- Resource constraints and model closure.

Production and output determination

Consider an economy with n industries, each producing an output q_i using labour and capital according to either a CES or Cobb-Douglas production function and n intermediate inputs. In that case, production functions can be written as

$$q_i = \text{Min}(f^i(L_i, K_i); q_{ji} / a_{ji}) \text{ for } i, j = 1, \dots, n$$

where:

- q_i = gross output of sector i
- L_i = Labour requirement of sector i
- K_i = Capital requirement of sector i
- q_{ji} = intermediate input requirement of sector i from sector j
- a_{ji} = input-output coefficient for q_i
- f^i = Cobb-Douglas production function operator for industry i

Table 2: Model equations

Production and output determination

1. $q = (I-A)^{-1}(C+INV+G+X-M^F)$

Price determination

2. $P'_{VAT} = (1 + \alpha)P'$

3. $P' = [(1 + \alpha)P'_{m^{nc}}\hat{H} + w' + d' + t' - s'] [I - \alpha I - A(I + \hat{m})]^{-1}$

4. $P'_{m^c} = (1 + \alpha)eP'^*_{m^c}(1 + \hat{t}_{m^c})$

5. $P'_{m^{nc}} = (1 + \alpha)eP'^*_{m^{nc}}(1 + \hat{t}_{m^{nc}})$

6. $P'_x = eP'^*_x(1 - \hat{t}_x)$

Private transactions

7. $Y = (w' + \pi' + d')q$

8. $Y^D = (1 - t_y)y$

9. $S_p = s_p Y^D$

10. $D = Y^D - S_p$

11. $C = \beta p - 1D$

Government transactions

$$12. \quad GREV = t_y Y + t_q q + t_x P'_x X + t_{m^c} P'_{m^c} M^c + t_{m^{nc}} M^{nc} \\ + \alpha P'(C + I + G) + \alpha (P_{m^c} M^c + P_{m^c} M^c + P_{m^{nc}} M)$$

$$13. \quad GEXP = P'G + P'GVAT + s'_q q$$

$$14. \quad GVAT = \lambda RVAT$$

$$15. \quad S_g = GREV - GEXP$$

External trade

$$16. \quad M^{nc} = h'q$$

$$17. \quad M^c = M^c_o (P \hat{P}_m^{-1})^o$$

$$18. \quad X = \bar{X}_o$$

$$19. \quad FSAV = P'_{m^{nc}} M^{nc} + P'_{m^c} M^c - P'_x X$$

Savings - investment balance

$$20. \quad P'INV = S_p + S_g + FSAV$$

Resource constraints and model closure

$$21. \quad w = \bar{w}$$

$$22. \quad L^D < L^S$$

$$23. \quad K^D < K^S$$

Definition of variables and parameters

q	=	n -vector of gross output
I	=	nxn identity matrix
A	=	nxn matrix of input-output coefficients
C	=	n-vector of real private final consumption demand
INV	=	n -vector of real investment demand
G	=	n-vector of real government expenditure on final goods
X	=	n-vector of exports
M ^c	=	n-vector of imported final goods
M ^{nc}	=	n-vector of imported intermediate inputs
H	=	nxn diagonal matrix of per unit imported intermediate inputs
m	=	nxn diagonal matrix of sectoral markup rates
P' _d	=	n-row vector of index of domestic producer prices

w^i	=	n -row vector of nominal per unit wage cost
t_d^i	=	n -row vector of nominal per unit indirect taxes on domestically produced goods
s^i	=	n -row vector of nominal per unit subsidy
h^i	=	n -vector of real per unit imported intermediate input requirements
$P_{m^c}^i$	=	n -row vector of index of prices of imported final goods
e	=	exchange rate index
$P_{m^c}^{i*}$	=	n -row vector world price index of imported final goods
π^i	=	n -row vector of nominal per unit operating surplus (profit)
$t_{m^c}^i$	=	index of import duty rate on imported final goods
α	=	VAT rate.
$P_{m^{nc}}^i$	=	n -row vector of price index of imported intermediate inputs
d^i	=	n -row vector of nominal per unit depreciation
$P_{m^{nc}}^{i*}$	=	n -row vector world price index of imported intermediate inputs
β	=	n -vector of sectoral expenditure shares
$t_{m^{nc}}^i$	=	import duty rate on imported intermediate inputs
P^i	=	n -row vector of price index of exports
P^{xi}	=	n -row vector of world price index of exports
t_x^i	=	index of export duty tax rate on exports
Y	=	private nominal income
Y^D	=	private nominal disposable income
t_v	=	direct tax rate
S_p	=	private savings
s_p	=	nominal private savings rate
D	=	nominal private consumption expenditure
GREV	=	total nominal government revenue
GEXP	=	total nominal government expenditure
S_g	=	government savings
σ	=	price elasticity of demand for imported final goods
FSAV	=	total nominal foreign savings in domestic currency
\wedge	=	diagonal matrix operator
GVAT	=	n -vector of real VAT induced increase in government consumption expenditure
λ	=	government consumption expenditure shares
RVAT	=	real value added revenue
P_{VAT}^i	=	n -row vector of VAT inclusive sectoral prices

Suppose that there is excess capacity and there is considerable unemployment. In that case, output can be determined by the availability of intermediate inputs, so that the operational production function is of the Leontief type. This is the familiar input-output balance equation specified in Equation 1, Table 2.

Price determination

Analysis of the survey of VATable organizations suggests the prevalence of a markup

pricing regime. It has also been found that the producers tend to treat VAT on input as costs. Moreover, production, cost and hence prices in Nigeria are affected by the availability and cost of imported intermediate inputs. Since these imported inputs are also subject to VAT, this attribute must be taken into account in specifying the price equation.

For this purpose, an input-output price equation similar to the one specified in Ajakaiye (1985) is considered suitable. Basically, this equation defines sectoral prices as the sums of sectoral per unit of domestically produced and imported intermediate input costs, wage costs, operating surplus (profit), depreciation, indirect (excise) taxes less subsidies. In symbols, this can be written as:

$$P' = P'A + P_m^{nc'} + w' + r' + d' + t' - s'$$

where:

- P' = 1xn vector of sectoral prices
- A = nxn matrix of input-output coefficients
- $P_m^{nc'}$ = 1xn vector of sectoral prices of imported intermediate inputs
- \hat{H}^m = nxn diagonal matrix of imported intermediate inputs per unit of output
- w' = 1xn vector of sectoral per unit wage cost
- r' = 1xn vector of sectoral per unit profit
- d' = 1xn vector of sectoral per unit depreciation
- t' = 1xn vector of sectoral per unit indirect taxes
- s' = 1xn vector of sectoral per unit subsidies

Suppose that sectoral prices are determined by the application of markups on costs where sectoral costs are defined as the sums of sectoral per unit domestically produced and imported intermediate input costs, wage costs, depreciation, indirect (excise) taxes less subsidies. In other word, sectoral profit rates are endogenously determined by the markup rates and these costs. In symbols, this can be written as:

$$r' = c'$$

where:

- c' = $P'A + P_m^{nc'} + w' + d' + t' - s'$
- \hat{m} = n x n diagonal matrix of sectoral markup rates

All other variables are as defined earlier.

So, sectoral prices can be re-written as:

$$P' = c'(I + m)$$

where: $I = nxn$ identity matrix

All other variables are as defined earlier.

Suppose that the product type VAT as defined in Zee (1995) is imposed. Then, the vector of VAT inclusive sectoral prices can be written as:

$$P'_{VAT} = (I + \alpha)P'$$

where:

$$\begin{aligned} P'_{VAT} &= \text{sectoral prices inclusive of the VAT} \\ \alpha &= \text{VAT rate, which is .05 in Nigeria at present} \end{aligned}$$

All other variables are as defined earlier.

Clearly, the product-type VAT will cause the sectoral prices to increase by exactly the VAT rate (see Equation 2 in Table 2). Recall that the self policing property of the input-output (multi-stage) VAT mechanism has been adopted in Nigeria. Suppose, as evidence strongly suggests in the case of Nigeria, that the VATable organizations treat VAT as a cost, then the price equation becomes:

$$P' = (P'A + P_m^{nc'} \hat{H} + w' + d' + t' - s')(I + \hat{m}) + \alpha P'$$

If, as is the case in Nigeria, imported intermediate inputs are also subject to VAT, then the price equation becomes:

$$P' = (P'A + (1+a)P_m^{nc'} \hat{H} + w' + d' + t' - s')(I + \hat{m}) + \alpha P'$$

From this equation, it is easy to solve for P' , which has been specified in Equation 3, Table 2.

It should be recalled that all categories of imports are subject to VAT. Accordingly, the VAT inclusive sectoral prices of imported final goods has been specified in Equation 4, Table 2. Sectoral prices of imported intermediate inputs and exports are as specified in equations 5 and 6 of Table 2, respectively.

Private household transactions

In Nigeria, wage rates are generally fixed in nominal terms. This, along with the output and producer price determination processes, described above, implies that wages per unit of output are also fixed in nominal terms. Define private income as the sum of sectoral wages and gross operating surplus (including depreciation allowance), then Equation 7 specifies private income. Private disposable income is specified in Equation 8 in the usual way and private consumption expenditure is the residual of disposable

income and private savings. See equations 9 and 10. It is assumed that the typical private consumer is maximizing a Cobb-Douglas type utility function from where the real sectoral consumption demand specified in Equation 11 can be derived.

Government transactions

Government revenue is the sum of direct and indirect taxes as well as VAT on domestically produced and imported finished goods as specified in Equation 12. Since the VAT is a new revenue generating tax handle, government revenue will increase accordingly. Two possibilities exist for government expenditure, depending on the treatment of VAT revenue. If VAT revenue is sterilized, real government consumption expenditure will remain unchanged. However, its nominal value will increase with increases in sectoral prices because of VAT. If, as is the case in Nigeria, VAT revenue is injected into the economy via increases in government final consumption expenditure (see Equation 14, Table 2), then both real and nominal government consumption expenditures will increase. Equations 13 and 14 in Table 2 define government expenditure while Equation 15 defines government savings.

External trade

Equations 16, 17 and 18 define demand for exports, imported inputs and imported final goods. The demand for Nigeria's main exports (petroleum and to some extent cocoa) do not respond to price changes because Nigeria belongs to the OPEC and ICCO. Hence, it is considered reasonable to assume that real exports are fixed. The demand for imported intermediate inputs is determined by technology and the level of output. With regard to imports of finished goods, although the primary determinant is the import capacity, which is itself determined by the export earnings, given the main focus of this study — to analyse the impact of VAT via its effects on prices — it is considered reasonable to allow imports of finished goods to respond positively to the ratios between sectoral prices of domestically produced goods and their imported counterparts. Equation 19 defines foreign savings.

Savings-investment balance

Since prices are determined on the basis of markups on costs, nominal values of the fixed real investment will change with changes in the vector of domestic prices. As a result, total nominal investment will increase. In order to finance the nominal value of investment, total nominal savings must increase as necessary. Total nominal savings is made up of private, government and foreign savings. While government and foreign savings are essentially definitional, total private savings is endogenously determined and this explains the specification of Equation 7, Table 2. The savings-investment balance is as specified in Equation 20.

Resource constraints and model closure

CGE models are generally overdetermined and the way to render the model mathematically solvable is referred to as the closure rule. Normally, the choice of closure rule has implications for the workings of the model and the qualitative interpretation of the simulation results (Drud et al., 1985). It is also important to recognize that the choice of model closure rule depends not only on the political and economic considerations but also on the nature of the problem at hand (Rattso, 1982; Decaluwe, Martens and Monette, 1988). In the present circumstance, the pertinent structural features of the Nigerian economy as well as the nature of the problem at hand have influenced the choice of closure rule.

As noted earlier, there is excess capacity everywhere in the contemporary Nigerian economy; nominal wages are institutionally determined and they are not flexible downwards. They can, however, increase as a result of considerations other than increasing productivity. Observers of the recent events in Nigeria will find that demands for wage increases are, invariably, premised on the rising cost of living and hardly on increases in labour productivity. Given the level of unemployment in the economy, the various increases in remunerations cannot be justified within the neoclassical economics paradigm.

Moreover, prices of all other goods are rising despite the generally acknowledged weakening effective demand, largely because of the institutional factors involved in price determination and the influence of costs on these prices. As a result, profits hardly reflect the scarcity values of capital since profits really depend on costs and on the markup rates. See Ajakaiye and Ojowu (1994) for further elaborations of this phenomenon in the specific case of Nigeria. Finally, the main concern when it comes to the economy-wide effects of VAT in Nigeria has to do with the cost-induced increases in prices that arise from the way VAT on inputs is treated. Accordingly, it is pertinent to select a closure rule that will permit a more realistic analysis of the impact of the tax on the economy via changes in prices under alternative treatment of input VAT.

Against this background, the Kaldorian Closure, where primary factors of production are not necessarily paid according to the values of their marginal products and savings, adjusts to the nominal value of fixed real investment demand is adopted. See Rattso (1982) and Decaluwe, Martens and Monette (1988) for further elaborations on this and related issues. Nominal per unit wages are assumed fixed as specified in Equation 21, and the excess supplies of labour and capital situations are reflected in equations 22 and 23, respectively.

Data and base solution

The model specified above has been calibrated using Nigerian data for 1991. For this purpose, the 29-sector input-output table for 1987 was updated to 1991. Other macroeconomic aggregates were obtained from the Federal Office of Statistics and the Central Bank of Nigeria. These and other data sets have been combined to produce a

1991 SAM for Nigeria (see Table 3). Information on the VAT policy articulation and implementation were obtained from the Federal Inland Revenue Service. Insights into the way VATable organizations treat VAT on their inputs as well as how they render their returns to the FIRS were gained from the analysis of the survey of VATable organizations presented in Section III above.

The model was simulated for the base run, and it was found that the base solution of the model replicated the data base as required. Accordingly, the model has been used to simulate the impact of VAT on prices and other sectoral and macroeconomic aggregates under the alternative treatments of input VAT by the VATable organizations. The simulation results are analysed next, beginning with the articulation of the scenarios considered in the simulation exercises.

V. Analysis of simulation results

Clearly, the impact of VAT on the economy depends critically on the way VATable organizations treat the VAT. In the specific case of Nigeria, evidence suggests that the VATable organizations are treating the VAT as a cost, in which case the VAT will be cascading. In order to assess the influence of this cascading treatment of the VAT on the impact of VAT on the economy, it will be necessary to compare these impacts with those likely if the VATable organizations had treated the VAT in a non-cascading manner by not treating it as cost. The significance or otherwise of the effects of VAT under the two scenarios should provide justifications for designing strategies for securing the appropriate treatment of VAT by the VATable organizations.

In order to closely approximate the Nigerian situation, it will be assumed that government is pursuing an active fiscal policy involving the re-injection of the VAT via increases in government final consumption expenditure under a non-cascading treatment of the VAT. These scenarios will be compared with those of a passive fiscal policy, where the VAT revenue is sterilized, in order gain insight into the desirability or otherwise of sterilizing the VAT revenue. The specific scenarios simulated are as follows:

- Impact of non-cascading treatment of VAT under active fiscal policy
- Impact of non-cascading treatment of VAT under passive fiscal policy
- Impact of cascading treatment of VAT under active fiscal policy

The simulation results are analysed in the rest of this section.

Impact of non-cascading treatment of VAT under active fiscal policy

This scenario presupposes that VATable organizations conform with the official expectation that the VAT should lead to a once and for all increase in consumer prices and that the increase should not exceed the VAT rate. This requires that VATable organizations do not treat VAT as costs. Impacts of the 5% VAT, assuming that the VATable organizations treat the VAT properly and that government pursues an active fiscal policy by which the VAT revenue is injected into the economy via increase in government consumption expenditure, are shown in tables 4 and 5. Table 4 shows the impact on sectoral prices, private and total consumption expenditures, and gross output. A look at column 1 of the table will reveal that all sectoral prices will increase at the VAT

Table 3: Social accounting matrix for Nigeria, 1991

SECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Agriculture	12317.31	0.00	0.00	0.00	0.00	0.00	1287.87	518.10	582.14	0.00	0.00	0.00	475.09
2 Livestock	0.00	0.00	0.00	0.00	0.00	0.00	399.80	0.00	0.00	101.06	0.00	0.00	105.57
3 Fishing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Forestry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	192.56	354.94	47.81
5 Crude Petroleum	0.00	0.00	1394.45	0.00	951.96	2.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Other mining	0.00	0.00	0.00	0.00	5.33	2.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Food	0.00	999.08	9.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Drink Bev & Tobacco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.19
9 Textiles	0.00	0.00	0.00	0.00	16.03	0.00	0.00	0.00	360.21	0.00	0.00	0.00	0.00
10 Footwear & Leather	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.53	0.00	0.00	0.00
11 Wood	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.45	0.00	0.00
12 Paper	0.00	0.00	0.66	0.00	61.85	0.00	0.00	54.76	0.00	0.00	0.00	45.48	30.53
13 Drugs & Chem	81.82	0.00	9.44	0.00	17.70	45.64	0.00	18.25	0.00	0.00	0.00	0.00	467.48
14 Refineries	196.45	0.00	40.18	15.21	22.18	71.64	53.30	65.45	50.80	14.35	25.95	30.22	28.15
15 Rubber & Plastics	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	115.69	0.00	0.00	0.00
16 Iron & Steel	0.00	0.00	0.00	0.00	124.49	1237	0.00	0.00	0.00	0.00	0.00	0.00	24.42
17 Fabricated Metal	1340.86	0.00	0.29	12.44	28.90	18.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Vehicle Assembly	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Other manuf	800.08	0.00	0.00	0.00	0.00	0.00	0.00	6.70	0.00	0.00	0.00	0.00	4.50
20 Utilities	0.00	0.00	140.56	0.00	40.06	5.25	52.12	57.15	183.34	23.51	11.77	20.53	34.55
21 Bldg & constructn	0.00	0.00	0.00	0.00	75.14	8.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Transport	0.00	0.00	30.28	41.48	1152.73	154.42	428.88	288.00	66.28	41.91	58.54	135.11	137.00
23 Communications	0.00	0.00	13.69	0.00	16.97	0.00	14.76	13.29	12.55	1.89	1.62	4.43	7.38
24 Distributive Trade	370.58	169.04	59.58	1.38	230.44	0.40	802.92	394.11	194.38	101.82	125.99	229.96	295.63
25 Hotel and Restrntrts	0.00	0.00	0.00	0.00	48.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Fin & Insurance	0.00	0.00	313.51	12.44	141.23	2.73	36.35	32.45	23.37	4.54	3.89	7.79	19.59
27 Real Estate & Bus Serv	0.00	0.00	103.47	0.00	100.47	16.98	11.87	7.22	5.60	0.59	0.66	1.18	5.90
28 Housing (Dwelling)	0.00	0.00	29.49	0.00	28.44	0.00	9.81	9.71	6.65	4.45	2.72	8.08	12.67
29 Comty Soc & Pers Serv	0.00	0.00	9.02	15.21	0.00	25.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 Prod of Govt Serv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 Private Income	73398.13	11611.08	4593.15	2270	117691.59	716.13	1856.7	851.01	1689.6	606.34	257.72	901.64	1855.5
32 Government Revenue	0	0	0	0	0	0	0	0	0	0	0	0	0
33 Corp. Income (Depr)	2879.48	70.09	108.13	534	2411.31	31.9	227.72	372.98	283.35	68.34	57.68	123.56	127.02
34 Gross Savings	0	0	0	0	0	0	0	0	0	0	0	0	0
35 Imports	328.39	0.00	250.00	0.00	7276.73	30.00	288.72	64.65	97.22	34.86	26.67	79.97	148.45
36 Indirect Taxes	0	0	14.01	140.31	430.05	0	222.24	1149.64	357.00	98.17	31.53	106.21	224.91
37 Import Duties	0	0	0	0	0	0	0	0	0	0	0	0	0
38 Subsidies	52.91	0	0	78.34	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39 Direct Taxes	0	0	0	0	0	0	0	0	0	0	0	0	0
40 Total	91660.2	12849.29	7119.14	2435.5	130871.78	1145.97	5693.1	3903.5	3912.5	1248.1	809.76	2049.1	4073.3

cont. 3: Social accounting matrix for Nigeria, 1991

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
0.00	0.33	89.39	0.00	0.00	752.09	0.00	0.00	0.00	0.00	0.00	203.08	0.00	0.00	0.00	0.00	0.00
0.00	2.96	0.00	0.00	0.00	116.80	0.00	0.00	0.00	0.00	0.00	70.95	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	2.43	0.00	0.00	0.00	0.00	0.00	78.54	0.00	0.00	0.00	0.00	0.00
0.00	209.79	3.86	0.04	15.22	71.98	0.00	117.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1550.25	0.00	0.00	0.00	0.00	69.71	855.36	16.42	2415.49	2.27	973.05	0.00	53.71	0.00	0.00	0.00	0.00
0.00	0.00	399.52	0.00	0.00	138.73	0.00	544.45	27.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	50.04	0.00	0.00	0.49	0.09	0.00	41.14	19.69	2.97	0.00	3.73	0.00
0.00	0.00	0.00	0.00	0.00	150.79	0.00	0.00	0.30	0.00	0.00	24.92	9.65	3.09	0.00	0.00	0.00
0.00	0.00	0.00	3.42	0.00	116.38	0.00	0.00	0.59	0.86	144.68	0.00	4.73	3.50	0.00	2.17	0.00
0.00	26.86	3.11	0.00	202.50	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2.93	7.27	67.95	135.00	83.58	0.00	44.82	2.46	0.00	108.31	0.00	4.73	0.00	0.00	0.00	0.00
0.00	20.64	85.84	61.05	216.00	47.19	0.01	5.62	15.52	8.91	132.81	4.12	646.89	12.41	0.00	13.48	0.00
29.85	0.12	40.97	61.48	671.73	46.48	0.22	59.45	0.30	0.09	180.26	0.00	0.00	8.66	0.00	8.83	0.00
1.53	25.34	350.13	42.43	202.50	109.92	1.42	4.06	268.09	0.44	0.00	0.00	12.97	0.00	0.00	0.00	0.00
0.00	143.96	27.23	4.15	0.00	0.00	0.00	0.00	195.49	0.00	139.16	0.00	0.00	2.65	0.00	4.42	0.00
0.00	4.88	769.79	351.75	324.00	92.35	0.00	92.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	114.90	0.00	22.72	0.00	23.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	16.03	3.34	0.00	30.37	9.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56.92	26.44	220.53	18.40	11.20	5.80	15.44	0.06	13.75	7.82	641.49	18.66	82.84	7.98	0.00	11.82	0.00
0.00	0.00	0.00	0.00	0.00	0.00	39.83	0.00	44.39	1.17	0.00	0.00	0.00	0.00	275.57	0.00	0.00
333.29	105.95	561.77	99.29	568.97	42.14	56.57	169.09	180.96	35.83	5321.29	18.94	394.89	35.89	0.00	33.69	0.00
3.69	4.74	18.45	4.43	18.39	1.03	3.52	8.62	16.01	4.47	118.09	9.81	94.11	14.85	0.00	21.89	0.00
116.80	146.12	117.65	34.03	781.90	120.54	33.60	539.94	824.29	3.19	778.50	159.28	314.72	36.82	0.00	20.01	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.63	13.24	0.00	0.00	2.43	0.00	0.00	0.00	0.00
13.81	32.45	206.64	18.21	71.19	9.38	35.51	38.81	141.80	9.21	0.00	5.92	230.94	41.03	0.00	49.41	0.00
1.18	3.54	5.90	2.53	11.81	1.52	70.78	11.29	84.07	66.53	10.31	17.89	80.67	19.97	0.00	16.18	0.00
4.03	4.80	15.34	5.01	6.51	5.23	7.29	27.17	9.46	6.14	952.89	11.24	227.06	19.80	0.00	23.76	0.00
0.00	0.00	0.00	0.00	0.00	92.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
258.57	762.5	389.01	1037.4	2111.5	2304.3	901.39	4886.1	4825.55	371.5	37897.66	69.58	9356.54	437.8	4751.3	1041.5	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
121.90	86.69	364.36	118.40	118.11	146.60	382.22	14.21	1654.83	77.67	2078.78	23.73	3623.27	30.23	0.00	30.61	0.00
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29.27	393.28	725.73	99.12	429.94	54.53	265.87	2809.49	371.04	22.29	6050.00	0.00	172.29	0.00	0.00	0.00	0.00
245.74	81.80	115.43	130.61	57.12	0.00	0.00	9.54	59.61	0.00	0.00	9.57	0.00	0.00	0.00	0.00	0.00
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.00	0.00	0.00	0.00	0.00	0.00	14.77	0.00	195.19	162.13	0.00	0.00	0.00	0.00	0.00	7.33	0.00
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2766.8	2086.1	4534	2278	5953.6	4685.44	2664.08	9421.78	10975.60	469.63	55527.28	1267.34	15332.14	677.65	5026.86	1274.21	12901.76

cont. 3: Social accounting matrix for Nigeria, 1991

Income	Income	Income	Investment	Exports	Imports	Taxes	Taxes	Taxes	Total
72206.37	93.26	0	0.00	4184.27	-1049.11	0	0	0	91660.20
11874.37	16.15	0	0.00	177.36	-15.71	0	0	0	12849.29
7038.17	0.00	0	0.00	0.00	0.00	0	0	0	7119.14
1333.96	1.39	0	0.00	86.44	0.00	0	0	0	2435.50
12320.04	210.03	0	401.02	113174.35	-3519.31	0	0	0	130871.78
30.69	0.00	0	0.00	1.56	-4.32	0	0	0	1145.97
3675.66	71.41	0	583.84	564.92	-329.04	0	0	0	5693.05
2983.28	56.92	0	465.35	450.27	-262.26	0	0	0	3903.49
1176.92	191.68	0	1932.40	71.89	-113.01	0	0	0	3912.45
204.32	71.83	0	724.12	26.94	-42.35	0	0	0	1248.06
1253.73	21.42	0	-899.10	31.45	-67.23	0	0	0	809.76
257.82	120.69	0	248.18	1.09	-42.46	0	0	0	2049.09
1809.04	108.19	0	472.64	7.89	-73.22	0	0	0	4073.33
933.49	42.11	0	183.96	3.07	-28.50	0	0	0	2766.84
1001.22	112.08	0	505.77	4.31	-170.21	0	0	0	2086.13
-0.00	4162.35	0	3936.70	64.08	-5425.30	0	0	0	4533.96
740.88	18.10	0	117.54	20.16	-180.22	0	0	0	2277.99
6164.69	156.39	0	1015.65	174.20	-1557.29	0	0	0	5953.63
3763.54	21.26	0	18.89	2.92	0.00	0	0	0	4685.44
469.85	486.22	0	0.00	0.00	0.00	0	0	0	2664.08
-0.00	672.58	0	8320.02	0.00	-15.73	0	0	0	9421.78
316.02	185.77	0	0.00	68.01	-87.41	0	0	0	10975.60
33.32	7.62	0	0.00	0.00	0.00	0	0	0	469.63
48252.72	270.95	0	0.00	0.00	0.00	0	0	0	55527.28
1178.37	6.50	0	0.00	0.00	0.00	0	0	0	1267.34
13907.32	18.17	0	0.00	48.86	-144.42	0	0	0	15332.14
46.31	10.17	0	0.00	6.68	-43.63	0	0	0	677.65
3458.84	130.27	0	0.00	0.00	0.00	0	0	0	5026.86
1131.46	0.00	0	0.00	0.00	0.00	0	0	0	1274.21
37.90	12901.76	0	0.00	355.37	-726.27	0	0	0	12901.76
0	12859.77	0	0	0	0	0	0	0	303060.76
0	0	0	0	0	0	13412.53	2972.8	11302	27687.35
0	41.99	0	0	0	0	0	0	0	15638.51
93825.41	-5898.36	15680.5	0	0.00	0	0	0	0	103607.55
0	0	0	85580.584	0.00	13897.01	0	0	0	119526.08
0	0	0	0	0	0	0	0	0	2972.82
0	0	0	0	0	13412.53	0	0	0	13412.53
0	0	0	0	0	0	0	0	0	0.00
0	510.67	0	0	0	0	0	0	0	0.00
11302	0	0	0	0	0	0	0	0	11302
303060.7	27687.35	15680.5	103607.55	119526.08	13412.53	13412.53	2972.8	11302	11302

rate, i.e., 5%. Columns 2 and 3 of the table show that whereas there will be a generalized and almost uniform decline in sectoral private consumption expenditure of over 12%, this is not the case for the sectoral total consumption expenditure. For example, total private consumption expenditure will decline in only 19 sectors and the increases in total private consumption expenditure on goods originating from footwear and leather products, paper and paper products, iron and steel, transport, communication and real estate business services sectors will be quite substantial. It is significant to note, however, that these increases are insufficient to restore the initial level of total consumption, let alone surpass it. On the whole, total consumption expenditure will still decline by 6.74%. The indication, therefore, is that the re-injection of total VAT revenue into the economy will be insufficient to restore the initial level of total consumption expenditure. Moreover, if the initial pattern of government consumption expenditure is retained, total final consumption expenditure on goods and services originating from sectors that are critical to consumer welfare will suffer major setbacks. Prominent among such sectors are agriculture, livestock, fishing, food, drinks and beverages, and drugs and chemicals. Since the structure of government expenditure can really be a policy tool, this finding suggests that the VAT revenue should be allocated to sectors whose outputs are critical to the welfare and nutritional status of the people.

With respect to the impact on output and, hence, employment, column 4 of Table 4 shows that the level of output will fall in 17 out of the 29 sectors and will rise in the remaining 12 sectors. It should be noted that while total consumption expenditure on goods originating from other mining and refineries sectors will decline, their gross outputs will increase, reflecting the large proportion of the total output of these sectors that is delivered to intermediate inputs.

On the whole, total gross output will fall by about 3% implying that despite the re-injection of VAT revenues, total output and, hence, employment will still decline compared with the initial condition. It is pertinent to draw attention to the indication that output of agriculture, livestock, fishing, wood and wood products, other (small-scale) manufacturing, distributive trade, hotel and restaurants, and community and personal services sectors will be more threatened under this scenario than the other sectors. Since these relatively labour intensive sectors harbour the relatively poor and less skilled workers, it will be instructive to reallocate the VAT induced increases in government consumption expenditure in favour of these sectors. It turns out that doing so will also help to improve the welfare and nutritional status of the people.

In terms of the effects on key macroeconomic aggregates, Table 5 is quite revealing. As expected, there will be a 5% increase in the general price index. Given the decline in the total consumption expenditure and gross output discussed earlier, it should be expected that real wage and profit incomes will fall. However, it should be observed that real profit income will fall more than real wage income. Correspondingly, the share of wages in total factor income will increase slightly from 12.99% to 13.06%. Thus, if VATable organizations were to treat the VAT as expected, there would be some improvement in the functional income distribution if the VAT revenue were to be re-injected into the economy.

Table 4: Percentage changes in prices, private and total consumption expenditure, and gross output under non-cascading VAT treatment and active fiscal policy

Activity sectors	Price	Priv cons	Total cons	Gross output
Agriculture	5.00	-12.39	-12.18	-11.22
Livestock	5.00	-12.39	-12.17	-11.65
Fishing	5.00	-12.39	-12.39	-12.36
Forestry	5.00	-12.37	-12.21	-6.12
Crude petroleum	5.00	-12.39	-9.72	-0.60
Other mining	5.00	-12.90	-12.90	59.69
Food	5.00	-12.40	-9.37	-8.43
Drink bev & tobacco	5.00	-12.37	-9.38	-7.84
Textiles	5.00	-12.40	9.86	3.04
Footwear & leather	5.00	-12.25	28.99	5.61
Wood	5.00	-12.44	-9.80	-18.27
Paper	5.00	-12.40	38.26	8.78
Drugs & chem	5.00	-12.38	-3.39	-1.72
Refineries	5.00	-12.33	-5.44	17.93
Rubber & plastics	5.00	-12.39	3.59	4.51
Iron & steel	5.00	-	146.71	160.74
Fabricated metal	5.00	-12.42	-8.56	-9.53
Vehicle assembly	5.00	-12.39	-8.46	-8.99
Other manuf.	5.00	-12.38	-11.16	-10.42
Utilities	5.00	-12.34	68.51	34.95
Bldg & constructn	5.00	-	146.66	10.51
Transport	5.00	-12.34	46.61	5.73
Communications	5.00	-12.12	17.07	2.34
Distributive trade	5.00	-12.39	-11.50	-10.13
Hotel & restrnts	5.00	-12.39	-11.48	-10.66
Fin. & insurance	5.00	-12.39	-12.18	-9.22
Real estate & bus.serv	5.00	-10.87	17.86	5.01
Housing (dwelling)	5.00	-12.40	-6.63	-6.60
Comty soc. & pers serv.	5.00	-12.38	-12.38	-10.68

Source: Model simulation results.

However, this attribute of VAT under an active fiscal policy regime is an empirical question because it depends critically on the sectoral distribution of any additional government consumption expenditure. Nevertheless, this tendency to redistribute income in favour of wage earners can be deliberately secured if the VAT revenue is properly targeted at the labour intensive and welfare enhancing sectors. It turns out that deploying VAT revenue according to the original structure of government expenditure will result in 4.73% decline in GDP.

On the whole, total private income, direct taxes and private disposable income will each fall by 4.81% as can be seen from Table 5. However, private savings must rise by 14.46% in order to finance the higher nominal value of fixed real investment. This is the familiar forced savings phenomenon implicit in the Kaldorian closure adopted for this

model. As a result, private real consumption expenditure had to fall by as much as 12.4%. It is significant to note that there will be no major changes in foreign savings because the 5% increase in sectoral prices will not elicit a large increase in imports of finished goods. Moreover, the foreign savings implications of the increase in imported finished goods will be decimated by the reduction in imported inputs because of the fall in gross output.

Although direct tax will fall by 4.81%, total government revenue will increase by about 23% because of the VAT revenue. Since the entire VAT revenue is re-injected into the system, however, total government consumption expenditure will increase phenomenally as shown in Table 5, leaving government savings to decline by 4.08%.

The upshot of all this is that the 5% VAT, properly treated by the VATable organizations, will cause prices to increase by exactly 5% as expected.

Table 5: Percentage changes in real macroeconomic aggregates under non-cascading VAT treatment and active fiscal policy

Aggregate	Change %
General price index	5.00
Total gross output	-3.04
Priv. cons. exp.	-12.39
Total cons exp.	-6.74
Exports	0.00
Total imports	-28.93
FSAV	-11.60
Wage income	-4.53
Operating surplus	-5.10
Total factor income	-5.03
Gross dom. product	-4.73
Total private income	-4.81
Direct taxes	-4.81
Disposable income	-4.81
Private savings	14.46
Govt revenue	22.99
Govt cons exp	146.69
Total govt exp	137.20
Govt savings	-4.08

Source: Model simulation results.

If the VAT revenue is re-injected into the system via indiscriminate increases in sectoral government consumption expenditure, the likelihood is that the welfare of the people may not be restored to its initial level. Employment in certain labour intensive sectors may suffer, overall output and employment may fall, and real GDP will also fall. Nevertheless, there are indications that functional income distribution may improve somewhat.

Impact of non-cascading treatment of VAT under passive fiscal policy

This scenario presupposes that VATable organizations conform with the official expectations by not treating VAT as costs. Impacts of the VAT when this is combined with a passive fiscal policy are shown in tables 6 and 7. From table 6, it can be seen that the price effects are exactly the same as before. Column 2 of the Table shows that there will be a generalized and virtually uniform decline in private consumption expenditure hovering around 8% in each sector. Compared with the situation under the active fiscal policy, there is a temptation to conclude that the impact of the VAT under this scenario is superior, especially since total private consumption expenditure will fall by 7.83% compared with the 12.4% decline under the preceding scenario. However, since real government consumption expenditure will remain unchanged under this scenario because the VAT revenue is sterilized, total consumption expenditure will fall by about the same percentage as the fall in private consumption expenditure. Consequently, the fall in total consumption expenditure will be about 7.55%, which is slightly higher than the 6.7% fall under the preceding scenario. Correspondingly, there will be a generalized decline in all sectoral gross output ranging from 0.29% in the building and construction sector to 16.3% in the wood and wood products sector. On the whole, total gross output will fall by almost 5%, compared with the 3% fall under the preceding scenario. Obviously, while the impact of the VAT on private consumption expenditure under this scenario is slightly less severe compared with the preceding scenario, the overall effects on total consumption, output and, hence, employment are more severe.

In terms of the effects on macroeconomic aggregates, Table 7 shows that while the general price index will increase by 5% and the sterilization of VAT revenue will cause total output to fall by almost 5%. Total wage income will fall by about 6.7% and total real profit income will fall by about 4.4%. Further analysis of the simulation results shows that the share of wage income in total factor income will fall slightly from its initial level of 12.99% to 12.72%. The indication is that even when the VATable organizations treat VAT properly, if the VAT revenue is sterilized, there is a tendency for functional income distribution to worsen. In view of the greater decline in sectoral and total gross output, real GDP will also fall by about 4.8%.

Private income, direct tax and disposable income will fall by about 4.8% each. However, private savings will increase by just 3% because the sterilized VAT revenue will enable government to contribute directly to total savings, thus reducing the amount of private savings necessary to secure savings-investment balance. This explains the less deleterious effects of VAT on sectoral private consumption expenditure under this scenario. As indicated earlier, since the VAT revenue is sterilized, almost all of the increase in government revenue will be passed on to government savings. This explains the 27.9% increase in government savings, which reduced the severity of the forced savings phenomenon under this scenario.

Table 6: Percentage changes in prices, private and total consumption expenditure, and gross output under non-cascading VAT treatment and passive fiscal policy

Activity sectors	Price	Priv. cons	Total cons	Gross output
Agriculture	0.05	-7.82	-7.82	-7.43
Livestock	0.05	-7.82	-7.82	-7.63
Fishing	0.05	-7.83	-7.83	-7.82
Forestry	0.05	-7.87	-7.87	-7.31
Crude petroleum	0.05	-7.70	-7.70	-1.11
Other mining	0.05	-9.68	-9.68	-2.01
Food	0.05	-7.69	-7.69	-6.57
Drink bev & tobacco	0.05	-7.66	-7.66	-6.40
Textiles	0.05	-6.72	-6.72	-3.17
Footwear & leather	0.05	-5.80	-5.80	-2.80
Wood	0.05	-7.69	-7.69	-16.30
Paper	0.05	-5.28	-5.28	-5.86
Drugs & chem	0.05	-7.41	-7.41	-6.41
Refineries	0.05	-7.49	-7.49	-5.93
Rubber & plastics	0.05	-7.01	-7.01	-5.42
Iron & steel	0.05	0.00	0.00	-1.68
Fabricated metal	0.05	-7.64	-7.64	-7.46
Vehicle assembly	0.05	-7.64	-7.64	-8.11
Other manuf.	0.05	-7.75	-7.75	-7.64
Utilities	0.05	-3.87	-3.87	-5.18
Bldg & constructn	0.05	0.00	0.00	-0.29
Transport	0.05	-4.98	-4.98	-6.11
Communications	0.05	-4.88	-4.88	-6.60
Distributive trade	0.05	-7.79	-7.79	-7.59
Hotel & restrnts	0.05	-7.76	-7.76	-7.50
Fin. & insurance	0.05	-7.82	-7.82	-7.66
Real estate & bus.serv	0.05	-5.36	-5.36	-6.05
Housing (dwelling)	0.05	-7.55	-7.55	-7.44
Comty soc. & pers serv.	0.05	-7.78	-7.78	-7.69

Source: Model simulation results.

Table 7: Percentage changes in real macroeconomic aggregates under non cascading VAT treatment and passive fiscal policy

Aggregate	Change (%)
General price index	5.00
Gross output	-4.97
Priv. cons exp.	-7.83
Total cons. exp.	-7.56
Exports	0.00
Total imports	-2.26
Foreign savings	-0.91
Wage income	-6.68
Operating surplus	-4.39
Total factor income	-4.69
Gross dom. product	-4.76
Total private income	-4.76
Direct taxes	-4.76
Disposable income	-4.76
Private savings	3.06
Govt. revenue	22.47
Govt cons exp.	-0.01
Total govt exp.	-0.43
Govt savings	27.90

Source: Model simulation results.

The indications are that sterilizing the VAT revenue can be more injurious to the economy than the situation where the VAT revenue is mobilized and used to increase government consumption expenditure. Clearly, the beneficial effects of reduced forced savings could not compensate for the effects of generalized decline in private consumption expenditure on output and income. What is more, this scenario has the tendency to redistribute income in favour of the profit earners. Thus, the welfare and equity implications of a properly treated VAT under a passive government fiscal policy are likely to be less desirable than the probable outcomes under an active fiscal policy. If the VAT revenue is properly targeted at those sectors that have greater impacts on welfare of the people, the situation could even be more salutary.

Impact of cascading treatment of VAT under active fiscal policy

The supposition under this scenario is that the VATable organizations treat VAT as costs, in which case, the VAT has inherent cascading effects on prices. Moreover, it is assumed

that the VAT revenue is re-injected into the economy via increase in government consumption expenditure. As said earlier, this scenario closely approximates the Nigerian situation. Foremost, our survey results show that the VATable organizations actually treat the VAT as costs. Furthermore, the 65% of the VAT revenue now being shared among the state and local governments will certainly be re-injected into the economy via increases in government expenditures. The 35% retained by the federal government is expected to be used to cover the cost of administering this tax handle, in which case this proportion will also be re-injected into the system. Thus, the impacts of the VAT under this scenario should be of particular interest to Nigerian policy makers.

In this connection, tables 8 and 9 display the impacts of the 5% VAT on the usual sectoral and macroeconomic aggregates under this scenario. Beginning with Table 8, column 1, it can be seen that treating the VAT as costs has horrendous cascading effects on all sectoral prices. Price increases in all other sectors except the finance and insurance will rise by more than 10%. Moreover, notice that unlike the preceding scenarios, the price increases are not uniform, explaining the variations in the decreases in sectoral private consumption expenditures. From column 2 of Table 8, it can be seen that there are relatively large decreases in private consumption expenditures, with the lowest being 11% and the highest 19.98%.

Column 3 of the table, however, shows that the increase in government consumption expenditures not only reduced the severity of the fall in total consumption expenditure but it actually swamped it in nine sectors. Thus, while total private consumption expenditure fell precipitously by 16.04%, total consumption expenditure fell by 10.64%. Clearly, this is still very high compared with the first scenario. The indication is that private and total consumption expenditure will fall more precipitously if VAT is treated as cost, the re-injection of VAT revenue notwithstanding. It may be impossible to redress the situation effectively even if the re-injection is targeted in the best way possible.

Correspondingly, there will be large decreases in sectoral gross outputs although this will not be universal. As shown in Table 8, column 4, gross output will, in fact, increase in crude petroleum, textiles, footwear and leather products, paper and paper products, iron and steel, utilities, building and construction, transport, communications and real estate and business services sectors. It should be recalled that these are the same sectors that are shown to have increases in gross output under the first scenario. Thus, the same explanations apply. On the whole, total gross output will still fall by 6.25%, which is more than double the decline shown under the first scenario.

Turning to the effects on key macroeconomic aggregates, Table 9 shows that the general price index will increase by 12%, reflecting the high degree of cascading. The consequent decreases in private and total consumption expenditures as well as output have been discussed.

Wage and profit incomes will fall rather precipitously by 8.54% and 12.27%, respectively. Further analysis of the results show, however, that the share of wage income in total factor income will increase from its initial level of 12.99% to 13.47%. Nevertheless, the rather sharp decreases in both components of total factor income are likely to mask this desirable development. This is especially so because it is doubtful if

the situation can be redressed significantly through targeting of the VAT revenue. Overall, real GDP will decline by 11.34%.

Under this scenario, private income, direct taxes and private disposable income will each fall by 11.44%. A significant development is the relatively small change in private savings despite the fact that government savings declined as expected. The explanation for this phenomenon lies in the increased foreign savings warranted by the 6.85% increase in imports. Recall that imports of finished goods are expected to respond positively to the ratio between domestic and import prices. Given the high domestic prices, the consequent increase in imported final goods swamped the decline in imported intermediate inputs. Foreign savings increased as a result, thus reducing the pressure for increased private savings. Nevertheless, real private savings rate still increased by about 4% to reach 31% under this scenario.

As expected, the decreases in direct and indirect taxes were swamped by the increase in VAT revenue so that government revenue increased by 16.08%. However, since all of the VAT revenue is mobilized, government savings actually fell by about 12% as shown in Table 9.

The indication is that the situation whereby VAT is treated as cost by the VATable organizations poses a great threat to the sustainability of VAT in a developing economy like Nigeria's despite its high revenue potential. If a 5% VAT under this scenario can cause a 12% increase in the general price index, little wonder why the 17% VAT had to be withdrawn in Ghana. More worrisome is the indication that the declines in consumption, output and income are so large that it is doubtful if these effects can be significantly addressed through appropriate targeting of the VAT revenue. There is, therefore, a strong motivation to consider carefully the strategies likely to effectively secure the appropriate treatment of the VAT by the VATable organizations. In addition, while the current situation whereby VAT revenues are re-injected into the system is basically appropriate, care must be taken to target the VAT revenue effectively in ways that will redress the welfare and equity problems the VAT tends to raise, especially since VAT will lead to increases in prices under the best possible treatment by the VATable organizations. Some recommendations for this are contained in the next section.

Table 8: Percentage changes in prices, private and total consumption expenditure, and gross output under cascading VAT treatment

Activity sectors	Price	Priv cons	Total cons	Gross output
Agriculture	13.00	-16.41	-16.21	-15.23
Livestock	17.00	-19.90	-19.69	-18.95
Fishing	11.00	-15.36	-15.36	-15.37
Forestry	15.00	-18.37	-18.20	-12.61
Crude petroleum	11.00	-15.06	-12.39	-1.28
Other mining	17.00	-19.35	-19.35	49.65
Food	15.00	-18.09	-15.11	-14.12
Drink bev & tobacco	11.00	-14.98	-12.01	-10.48
Textiles	12.00	-15.72	6.43	1.23
Footwear & leather	13.00	-16.67	24.28	2.32
Wood	14.00	-17.70	-15.06	-40.74
Paper	13.00	-16.67	33.51	4.15
Drugs & chem	15.00	-18.46	-9.65	-8.08
Refineries	15.00	-17.79	-10.97	9.94
Rubber & plastics	13.00	-16.78	-0.90	-0.05
Iron & steel	15.00		138.03	135.40
Fabricated metal	14.00	-17.41	-13.70	-14.66
Vehicle assembly	17.00	-19.35	-15.50	-19.35
Other manuf.	13.00	-16.98	-15.77	-14.98
Utilities	11.00	-15.11	65.79	29.95
Bldg & constructn	12.00		142.50	9.96
Transport	12.00	-15.82	42.83	0.86
Communications	10.00	-15.15	14.63	-1.70
Distributive trade	11.00	-14.98	-14.09	-13.06
Hotel & restrnts	14.00	-17.74	-16.88	-15.86
Fin. & insurance	9.00	-13.49	-13.28	-10.89
Real estate & bus.serv	11.00	-15.22	14.29	0.74
Housing (dwelling)	18.00	-19.98	-14.35	-13.01
Comty soc. & pers serv.	13.00	-16.53	-16.53	-15.07

Source: Model simulation results.

Table 9: Percentage changes in real macroeconomic aggregates under cascading VAT treatment and active fiscal policy

Aggregate	Change (%)
General price index	12.00
Total gross output	-6.25
Priv. cons. exp.	-16.04
Total cons exp.	-10.36
Exports	-1.06
Total imports	6.85
FSAV	4.24
Wage income	-8.54
Operating surplus	-12.27
Total factor income	-11.79
Gross dom. product	-11.34
Total private income	-11.44
Direct taxes	-11.44
Disposable income	-11.44
Private savings	0.25
Govt revenue	16.08
Govt cons exp	143.85
Total govt exp	134.22
Govt savings	-11.92

Source: Model simulation results.

VI. Summary and recommendations

Summary

In this study, the impact of VAT on key sectoral and macroeconomic aggregates has been analysed using a CGE model considered suitable for Nigeria. A survey of VATable organizations in Nigeria was conducted to gain insights into the way they treat VAT. This was necessary because the impacts of VAT on the economy depend critically on whether or not VAT has cascading effects on prices.

Analysis of the survey results show that the majority of the VATable organizations treat VAT in a price cascading manner by regarding it as cost, contrary to expectations. Evidence from the way VAT revenue is being shared among the three levels of government in Nigeria suggests that this revenue is being re-injected into the economy. These findings provided useful guides to the specification of the model, especially the price formation and government expenditure aspects as well as the choice of closure rule. The findings also provided guides to the articulation of the three scenarios simulated; these scenarios were:

- Impact of non-cascading treatment of VAT under active fiscal policy
- Impact of non-cascading treatment of VAT under passive fiscal policy
- Impact of cascading treatment of VAT under active fiscal policy

Analysis of the simulation results can be summarized as follows. Foremost, if VATable organizations treat the VAT in the expected non-cascading manner, all sectoral prices and the general price level will increase by 5%, the amount of the tax. However, the impacts on other key economic variables such as consumption expenditure, output (and, hence, employment), factor income and its functional distribution, and private, government and foreign savings depend critically on the prevailing fiscal policy as far as the deployment of VAT revenue is concerned.

Analysis of the simulation results when VAT is treated in a non-cascading manner and the VAT revenue is re-injected into the economy via increases in sectoral government consumption expenditure showed that sectoral private consumption expenditure will fall uniformly by about 12%. However, the injection of VAT revenue will abate the deleterious effects of the VAT on sectoral total consumption in all sectors, while swamping it in 10 sectors. Overall, while total private consumption expenditures will fall by over 12%, total consumption expenditure inclusive of government will fall by only 6.7%. Gross

output and GDP will fall by about 3% and 5% respectively, but the share of wages in total factor income will increase slightly. Private savings will increase by over 14% in order to secure the savings-investment balance because government and foreign savings will fall by about 4% and 11.6% respectively.

The model simulating the supposition that the VATable organizations treat the VAT in a non-cascading manner with the VAT revenue sterilized, shows that although the price effects will be the same, the effects on the other sectoral and macroeconomic aggregates will be more deleterious than in the first scenario. The indication is that if VATable organizations treat VAT as expected, the impacts on consumption, output and income will be less deleterious if the VAT revenue is re-injected into the economy via increases in government consumption expenditure provided that there is considerable excess capacity in most sectors of the economy.

Finally, when VAT is treated in a cascading manner by the VATable organizations and the VAT revenue is re-injected into the economy, the price, consumption expenditure, output and income effects will be most deleterious. What is more, the VAT revenue under this scenario will be lower than under the first scenario by more than 3%. Therefore, while it may be possible to ameliorate, if not eliminate, the adverse effects of VAT under a non-cascading treatment by properly targeting the re-injected VAT revenue, doing so will certainly be more difficult if VAT is being treated in a cascading manner. It turns out that this scenario, where VAT will have the most deleterious effects on price, consumption, output, employment and income, best approximates the Nigerian situation. It will, therefore, be necessary to consider strategies for securing appropriate treatment of VAT by the VATable organizations while taking steps to ensure that the VAT revenue is targeted at sectors most likely to ameliorate the inadvertent adverse effects of VAT on consumer welfare, production, employment and income.

Recommendations

First, there is need to take steps to secure appropriate treatment of VAT by the VATable organizations in Nigeria. Towards this end, it will be necessary to embark on massive enlightenment campaigns targeted at these organizations and their customers to sensitize them to the desirable treatment of the 5% VAT and its price implications under the credit system. The VATable organizations could be reached through various private sector organizations and associations. Prominent among these are:

- The National Association of Chambers of Commerce, Industries, Manufacturing, Mining and Agriculture (NACCIMMA)
- The Manufacturers Association of Nigeria (MAN)
- National Employers Consultative Associations (NECA)
- National Association of Road Transport Owners Association (NARTO)
- National Association of Small-Scale Industrialists (NASSI)
- Market associations in the major markets all over the country

More substantively, the VATable organizations should be encouraged to publicize the recommended retail prices of their products or services, clearly indicating the pre-VAT and VAT-inclusive retail prices. In addition, the FIRS should design incentives for appropriate treatment of VAT by the VATable organizations. For this purpose, external auditors could be required to verify and report on the treatment of VAT by the VATable organizations. Setting up the proposed Federal Consumer Protection Council and State Consumer Protection Committees to monitor costs and prices and ensure that VATable organizations are treating the VAT appropriately should be explored.

Analysis of the simulation exercises also suggests that even if the VATable organizations treat VAT in a non-cascading manner, the impacts of the inadvertent price increases on consumption expenditures, production, employment and income are quite deleterious. While the adverse effects on these variables are generally less severe if the VAT revenue is re-injected, these adverse effects can be further ameliorated if the VAT revenue is properly targeted. In the Nigerian case, it is recommended that the federal, state and local governments should target their VAT induced increases in government expenditures at activities that will reduce operational constraints to the agricultural sector (including livestock and fishing) as well as the manufacturing sector, especially the food, drinks and beverages, footwear, textiles, drug and chemical subsectors. These are the sectors likely to suffer major setbacks if the VAT revenue is indiscriminately injected into the system. It turns out that targeting the VAT induced increases in government expenditure this way will ameliorate the effects of the unavoidable price increases on consumer welfare, nutritional status of the people, production, employment and income. It must be emphasized that failure to address these inadvertent adverse effects of VAT will decimate its overall benefits to the economy and, indeed, threaten its sustainability, especially if an increase in the VAT rate is contemplated. Presumably, it is the relatively low VAT rate and the fact that VAT is just one of the several cost escalating policies that have been obscuring these adverse effects so far. Clearly, if government had accepted the proposal to set the VAT rate at a higher level, these problems could have been more visible and the associated resistance might have warranted its withdrawal as was the case in Ghana.

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Appendix A

NIGERIAN INSTITUTE OF SOCIAL AND ECONOMIC RESEARCH
P.M.B. 5, U. I. POST OFFICE, IBADAN

IMPACT ASSESSMENT OF VALUE ADDED TAX

The Federal Government of Nigeria introduced a 5% value added tax (VAT) with effect from January, 1994. Since then, the tax handle has been seen as a veritable source of revenue for the Government. Nevertheless, there have been complaints by the various organizations regarding its impact suggesting that the policy may be having certain adverse effects. It is the intention of this study to assess the benefits and costs of the policy in Nigeria with a view to advising Government on the appropriate complementary policies necessary to minimize the cost and maximize the benefits.

Your organization has been identified as one of the major VATable organizations in the country and you are hereby requested to please assist in completing the attached questionnaire.

Thanks for your cooperation.

Prof. Olu Ajakaiye

Code:
(for office use only)

1.1 Name of Establishment:

1.2 Address of Physical Location:

1. Street and Number:

2. Town: 3. Local Govt. Area

4. State: 5. Telephone:

1.3 Mailing Address: (If different from item 2)

1. Street and Number:

2. Town: 3. Local Govt. Area
 4. State: 5. P.O. Box/P.M.B

1.4 Type of Economic Organization:

Is this establishment one of many business owned or controlled by one company?
 (Tick one box)

Yes No

If 'Yes' continue below, otherwise go to item 1.7

1.5 Name of Headquarters/Owning Company:

1.6 Address of Physical Location:

1. Street and Number:

2. Town: 3. Local Govt. Area

4. State: 5. Telephone:

1.7 Type of Legal Organizations (Tick one box)

1. Sole Proprietorship 5. Co-operative

2. Partnership 6. Statutory Corporation

(Parastatal)

3. Public Limited Co. 7. Govt. Owned Company

4. Private Limited Co. 8. Others (specify)

ARE YOU A REGISTERED VATABLE ORGANIZATION? (Tick one)

Yes No

IF YES, PLEASE INDICATE YEAR OF REGISTRATION (Tick one)

1994 1995

DO YOU PAY THE 5% VAT ON YOUR INPUTS? (Tick one)

Yes No

IF YOU PAY VAT ON YOUR INPUTS, HOW HAS THE 5% VAT AFFECTED YOUR PRODUCTION COST? (tick one)

- 1. caused cost of production to increase by 5%
- 2. caused cost of production to increase by more than 5%
- 3. caused cost of production to increase by less than 5%
- 4. caused cost of production to remain the same
- 5. caused cost of production to decrease by about 5%
- 6. caused cost of production to decrease by more than 5%
- 7. caused cost of production to decrease by less than 5%

IF YOU PAY VAT ON YOUR INPUTS, HAS THE 5% VAT CAUSED AN INCREASE IN YOUR WORKING CAPITAL REQUIREMENT? (Tick one)

Yes No

IF THE VAT HAS CAUSED YOUR COST TO INCREASE, PLEASE RANK THE FOLLOWING COMPONENTS OF THE 5% VAT ON YOUR INPUTS ACCORDING TO THEIR SIGNIFICANCE AS CONTRIBUTORS TO YOUR COST (Tick as appropriate)

COMPONENTS	VERY SIGNIFICANT	SIGNIFICANT	NOT SIGNIFICANT
VAT ON IMPORTED RAW MATERIALS			
VAT ON LOCAL RAW MATERIALS			
VAT ON UTILITIES			
VAT ON FINANCIAL SERVICES			
VAT ON OTHER SERVICES			

IF YOU PAY VAT ON YOUR INPUTS, HOW HAS THIS AFFECTED YOUR PRODUCTION LEVEL? (Tick one)

- 1. caused production level to increase
- 2. caused production level to decrease
- 3. has had no effect on production level

IF YOU PAY VAT ON YOUR INPUTS, HOW HAS THE 5% VAT AFFECTED THE PRICES OF YOUR PRODUCTS? (Tick one)

1. caused the product prices to increase by 5%
2. caused the product prices to increase by more than 5%
3. caused the product prices to increase by less than 5%
4. caused the product prices to remain the same
5. caused the product prices to decrease by about 5%
6. caused the product prices to decrease by more than 5%
7. caused the product prices to decrease by less than 5%

DO YOU ALSO CHARGE VAT ON YOUR PRODUCTS? (Tick one)

Yes No

IF YOU CHARGE 5% VAT ON YOUR PRODUCTS, HOW HAS THIS AFFECTED YOUR PRODUCT PRICES?

1. caused the product prices to increase by another 5%
2. caused the product prices to increase by more than 5%
3. caused the product prices to increase by less than 5%
4. caused the product prices to remain the same
5. caused the product prices to decrease by about 5%
6. caused the product prices to decrease by more than 5%
7. caused the product prices to decrease by less than 5%

IF YOU CHARGE THE 5% VAT ON YOUR PRODUCTS HOW HAS THIS AFFECTED DEMAND FOR YOUR PRODUCTS (Tick one)

1. caused the demand to increase
2. caused the demand to decrease
3. has had no effect on demand

IF YOU PAY VAT ON YOUR INPUTS AND CHARGE VAT ON YOUR OUTPUT DO YOU NORMALLY DEDUCT THE VAT PAID ON YOUR INPUT FROM THE VAT CHARGED ON YOUR PRODUCTS AND FORWARD THE BALANCE TO VAT OFFICE? (Tick one)

Yes No

IF YES, HAVE YOU EVER HAD TO SUCCESSFULLY REQUEST FOR A REFUND FROM THE VAT OFFICE? (Tick one)

Yes No

IF YES, WAS THE REFUND WORTH THE EFFORT? (Tick one)

Yes No

IF NO, WHY NOT

- 1.
- 2.
- 3.
- 4.
- 5.

IF YOU PAY VAT ON YOUR INPUTS BUT YOU DO NOT CHARGE VAT ON YOUR PRODUCTS DO YOU REGULARLY REQUEST FOR A REFUND FROM THE VAT OFFICE? (Tick one)

Yes No

IF YES, HAVE YOU ALWAYS RECEIVED THE REFUND FROM THE VAT OFFICE? (Tick one)

Yes No

IF YES, WAS THE REFUND WORTH THE EFFORT? (Tick one)

Yes No

IF NO, WHY NOT?

- 1.
- 2.

3.

4.

5.

WHAT IS YOUR OPINION ABOUT THE IMPACT OF THE 5% VAT ON PRICES IN NIGERIA?
(Tick one)

- 1. IT HAS CAUSED PRICES TO INCREASE BY MORE THAN 5%
- 2. IT HAS CAUSED PRICES TO INCREASE BY JUST 5%
- 3. IT HAS CAUSED PRICES TO INCREASE BY LESS THAN 5%

WHAT IS YOUR OPINION ABOUT THE 5% VAT? (Tick one)

- 1. IT IS TOO HIGH
- 2. IT IS QUITE ADEQUATE
- 3. IT IS TOO LOW

Name of Responding Officer:

.....

Title of Responding Officer:

.....

AFRICAN ECONOMIC RESEARCH CONSORTIUM



P.O. BOX 62882
NAIROBI, KENYA

TELEPHONE (254-2) 228057
225234 215898 212359
332438 225087

TELEX 22480

FAX (254-2) 219308, 246708

E-MAIL:
aercpub@form-net.com

WEB SITE:
<http://www.aercafrica.org>

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