DATA MANAGEMENT IN MACROECONOMIC POLICY ANALYSIS

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I.   INTRODUCTION

Economic management is concerned with the design and implementation of appropriate policies to enhance the performance of the economy in some desired directions. The ultimate goals of economic management are increased economic growth/prosperity, equity and sustainability (Ojo, 1995). Economic management has two major aspects, namely, macroeconomic management and microeconomic (sectoral) management. The latter deals with policy actions relating to specific sectors such as agriculture, industry, energy, transport, social services, etc. The former deals with policy actions directed at economic aggregates such as inflation, employment, output etc.

Certainly, the manipulation of these macroeconomic parameters – output, savings, investment, employment, price level etc, with a view to moving the economy from less to more desirable state requires as a basic condition for success, sound policy analysis and economic planning practices. While macroeconomic policy makes for projections into the future of the economy on the basis of available facts, thorough analysis of the policy exposes the strengths and weaknesses inherent in the policy package by clearly showing the consequences of the policy on the economy, the character and extent of the policy performance as well as the number of possible policy options from that which in the best interest may be chosen. In both circumstances, there is the requirement for policy research, research skill and most importantly adequate, reliable, accurate and timely data. Adequate data allows for better decisions because they are informed decisions; makes decision making easier and ensure that set goals

are met (Whitlock *et al*, 1987) Thus, data provide the basis from which economic and other decisions are made in order to achieve desired objectives for growth and development.   Also, it is only in the presence of adequate, reliable, accurate and timely data on the various aspects of the economy and social activities that macroeconomic policy analysis can be detailed, meaningful and result achieving.

In other words, the role of adequate and reliable data in enhancing the quality of policy decision cannot be over-emphasised. It is widely recognised that data are major inputs into policy analysis. Apart from theoretical frame, policy analysis requires well-structured and reliable data that provide the true reflection and the working of the economy upon which the policy analysis is being undertaken. Since the economy on which policy analysis is carried out is complex, data requirements are most often enormous and complex. Unarguably, the quality of any data would have effects on empirical findings and consequently on policy decisions; hence the need for a good data management system. This paper explores in detail the importance of efficient data management in macroeconomic policy analysis.

The remaining part of the paper is organised as follows: Section II presents the conceptual framework for examining the importance of data management in policy analysis by providing meaning for data management and establish linkage between data, policy analysis and decision making and management. Data requirement for macroeconomic policy analysis is the subject matter of Section III. Section IV is concerned with data management in Nigeria. While Section V examines the problems of data management in Nigeria, Section VI presents the strategies for improving data management for effective policy analysis. Section VII concludes the paper.

II.   DATA MANAGEMENT, POLICY ANALYSIS, ECONOMIC DECISION MAKING AND MANAGEMENT

The phrase `data management' consists of two words that are subject to multiple definitions. To avoid ambiguity in conception, we make the contextual clarification. We agreed with Davidson

(1996:P.4) in defining data as any form of organised information that has been gathered about a topic or topics of interest. Further to this, Egbon (1994) sees data as any set of characters accepted as input to an information system that can be stored, processed and retrieved. Management, on the other hand, embraces the effective mobilization and utilization of resources through careful planning, organising, directing and controlling, with a view to achieving some desired results. From these two elements, `data management' connotes the totality of the process through which a system tries to effectively mobilize data towards achieving some desired result via meticulous planning, organising, directing and controlling. Thus, the hallmark of any data management system is the effective gathering, storing, processing, analysing, presenting and disseminating of accurate, precise, timely, accessible and reliable data set.

Practically, there are two basic approaches to data management. There is the manual and computer based approaches. The manual approach involves a method whereby all activities: thinking, recording, operating, data handling are carried out by human hands and brains, without the aid of machines. The computer-based approach involves heavy reliance on data processing equipment in the performance of these activities. However, the two approaches are not mutually exclusive of each other (Egbon, 1994). Accordingly, a data management system can either be said to be highly manual or highly computer-based. The highly computer-based approaches are very relevant for complex processing, analysing and presentation aspects. This is because of the ease and speed with which the computer does the job (Awopegba, 2001). However, computer-based data management involves not just buying some units of computer hardware, it also involves the commitment of management and staff of organisations to establish and maintain the information system and to obtain the desired results. Specifically, as a requirement to operating an effective computer-based data management approach, organisations must invest in hardware (computer units): software (programmes), maintenance (including stock of spare parts and accessories) and know-how and skills (consisting of both technical and professional analytical skills).

Whatever the procedure for data management, its effectiveness and efficiency is defined by its flexibility, reliability, accessibility, and accuracy. However, given the dynamics in world and national economies and the large mass of data that has to be generated and processed for the use of National Economic Management (NEM), it is very evident that the computer-based approach has an edge over the manual approach, particularly for a National Statistical System (NSS).

The statistical system of any country or nation according to Fellegi, referenced in Bawa (1993) is the sum total of the functions carried out by all the agencies that are engaged in data generation and management. A typical national statistical system is expected to generate and manage data towards achieving national goals through meticulous and successfull economic planning process (Egbon, 1994). To this end, an ideal national statistical system requires that statistical agencies must (i) interact and cooperate with and among themselves, (ii) try to produce reliable, up to date and relevant information describing the profile of the society; (iii) formalize the system for the determination of users' data requirements, and (iv) develop an elaborate feedback system to the suppliers of data.
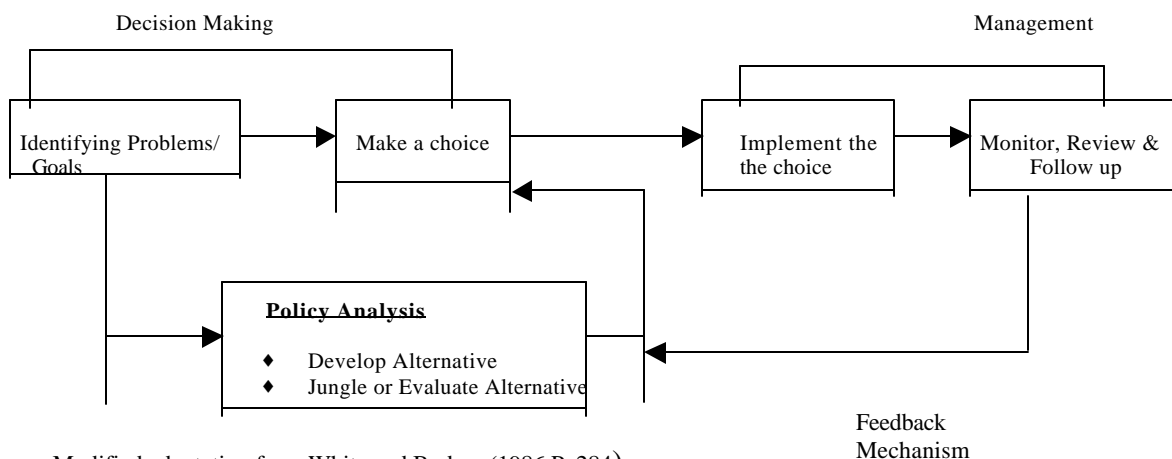
Conceptually, policy analysis has been defined in various ways. Nevertheless, the fundamental essence of it remains basic or the same. According to Dror (1968: 129-143), policy analysis is a course setting involving decision of the modest ramifications and highest time perspective in the life of an organisation. As for George Kent quoted in Sani (1992), it is that kind of systematic disciplined, analytical, scholarly, creative study whose primary motivation is to provide well-supported recommendations for action dealing with concrete socio- political problems. From a macro perspective, Sani (1992) defines policy analysis as the process of applied and theoretical research, which strives to propose a number of possible options from which the political leader or chief executive may select the best possible alternative, based on the final analysis, on what is in the best public interest. In other words, economic policy analysis is the breaking down of economic phenomena into separate and proper segments and the examination of the same for the purpose of identifying and understanding the working of various policies in relation to the economic set-up of any particular economy. Thus macroeconomic policy analysis involves identifying presenting, prescribing, informing and formulating analytical tools for considering in its proper perspective and in all its ramifications macroeconomic problems to the extent that policy formulation and implementation can tackle or at best give indication of ways or alternatives of tackling this same economic problems.

From these definitions, it is very clear that the primary importance of policy analysis is to facilitate economic and social decision-making and management. Ordinarily, decision involves the selection of alternative course of action from available alternatives in order to achieve a given objective (Nwachukwu, 1998). The typical stages/elements in decision making include (i) formulation of goals; (ii) acquiring knowledge of the problem; (iii) analysis of the situation to determine alternatives; (iv) selection of action plan; (v) implementation and (vi) evaluation. A critical look at these elements especially the third one – in which analysis of the situation is done with a view to determining

alternatives, is a clear indication that policy analysis and decision making are intertwined. As a matter of fact, policy analysis constitutes a guide to decision making. This assertion is well supported by Presthus (1975) in defining policy as a definite course or method of action selected by a government, institution, group or individual from among alternatives and in the light of given conditions to guide and usually determine present and future decisions. With the guide provided for economic decision making by policy analysis, management becomes easy. After all, management is all about taking appropriate and effective decisions in the use of resources – human and material in achieving set objectives or goals. Figure 1, depicts the general linkages among policy analysis, decision-making and management.

Figure 1: The **Linkages among Policy Analysis, Decision Making, and Management**

Decision Making   Management

| Identifying Problems/ Goals | → | Make a choice | → | Implement the the choice | → | Monitor, Review & Follow up |

Policy Analysis
- Develop Alternative
- Jungle or Evaluate Alternative

Feedback Mechanism

Source: Modified adaptation from White and Budnar (1986 P. 284)

From the figure, the process of decision making which involves identifying problems/goals and making a choice is interjected by policy analysis. With policy analysis, alternative line of actions to achieve a set goal or solve identified problems are uncovered, and evaluated to arrive at the best alternative and option for choice. The choice made is then implemented, monitored, reviewed or followed-up as tasks of management. Very essential to the figure (policy decision framework) is the feedback mechanism. This ensures that current policy has both theoretical and historical context. The integrity of these context is what guarantee policy/decision sustainability.

III   DATA REQUIREMENT FOR MACROECONOMIC POLICY ANALYSIS

Since policy analysis serves as means of fine-tunning the National Economic Management (NEM) process and system, data are required on the key areas of the economy. Some of the key areas of the economy on which data are required include (i) Demographic and Social Statistics; (ii) Economic Statistics; (iii) Data on Public Finance; (iv) Data on Trade and Balance of Payments, (v) Data on Science and Technology and (vi) Data for Development Planning. A correct population statistics with the age distribution, school enrolment location of the populace among others would facilitate and help rationalize the choice and location of many social facilities and programmes/projects. More importantly, to make economic planning achieve the goal of development, the number, distribution and characteristics of the people for whom planning is meant must be known in order to ensure optimal allocation of resources. Thus, data such as record of birth, death as well as migration statistics would make it possible to determine the nature and characteristics of the population of the country.

Also, an effective educational planning will require amongst others, data on types, number and location of educational institutions, member and types of teaching staff, stock of existing books and other teaching materials, facilities and equipment. In the case of health policy analysis and planning, data required would include the number, types and location of existing health facilities, data on incidence and prevalence of diseases, available drugs and their costs, number of medical and paramedical personnel, available training and research facilities, population serviced for health facility etc. Furthermore, the level of provision of infrastructure such as roads, railways, water supply, electricity, storage facilities, etc would depend, among others on the existing stock and quality of these facilities.

Economic statistics are required to keep a finger on the economic pulse of the nation. The significance of the National Income Accounting System (NIAS) in this respect cannot be overemphasized. The NIAS incorporate various measures, which make up the system and permit for a

measure of the level of production in the economy at some points in time and explain the immediate

causes of that level of performance. And by so doing, the information supplied provides a basis for the

formulation, adjustment in and application of public policies in improving the performance of the

economy.

Undoubtedly, an analysis of the performance of government and effecting changes in a desired

direction requires data on public finance. These data relate to the sources and magnitude of revenue

and expenditures, choice and combination, and appropriateness of policies for specific objectives

and/or problems in given situation, and the overall welfare implications of government financial actions.

Given that there is no country that is an Island, or an autarky economy but rather there is trade and

other forms of external interactions. Thus, for the relative financial position of one country to be

analysed vis-a-vis other countries, data on trade and balance of payment would be required. This

would facilitate the recommendation on the nature and direction of adjustment that will be required and

appropriate.

Collectively, data on foregoing various activities or aspects of the economy must be

appropriately reconciled and effectively utilized in a systematic form to target developments in the

economy in the desired direction. This has the advantage of facilitating the process of development

planning, as well as provide analyses and pronouncement on the desirability or otherwise in the direction

and success achieved.

Summarily, policy analysis of an economy requires a good database. This is turn requires a

sound data management practice. The next section takes up this important issue on data management in

Nigeria.

IV INSTITUTIONAL FRAMEWORK FOR DATA MANAGEMENT IN NIGERIA

The data management system in Nigeria can be seen as the sum total of the functions and

activities carried out by all the agencies that are engaged in data generation and management comprising of four major institutions namely - the Federal Office of Statistics (FOS), National Population Commission (NPC), Central Bank of Nigeria (CBN) and the National Data Bank (NDB). Other agencies which also collect and disseminate information in Nigeria are the Nigerian National Petroleum Corporation (NNPC), Federal and State Ministries of Finance, Department of Customs and Excise, Nigerian Ports Plc. etc.

The central objective of the system is to make available to government and the general public, a body of coherent, relevant, timely and readily accessible data on economic and social conditions in the country as inputs for planning and management of the economy. Ideally, the requirements are that the agencies making up the data management system must:

(a)   interact and cooperate with and among themselves;

(b)   try to produce reliable up to date and relevant data describing the profile of the society;

(c)   formalise the system for the determination of users' data requirements; and

(d)   develop an elaborate feedback system to the suppliers of data (Egbon 1994).

What is glaring in Nigeria is the fact that the rapid and increasing expansion in socio-economic activities have resulted in government's involvement in the collection and management of data for efficient planning and economic management. It is therefore pertinent to briefly look at the structure, functions and strategies of the four major agencies in order to have a clear picture of the data management system in Nigeria.

Federal Office of Statistics (FOS)

FOS has the responsibility of producing national statistics with other collecting agencies,

developing an integrated scheme of social and economic statistics and publishing not only what it produces but also what others produce. This is by virtue of the Statistical Act of 1958 and its amendments (Samanja, 1993). In carrying out its data gathering function, FOS conducts annual censuses or sample surveys on different aspects of the economy. It also gathers and utilizes administratively collected statistics.

Until recently, FOS was a department within the Federal Ministry of National Planning. With the establishment of NPC under Decree No. 12 of 1992, FOS ceased to be a department of the ministry. Instead, it has become a parastatal of NPC, and has a director-general as its chief executive. Consequently, FOS has been structured into seven departments and three units. Out of the seven departments, the ones of immediate interest to us are those that constitute the *operational departments*. The operational departments are the corporate planning and technical coordination, the statistical surveys and censuses, field operation and methodology, computer management and information services, and the social and economic analysis. Information seem to abound for the first three departments, i.e. the corporate planning and technical coordination, the statistical surveys and census, and the field operations and methodology.

Corporate Planning and Technical Coordination

This department consists of the planning, research and statistics units of FOS. It is charged with the responsibility of survey-planning coordination in FOS. It coordinates the activities of federal and states statistical units and the development of human resources. In addition to the afore-mentioned responsibilities, the department is also expected to strengthen the Nigerian statistical system and coordinate all surveys conducted outside FOS. This department is charged with the responsibility of liaising with international statistical bodies.

Statistical Surveys and Census

Over the years of statistical survey work, a system has evolved in FOS with the following

elements:

i.   survey programming;

ii.   survey organisation (new field organisation and evaluation department);

iii.   subject matter specialist unit (subject matter units);

iv.   research and statistical standard units (field and evaluation);

v.   data collection arm/national sample survey units (scrutiny and evaluation)

vi.   data processing;

vii.   information services unit (data processing management and dissemination department).

The first attempt at a comprehensive survey at FOS covered the period, 1970-75. This survey was accompanied by preliminary costing and brief description of the objective, scope and design of each survey. The next attempt was for the 1981-85 period, which was more integrated and flexible to the extent of being able to accommodate new surveys at short notice.

Field Operation and Methodology

With the plans drawn out (by the earlier departments), the next logical phase is that of the field operation and methodology department which is based at the headquarters of FOS but liaises with state control offices directing and controlling field operations in the states. The state offices assign staff to the survey centres and also define the job and supervision of field staff.

FOS surveys are essentially based on interviews using questionnaires with the field staff assisting when necessary in the completion of the questionnaires. Data collection is done through primary and secondary sources. Consequently, various surveys are conducted fairly regularly (for primary data) while data from other agencies are also solicited from time to time.

FOS has, over the years, produced some publications for public consumption. Such publications include the

i.   Annual Abstract of Statistics;

ii.   Digest of Statistics;

iii.   Nigerian Trade Summary;

iv.   Economic Indicators;

v.   Economic and Social Statistics Bulletin, etc.

These publications address different aspects of the economy. For instance, the *Annual Abstract of Statistics* contains series of socio-economic data on the Nigerian economy while the *Nigerian Trade Summary* (formerly a monthly publication but currently an annual publication) contains detailed monthly and cumulative monthly statistics of Nigeria's external trade by commodity categories and direction of trade.

Despite the fact that FOS was set up by the 1957 statistical ordinance and specifically charged with the coordination of statistical activities and agencies throughout Nigeria, it has not regarded coordination as part of its duty. It has, therefore, failed to give appropriate directives to the other statistical agencies through the relevant channels (Offor, 1983). That `Statistics' is on the concurrent legislative list of the Nigerian constitution does not preclude FOS from providing the leadership that official statistic needs, given its size in terms of human and material resources and its central position on the national scene.

The issue of coordination becomes more compelling given Nigeria's 38 governments (federal government, 36 states and federal capital territory, Abuja). Added to these various governments, let us imagine the burden on data suppliers if surveys asking for, essentially, the same set of information were launched simultaneously by the various statistical agencies! Equally important to note is the concomitant enormous burden placed on users as conflicting statistics on the same subject will eventually be issued.

The quality of statistics released will be seriously compromised due to differences in concept, definition and classification, standards that would have been adopted.

National Population Commission

Section 140 of the 1979 Nigerian constitution provides for the establishment of the National Population Commission. Consistent with part (1) of the third schedule to the constitution (section 14), the body consists of a chairman and one person from each state of the federation. The duties of the commission are, among others, to

a. undertake periodic enumeration of population through sample surveys, censuses and otherwise;

b. establish and maintain a machinery for continuous and universal registration of births and death throughout the federation;

c. advise the President on population problems;

d. publish and provide information and data on population for the purpose of facilitating development planning; and

e. appoint and train or arrange for the appointment and training of enumerators or other staff of the commission.

Section 145(2) of the 1979 constitution states, among others, that the commission is not subject to the direction or control of any other authority or persons in carrying out its functions. Besides the compilation of population data, it can also publish and provide information and data on population to facilitate planning. Specifically, the commission is charged with the collection of numerical information on the characteristics of economic and social activities of human population through sample surveys, census and registration. The national census bureau is currently engaged in demographical sample surveys and thus serves as the main agency servicing the commission. Over time, the population census has become a frame for the development of other data collecting procedures. In fact, the census collecting machinery can also be used to collect listings of areas, dwellings or establishments needed for

subsequent collection of data on other social/economic aspects. Census is, therefore, a major

source of data generation machinery. A brief review of the experience of the commission in the conduct

of the 1991 Nigerian census would elucidate some of the issues raised above.

The activities of the population commission in the conduct of the 1991 census can be

categorized as: pre-census activities, census activities, and post-census activities (Sulaiman, 1993).

Pre-Census Activities

The activities that come under this category include the enumeration area demarcation (EAD)

exercise, questionnaire development, pre-test/trial census, public enlightenment and recruitment/training

of census personnel. The country was divided into 210,000 enumeration areas (EA) using

topographical and cadestral maps. Each enumeration area was estimated to have between 250 and

600 people. The demarcation exercise has also provided a convenient national framework for

sampling. Under the *questionnaire development* category, the questionnaire was designed to capture

personal data with demograhical, social and economic bearing. This, therefore, implies the necessity to

determine the scope of the information that need to be generated. Hence, conferences and

consultations were arranged by the commission involving various experts and users of the data to be

generated. These include ministries of Health, Finance and Economic Planning, the United Nations,

several universities within Nigeria and outside Nigeria, etc.

The questionnaire was pre-tested thrice. These pre-tests were subsequently followed with the

necessary adjustment of the questionnaire. The pre-tests also served as tests for the logistic capability

of the commission. Further lesson(s) from the pre-tests led to the setting up of logistics committees at

the headquarters of the commission and at the state and local government levels. The committee was

charged with the responsibilities of mapping out the logistical need (of the census) and tapping all

available assistance from all relevant bodies. The need for the successful conduct of the census led to

the creation of public enlightenment campaign machineries at the federal, state and local government

levels. About 800,000 census personnel were needed for the enumeration proper, hence the need

for the recruitment and training of required personnel.

Census Activities

Under this category, personnel on the field were expected to identify their assignment areas

through house listing and numbering exercises. The results of actual enumeration were compiled and

crosschecked by the senior supervisors before submission to the controller at the local government

headquarters. All local government results were sent to the data processing centre through the various

state headquarters.

Post-Census Activity

Two weeks after the census proper, about 5 per cent of all the enumeration areas were

surveyed with the sole aim of evaluating the data collected during the census. Releasing the provisional

census results was part of the post-census activity.

What is glaring, so far, is that census could serve as a framework and baseline for development

planning. In fact, census data are imperative needs of government for planning the various sectors of the

economy including health, education, employment, industry, housing, agriculture, public utilities, etc. It

is, therefore, important that all efforts be aimed at reducing the possibility of `unscientific manipulation'

of census data and unnecessary over-lapping between the commission and other existing data collecting

agencies.

It must also be acknowledged that though its main function is to compile population data, there

is a leeway in one of its functions to go beyond this:

> To publish and provide information and data on population to facilitate
>
> economic and development planning purposes (Adam, 1983)

By extension, therefore, the commission could collect numerical information on the characteristics of the economic and social activities, and social mobility, of human populations not only through registration but also through sample surveys and censuses. There is, therefore, the need for uniformity at various stages of data collection, i.e. in regular reporting and registration with regards to censuses and surveys. A common approach to the preparation of schedules, forms and questionnaires and uniformity of concepts, methodology and products are important. Where surveys are involved, agreements on definitions and survey objectives should be reached among the cooperating agencies.

Central Bank of Nigeria (CBN)

The Central Bank of Nigeria (CBN) is responsible for generating financial, monetary, fiscal and trade data. As the banker and financial adviser to the Federal Government, massive array of data on daily basis are collected and produced. The bank also undertakes economic centred researches aimed at policy formulation in order to give necessary advise to the government The user status of CBN makes it possible for it to collect and compile relevant, reliable, accurate, timely and comprehensive data. The CBN transforms and releases data to the public through its major publications, namely:

- The Economic and Financial Review
- Statistical Bulletin;
- Annual Report and Statements of Accounts; and
- Nigeria's Major Economic, Financial and Banking Indicators.

National Data Bank (NDB)

The need for a central storehouse for data that are published and unpublished led to the

establishment of the National Data Bank in 1986. To make the National Data bank very functional,

sectoral Data Banks in Education, Industry, Agriculture, Finance, and Science and Technology were

also established to service the National Data Bank. The National Data Bank (NDB) has the mandate

to carry out the following responsibilities:

(a)   standardize statistical survey methods, classification and nomenclature;

(b)   establish guidelines for the development of sectoral database;

(c)   create appropriate organisational framework representing data procedures and users to

         determine the priorities in data production;

(e)   conduct a critical survey of existing sources and methods of data production and develop both

         short and long-term remedial action plans; and

(e)   provide data processing facilities needed for the production of selected macro and socio-

         economic indicators

         The regulatory body which consists of three agencies - the National Council on Statistics,

(NCS); the National Advisory Committee on Statistics, (NACS); and the Consultative Committee on

Statistics (CCS), serves as a governing council for ensuring that the entire national statistical institutions

play their proper roles.

         Complimentary to the foregoings are the sectoral research institutes departments of planning,

research and statistics (DPRs) nationwide, and universities and other institutions of higher learning.

Some sectoral research institutes like the Nigeria Institute for Social and Economic Research (NISER),

Cocoa Research Institute of Nigeria (CRIN) and the Nigerian Institute for Forestry Research, all based

in Ibadan, are mandated to collate data and undertake

research on scientific, socio-economic activities and developments in specific sectors of the Nigerian

economy. The DPRs at the federal, state and local government levels, ministries and parastatals collect

and collate data for their various activities. Useful data also emanate from the regular research activities

in all fields of studies or discipline from the universities and other institutions of higher learning.

Despite the above institutional framework put in place, a lot of problems still abound which militate against effective data management and by implication also affect policy analysis and economic management. These problems are examined in the next section.

V. PROBLEMS OF DATA MANAGEMENT IN NIGERIA

A major problem of data management in Nigeria is the lack of coordination among the various statistical agencies. This lack of coordination is very evident in the published data, which often conflict and thereby make them unreliable. There is also the duplication of efforts by statistical bodies. Virtually the same set of data is being generated by each of the statistical agencies, instead of each focusing on its primary area of mandate.

Another problem is that of lateness in data generation and release. It has been a normal practice in Nigeria for data on economic/social activities of a particular year never to be available until at least some two years later. Certainly, this absence of timeliness in data generation not only make for imprecision data when the data are eventually release but also make timely analysis of the economic performance and policy difficult.

The lateness in data generation and release by the statistical agencies is to a large extent tied to the insufficiency of funds. Obviously, the process of data gathering and management is an expensive one, yet these agencies do not have sufficient funding for their activities. This insufficient funding results in scanty surveys, imprecise estimates and more importantly a very lengthy time period in data processing, because the manual approach to data management is still the common thing despite the mounting awareness on the capability and speed of the computer.

There is also the problem of shortage of manpower. The statistical agencies, especially the FOS, suffer inadequate personnel in terms of type, quality and quantity. While efforts have been made over time to improve capacity to generate and manage data through the establishment of the FOS training school, the united nations sponsored courses, higher educational institutions etc, yet, there is still the problem of technical manpower. Thus, the ability of the FOS to engage in timely and detailed coverage in respect of data generation and processing is greatly constrained.

There is the problem of standard classifications used by each of these agencies. FOS follows SNA concepts and classifications, while CBN follows the IMF manual on balance of payments, which is not identical with that of SNA. This has caused a lot of statistical discrepancies between CBN and FOS data (Adamu, 1995). This kind of problem is now not only between FOS and CBN, but among many other agencies in charge of agriculture, trade, industry, labour, etc. which feel that they should be independent in collecting data they control. But this is not easy because of the inadequate resources available to these agencies in developing countries.

Lastly, there is also the problem of lack of confidence on the part of respondents that the information being supplied when interview and surveys are being carried out will yield any positive policy action or reaction. Thus, some information are deliberately falsified by volunteering individuals and firms

VI.   TOWARDS EFFECTIVE POLICY ANALYSIS AND DATA MANAGEMENT

So far we have identified some of the problem areas in data management especially in Nigeria to include the inability of the various data generating agencies to produce complete, timely and accurate data. These problems as noted are partly due to resource constraints, lack of incorporation of the structural features of the economy, lack of coordination among the agencies, inadequate personnel, official opposition, improper record keeping, conflict of interest among data generating agencies, lack of

data appreciation and respondents apathy among others. Consequently, there are gaps in the available data, often with very long time lags and inadequate frequencies. These ultimately adversely affect the quality (depth and scope) of policy analysis that are carried out as well as the policy options emerging therefrom.

In real terms, availability of and quality of data, affect policy analysis efforts in several ways. First, considerations about the types of available data may influence techniques of analysis. For example, the choice in the use of applied general equilibrium (AGE) models is usually the result of lack of reliable and high quality time series data (Ogunkola, 1997). Also, lack of appropriate data may be responsible for the existence of very few short run models especially of Sub-Saharan African (SSA) countries, as these models require quarterly, monthly and even weekly data which are in most cases not available in these countries.

Moreover, an unintimidated policy analyst who is not cautious of the state of macroeconomic data may end up with a model without numerical solution. As noted in Ogunkola (1997), even veteran policy model builders still make extensive use of proxies, which in some cases are inappropriate.

Thus the main issue bothering on data management in macroeconomic policy analysis include poor presentation of available data, breaks in series, lags in data, lack of disaggregated data of various levels and the problems of incorporating the informal sector.

The above problems call for concerted effort at improving the quality of data and hence data management for effective policy analysis. Given the fact that there are various sources of data, which of course usually result in incompatible data, it becomes compelling that policy analysts must carry out a critical appraisal of the data before use. Problems of gaps and jumps must be properly investigated, noted and addressed.

To address missing gaps, policy analyst need to be clear about the definitions used by different sources even where the series are seemingly comparable. Since there are hardly data tapes,

transformation and notes on them are not only necessary for the interpretation of the results but also for the replication of results where necessary. In other words, data producers should provide fuller notes on published data.

To ensure a better understanding of the data used for policy analysis, there is need to establish interaction and cordiality between policy analysis and data generating agencies. A channel of communication should be opened through the establishment of producers/users fora. Such fora will not only strengthen users confidence on the producers but will also create opportunity to exchange idea on how better result can be achieved.

As noted earlier, inadequate resources is one major constraining factor especially inadequate funding. Irregular and unstable funding hinder sustainable production of some data and this in effect adversely impact on the quality of macroeconomic data produced for policy analysis. There is a minimum amount required to sustain some surveys at regular interval, where funding is irregular or inadequate, responses are likely to be poor leading to gaps. This factor has been attributed to the less than satisfactory performance of FOS. A way out of this problem is to ensure that there is adequate funding. It is more than a fact that the task of a timely data management is beyond the scope of manual operations. Thus, the government should make available to statistical agencies, especially the FOS, a special grant to procure relevant modern equipment particularly computer which would guarantee an automation of the data management process in the country. It is a matter of fact, the level of technological development manifests in the processing and presentation of data in Nigeria.

Processing methods have not been fully computerised, hence transmitting errors are not minimised. Indeed the current processing method contributes to production lags and typographical errors. More importantly it affects the storage and retrieval systems.

Other efforts that need to be vigorously pursued in Nigeria as in all other Sub-Saharan African countries include:

The need for proper coordination of statistical agencies. Therefore, the FOS should effectively perform the role of coordination by utilizing effectively the National Advisory Council on Statistics (NACs). This will reduce the incidence of publishing unreliable and non-comparable figures. Statistical agencies should play complimentary roles rather than engaging in wasteful duplication of efforts in data generation and management which result in conflicting outcomes.

The need to strengthen the National and State data at banks for proper storage and management of all forms of data the National and State levels. Government should encourage public enlightenment campaign and legislation to encourage the citizens to cooperate with all statistical agencies in their job of data generation and management.

There must be adequate improvements in the capabilities for data generation and management for all external and internal operations of the statistical agencies. The external capabilities will create and maintain effective contact with users in order to keep abreast of their evolving needs. There should also be close contact and cooperation with the suppliers of the basic information used as raw materials to gain their good will and trust. Producers of data must cooperate and collaborate to ensure complete coverage in data collection on topics of interest to minimise duplication. In addition, statistical agencies need to establish proper understanding and relationship with relevant government agencies concerned with government policies and resource allocation for statistical activities. To achieve this, there must be experts in various subject matter whose responsibility it should be to (a) bridge the communication gap among users, suppliers and other producers and government policies; and (b) facilitate the detection and evaluation of demands for data in terms of their feasibility and burden to the respondents.

The role, status and influence of the heads of the statistical agencies are also an important factor to be consolidated. The external capability of statistical agencies is highly influenced by the internal capability. It means that there must be a system of continuity in management and operations, as it ensures that the required range, variety and level of human skills, infrastructure and facilities for

collecting, processing, storing, retrieving and disseminating data are put in place. A range of skilled personnel is necessary because official statistics is an inter-disciplinary activity which requires inputs from a variety of knowledge. They should also be able to competently handle analytical work because of the benefits of its feedback.

With the return to democratic governance in the country and the rising confidence in the government of the day, there is the need for a public enlightment programme on the vital importance of accurate data for policy formulation, analysis and management. The programme should also aim at making the populace develop favourable disposition to the supply of relevant and accurate information in response to interviews and surveys, by the statistical agencies. Above all these, there is the requirement of good governance and performance on the part of the government to instill confidence in the populace and engender cooperation.

VII.   SUMMARY AND CONCLUSION

This paper has examined the importance of data management in macroeconomic policy analysis. Essentially data provide the base from which macroeconomic policy decisions are made in order to achieve desired objectives for growth and development. Also, it is only in the presence of adequate, reliable, accurate and timely data in the various aspects of the economy and social activities that policy analysis and the intention to positively influence policy direction can be detailed, meaningful and result achieving. To this end, good data management systems and practices are required. Basically, there are two approaches to data management. The first is the highly manual approach and the second is the highly computer-based approach. Irrespective of the approach to data management in a country, the necessary attributes are flexibility, reliability, accessibility and accuracy. However, the highly computer-based approach has an edge over the highly manual approach on grounds of both efficiency and

effectiveness. Hence, the need for a nation's statistical system to be computerized.

Regrettably, one of the major problems of data management in Nigeria is that the operation in most of the agencies that make up the national statistical system is yet to be computerised. In addition, there is the problem of inadequate funding, shortage of manpower and the attitude of the Nigerian public with respect to supplying reliable information to statistical agencies in their surveys. Because, of the significant implications that this indirectly holds for macroeconomic policy analysis as well as economic management, we offer some recommendation for consideration.

The conclusion in this paper is that a good data management system/practice is a sine-qua-non to macroeconomic policy analysis and economic management. And that until the problems of data management in Nigeria are squarely addressed, macroeconomic policy analysis and economic management will continue to be undermined.

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