CHAPTER FIVE

THEORETICAL AND ANALYTICAL FRAMEWORK

5.1 Introduction

The literature provides a rich catalogue of models that deal with economic development policy and planning in developing countries. Of the models, the most widely used models are the econometric methodology and computable partial and general equilibrium analysis. However, building a model for a developing economic environment poses serious problems due to the dearth of relevant data. According to Nwaobi (2004:29), models are used to unravel complex real-world situations of interest.

The ongoing discussion of the ways to attain the MDGs has pinpointed a lack of financial resources as a major problem. In consequence, a series of global conferences have been convened to discuss partnering as a way to finance development for the third world countries. According to the UN (2002e:23), the links between financing development, measuring development progress, helping guide development priorities and encouraging active involvement of all relevant stakeholders, including the civil society organisations and the private sector, are widely recognised. In Nigeria, such discussions have clearly shown that the country needs to look inward (domestically) and outward (internationally) to find resources that can be employed to overcome the financial limitations and to generate the type of growth required to achieve the high level of development in Nigeria needed to reach the MDGs.

The UN has urged developed countries to make concrete efforts towards supporting and financing growth targets by giving 0.7 percent of their GNP as ODA to developing countries, and 0.15 to 0.20 percent of their GNP to least developed economies. The UN (2002f:8) further urges domestic banking systems and institutional arrangements to address the financial development of developing countries. Domestic insurance companies, debt and equity market institutions are encouraged to mobilise and channel savings to foster productive investment.

However, while financial resources are of paramount importance, the right kind of policies and sectors are also necessary to accelerate growth at the rapid rate required to achieve a high level of development to attain the MDGs in Nigeria. Therefore, the core objective of this chapter is to identify and analyse empirically the sectors most suited to accelerating growth, which could

serve as vehicles for reaching the development goals. These sectors must also have the capability to improve household income, by strengthening their labour power, return on labour and most importantly, the accessibility by the poor to assets or social capital.

This chapter argues that the sectors that have the greatest potential to improve the labour power, labour income and access to social capital and to address poverty are the agriculture, manufacturing and the solid mineral mining. In his 2006 budget speech, President Obasanjo (2006:11) said the national budget must focus on diversifying the Nigerian economy and the priority growth sectors are agriculture, manufacturing and the solid mineral exploration. Similarly, the special assistant to the country's presidency, Armina Abrahim (2005:4), stressed that development of agriculture and environment, power and steel, womens affairs, water, health, education and urban development will help Nigeria to attain the MDGs.

Apparently, emphasis on these growth sectors offers leeway for poverty reduction in Nigeria, because the poor depend on their labour capability for their livelihood, whether as wage-labour or through self-employment. It is reasonable to link the labour capability of the poor to the availability of productive employment. This in turn depends largely on the income earned by the poor. Similarly, access to social capital and other physical and human assets could also determine the returns of the poor on their labour. In sum, measures to reduce poverty should be seen in the context of improving the return on the labour of the poor through increasing their income and their access to social, physical and human capital assets. It should also be mentioned that the interplay of market forces in terms of costs of inputs and output-product prices expressed in the form of terms of trade could play a significant role in poverty reduction.

Therefore, the activity of the growth sectors, namely agriculture, manufacturing and the solid mineral mining, could to an appreciable extent depend on the production potential and expansion of the economy. The extent to which the economy expands will also enhance the employment potential of the growth sectors. Dynamism in the economy will encourage the movement of labour capabilities from one sector to another. For example, the manufacturing sector could absorb skilled labour from the agriculture and mining sectors.
The cost of domestically produced goods, foreign imported capital goods, capital and imported consumer-produced finished goods can simply be captured in the form of terms of trade.

5.2 The concept of cointegration and error-correction (ECM) econometrics methodology.

During the last few years, considerable progress has been made in developing new econometric methodologies to make use of the two-step approaches especially the concepts of cointegration and error-correction mechanism (Bond and Harrison, 1992:315). As explained by Bond and Harrison (1992), the concepts of cointegration and error-correction mechanism (ECM) are introduced to avoid spurious regressions. The estimation of long-run models containing non-stationary variables may lead to serious problems and predominantly spurious results (Lauridsen, 1998:1). Thus, the concept of cointegration and ECM have evolved to suggest an alternative methodology to the time series analysis while taking account of many of the problems that can give rise to unstable series. The concept of cointegration and ECM were initially introduced independently.

The theory of cointegration was developed by Granger (1983) and Granger & Weiss (1983). It postulates that if two variables x and y are *I*(1), therefore any combination of the two variables will also be *I*(1). There may exist a singularity, for instance 'λ', such that y-λx results to *I*(O). In that instance, such singularity x and y are said to be cointegrated.

The ECM was introduced by Phillip (1954) and first used in economics by Sargan (1964), and since the work of Davidson et al. (1978), error-correction models have played an important role in dynamic economic modelling (Bond and Harrison, 1992:317). In the application of the cointegration and ECM model, the dynamics of both short-run (changes) and long-run (levels) adjustment processes are included. Bond and Harrison (1992:317) further explain that the model takes account of the dynamic adjustments to steady-state targets by including in the short-term dynamics a measure of how much out of equilibrium the variables were at the start of the period.

Engle & Granger (1987) proved that cointegrated series can be represented by an ECM model, and a two step estimation procedure for ECM models was developed. Practically, the first stage of the procedure is to perform a levels estimation which allows for the hypothesis of cointegration to be tested. A technical analysis of the methods is shown by Park & Phillip (1988,

1989). However, three tests have become standard in the literature: the Cointegration Regression Durbin-Watson test, the Dickey-Fuller (DF) test and the Augmented Dickey-Fuller (ADF) test

The DF and ADF procedures are based on the standard 't' test. DF is comparable to the standard 't' test of the hypothesis that the parameter α equals zero in the model:

$$\Delta e = \alpha e_{t-1} + v_t$$

The null hypothesis that α =0 is again comparable to the hypothesis that the regression is not cointegrating. Thus, if the regression is cointegrating then α will be negatively signed and significantly from zero.

The ADF is similar but the 't' statistic on α is calculated from the regression:

$$\Delta e_t = \alpha e_{t-1} + \Sigma_i = {}_1\gamma_i \Delta e_{t-i} + v_t$$

This test allows for more dynamics than the DF and the number of, q, of lags can be varied. Howver, if the ADF test proves inconclusive, the graphical representation of the data in levels and first differenced may be relied upon (Koekemoer, 1999).

Engle-Yoo (1991) estimation procedure provides an extension (third step) on the Engle-Granger estimation. The third step provides the dynamics through which the parameter estimates of the first stage (long-run) estimation and a set of standard errors allow for the calculation of new adjusted coefficients and standard 't' statistics. In essence, the third step procedure helps to recovery all long-run cointegration relationship present in the data with the short-run properties simultaneously to adjust for a set of new coefficients and the t-statistics. The two-step procedure introduced by the Engle-Granger (1987) and Engle-Yoo (1991) have come to represent a standardised estimation method (see Du Toit, 1999; and Koekemoer, 1999).

As emphasised in chapter one of this study, an econometric multivariate co-integration methodology as found in Engle and Yoo's (1991) three-step technique is a relevant tool for analysing and addressing a wide range of economic development issues in Nigeria. The main goal for adopting the Engle-Yoo econometric multivariate cointegration estimation model in this study is to simulate policy-oriented macroeconomic development scenarios through the

analysis of the relationships between domestic and foreign financial resources and the domestic production of Nigeria's growth sectors. Essentially, the emphasis is on the impact of increasing the productive output of the agricultural, manufacturing and mineral mining sectors using domestic financial and infrastructural and foreign financial resources. Also, improving and enhancing the productive capacity of the real sectors requires large investment in education and health. The financial sustainability of the agricultural, manufacturing and mining sectors is of vital importance. The development of the growth sectors can impact significantly on the standard of living of the vast majority of their people. Through employment creation, income generation, skills acquisition in science and technology training and capacity building can facilitate rapid growth and poverty reduction in Nigeria. Mistry (2002:13) stresses the importance of domestic resource mobilisation in financing development and the responsibility that developing country governments have in maximising the availability of such resources.

The government's expenditure and other agricultural development efforts supported by commercial banks' aggregate credits to farmers constitute the main domestic financing windows for agriculture, manufacturing and mineral mining in Nigeria. Mistry (2002) stresses the need for financial systems that intermediate domestic resources efficiently. The role of commercial banks in mobilising financial resources and intermediating savings or idle funds into capital investment for the productive sectors of Nigeria is compatible with Mistry's (2002) assertion. This is because the commercial banks have large networks of branches, and can intermediate domestic financial resources efficiently. Similarly, FDI into the growth sectors will offer a complementarily enhancement of the economy's output performance.

The central objective of adopting the Engle-Yoo econometric multivariate cointegration estimation model in this study is to simulate policy-oriented macroeconomic development scenarios by analysing the relationships between domestic and foreign financial resources and the domestic production of Nigeria's growth sectors. Essentially, the emphasis is on the impact of increasing the productive output of the agricultural, manufacturing and mineral mining sectors using domestic financial, infrastructural and foreign financial resources.

A review of the empirical works involving the analysis of multivariate econometric cointegration error correction methodology, especially in the context of the agricultural, manufacturing and

mining and quarrying sectors in Nigeria, show that not many studies have been done in this area, compared with many other developing countries. These rare studies that do address economic development issues mostly use traditional econometric analysis. These studies include the pioneering work of Liedholm (1966) on manufacturing industries, in which he estimates production functions of the Cobb-Douglass type for the period 1962-1963 for selected industries within the Eastern provinces of Nigeria. Liedholm derives cross-sectional data of individual firms against industrial aggregates. Liedholm believed that the study made some important contributions to the analysis of the structure of the Nigerian industry. It also highlights the usefulness of the estimated coefficients for planning purposes. The study suggests that increases in output can be expected from given increases in capital and labour inputs.

Oyelabi (1971:52) also estimates and tests factors substitution in Nigeria's manufacturing sector. He finds that the elasticity of substitution in Nigeria's manufacturing industries varies from industry to industry. Osakwe (1976) fits a Cobb-Douglas production function to time series observations of ten industries in the manufacturing sector of Nigeria. He finds that labour productivity exceeds that of capital by more than double. His coefficient of capital, however, is negatively signed and statistically insignificant.

In their study, Odama and Kazi (1982) estimate production functions exhibiting constant elasticity of substitution to the manufacturing industry in Nigeria, based on an industrial survey for the years 1962 to 1975. They find that labour and capital are both economic and politically significant. Their study shows that the level of substitution in the Nigerian industries is very low.

Ukpang and Anusionwu (1986:47) test for the contribution of expatriate labour in relation to Nigerian labour in the Nigerian manufacturing using a traditional econometric approach. Their result shows that Nigerian labour contributes more to aggregate production than does the expatriate labour. They also find a negative contribution of capital and Nigerian professionals to gross output in some industries in Nigeria.

Growth theory provides substantial guidance for specifying supply-side agricultural potential output, which is primarily determined by measurable input factors, as well as total factor productivity (TFP). This methodology is to a large extent consistent with the theory of

production function that underlies specification of the supply-side of agricultural potential output (see Agu, 1985:183; Doll & Orazem, 1978:12; Pauly, 2000:3). However, the unavailability of most cointegrating factor inputs for the specification of the production function results in the incorporation of variables such as commercial banks loans, agricultural credit guarantee scheme, imported machinery and equipment which lie outside the strict inputs of production function. However, most of the variables used in this methodology are not strictly inputs in the production function, they strongly influence the domestic output production and development in Nigeria.

5. 3 Structure of the model

Three behavioural equations defined in the form of a neoclassical supply-side model for the Nigerian economy are estimated individually. Of the three equations, one is specified for the agricultural sector and one for the manufacturing and the mining and quarrying sectors respectively. Growth theory provides substantial guidance for specifying supply side agricultural potential output, which will be primarily determined by measurable input factors, as well as total factor productivity (TFP). This model is to a large extent consistent with the theory of production function that underlies specification of the supply side of agricultural potential output (Doll & Orazem, 1978:12; Pauly, 2000:3). Pauly (2000:3) asserts that, in most developing economies, agricultural output is best modelled as supply-determined. The value-added in agriculture is presented as:

$$X^{\mathbf{AGR}}/\text{Arable Land} = A_0 \quad K^a \quad \text{Rainfall}^b \quad \text{Fertiliser}^c \quad \mathbf{e}^{\mathbf{TFG\text{-}AGR}}$$

Thus, potential output is determined by fully utilised inputs of measurable factors of production: capital (K), average annual rainfall and fertiliser, as well as by the total factor productivity of agriculture ($e^{TFG\text{-}AGR}$). Pauly (2000:3), however, explains that data limitations may well lead to the estimation and introduction of non-constant returns to scale through endogenous modelling of TFP. Most of the cointegrating factor inputs necessary for specifying the production function are not easily available, which means that variables such as commercial bank loans and advances, agricultural guarantee scheme, modern farming machinery and equipment have to be incorporated into the function, though strictly speaking, they fall outside the inputs of the production function. These variables play significant roles

that strongly influence the domestic output production and development in Nigeria and so are included for that purpose in this study.

5.4 Model for agriculture

Based on the general specifications for supply-side agricultural potential output for most developing economies, as given in Pauly (2000:3), a reasonably flexible representation is given in equation 1.

$$Agr = a_0 + \beta_1 lnAgcap + \beta_2 lnlabor + \beta_3 lnFert + \beta_4 lnRi + \beta_5 lnAcgs + Dum86sap + e_i \quad \ldots\ldots(1)$$

Note: a_0, β_1, β_2, β_3, β_4 and $\beta_5 > 0$

Where:

Agr = agricultural GDP

Agcap = public capital expenditure

Labor = estimated labour in agriculture

Fert = fertiliser used in the sector

Ri = interest rates

Acgs = agricultural credit guarantee scheme

Dum86sap = the policy impact of the structural adjustment programme launched in 1986

a_0, β_1, β_2, β_3, β_4 and β_5 = coefficients

ln=logarithm

e_i =error terms

This explains that Nigeria's potential agricultural output is determined by the following measurable input factors: labour force (Labor), public capital expenditure for agriculture (agcap), fertiliser utilised (Fert), interest rates to the sector (Ri), the banks' aggregate loans and advances (Acgs) and the policy impact of the SAP on the agricultural sector (dum86sap).

5. 5 Basic hypotheses, assumptions and expectations for each variable in the cointegration agricultural model

Agriculture plays a dominant role in the Nigerian economy, as it employs about 70 percent of the total workforce, and serves as a source of income to farmers, yields foreign exchange, provides food for the growing population (now at over 130 million) and produces raw materials for the industrial sector. Therefore, if agriculture is adequately financed with domestic and foreign resources, this growth sector could provide enough food and income for the vast majority of the country's population engaged in it. Poverty and extreme hunger will thus be reduced.

The domestic gross product of the agricultural sector (Agr) in Nigeria is hypothesised as jointly and severally determined by changes in labour force (Labor); public capital expenditure for agriculture (Agcap); fertiliser (Fert); interest rates to the sector (Ri), agricultural credit guarantee scheme (Acgs); the impact of the structural adjustment programme on agricultural production (dum86sap).

The expected roles of these variables in increasing the agricultural production in Nigeria will guide the assessment of each variable included in the models. The expectations include the following:

a) Labour force (Labor) in the agricultural sector in Nigeria is expected to have a positive effect on the productivity of the sector. Agriculture provides gainful employment to large labour force in developing countries (World Bank 2000:187-188; Norton, 2004:4; Niang, 2006:88; Mortimore, 1998:4) others evidences include (Lenihan, 2005; Meier & Rauch, 2005:393; Mellor & Johnston, 1984). Thus, the coefficient of labour in the model is expected to be positive.

b) Public capital expenditure for the agricultural sector (Agcap), is expected to service as positive incentive for the country's predominantly rural agriculture, and could stimulate growth, production and poverty reduction. According to Schwartz (2000:151-155), Israel's sponsored agricultural settlement projects in Zambia, Nigeria and Nepal resulted in Zambia and Nigeria achieving high agricultural productivity due to improved social services to the farmers. Schwartz

(2000) explains that Nigeria increased its agricultural production through this project, though the high growth and productivity declined due to the outbreak of the Nigerian civil war in the early 1970s. This evidence suggests the importance of the capital expenditure for the agricultural sector. The coefficient is expected to be positively signed.

c) The use of fertiliser provides the soil with nutrients and encourages high crop yields (Nelson, 2001:15; Mortimore, 1998:43). Therefore, the coefficient of fertiliser is expected to be positively signed in the estimation.

d) The coefficient of interest rates is expected to be negatively signed in the model. The expected inverse relationship between the interest rate and agricultural output is supported in literature. The influential work of McKinnon (1973) and Shaw (1973), financial liberalization protagonists, asserts that low or negative real interest rates discourage high saving rate and would misallocate capital to unproductive sectors. The achievement of high, positive real interest rate would stimulate savings and volume of credit available to the productive investment (Demetriades and Hussein, 1996). Demetriades and Devereux (1992) study on 63 developing countries over the period 1961-1990 find higher real interest rates on investment is adverse. It is expected that interest rates to the agricultural sectors will show a negative relationship with the output of the sector since high and positive interest rates to farmers is expected to discourage more investment in the agricultural sector.

e) Agricultural credit guarantee scheme (Acgs) is expected make a positive significant contribution to agricultural production. The general contention is that low levels of savings in developing countries contribute significantly to the depreciable level of investible funds. The federal government of Nigeria, through the central bank with some selected commercial banks initiated a credit scheme to support farmers with credit to enable them boost production. It is against this background that coefficient (Acgs) is expected to have a positive impact on agricultural production.

f) Dum86sap represents the policy impact of the structural adjustment programme on the agricultural production. The SAP reforms aims at enhancing economic efficiency in the use and allocation of economic resources (Mensah, 2006:4). According to the CBN (2000:38) the output

of the agricultural sector increased sharply due to the SAP measures. Thus, the dum86sap is expected to be positively related with the agricultural GDP.

In the next section, the model for manufacturing is presented and its basic assumptions and expectations discussed.

5.6 Model for the manufacturing sector

The specification of the manufacturing value-added potential output is based on Pauly's (2000:3) model for developing countries. Pauly (2000:3) states that non-agricultural modelling for developing economies should be determined by fully utilised inputs of certain measurable factors of production (such as capital (K) and labour (L), energy, imported raw materials), as well as by total factor productivity. As for agriculture, in the manufacturing sector data limitations can dictate a more reasonably flexible form of specification. Potential output is given as:

$$Y_t = e\beta_{0t}\ K\beta_{1t}\ L\beta_{2t}$$

Therefore, the value-added potential output for manufacturing will be determined by measurable input factors represented as:

$$Manuf = a_0 + \beta_1 lnlabor + X_2 lnfdim + \beta_3 lnrexch + dum86sap + ei \ldots\ldots\ldots\ldots..(2)$$

Note: β_1, X_2 and $\beta_3 > 0$

Where:

Manuf = manufacturing value-added gross output

Manlabor = estimated labour in manufacturing

Fdim = foreign direct investment in manufacturing

Exch = Naira/dollar exchange rate

Dum86sap = the policy impact of the structural adjustment programme launched in 1986

β_1, X_2, =coefficients

ei =error terms

Data coverage 1970-2005

5.7 Basic hypotheses, assumptions and expectations for each variable in the cointegration manufacturing model

The following are the basic underlying assumptions and expectations for the variables included in the manufacturing model, which will be estimated in chapter six of this study:

a) Labour force consists of the quality of educated and well-trained skilled labour that can bring about innovation and technological invention in the manufacturing sector (Okore, 1985:126). Relevant skills include for consumer-goods branding, marketing and advertising. Because of the importance of labour in enhancing the productivity of the manufacturing sector, the coefficient is expected to be positively signed.

b) FDI plays an important role in economic development because it helps to make possible superior technology, huge capital outlays and superior production techniques, management, marketing, distribution skills and technical know-how (Mugabe, 2005:75). Thus, the coefficient for FDI (Fdim) in Nigeria is expected to be positively related with the gross output of the manufacturing sector.

c) The manufacturing sector imports most of its raw materials for production in the country. Consequent upon this, the manufacturers are often affected by changes in exchange rate Naira/dollar movement. Suffice to stress that Naira/dollar appreciation will lead to lower cost in raw materials imports while depreciation in the exchange rates translates to high cost of raw materials imports. Thus, the coefficient of the Naira/dollar exchange rate is expected to be positively signed.

d) Dum86sap represents the policy impact of the structural adjustment programme launched in 1986. The SAP reforms aims at enhancing economic efficiency in the use and allocation of economic resources (Mensah, 2006:4). The SAP programmes are essentially market driven. It is expected to encourage private sector led-businesses and production. In the light of this, the SAP is expected to impact positively on manufacturing activities in Nigeria. Thus, coefficient of Dum86sap should be positively signed.

e) Infrastructure in the model is expected to have a strong and direct relationship with value-added manufacturing gross production. Pauly (2000:3) states that productivity enhancement factors like infrastructure can influence the productivity possibility of a growth sector. Infrastructural investment in and outside the industrial estates in Nigeria is expected to play a significant role in attracting more manufacturing firms due to the reduction in the cost of doing business and greater availability of transports facilities. Uninterrupted communication systems (both electronic and parcels) will have a similar effect. The coefficient for infrastructure (Infrast) in the manufacturing model is expected to be positively signed.

5. 8 Model for the mining and quarrying sector

In this section, the model for the mining and quarrying (solid minerals) sector and the underlying basic assumptions and expectations for the variables included in its estimation are discussed. It is important to emphasise that the primary goal of this mining and quarrying cointegration estimation model is to assess the impact of public policy and the implications of mobilising financial resources towards stimulating investment growth in the solid mineral resources sector in Nigeria. The mining sector is one of the backbones of most economies on the African continent (Hilson, 2003). It is imperative to mobilise domestic and foreign financial resources to stimulate investment at small-medium and large-scale enterprises to boost the productive capacity of the mining sector. The deregulation of Nigeria's mining sector by the government, following the example of most other African countries, will no doubt create significant economic development opportunities and bring employment creation, increased income to household artisan miners, expansion of revenue sources and foreign exchange for development and poverty reduction in the economy. The model for mining is therefore presented in this section.

$$MINQUA = \beta_0 + \beta_1 lnMINCAP + \beta_2 lnLABOR + DUM80S + Dum86sap + ei \quad \ldots\ldots\ldots(3)$$

Note: β_1, β_2, >0; dum80s and dum86sap <0.

Where:

Minqua = real value-added gross output of mining and quarrying

Labor = real labour in the sector

Mincap = real public capital expenditure to the mining and quarrying sector

Dum80s = the impact of government policies on the mining and quarrying

Dum86sap = the policy impact of the structural adjustment programme launched in 1986

Note: $\beta_1, \beta_2,$ = coefficients

5.9 Hypotheses and basic expectations for each of the variables included in the mining and quarrying (solid minerals) model

a) Labour force (Labor) in the mining sector includes small-scale artisan miners and medium and large-scale mining companies (Hilson, 2003). Given the economic and social opportunities available for Nigerians residing around the various mining and quarrying communities, it is expected that if their labour earns better income this will enhance their standard of living and significantly uplift their social and economic status (Odesola, 2001:48). In essence, the coefficient of labour in the mining and quarrying sector is expected to play a positive significant role in poverty reduction in Nigeria.

b) Public capital expenditure (Mincap) provides the needed capital outlay to mine the solid minerals in Nigeria because the mines are placed under direct control of the national government. The mincap is expected to be positively signed in the mining and quarrying model

c) Dum80s which represent the effects of changes in government past policy on the mining sector, is expected to be negatively signed. The expectation is that the past government policies have impacted negatively on the development of the mining and quarrying sector. Onah (2004) believes that government control and past policies have not induced the expected performance of the sector.

5.10 Summary of the main findings and conclusions

In this chapter, attention was primarily focused on developing models for the growth sectors in Nigeria. Overall, the models suggest that Nigeria needs to accelerate the pace of economic growth and development in its agricultural, manufacturing and mining and quarrying sectors to be able to attain the international development target of reducing poverty by half by 2015. It is

against this background that the UN through various international forums has mandated all developing countries to look inward and ensure efficient financial intermediation to mobilise resources to finance development and growth in their own countries (UN, 2002). This wake-up call was needed, since Nigeria and other developing countries are endowed with rich renewable and non-renewable resources that can be harnessed in partnership with foreign investors and development agencies, and used to enable these countries to attain global development goals.

In response to the need to improve and increase the output performance of the agricultural, manufacturing and mining and quarrying sectors in Nigeria, a set of factor inputs in the production function are incorporated in the estimation of the cointegration models. Additional input variable not strictly factor of production such as agricultural credit guarantee scheme is included. The inclusion of this input variable is necessary because it plays an influential role in the economic development of Nigeria. A total of three (3) cointegration equations were formulated for estimation. The expected signs and behaviour of the variable inputs in the equations were also discussed.

In chapter six, the results of the multivariate cointegration econometric estimated models for agriculture, manufacturing and mining and quarrying (solid minerals) in Nigeria will be presented and the policy implications of these results discussed.