Agricultural Economics of Nigeria: Paradoxes and Crossroads of Multimodal Nature

Professor Eric C. Eboh
Professor of Agricultural Economics
University of Nigeria

CONTENTS

PROTOCOL

Mr. Vice Chancellor, Deputy Vice Chancellors, Distinguished Professors, Very respected Colleagues, Lions and Lionesses, Ladies and Gentlemen ……

It gives me great pleasure to have this distinguished opportunity to present my Inaugural Lecture. I am very happy for this privilege of giving Inaugural Lecture as a Professor in this University.

1.0 ACKNOWLEDGEMENTS

I would like to start by dedicating this Lecture and this occasion to the Almighty and All-Knowing God for making this day a reality. Let me thank most importantly my dear parents and mentors, Evangelist Frederick and Deaconess Lucy Eboh, for their exceptional gracious love and care. I thank them for molding me in character, faith and learning. May God give them long life and good health to behold and enjoy the fruits of their investments in their children. Amen.

I give special thanks to my darling wife, Ogugua, for her extraordinary support, love and care. Today marks almost 15 years since we exchanged marital vows. I am unequivocal that the fateful day marked a watershed in my life and career. With the benefit of hindsight, I am very delighted to observe that our marriage became an important motivation for progressive career

mobility. Since 1996, she has continuously created an enabling environment for my academic and intellectual life. I remain highly grateful to her.

Without doubt, beginning from primary school through university education, I have been positively impacted upon by several teachers, administrators and scholars, both in Nigeria and overseas. Whatever knowledge I have accumulated and use today has been given to me by others. I am not a 'self-made man'. While I would mention some persons as a mark of my gratitude and appreciation, the list here cannot be exhaustive of all those who have in one way or the other contributed and still contribute to my research and academic career.

I would like to pay tribute to Mr. S. Nwakwanogo, of blessed memory, who imparted key reading and study skills to me as early as my primary school age. In the same vein, let me thank all the teachers who taught me at the secondary school level. I particularly thank Mr. J. Usifo (English Teacher), Mr. J. O. Ogigie (Mathematics Teacher), Mr. A. J. O. Aliemeke (Geography and Senior House Master), Mr. Okoh (School Principal) of blessed memory, Mr. C. O. Oteh (Economics Teacher) and others.

My educational development benefitted immensely from my one-year stint at the Lower Six Geography class at Edo College Higher School Certificate during the 1979-1980 class. Let me therefore thank Mr. Emuhen, Biology Teacher and Mr. Aigbe, the School Principal and others.

I give thanks to all the lecturers, administrative and technical staff who contributed to the success of my Bachelors Degree programme in Agricultural Economics at the University of Nigeria, from 1980-1985. Very specially, I am very grateful to Professor Felix I. Nweke, who graciously supervised my Bachelors Degree thesis during the 1984-85 academic session. He taught me research and report writing skills and science attitudes which later became the solid foundation for my research career. Professor Nweke has been a great source of academic inspiration by virtue of his very strong scientific skills and research effectiveness. I am also grateful to other lecturers including Professor S. A. N. D. Chidiebelu and Professor O. Okereke.

I give special thanks to the lecturers and students during the 1986-87 session of Masters Degree programme in Agricultural Economics at the University of Ibadan. In particular, I received intensive guidance from Professor S. G. Nwoko, my thesis supervisor. He encouraged and inspired me so much towards quantitative and econometric methods. I note specially my helpful interactions with Professor S. O. Olayemi, Professor F. S. Idachaba and other academic staff.

I am greatly indebted to my supervisors in the Doctorate Degree programme, Professor O. Okereke and Dr. C. O. B. Obiechina. Both co-supervisors provided me excellent atmosphere and friendly academic guidance that saw me through in my research and academic work from 1987-1991. Besides, many other academics contributed to the success of my PhD programme. They include Dr. Karen Dvorak, Professor Y. L. Fabiyi,

Professor E. C. Nwagbo, HRH Professor Emea Arua, Professor S.A.N.D. Chidebelu, Professor E. C. Okorji and Professor Aja Okorie.

I am most grateful for the peer support in the Department of Agricultural Economics, since September 1989 when I started my academic career as lecturer. In this regard, I am thankful to colleagues including Professor Noble Nweze, Professor C. U. Okoye, Dr. (Mrs.) Ifeyinwa Achike and Professor C. J. Arene. Also, I recall collaboration with lecturers from other Departments including Animal Science, Crop Science, Soil Science, Agricultural Extension, Food Science and Technology, Home Science and Nutrition, Sociology, Economics, Political Science and others.

For some years now, I have received tremendous support and cooperation from the staff and Associate Fellows of the African Institute for Applied Economics. Let me state my gratitude for the enabling environment which the Institute has created for my academic and intellectual work.

2.0 CONCEPTUAL APPROACH OF THIS INAUGURAL LECTURE

In exploring the conceptual identity of my Inaugural lecture, I examined a sample of prevous Inaugural Lectures in terms of substance, content and style. I found that most previous lectures followed a ‘traditional’ or ‘classical’ stereotype, characterised by a rehearsal of own academic and research accomplishments.

While this approach is necessarily scholarly and desirable, I have however opted to take a somewhat 'liberal' approach. My liberal approach involves both highlighting my research and intellectual outputs and using them as evidence bases to propose solutions to Nigeria's lingering agricultural development question. This approach is inspired by the insights I have gained in my many years of interacting and working with economic policymakers, government technocrats, development practitioners and the private sector. For many years now, I have been actively involved in spearheading and managing networks of researchers and policymakers that seek to enhance the relevance and impact of research in public policies and private enterprise. The networking experience has afforded me deep understanding of the challenges of developing and sustaining the dual linkages between research and policymaking and between research and private sector. In preparing this lecture, therefore, I seek not to merely regurgitate research evidence, whether from own or other research. Rather, I wish to take forward the reflections from my research and those of others to inform and stimulate new thinking about Nigeria's agricultural development

This paper examines Nigeria's agricultural development trajectory from multidimensional perspectives. The perspectives include the succession of conceptual-theoretical constructs, empirical political economy experience, man's economic history and economic role-milieu of the agricultural sector. The time dimension is very unique. Nigeria has attained 50 years of political independence. It is auspicious to retrospect backward to 1960 when the country became independent from colonial rule and to look forward to 2020 dateline for Nigeria's ambition to

become one of the top 20 economies in the world. So, the perspective of this paper is both backward-reflecting and forward-prospecting. The paper mirrors the "good", "bad" and "ugly" (milestones, paradoxes, crossroads and challenges) in the agricultural economy. By "paradoxes", I mean the contradictions and absurdities within the agricultural economy and in relation to the overall economy. By "crossroads', I mean the decision junctures in the agricultural development policy landscape that are underpinned by tough choices, most often involving critical trade-offs. Understanding these complexes is critical to promoting informed and educated dialogue about policy responses for inclusive and sustainable agricultural growth and economic prosperity.

Mr. Vice Chancellor, Distinguished Colleagues, Lions and Lionesses, Ladies and Gentlemen, my Lecture will take you through a 7-phase perspective journey on Nigeria's agricultural economy. Phase 1 underscores the indispensable role of agricultural economy in our national development ambitions. Phase 2 expounds the hypothesis that agricultural economic management has shaped the historical social and economic evolution of man. Phase 3 mirrors agricultural development question as the centerpiece of age-long conceptual debate about the role of state vis-à-vis markets. Phase 4 spotlights the variety of theoretical models that have largely defined successive empirical approaches of agricultural development. Phase 5 demonstrates that Nigeria's agricultural development trajectory has been closely linked to the dynamics of political economy since independence. Phase 6 unveils the paradoxes that bedevil the agricultural economy of Nigeria. Phase 7 phase pontificates

broad-view therapy to the lingering paradoxes of agricultural sector in the Nigerian economy.

3.0 REFLECTIONS ON THE STRATEGIC ROLE OF AGRICULTURAL ECONOMY

Theory and evidence shows that the agricultural economy is strategic to national development, particularly for developing countries (Okorie and Eboh, 1990). In Nigeria, like other developing countries, the agricultural sector's role transcends the classical functions related to providing food, raw materials, employment and incomes. The roles of the agricultural sector in a modernising economy are much more transformative and phenomenal than implied in classical models of development.

Food is both a consumption and investment good. As a consumption good, food otherwise referred to as the "wage good" in classical terminology, is a biological necessity of man. That is why nations do not have a choice than to offset their food deficits by importing from other countries. In fact, ensuring food security is good politics. As investment good, food consumption fosters the formation of human capital for better quality of labour force and increased economic productivity. With hunger, under-nourishment or malnourishment, the labour force cannot be optimally healthy or productive. Adequate food and nutritional security will assure peace, law and order. There are many instances where rising food prices and hunger have led to angry and violent protests and riots across the globe; in

extreme cases, the riots escalated into wider crisis of regime change.

Agricultural commodities are sources of raw materials for manufacturing industries. If a nation is able to supply its industries from locally produced agricultural products, there is stable supply of industrial raw materials.

Wealth creation role of agriculture: The exports of agricultural products bring foreign exchange, with positive effects on the country's balance of payment. The agricultural sector generates personal savings, government tax revenue and foreign exchange that can be used to finance development and growth of the overall economy.

Agricultural sector is an important stimulus market for industrial products – both in terms of backward and forward linkages to industry. A flourishing agricultural economy implies growing markets for industrial production and industrialisation will depend on how rapidly agricultural incomes are rising. Rising agricultural incomes can expand the market not only for light consumer goods (radios, bicycles, kitchen utensils, etc) but also for manufactured agricultural implements, machinery and inputs. This is the "market contribution" role of the agricultural sector. On the other hand, the 'factor contribution' "role refers to transfer of resources (like capital and labour) from agricultural to "successor" sectors.

The fact that agricultural sector accounts for up to 90% of non-oil foreign exchange earnings places it at the heart of strategy for economic diversification from oil.

In Nigeria, the agricultural sector plays a crucial economic stabilising role including the mitigation of negative impacts of externally-induced economic crisis. This assertion is supported by both historical and current evidence. The slow and low transmission of the recent global economic crisis to the Nigerian economy has been explained by the buffering influence of the agricultural sector in the growth dynamics of the economy. During similar economic declines in the 1980s, it was the shock-absorbing role of the agricultural sector that prevented sharp falls in incomes and living conditions. During the country's structural adjustment programmes (SAP) from 1986-early 1990s, the agricultural sector prevented huge economic slump. From 1983-2002, the negative impacts of the volatile enclave oil sector have been moderated by agricultural value added. Since GDP per capita reached its low in 1984, agricultural GDP per capita increased by over 30% to 2002. If not for this growth, per capita GDP would have been 20% below the level attained in the post-2000 period (Eboh et al., 2006).

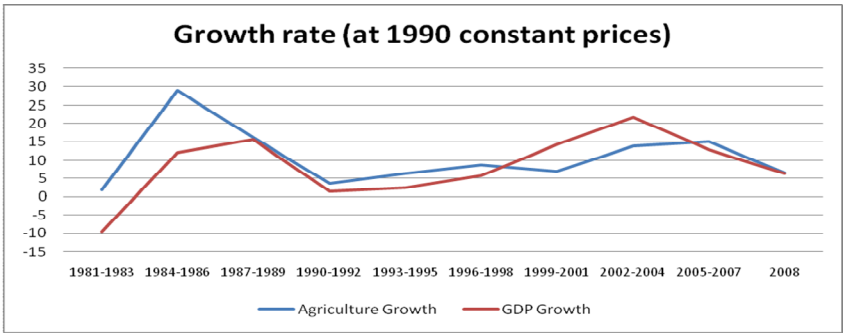

Figure 1. Agricultural and overall GDP growth rate 1981-2008

Agricultural prices are important components of the inflation metrics – the consumer price index (CPI). A slowly growing agricultural sector can result in inflationary pressures. Where national food supply (both domestic production and food import) does not keep pace with population growth and growth in per capita incomes, the food price-induced inflationary pressure would reverberate all over the economy. In many poor countries, households spend up to two-thirds of income on food. Hence, rise in food prices will deplete the purchasing power, increase economic desperation and lower living standards.

The agricultural sector in many developing countries functions as the lever for structural transformation, technological and economic change. David Ricardo's classical economics treatise - *Principles of Political Economy and Taxation,* Simon Kuznet's *Economic Growth and Structure* (1965) and John Mellor's *Accelerated Growth in Agricultural Production and the Intersectoral Transfer of Resources* (1973) have laid the theoretical foundation for emphatic role of in agricultural sector

in structural transformation. A stagnant agricultural sector hinders the growth of the rest sectors of the economy and limits the resources available to promote development.

Structural transformation connotes progressive decline in the share of primary production (agriculture and minerals) in national output as the economy modernises and grows, while manufacturing and services sectors grow increasingly. Another correlate of structural transformation is the reallocation of the labour force through specialisation (in products and skills) and market differentiation[1]. Specialisation and technological change are the driving forces that transform an agrarian economy into a diversified economy. Structural change is caused by changes in consumer demand[2] and varied increases in productivity in the different sectors of the economy, due to specialisation[3] and division of labour associated with scientific and industrial advances.

Growth of the agricultural sector sets the upper boundary to the growth of other economic sectors. The structural transformation

---

[1] During structural transformation, markets for labour, land, capital and financial services multiply in number and in size.

[2] As per capita income increases, the need for some goods and services (those with high income-elasticity) will increase more rapidly. Also, rising incomes pushes up the demand for non-agricultural (manufactured) goods.

[3]Specialisation means that new manufacturing and service activities emerge. Households increasingly transfer a host of functions to specialist producers, thereby shifting their orientation shifts from self-sufficiency to dependence on the markets for sale of surplus, purchase of inputs, labour and other services. Specialisation facilitates the use of more capital equipment, better organisation and productive technologies, which together lead to augmented productivity of the land, capital as well as labour.

role of agricultural economy is exemplified by Nigeria Vision 20: 2020. The vision of becoming one of the top 20 economies by 2020 necessitates growing the GDP to US$900 billion, out of which 15% (or US$135 billion) will come from agricultural sector. This is in contrast to the existing economic structure whereby agriculture contributes US$89 billion (42%) of the GDP (US$212 billion). This structural transformation is envisaged to crystalise through 300% increase in agricultural productivity enabled by investments to strengthen agricultural research and extension, develop critical infrastructure and market-based agricultural value chains.

The agricultural sector is the breeding ground for technological learning and technical change. Historical evidence shows that no country ever achieved industrial progress without initial significant technological learning and productivity improvements in agriculture. Productivity leaps through technological change (among others) is indispensable if agriculture is to play its ascribed role in fostering structural transformation. Country experiences reveal that the agricultural economy usually provides the testing and breeding grounds for science, technology and innovations (STIs).

Agricultural growth and development is indispensable for poverty reduction and equitable prosperity. Agriculture including forestry and fishery provides the main source of incomes, employment and livelihood for over 60% of the population. The sector has the highest incidence of poverty – 7 out of every 10 farming households are living below the national poverty line and 6 out of every 10 poor households is in

agriculture. The poverty and employment character of agricultural sector commends it as the economic sector with the largest scope for fostering equitable prosperity and achieving the MDGs goal of halving poverty by 2015.

Eboh and others (2006) showed that agricultural sector performance and poverty trend are somewhat associated. Negative annual average agricultural growth from 1981-85 was accompanied by increase in poverty from 28% in 1980 to 43% in 1985. Conversely, from 1986-90, the country recorded higher annual average agricultural growth (6.7% per annum) and poverty reduced from 43% in 1985 to 34% in 1992. Again, a decline in annual average agricultural growth (2.4% per annum) from 1990-1996 was accompanied by increased poverty from 34% to 65.6% in 1996.

Agriculture is critical to **climate change mitigation and adaptation**. Crop, livestock, fishery and forestry production represents the foremost biological-cum-economic activity that critically impacts and is impacted upon by climate change. Agriculture can help to mitigate climate change through the use of more ecologically-sustainable crop and livestock and less environmentally-degrading production systems. Also, agricultural technologies provide springboards for innovations for adapting to climate change through climate-smart changes in production techniques, enterprise combinations, input mixes and crop and livestock management practices.

4.0 AGRICULTURE FROM THE LOOKING GLASS OF MAN'S ECONOMIC HISTORY

Agriculture in prehistoric livelihood strategy

Agriculture is rightly regarded as the oldest human occupation, divinely instituted. "And the Lord God took the man and put him in the Garden of Eden to work it and take care of it"… - *Genesis 2:15*. Agricultural development is inextricably tied with the social and economic evolution of man. Managing a farm field, a forest or a fishing ground, so as to gain a reasonable harvest while minimizing economic and environmental costs, has been the oldest form of resource management. Since the Garden of Eden, agriculture has continued to shape man's social and economic history. Man's maiden societies including, Mesopotamia, Babylonia and the Nile Valley faced resource allocation challenges about production and consumption of agricultural outputs. The choices were made and implemented mostly by the social force of tradition and influenced by the political force of command. Trade was almost non-existent and families produced for themselves and their leaders, through forms of slavery.

'Ancient societies' context of agricultural development

The situation continued into the early days of the "ancient societies" of Greece and Rome, about five centuries before the birth of Christ. Although specialisation and trade became more developed, the economic system remained tradition-bound. With the rise of the Roman Empire at about the time of Christ, the political force of command overwhelmed the influence of tradition. The political authorities decided the control, use and allocation of agricultural resources. But, as the Roman Empire collapsed during the 5th century after the death of Christ, little

separate, independent socioeconomic and political units emerged throughout Europe. Throughout Western Europe, there evolved the economic, social and political arrangement called feudalism – characterized by the 'serfs' working in subservience to the 'lords'. The market process had very negligible influence on production and distribution patterns in the society.

Mercantilism and colonization fostered primitive competition for agricultural goods

As the centuries passed, the feudalist system began to wane. Trade increased, markets grew and gold and silver become more widely used as money. Feudalism was soon to give way to mercantilism, whereby the government directed the economy in order to gain more wealth and power, in terms of gold and silver. The single priority was to maximise national wealth in terms of gold, by maximising exports/minimising imports. Under mercantilism, each nation established colonies to provide guaranteed sources of raw materials for the production of goods that will be sold for gold. For about three centuries – from the discovery of America to the time of American Revolution – the British, French, Dutch, Spaniards, Portuguese, Italians and some others scrambled for colonies to increase the wealth of their nations, in terms of gold. In fact, the American Revolution followed the mercantilist policies of England during the 1700s.

Industrial revolution triggered agrarian change

The conditions imposed under mercantilism – holding down consumption, controlling trade, and colonisation, - lasted for

about 300 years, until the Industrial Revolution was sparked off by the inventions[4] in the textile industry in England. The Industrial Revolution triggered by machine-based systems spread, such that, by 1800, the demand for cotton and wool expanded rapidly, thereby making cotton-growing and sheep-raising very profitable. The price mechanism became more influential in determining the use of society's scarce resources. The industrial revolution laid the foundation for the emergence of economically advanced nations.

The 'Physiocrats' agricultural economy

The industrial revolution was trailed by strong criticisms of the mercantilist ideology. During the mid-1700s, some French philosophers known as the Physiocrats[5] developed the concept that economic activity follows a kind of circular flow. In the view of the Physiocrats, the nation's wealth was the physical output produced from the soil. The control by the government was seen as interference in the wealth producing process and the solution to this interference is *laissez-faire* – meaning government should let people alone to make their own economic decisions, how to use their energies, resources or capital.

Agricultural economy of the 'classicalist' school

[4] Hargreaves' spinning jenny (about 1770) and Eli Whitney's cotton gin (about 1790).

[5] A leading physiocrat was Francois Quesnay who wrote the piece "Tableau Economique". To the mercantilists, wealth was gold obtained from selling things and government controls were needed to force people to produce the right things and not to consume too much and to force trade to flow in the right directions.

Perhaps, the most forceful blow to mercantilist philosophy was [6]Adam Smith's classical treatise titled *An Inquiry into the Nature and Causes of the Wealth of Nations,* published in 1776. Adam Smith described the automatic operation of the market process – how the natural forces of free markets (demand, supply and price) --- work to bring about agricultural wealth. Nations would become wealthy by following a laissez-faire policy (keep its hands off the market) and just let the "invisible hand" (that is, automatic market forces) to get the right choices to be made, move the factors of production to the right uses, and get the right amounts of output to be produced.

Agricultural economy in the hey-days of capitalism

By early 1900s up to the World War I (1914-1918), capitalism had peaked. The period, often referred to the heyday of capitalism, marked the peak of glory of old-style Western capitalism including the growth in agricultural and industrial outputs. But, before the outbreak of World War I, several new refinements to the classical economics theories had emerged. The natural economic laws which seemed to fit events of the early 1800s turned out not to be holding true in the late 1800s. These refinements to the classical school of economics became known as neoclassical (new classical) school of economics. Notable among the thesis was Alfred Marshall's Principles of Economics published in 1890. Distinctive tenets of the neoclassical economics school include the *marginal* concept,

[6] Adam Smith's book marks the beginning of "classical economics". Thomas Malthus's Law of Population, David Ricardo's Iron Law of Wages and Jean Baptiste Say's Law of Markets are also important contributions in the classical economics concept of the natural laws of market forces.

[7]Walras' partial equilibrium analysis[8] and general equilibrium analysis[9].

Keynesian paradigms for agricultural prosperity

However, the neoclassical economics model came under severe attack during the economic depression of the 1930s. John Maynard Keynes attempted to explain the economic realities of the time – the depression problem, through his book – *The General Theory of Employment, Interest and Money* published in 1936. Keynes diagnosed the depression in terms of "not enough total spending" by people, businesses and government Rather than wait for the "natural economic laws" to work things out, Maynard Keynes saw the solution as increased government spending and the use of fiscal and monetary instruments to get the economy to recover.

The monetarist view of agricultural economy

As Keynesian economics was being integrated into the mainstream of economic theories during the period of the 1940s, 50s and 60s, some criticisms came. Notable among the critics were Milton Friedman and Irving Fisher, otherwise called the monetarist school of economic thought. The public policy prescription of the monetarist school is that government should

---

[7] Modern-day econometric models of the entire economy can be traced to the Walras' general equilibrium analysis. Alfred Marshall and Walras are two notable contributors to neoclassical economics thinking.

[8] Explaining how changes in one part of the economy will work through the rest of economy, assuming everything else remains the same.

[9] Explaining how simultaneous changes in parts of the economy will work themselves out throughout the entire economic system and towards a new general equilibrium.

keep the size of the money supply right and hence everything (including agricultural prices, employment and production) will adjust automatically and the economy will run properly. The monetarists take a long-term view – assumes that the ups and downs of the economy – inflation, unemployment, etc – are short-run swings which the market forces will resolve in due course.

Supply-side and rational expectations perspectives on agricultural economy

Alongside Keynesian economics, two new theories were gained increased acceptance: rational expectations" and "supply-side economics" during the 1970s and early 1980s. According to the rational expectations theory, when agricultural actors (consumers, farm managers, etc) expect the government to take certain economic stabilisation policy, they take action for self-protection which could undermine government's stabilisation measure. On the other hand, supply-side economics posits that, to slow inflation, there is need to generate more agricultural and other output to boost the market supply. This implies policy attention to increasing agricultural worker productivity.

5.0 AGRICULTURAL ECONOMY FROM PARADIGMATIC VIEWPOINTS ABOUT THE STATE VIS-A-VIS MARKET

National policy stance towards the agricultural economy is shaped by the generational "twists" and "turns" about the role of the state vis-a-vis market in economic growth. The stream of development thinking and practice over the past fifty years can be roughly condensed into distinctive generational blocs – the older generation (about 1950-1975), the newer generation (since 1975) and then the theoretical refinements emanating from the lessons of the global economic crisis since 2008. Overall, the cross-cutting feature of successive generations of modern growth theories is the debate about the role of the state vis-a-vis markets.

State-led approach of the 1950s and 1960s

The older generation development models of structural transformation were based on big involvement of government in economic planning. These theoretical models of capital accumulation-induced growth include Harrod-Domar equation and Solow's (1957) "growth decomposition" thesis, Rostow's "stages of growth", Nurske's "balanced growth", Rosenstein-Rodan's external economies and "big push". Others include: Lewis's limited supply of labour and dual-sector model, the Prebisch-Myrdal-Singer hypotheses about terms of trade and

import substitution, Leibenstein's "critical minimum effort", and Chenery's "two-gap model". These models prescribed strong state action to correct or avoid market failures. The structuralist school also criticised the market price system by pointing out rigidities, lags, low elasticities of supply and demand. In the same vein, the welfare economics school lent credence to government action to correct market failures, promote capital accumulation, industrialisation and coordinate resource allocation through planning.

Throughout the late 1960s and early 1970s, however, results of industrial planning were disappointing. Contrary to expectations, poverty, unemployment and inequality increased. The poor results were blamed on deficiencies in the plans, inadequate information and resources, institutional weaknesses, distortions and inadequate executive capacity.

Pro-market approach of the 1980s and 1990s

The disappointing results from the state-led models of the 1950s and 1960s triggered the resurgence of neoclassical analysis by the newer generation. Governments were advised to "get all policies right" and to remove price distortions. Government failure was cast in terms of policy-induced distortions in prices and economic incentives.

Some modification of neoclassical analysis however occurred in the 1980s and 1990s when "new market failures" were observed. Government remedial measures were necessary to correct the new market failures particularly, risk and information

imperfections in the economy. The recognition of risk and information imperfections drew attention to two economic sectors often overlooked in the older models– agriculture and finance. Hence, the newer generation growth theories emphasized policies for agricultural and rural development, unlike the older ones that favoured industrialisation. Misguided agricultural pricing policies were fingered as negating the incentives to produce food and export crops, food security and sustainable employment opportunities in farming, agro-based processing and rural industries. It was argued that market system should get prices right while government should get policies right through stabilisation, liberalisation, deregulation and privatisation. This was to become the basis for IMF conditionalities/WB structural adjustment lending.

Neoliberal variant of the pro-market models of the 1990s

With the benefit of hindsight about the experiences of countries, growth theories of the 80s and 90s (known as "new growth theories") shifted attention to the role of knowledge and innovation, externalities, dynamic increasing returns, information, contract enforcement and missing markets. Neoliberal thinking sees knowledge as a source of increasing returns and as a powerful driver of technical change, unlike nature or physical capital which is subject to diminishing returns. In addition, the neoliberal approach alluded to the role

of organisations, institutions and social capital[10] or social capability.

The impact of the global financial and economic crisis, 2008

Despite the sound empirical logic of the new growth theories, the global financial and economic crisis beginning from 2007 eroded faith in market self-correction. For many countries in SSA, the crisis transmitted through slowdown in global commodity demand leading to fall in commodity prices and the contraction of foreign financial flows. The crisis marked a turning point in government-market relations across the globe. In response to the crisis, most large developed market economies have carried out various forms of government economic interventions, to stabilise the market, reduce vulnerability, restore public confidence and return the economy to the path of recovery and growth. This has entailed some realignment of the role for the state beyond simplistic regulation, discipline and oversight of the market. The interventions lend credence to the views that the global financial and economic crisis is the result of weaknesses in the neoliberal model that has dominated global economic management in the last thirty years, and in particular, the impacts of policy failures and lax regulation. Both the financial crisis in East Asia in the 1990s and the recent global economic crisis have reinforced the

[10] Defined as internal social and cultural coherence of society, the norms and values that govern interactions among people and the institutions in which they are embedded.

theoretical arguments for more proactive role of the state than was the case in the policy debates of the 1980s and 1990s.

Current thinking: Complementarities between markets and governments

Today, development thinking is not merely about tackling market failure or government failure. Current theoretical frameworks are founded on notions of complementation between state and market. No doubt, the market model is widely acknowledged as a fundamental organising framework for economic activity and resource allocation. Nonetheless, effective government will still be necessary for overcoming salient market failures – imperfect information, imperfect and incomplete markets, dynamic externalities and increasing returns to scale. Government's role remain strategic in the areas of provision of public goods, reduction of poverty and social inequality, provision of good investment climate, public infrastructure and maintenance of law, order and security. In order to perform these roles, government can take direct measures (interventions that structure markets) or indirect measures (rules that affect incentives).

The new economics science advocates an "effective state" and a "vibrant market", working in an organic fashion to promote national development in a globalising world economy. This viewpoint is founded upon the notion that the state is not a substitute for the market and vice versa. History and current experiences support new forms of economic governance that combine government responsibility and efficient private

enterprise. Countries (e.g. China) that have combined institutional improvements with market-oriented reforms have seen good economic performance. Tackling the structural and institutional constraints to agricultural development requires rebalancing of the roles of the state and market.

Insights from the debate and lessons from agricultural development

One lesson is that there is no single universal model to be replicated across countries. Neither the 'state-led' model nor the 'pro-market' model is a homogenous framework. In fact, each is often interpreted in varying ways by different countries. What works in one country may not work in another. Hence, countries must learn what works and what does not work in their peculiar circumstances, informed by past own successes and failures as well as experiences of other countries.

The lesson for agricultural development is that national policy framework requires synergy between growth-oriented macroeconomic policies and sector-specific enablers[11]. While growth is powerful in reducing income poverty, growth does not automatically reduce poverty. But, hardly can agricultural

[11] According to Habib Ouane, Director, Division for Africa, Least Developed Countries and Special Programmes, UNCTAD, there is large scope for an alternative economic strategy covering institutional capacity building and the strengthening of the market-complementing developmental State. Commentary on "The Least Developed Countries Report 2009: The State and Development Governance", UNCTAD, 15 September 2009.

development take place in the absence of agricultural growth, which in turn depends on stable macroeconomic and institutional environment. Realising structural transformation requires that agricultural policies rhyme with industrial policies in pursuit of economic linkages and feedback.

Over the decades, and particularly buoyed by oil revenues, Nigeria adopted largely "developmental state" approach for the agricultural sector. Governments at federal and state levels have been heavily involved in promoting agricultural development through land development, input, techology and credit subsidies, research and extension, development of irrigation, post-harvest and rural-agricultural infrastructure. From the mirror of the debate about the role of the state and markets, it can be deduced that the balance of orientation in Nigeria has titled to 'heavy' role of the state. But, the current poor state of agricultural development brings into question the quality and effectiveness of the heavy government involvement or the developmental state orientation towards agriculture.

6.0 NIGERIAN AGRICULTURE FROM THE PERSPECTIVE OF MODELS OF AGRICULTURAL DEVELOPMENT

Models of agricultural development: a cross-section perspective

Agricultural development literature is rife with a plethora of theoretical models that describe and explain the paradigmatic options for agricultural development. The paradigms are stylized ideals of how agricultural development could happen and the variants of agricultural development strategy. The models range from the classical to the modern definitions of the strategic drivers of agricultural development. Across the literature, the dominant agricultural development models include:

- Conservation model
- Industrial fundamentalist model
- Urban-industrial impact model
- Diffusion model
- Neo-Marxist and Dependency model
- Growth-stages model
- High pay-off input model
- Induced innovation model
- Basic human needs model
- Structural adjustment (demand management) model
- Supply response model
- Structural adjustment (equity with growth) model
- Sustainable development model

Even though these respective models are not wholly mutually exclusive (some features are common across the variants), it is important to discuss each one in order to decipher the lessons for Nigeria's agricultural development strategy.

The ***conservation model*** has bearing with the English agricultural revolution of the 18th century. It is based on the presumptions that agricultural land will become scarce and scarcer. The model is supported by the economic theories of classical English economists – Thomas Malthus, David Ricardo and John Stuart Mill – which proposed that as land scarcity increases, poorer land is used, causing the marginal productivity of labour and of land to decline. To forestall this situation, emphasis was attached to maintaining soil productivity at its present level, or returning it to its original productive level. The model proposes the use of land- and labour-intensive cropping system, the production and use of organic manures, and labour-intensive capital formation in the forms of drainage, irrigation and other facilities to promote utilisation of land and water resources. The model is criticised to have led to agricultural growth rates incommensurate with modern rates of growth in the demand for agricultural output, for example, the agricultural development framework used by the People's Republic of China in the late 1950s and early 1960s. Over time, the relevance of the conservation model has diminished because of the increased scope for increasing the productivity of land through more efficient modern inputs. The model failed to take into account the potential impact of technological change on the demand for land in agriculture.

The ***industrial fundamentalist model*** places industrial sector at the centre and agriculture at the periphery. This logic, which followed the industrial revolution in Europe, the United States, Japan, sees agriculture as having little prospects of accelerating growth and capital accumulation. But, critics of the industry-first model showed that a lagging agricultural sector would slow economic growth, as experienced by India and other countries. In this regard, it has been posited that "any underdeveloped economy which attempts to force the pace of industrialisation while disregarding the need for a prior... or at least simultaneous – revolution in its agricultural sector ..... will find the going most difficult "[12].The industry model gave way to the balanced growth approaches, when by early 1970s, the green revolution had demonstrated very high returns from investment in agriculture.

While the conservation model explains agricultural productivity as a function of soil, and the physical environment, the ***urban-industrial impact model*** sees agricultural productivity as a function of urban and industrial stimuli. The model is based on the rationale that input and product markets are more effective in areas of rapid urban-industrial development. The model drew on the Ricardian theory of rent and Johann Von Thuenen's demonstration effect concerning the influence of urban market on agriculture. The thesis is that industrial development would stimulate agricultural development by expanding demand for

[12] Fei, J. C. H. and Ranis G. (1964). Development of the Labour Surplus Economy: Theory and Policy.Homewood, III.: Irwin.

farm products, supplying the industrial inputs to improve agricultural productivity and pulling away surplus labour from agriculture. The empirical import of this model is that a strong nonfarm labour market is necessary for labour productivity in agricultural and improved rural incomes. The model seems more appropriate for less developed areas of highly industrialised countries or lagging areas of the rapidly growing less developed countries. But, in poor countries, where urban areas develop merely out of rural-urban migration that is not backed by improved employment or industrial growth in the urban areas, it is not likely that urbanisation will have the kind of impact posited by the model.

The ***diffusion model*** argues that significant increases in agricultural productivity can be obtained by increasing the flow of information about new agricultural technology and new institutional arrangements to farmers. It posits that "tradition-bound" farmers need to be taught more economically rational management decisions about the use of resources. The model prescribed promoting international diffusion of highly productive agricultural technologies from more developed to less developed nations during 1950s- 60s, hence, the surge of research and extension from 1950-60s. The model overlooked the fact that agricultural production is mostly context-defined. The presumption of inefficient resource allocation among "irrational tradition-bound" peasants was also not borne out by empirical evidence, since traditional farmers have good knowledge of available traditional technology and are efficient allocators of their resources. During the 1960s, agricultural and rural development policies based on the extension-bias model

failed to generate sustained agricultural modernisation and rapid growth in agricultural output. It became obvious that much more than diffusion is needed to bring about rapid agricultural growth.

The ***cultural-change-first model*** is the foundation of the community development movement of the 1950s and 1960s. Agricultural growth was hypothesized to be driven by social, cultural and institutional change. But, this was not supported by the development experience of the late 1960s whereby the Green Revolution through high-yielding varieties of wheat, corn and rice were adopted rapidly by local people in many areas of less developed nations without significant cultural change. Since the 1960s, successive paradigms of community development have been canvassed.

The ***neo-marxist and dependency model*** is an outgrowth of Marxist economic development theory. The dependency hypothesis blames the increasing interdependence of the economies of less developed and more developed nations for the drain on resources and income from less developed periphery to the more developed centre. The logic of dependency theory leads to an emphasis on national self-sufficiency, state control of capitalist enterprises coupled with reductions in international trade and aid. In contrast to this theory, neoclassical economists point out that increasing interdependence and trade provides some benefit to all parties on the basis of comparative advantage.

The ***growth-stages model*** is based on Rostow's (1960) general model and Jorgensen's (1961) dynamic dual-economy models.

The five sequential stages in Rostow model[13] are: (1) traditional society; (2) preconditions for take-off; (3) the take-off; (4) the drive to maturity; and (5) the age of high mass consumption. Over time, growth of the leading sector slows because of saturation of demand and other factors while another sector moves ahead. Agriculture was considered the leading sector in the initial stages, thereby highlighting the role that the agricultural sector plays in accelerating economic growth. In particular, the stage-wise model summarizes agricultural development as consisting of three stages – traditional (or static), transitional and dynamic. Critics point to its overly simplistic nature and naive assumptions of linear patterns of agricultural growth. Contemporary evidence shows that national economies are characterized by asymmetric growth dynamics across sectors.

The ***high-payoff input model*** emphasizes that agricultural growth depends on the availability and price of modern agricultural factors. This view was developed more vigorously by T. W. Schultz in his book – *Transforming Traditional Agriculture*[14]. Shultz blamed lack of agricultural progress on the limited technical and economic opportunities for peasant farmers. The model advocates for (i) investments in agricultural research; (ii) investments in capabilities for the production, supply and distribution of modern inputs; and (iii) investments in human capital (that is, capabilities of farmers to acquire and

[13] Rostow, W. W. (1960). The Stages of Economic Growth: A Communist Manifesto. London: Cambridge University Press.
[14] Schultz, T. W. (1964). Transforming Traditional Agriculture. New Haven, Conn.: Yale University Press.

use new knowledge and inputs). The model relied on high rates of return to public investment in agricultural research, particularly new high-yielding wheat varieties in Mexico in the 1950s and new high-yielding rice varieties in the Philippines in the 1960s. The phenomenon was associated with the rapid diffusion of new varieties in Asia, Africa and Latin America. The main criticism is the little attention to the limited fiscal and investment capabilities of less developed nations.

The ***induced innovation model***[15] incorporates aspects of Schultz high-payoff input theory and proposes that agricultural development includes four interacting elements: resource endowments, cultural endowments, technology and institutions. Two aspects of induced innovation are induced technical (technological) change and induced institutional change. The model indicates important roles for government (public sector investments) in the early stages of development, particularly, fostering agricultural research, technological change and institutional infrastructure, to generate spill-over effects. Three main criticisms are (i) the distortive influences of institutional rigidities in less developed countries (ii) the lack of emphasis on improved distributional outcomes of growth and (iii) the assumption that the "invisible hand" of prices will automatically lead to efficient growth paths.

[15] Hayami, Y. and Ruttan, V. W. (1971). Agricultural Development: An International Perspective. Baltimore: John Hopkins University Press.

The **basic human needs model** posits a direct approach to meeting the basic needs (nutrition, health and education) of the poor. This is in contrast to the "trickle-down" approach of cash-crop agriculture under the growth policies of the colonial and post-colonial era. The basic human needs paradigm fitted into the growth-with-equity viewpoints of the 1970s. The model promoted priorities for allocation of programmatic and public investment resources for food production and increased self-sufficiency. The attention to smallholder agriculture was therefore more for distributive, than growth reasons.

The ***structural adjustment (demand management) model***, upon which the World Bank hinged its lending beginning from 1979, was a reaction to countries' unsustainable budget deficits and foreign exchange shortages during the 1970s. The model which followed the landmark World Bank Report (1981), was based on the premise that the emerging agricultural-rural development problems arose from artificially distorted price incentives. The focus therefore was on measures to promote macroeconomic balance through management of aggregate demand. One of the main criticisms was that the policy recommendations were proactive for matters outside the agricultural sector, but passive for those concerning agriculture, that is, it adopted predominantly indirect or trickle-down economic policies in addressing the agricultural sector. Also, it failed to address squarely non-price policy issues within agriculture. The most vigorous challenge to the model came as a joint Economic Commission for Africa (ECA)-African Development Bank (AfDB) denunciation of the World Bank's 1981 report. An alternative plan of action known as the Lagos Plan of Action

was promoted. Both the ECA/AfDB critique and the Lagos Plan of Action (Browne and Cummings 1984) faulted the presumption that aggregate supply response will be adequate to improve agriculture's terms of trade. Also, the emphasis on export agriculture was criticised as too narrow and somewhat detrimental to food self-sufficiency objectives of the 1970s.

In the 1980s, the criticisms led to the re-emergence of agricultural ***supply-response or supply-shifters model.*** The model had legitimacy roots dating back to the 1950s and 1960s in the Asian Green Revolution. Contrary to the structural adjustment demand management model which focuses on price incentives and withdrawal of input subsidies, the supply-response model emphasises the role of non-price factors that shift agricultural production function upwards (that is, bringing about more output for same inputs). The dominant supply-shifters include public investments in research, extension and infrastructure, institutional and human capital to support production. The logic of the supply-response model is that price reforms are necessary but not sufficient for sustained agricultural productivity growth. But, the model insists, like the demand management approach, on macroeconomic and trade reforms and the liberalisation of input and output markets. Unlike the demand management and the post-colonial export-crop paradigms, the model favours food self-sufficiency objectives.

Concerns about the social and poverty effects of macroeconomic stabilisation and demand contraction attended the structural adjustment (demand management) model. Continuing criticisms

led to ***equity-with-growth*** arguments for agricultural development. In 1987, UNICEF sponsored a landmark report – *Adjustment with a Human Face: Protecting the Vulnerable and Promoting Growth* (Cornia, Jolly and Stewart, 1987), whose basic tenet is that proactive redistributive measures are important to involve the poor in growth, even if it lowers aggregate production in the short-run. The model proposed a variety of approaches to stem the negative effects of structural adjustment on the poor. The equity-with-growth model informed much of the modifications to the structural adjustment policies during the late 1980s.

Amidst the debate about the structural adjustment policies and how to make them favourable to agricultural development, the ***sustainable development model*** emerged with core emphasis on the nexus of agricultural growth, environmental preservation and poverty reduction. The model points to potential conflicts. One is the possible conflict between environmental sustainability and agricultural growth; the other between long-run natural resource conservation and short-run poverty alleviation, and also between *laissez-faire* market approach and equity objectives. The main policy offered to reconcile apparent conflicts include improving access of rural women and smallholders to education, health and agricultural production services, rational pricing of common pool resources, capacity building to mitigate the "vacuum" created by withdrawal of the state. Others are institutional development of research and extension, improving opportunities for sustainable agricultural intensification so that agricultural growth will be environment-friendly and poverty-reducing.

Lessons and Insights from the Models of Agricultural Development

Both the debate about the role of the state and markets and the models of agricultural development reflect the crossroads (tough choices and trade-offs) which countries have faced and still do face in agricultural development.

The models of agricultural development are closely associated with differing historical contexts and country experiences. They share many common philosophical undertones, theoretical tenets and policy prescriptions. No single model fits all situations of agricultural development. Price factors (demand, supply, markets) as well as non-price conditions (institutions, technology, human capital and infrastructure) are crucial for sustainable agricultural development. The key policy challenge is to get optimum mix of price and non-price factors (in other words, the right combination of demand-side and supply-side factors) under country-specific circumstances.

7.0 AGRICULTURAL SECTOR FROM THE LOOKING GLASS OF EVOLUTION OF NIGERIA'S POLITICAL ECONOMY

Nigeria's agricultural economy reflects the dynamics of political economy since independence. In this regard, four major forces have shaped the agricultural economy. The first is oil sector (mis)management and concomitant distortion of economic incentives. The second is political instability underpinned by the

alternation of civilian democratic and military-dictatorial regimes from 1960 through 1999. The third is (mis)application of fiscal federalism and the negative effects on fiscal responsibility and public accountability. The fourth is policy failures, crisis of sucession of economic plans/policies and misapplication of policy federalism across the three levels of government.

Nigeria's post-independence economic planning started with the 1st National Development Plan (1962-1968). At Nigeria's independence in 1960, agriculture was contributing 64% of GDP. The thrust of the 1st National Development Plan (NDP) was to move the inherited colonial economy to an independent modern agricultural economy. The main source of investment was government revenue from agricultural taxes and agricultural exports[16], through the marketing board system. Agricultural and rural development was pursued through the inherited colonial-era cash-crop commercialization approach[17], fuelled by rising world commodity prices and expanding global trade in the post-2nd World War decades. During the post-independence period, the three regional governments implemented agricultural development initiatives, including agricultural research and extension, export crop marketing, price stabilisation and farm settlement schemes.

The cash-crop paradigm was driven by mercantilist thinking: to earn foreign exchange and harness agriculture as a source of

[16] The main export commodities were cocoa, groundnuts, palm kernels/oil, hides and skin, natural rubber, raw cotton, timber and bananas.
[17] The heyday of cash crop expansion in Africa continued throughout the 1960s.

resources for industrialization and national infrastructure development. But, the 1ST NDP was weakened by two main factors: a lack of strong empirical basis - a situation characterized as "Planning without Facts" and under-investment. Matters were worsened by the outbreak of civil crisis in 1967, as national resources were diverted to prosecute the civil war.

The post-war Plan, that is, 2nd National Development Plan (1970-74) emphasized national reconstruction and social and economic development. With the oil boom of the early 1970s, crude oil had overtaken agriculture as the largest contributor of government revenue[18], foreign exchange. But, agriculture continued to provide the bulk of employment. By 1970, crude oil share of total exports had reached 58%, while agricultural share of total exports had dropped from 82% in 1960 to 30% in 1970. This was the economic context within which the 2nd National Development Plan (1970-74) was initiated. The Plan period (1970-74) recorded an average annual growth rate of 11.2% per annum, compared to 5.5% for the period 1967-1970, 6% for the period 1958/59 to 1966/67 and 4% for the period 1950-60. Towards the end of the 2nd NDP, that is, by 1973/74, agriculture share in GDP had fallen to about 34%, while petroleum share had risen from about 1% in 1960 to more about 17% (FRN, 1975)[19]. Similarly, by 1974, crude oil share of total

[18] Agricultural sector contributed 0.21%, 0.27% 0.14% and 0.07% of total government revenue during the years 1972-76. Agriculture sector contribution to total government revenue fell from 46% to 11% during the period 1950-1962.

[19] Federal Republic of Nigeria, Third National Development Plan 1975-1980, Vol. 1, (Lagos: Federal Ministry of Economic Development, 1975).

exports had risen to 92% while agriculture share of total exports had dropped to less than 5%.

Political expediency led to progressive creation of States which in turn expanded overall size of the government sector[20], as every State Government established new public service structures. As a result of the creation of States and the increased government's interventionist role in the economy, the government sector rose from about 3% of GDP in 1960 to about 8% in 1973-74. As at 2008, total government expenditure was equivalent of about 32% of GDP[21]. State and local governments accounted for about 58% of the total government expenditure in 2008.

The decline in agriculture share of GDP during 1960-1974 did not result from productivity-induced releases of resources into secondary sectors, but primarily due to the phenomenal rise in crude oil sector. The surge in crude oil revenues during the 1970s precipitated dramatic expansion in the economy fueled by sharp rise in public spending. Growth rate jumped from average of less than 5% prior to the oil boom to over 7% stimulated by the oil boom period[22], while per capita GDP increased by about 4% annually. But, since oil revenues were not effectively deployed to promote diversification through non-oil sectors, agricultural growth rate lagged behind the population growth

[20] Poor coordination between the federal and state governments in budgeting and expenditures led to spiraling debt (NPC, 2004).

[21] CBN (2008). Annual Report and Statement of Accounts for the Year Ended 31st December 2008. Abuja.

[22] Some estimates put the average growth to be about 11% per annum, from 1970-74 (Federal Office of Statistics, National Accounts of Nigeria, Lagos: 1976).

rate, leading to huge expenditure on compensatory food imports. Moreso, the oil boom resulted in overvalued exchange rate (the Dutch Disease) and loss of competitiveness of Nigeria's non-oil tradable sector, mainly agriculture.

The dramatic changes in the economic landscape underscored the context for the enunciation of the 3rd NDP (1975-1980). The Plan sought to use the oil earnings to develop the productive "non-oil" sectors of the economy, that is, to diversify the economy. On the back of phenomenal rise in government revenues, the period witnessed heavy public investments in economic infrastructure, agricultural and rural development, education and health infrastructure and manpower development. Consistent with the tide, this period witnessed many agricultural sector initiatives such as the National Accelerated Food Production Programme (NAFPP) in 1975, Operation Feed the Nation (OFN) in 1976, Land Use Decree of 1978, the River Basin Development Authorities (RBDAs).

To consolidate the progress achieved with the 1975-1980 NDP, Nigeria flagged off the 4th National Development Plan (1981-1985). The Plan aimed at promoting improvements in agriculture, manufacturing, education, manpower development and transport, power and water infrastructure. During the 1980s, the tide of public investments for agricultural development swelled with initiatives such as Green Revolution in 1980, Agricultural Development Projects (ADPs) and Directorate for Food, Roads and Rural Infrastructure (DFRRI) in 1986 and others.

The Plan incorporated, for the first time, the local government system in the planning framework, in line with the extant Constitution. However, the ambition of the plan was undermined by steep decline in revenue in the wake of the crude oil price crash of the early 1980s. The government responded using a series of demand management or austerity measures aimed at conserving foreign exchange and reducing the general level of domestic expenditures. These measures were encapsulated under the Economic Stabilization Act 1982 which aimed at rationalizing overall public expenditures and restoring fiscal balance in the domestic and external sectors. Due to the circumstances, the country achieved merely 50% of the planned investment during the 4th NDP.

Though the economy began to decelerate by the late 1970s, the downturn worsened in the early 1980s due to the crash in international prices of oil, the consequent sharp decline in government revenues and shrinking of the economy. From early to late 1980s, the GDP registered negative growth rates and major economic sectors deteriorated. Oil boom-induced borrowing led to accumulated domestic and external debts. Large draw-down on foreign reserves[23] and huge balance-of-payments deficits characterized the country's external payment position. The economic stagnation continued to the 1990s as per capita GDP in Purchasing Power Parity (PPP) terms fell 40% from $1215 in 1980 to $706 in 2000. By early 2000s, the economy had shrunk to about $45 billion, just a third of its size

[23] Foreign exchange reserves dropped by 85% from 1980-1983, that is, from N5.5 billion in 1980 to N778.5m in 1983 (Olaloku, 1994).

in 1981 and per capita income fell from about $1150[24] in 1981 to barely $300 in 2001 (AIAE, 2003). Poverty rose from 28.1% in 1980 to 65% in 1996, coupled with decline in several human development indicators, including access to health and education.

The 1980s and 1990s witnessed high macroeconomic volatility[25], otherwise known as the "boom-and-burst" syndrome. The situation underscored the unsustainable overdependence on the oil sector coupled with the negative reverberations on the productivity and competitiveness of the non-oil economy. Oil revenues were wrongly used to promote higher levels of public and private consumption, rather than investing in productive assets to ensure sustainable increases in productivity and incomes (Collier, 2008). As at 2000, Nigeria had earned not less than $300 billion from oil exports since the mid-70s, but per capita incomes fell 20% lower than the level attained in 1975. In fact, per capita GDP was among the lowest in the world during the 1980s and 1990s. By 2003, external and domestic debts amounted to about 70% of GDP, with serious budgetary consequences of debt servicing.

Domestic debt increased more than 200% from 1999-2002. On account of bad political and economic governance, growth induced by the oil boom from 1973-1980 was not inclusive and so did not translate to overall improvements of human well-

[24] Incidentally, per capita today is around what it was almost 20 years ago.
[25] Nigeria was rated among the 10 most volatile macroeconomic environments among a set of 110 developing countries. Exchange rate volatility, high and variable inflation, interest rates and unstable growth were the key elements (Soludo, 2006).

being. The enclave nature[26] of the oil sector meant that majority of the employed labour force (that is, in agriculture) were shut out from the growth track. Low and stagnant productivity and returns in agriculture pushed more and more people to other sectors of the economy, despite the fact that remunerative employment opportunities were not sufficiently generated to meet the growing demand for non-agricultural work. Annual growth averaged less than 3% for most of the three decades following the discovery and exploitation of crude oil (NPC, 2004)[27]. Consequently, poverty was aggravated by two main defining trends – low productivity agriculture and low productivity urban informal sector.

Against the backdrop of economic slide, the return to civilian democratic government in May 1999 rekindled the prospects of economic stabilization, sustainable growth and poverty reduction. The new civilian government committed to reversing the economic downturn and laying a solid foundation for sustainable broad-based growth. Specifically, the Government enunciated an Economic Policy Agenda aimed at achieving rapid and sustained growth of 6-10% per annum. Agricultural development initiatives were designed and implemented under the New Agricultural Policy Thrust[28], beginning in October

[26] The high capital intensive nature of the oil sector coupled with its high export orientation resulted in very low labour absorptive capacity and very little linkages with local industry and agriculture.
[27] NEEDS document
[28] The New Agricultural Policy Thrust, Federal Ministry of Agriculture & Rural Development, October 2001. The first national policy was adopted in 1988, and revised for the 2001 document. There is also a National Policy on Integrated Rural Development of 2004.

2001. On its part, the Economic Policy Agenda envisioned a national economy that is highly competitive, private sector-led, broad-based, diversified and market-oriented (FRN, 1999)[29]. Medium-term macroeconomic prospects were predicated upon political stability, fiscal stabilization, Paris Club debt rescheduling, private sector growth, and more effective government spending. Real GDP growth was projected to reach 4.6 percent in 2002, driven by increased productivity and growth of the non-oil sector including agriculture, manufacturing, solid minerals, telecommunications and services.

Driven by monetary and fiscal reforms and relatively better oil prices, the period 2000-2003 witnessed modest improvements in the economy. Annual per capita GDP grew by 2.2% during 1999-2003, compared to stagnant levels throughout most of the 1990s. Aggregate annual GDP growth averaged about 5% during 1999-2003. The climax was the superlative growth performance in 2003 (about 10.2%)[30], driven mainly by growth in agriculture (estimated at 7%) as well as growth in the oil sector (estimated at 23%). Also, foreign direct investment in the non-oil sector rose during 1999-2003, particularly in the telecommunications subsector. The period also witnessed a decline in poverty from 65% in 1996 to 54% in 2004.

Since 2004, there has been remarkably improved macroeconomic and growth performance. The situation was

[29] Federal Republic of Nigeria, 1999. Economic Policy Direction for Nigeria, 1999-2003. Federal Ministry of Information. Abuja.
[30] This is the highest growth rate in preceding three decades.

associated with the National Economic and Empowerment Strategy (NEEDS) which was enunciated in 2004, as a medium-term economic reform framework for the pursuit of sustainable growth, poverty reduction and MDGs. The federal government implemented some macroeconomic, institutional and sector-specific reforms. An example is the linking of fiscal policy to medium term expenditure framework (MTEF) through which public expenditure was prioritized for the attainment of MDGs. An Oil Price-Based Fiscal Rule (OPFR) that links government spending to long-run oil price and a Fiscal Responsibility Act became rallying instruments of fiscal reform.

Monetary and exchange rate policies and management also improved with better coordination between monetary and fiscal policies. External balance improved considerably, as current account balance rose from 4.9% of GDP in 2003 to 16.3% in 2007. Net foreign direct investment (FDI) doubled from US$3 billion in 2003 to more than US$6 billion in 2005[31]; other estimates show that portfolio investment increased to US$9 billion in 2007, from $7.4 billion in 2006[32]. Due to the significant relief from debt overhang of the Paris Club, the external debt stock (as % of GDP) dropped from about 45% in 2003 to just 1.9% in 2007.

[31] While close to 75% of FDI went to the oil and gas sector, the non-oil FDI also increased by almost six times from $0.3billion to $1.7 billion over the same period (World Bank-DFID, 2006 – Nigeria: Competitiveness and Growth).

[32] World Bank, 2008. Nigeria: Investment Climate Assessment 2008. Regional Program for Enterprise Development (RPED)
Africa Finance and Private Sector (AFTFP) and African Development Bank. Abuja.

Even though Nigeria witnessed improved macroeconomic performance since 2004, there remain huge challenges of sustainable growth, poverty reduction and attainment of the MDGs 2015 targets. Even though growth has been driven by non-oil sector, particularly labour-intensive agriculture, employment opportunities have not increased commensurate to the overall growth of the economy, leading to suggestions of "jobless growth"[33]. With an average annual investment rate of less than 14% of GDP, Nigeria is far below the minimum investment level of about 30% of GDP required to unleash poverty reducing growth[34]. Fiscal decentralization remains a challenge to effective macroeconomic stabilization and efficient public finance management.

Currently, the development of agricultural economy is pursued within the overarching context of Nigeria's Vision 2020 economic transformation blueprint and the associated medium-term implementation plan 2010-2013. Agricultural development is modeled as a strategic component of the overall national prosperity ambition of becoming one of the top 20 economies by the year 2020. Within this framework, Nigeria has set targets for year 2020 - GDP at US$900 billion and a per capita income at US$4000. Based on the strategic orientation towards optimizing the non-oil sources of economic growth, Nigeria aspires to achieve, in the medium-term (2010-2013), average annual GDP growth rate of 11% (up from 7% during 2004-2009). In the same vein, it is expected that in the medium-term (that is, by

[33] Unemployment is estimated to be over 20%.
[34] NEEDS document, p. 9

2013), the country's GDP will increase to ₦50 trillion ($333 billion) from $212 billion in 2008 while GDP per capita will increase from $1075 in 2009 to $2,008 by 2013. Accordingly, non-oil export (which would come mainly from agriculture) has been estimated to grow at an average annual rate of 30.0% from 2010-2013.

As a critical growth pole and trigger for industrialization, the agricultural sector is expected to drive productivity, competitiveness and diversification of the economy. Towards achieving the envisaged longer-term structural transformation whereby agriculture's share[35] of GDP declines in favour of manufacturing and services, the National Implementation Plan (NIP) 2010-2013 spells out the strategies for promoting productivity, value-addition and production-market linkages. According to Nigeria's National Implementation Plan 2010-2013, "the policy thrust will be on enhancing total factor productivity in the agricultural sector through the application and diffusion of knowledge and improvement in the technology base". It is envisaged that the sector's contribution to the GDP, will shrink from the current 41.5 per cent (2009) to 34.3 per cent (2013), as more agricultural output is transformed from their primary state into processed products, with more value-added."

Moreover, agricultural policies align with the organizing framework of NEPAD Comprehensive Africa Agricultural Development Plan (CAADP). The rallying instrument is the

[35] It is expected that agriculture's share of GDP will decline from about 41% in 2009 to about 34% in 2013 and progressively to 15% over the period to 2020.

National Agricultural Investment Plan (NAIP), covering 2010-2013. The NAIP reflects Federal Ministry of Agriculture (FMA)'s 5-point implementation agenda pertaining to policy-regulatory framework, commodity markets and value chains, sustainable resource management, efficient technologies and infrastructure. Together with NAIP, there exists the National Agriculture and Food Security Strategy (NAFSS) 2008-2011[36] (already revised as 2010-2020). Within the overall context of promoting food security and pro-poor agricultural growth, the NAFSS, among others, advocates clear roles for the three levels of government and prioritises commodities in relation to poverty reduction and fod security objectives. Alongside the broad policy framework provided by the NAFSS, the planning module of the Federal Ministry of Agriculture has been predicated upon the Medium-Term Sector Strategy (MTSS), for example, the MTSS 2007-2009, encapsulating costed projects and programmes against quantified targets and outcomes.

Despite successive economic blueprints, the economy remains undiversified and highly skewed, as crude oil still accounts for more than 95% of total export revenues and up to 80-85% of government revenues, but contributes less than 4% of total employment. Agriculture, amidst low and stagnating productivity, accounts for about 41% of GDP and about 60% of total employment. On the other hand, the manufacturing sector[37]

[36] The National Agriculture and Food Security Strategy (NAFSS - 2008-2011) was formulated in order to operationalise the agriculture and food security component of the Federal Government's 7-point agenda which commenced in 2007.

[37] The manufacturing sector grew by 5.7% and 6.17% in 2004 and 2005 respectively; as compared to NEEDS target of 7% annual growth rate (NEEDS-2 document, p. 16).

contributes less than 5% of GDP. The low manufacturing share of GDP reflects low industrialization, underscoring the huge deficit in value-added to agricultural output and weak linkages between agriculture and industry.

8.0 THE AGRICULTURAL ECONOMY: THE PARADOX INSIDE OUT

The agricultural import-export matrix is disappointing (Eboh, 2003; Eboh, 2007)

At independence in 1960, agricultural commodities accounted for up to 83% of export revenue. But, since 1974, agricultural commodities have declined to below 5% of export revenue. The decline did not come from desirable structural transformation of the export sector. Rather, it reflects the decline in the international competitiveness of agricultural exports brought about by the neglect, consequent to the dramatic earnings from crude oil. Today, agricultural imports far exceed agricultural exports. While agricultural imports amounted to about $3 billion per annum, agricultural exports are less than ₦100 billion. Fish importation has necessitated by domestic production deficits. While the national demand for fish is estimated at about 2.6 million metric tons (MT) in 2008, local supply was only about 600,000 MT, resulting to the estimated high annual import of about 700,000 MT of fish at US $500 million.

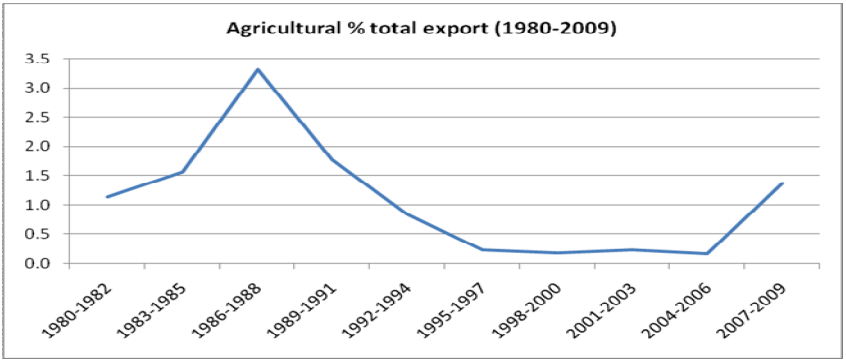

Figure 2. Agriculture share of total export (%) 1980-2009
Source: Derived from data in WTO & CBN reports

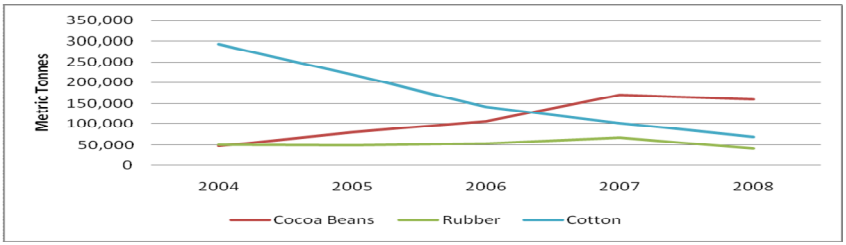

Figure 3. Quantity of Cocoa beans exported from Nigeria (1991-2007)

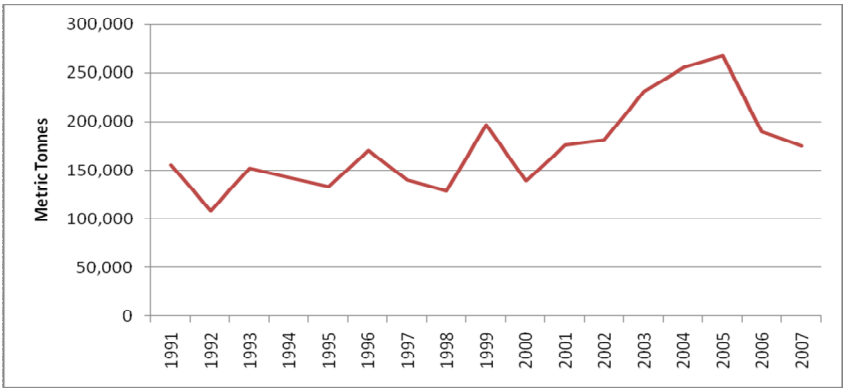

Figure 4. Export of cocoa beans (physical quantities in metric tonnes) 1991-2007
Source: Derived from data in FAO (http://faostat.fao.org/site/342/default.aspx)

Agricultural growth sustainability concerns are heightened by a vicious cycle dilemma (Eboh, 1993; Eboh, 2003a; Eboh and others, 2006)

Productivity growth is the key for sustainable agricultural growth**.** Recent study[38] found that 5.6% annual growth in

[38] Alpuerto, V., Diao, X., Salau, S., Nwafor, M., 2009. Agricultural investment for growth and poverty reduction in Nigeria. Nigerian Strategy Support Programme (NSSP) Background Paper 001. International Food Policy Research Institute (IFPRI) and International Institute for Tropical Agriculture (IITA).

agricultural total factor productivity is required to achieve 9.5% growth in agricultural GDP. But, Nigeria's agricultural growth has been accounted for mainly by agricultural land expansion. Evidence[39] shows that land expansion accounts for about 60% of agricultural growth; only 40% of growth is attributed to productivity increase. Also, while average annual agricultural growth is about 7% over the period 2002-2006, annual yield increases for most crops were less than 1%. The indication that output growth was accounted for more by expansion in area cultivated than by productivity improvements is reinforced by the significant correlation between output and area harvested compared to the correlation between output and yield[40]. In one analysis, while rice output and area are positively correlated in the order of 93%, rice output and yield have marginal positive correlation (4%). Crops and livestock record large yield gaps (that is, gaps between current and potential levels). Even though recent trends reveal some modest increases in productivity over time, yield levels are generally below potentials.

According to our study, the annual cost of yield declines of roots and tubers, cereals, and pulses is estimated at ₦210 billion (US$ 1.57 billion), or nearly 3 percent of GDP in 2003. The annual

[39] Diao, X., Nwafor, M. And Alpuerto, V. 2009. Options for Agricultural Growth for Poverty Reduction in Nigeria. Nigerian Strategy Support Programme (NSSP) Background Paper 2. International Food Policy Research Institute (IFPRI) and International Institute for Tropical Agriculture (IITA).

[40] Eboh, E. C., Larsen, B., Oji, K. O., Achike, A. I., Ujah, O. C., Oduh, M., Uzochukwu, S. A., and Nzeh, C. C. P. (2006). Renewable Natural Resources, Sustainable Economic Growth and Poverty Reduction in Nigeria. AIAE Research Paper 1. Enugu: African Institute for Applied Economics.

cost of yield declines from peak years is even higher, amounting to ₦500 billion (US$ 3.7 billion) for cereals (1981-2004), roots and tubers (1990-2004) and pulses (1990-2004), or nearly 7 percent of GDP. These losses are highly significant given that the total federal capital budget in 2004 was ₦350 billion (US$ 2.6 billion). Overall, poor management of agricultural crop land, rangeland degradation, and forest losses and degradation is costing at least ₦465 billion (US $3.4 billion) per year, at least 6.4 percent of GDP in 2003. This is just the direct cost and does not include the economic multiplier effects and dynamic gains of increased rural incomes that would have prevailed in the absence of degradation and poor management.

Hence, we have a vicious cycle whereby the pressure for more output leads to land expansion which in turn leads to land degradation and declining soil productivity and thereby more land expansion to offset output losses from declining soil productivity. The vicious cycle underscores the need for "resource decoupling" – that is delinking "output growth" from "land expansion".

International Competitiveness – very poor (Eboh, 2003a; Eboh and Lemchi, 2010)

Whereas Nigeria has potential competitive advantage in many agricultural commodities (crops and livestock), the unwholesome combination of low yields, high post-harvest losses and low value addition give rise to low levels of international competitiveness. For example, cassava and rice

economies rate poorly with comparator countries like Malaysia, Indonesia and Thailand.

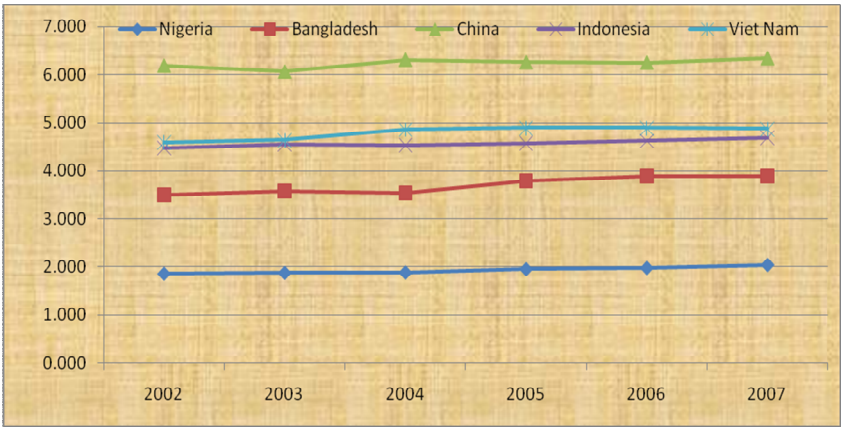

Figure 4. Rice yield (kilogrammes per hectare) in Nigeria and comparator countries

Poverty – agriculture is the largest repository (Eboh, 2003b)

By its nature and structure, the agricultural sector has the highest scope for reducing poverty and inequality. Despite being the largest contributor to economic growth, the agricultural sector has the highest incidence of poverty (about 70%) among all the economic sectors.

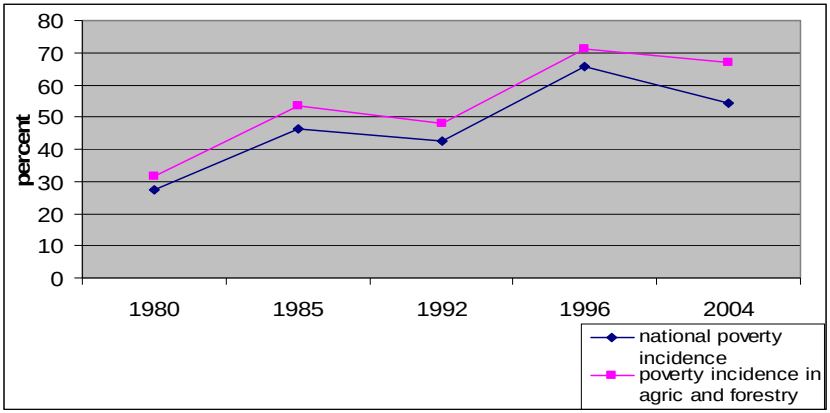

Figure 5. Poverty Incidence: overall and agricultural sector

Poverty in agriculture is precipitated among others by unfavourable terms of trade between agriculture and other economic sectors (in terms of returns to labour, purchasing power parity[41]). The unfair trade against agricultural products is often fuelled by government policies aimed at ensuring food availability and affordability. Nigeria is far short of meeting the Millenium Development Goals (MDGs) target for reduction of poverty.

[41] This refers to the comparative money vale of one unit of agricultural product in relation to one unit of products from any of the other economic sectors – manufacturing, industrial or services. Parity requires that one unit of agricultural product will purchase just one unit of industrial product. Where in equivalent terms, one unit of agricultural product purchases less than one unit of manufacturing or industrial product, the terms of trade is said to be against agricultural products.

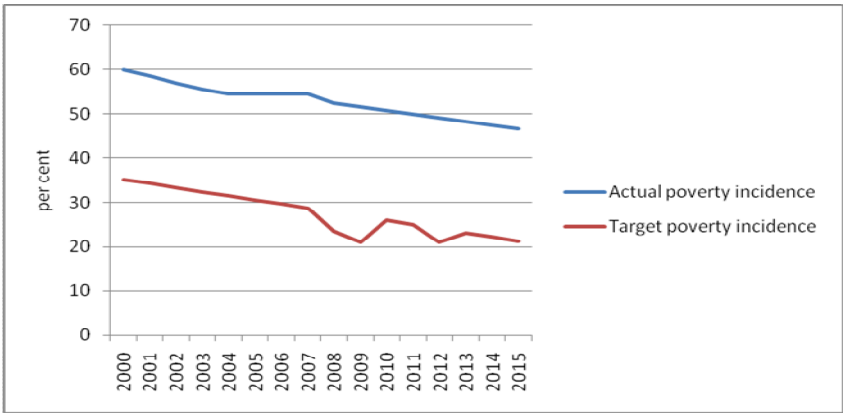

Figure 6. Poverty incidence in Nigeria: actual versus MDG target

Food security concerns persist despite agricultural growth (Eboh, 2005c, Eboh, 2007, Eboh 2008)

Food security refers to availability, adequacy, affordability and accessibility of food and nutrition to the population on a sustainable basis. Agriculture has witnessed relatively improved growth over the past decades. But, the growth has not translated into significant gains in food and nutritional security.[42]. The *Global Hunger Index 2008-9*, ranks developing countries on a scale of 0-100, with 0 indicating the absence of hunger in a given country, Nigeria's 2008 ranking was in the 10-19 range, labeled ―serious. It is estimated that protein intake is about 18 gms per capita per day, as against the recommended level – 35

[42] Government of the Federal Republic of Nigeria, 2006. Support to NEPAD-CAADP Implementation – Bankable Investment Project Profile, National Programme for Food Security, Vol. III of IV. Abuja

gms per capita per day. A considerable proportion of the population still manages with less than 1,810 kcal per person per day. The fact that the country spends about $3 billion annually on food imports (particularly wheat, rice, sugar, vegetable oil, fish, etc) indicates the existence of national food deficit. The domestic production of livestock products is inadequate. It is estimated that about 30% of livestock slaughters are imported from neighbouring countries. Domestic production of beef production is estimated at about 672,000 MT, far below the estimated annual demand of 1,008,000 MT, and this implies an annual deficit of 336,000 MT.[43] Nigeria is far short of meeting the Millennium Development Goals (MDGs) target for reduction of hunger.

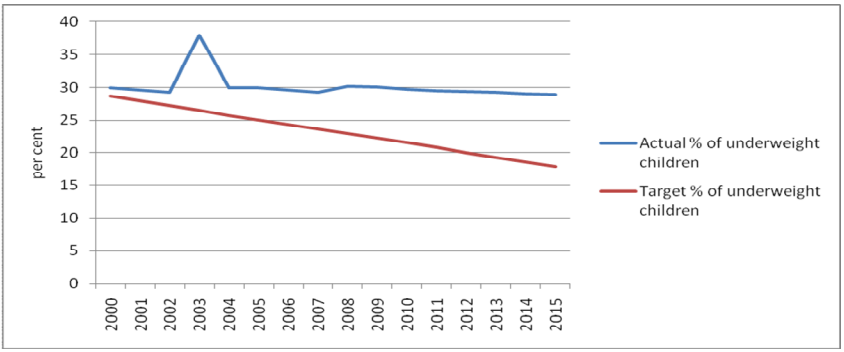

Figure 7. Percent of underweight children in Nigeria: actual versus MDG target

[43] FMARD, 2010. Nigeria: Global Agricultural and Food Security Support Programme. Abuja.

Private capital investment –meager and lack-lustre (Eboh and others, 2010)

Agricultural sector accounts for the single largest portion (about 42%) of national economic output (GDP). But, the private investment in agriculture in terms of bank loans and credit is the least among all economic sectors. From 2006-2008, the average annual flow of bank credit to agriculture was mere 2.27%[44] of total credit. In more than thirty years of existence (that is between 1978-2010), the Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB) now called Bank of Agriculture (BOA) has extended only a total number of 593,712 loans valued at ₦26.1 billion. This meagre flow of credit does not correspond with agriculture's status in the national economy. Worse still, agriculture, forestry and fisheries accounted for only 0.7% of total cumulative foreign private investment in Nigeria in 2003 compared to 25.6% for manufacturing and processing, and 34.6 percent for mining and quarrying. One sign of poor private sector participation in agriculture is the poor quality of agricultural labour force. The demand for university admission into agriculture courses has generally declined since the past 20 years (Eboh, 2003d).

Public sector expenditure –unstable, wrongly skewed and grossly inadequate (Eboh and others, 2007; Eboh, 2008; Eboh and others, 2010)

[44] CBN, (2009). Annual Report and Financial Statements for the Year Ended 31st December 2008.

The agricultural sector was the main financier of colonial and post-colonial regional and national development in Nigeria. Despite this credential, the agricultural sector has continued to suffer continuing neglect which began with the discovery of crude oil and the oil boom. Agricultural sector contributed an annual average of more than 32% of GDP from 2002-2007, but:

- Agriculture sector share of total federal government spending from 2002-2007 averaged 4.3%;
- Agriculture sector share of total state governments' spending from 2002-2007 averaged 3.6%;
- Agriculture sector share of total federal and state governments' spending from 2002-2007 averaged 3.4%; agriculture sector spending share in total spending peaked in early to mid-1980s at about 5.9%, stagnated to 1-2% between 1990-2000 and then rose to between 3.1-4.4% between 2001-2006.
- The ratio of agriculture sector spending to agricultural sector GDP averaged 2.8% from 2002-2007.
- The long-term average of the ratio of agricultural sector expenditure share of GDP to agricultural sector share of GDP is about 0.07, indicating that agriculture sector spending has been less than one-tenth of agricultural sector share of the GDP.

These appalling indicators show that agriculture sector spending has been inconsistent with agriculture sector contribution to (and status in) the national economy. Besides, the evidence shows that public sector expenditure on the agricultural sector has been

fraught with high degree of volatility or fluctuations from year to year.

There is also a huge financing gap in Nigerian agriculture. Projected federal government funding for agriculture and food security over a four-year period 2008-2011 is about ₦935 billion. But, total federal budget for agriculture and water resources in 2008 was less than ₦120 billion, as against the projected funding needs of about ₦319 billion for 2008[45].

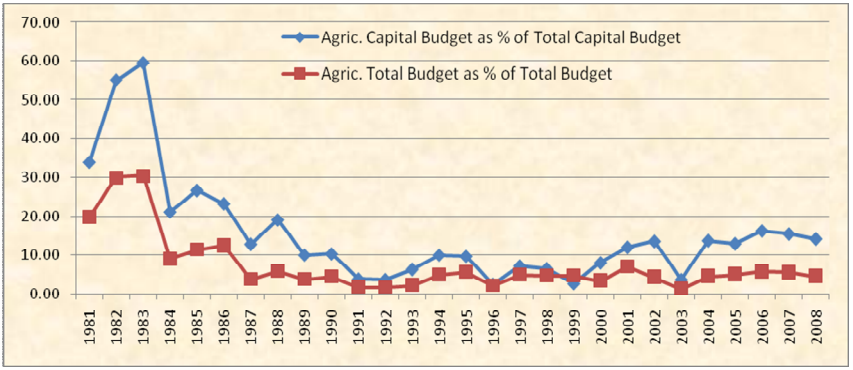

Figure 8. Federal government agriculture budget as % of total budget

Skewed public sector expenditure – misdirected capital spending: Public spending in agriculture is required to produce public goods such as research and extension, infrastructure and harness economies of scale. But, the bulk (about 80%) of total

[45] FMAWR - Federal Ministry of Agriculture and Water Resources. 2008. National Food Security Programme. August 2008. Abuja.

agriculture spending over the years has been wrongly skewed[46]. Fertiliser subsidy consumes about 42%, food security programme gulps about 22%, while strategic grain reserve programme (e.g. storage facilities, grain purchases) takes about 16%. Very marginal portion of the total capital spending is applied to research and extension.

Poor agriculture-industry linkages remain a principal drawback (Eboh, 2003a; Eboh and others, 2008)

Agricultural development was conceived as key driving force for the nation's industrialisation in the 1970s. But, industrial strategy was not rightly oriented to supporting agriculture. In effect, the import substitution models of the 1970s and 1980s did not significantly lead to the sourcing of raw materials from domestic agriculture, but promoted imports from outside the country. The main hindrance to linkages between production and market is the deficient infrastructural, technological and institutional capabilities for storage and processing. Agro-processing (both primary and secondary) and agro-industry constitute perhaps a critical missing link in the commodity value chain development process. But, the processing landscape is hampered by poor levels of farm-gate (that is, first-tier or primary) processing, low value-addition and the resulting low international competitiveness. Agricultural processing takes

[46] Alpuerto, V., Diao, X., Salau, S., Nwafor, M., (2009). Agricultural investment for growth and poverty reduction in Nigeria. Nigerian Strategy Support Programme (NSSP) Background Paper 001. International Food Policy Research Institute (IFPRI) and International Institute for Tropical Agriculture (IITA).

place in mostly scattered unorganized enterprises/centres where critical infrastructure, regulatory services, managerial and technical skills and promotional services are acutely short. Amidst these challenging domestic conditions, Nigeria faces growing international competition driven by the forces of globalising markets. More than 90% of total agricultural processing is carried out using inefficient technologies in infrastructure-poor areas. The associated high operational costs and poor technologies precipitate low product quality and non-competitive prices of processed products. A related problem is the high incidence of post-harvest losses, estimated to reach 50% for vegetables and fisheries, 40% for tubers and 35% for grains[47]. In fact, the cyclic nature of the post-harvest problem raises critical policy challenges.

Despite successive policies and programmes, agro-processing and post-harvest activities remain largely underdeveloped. Considerable wastes occur due to inadequate and inefficient transformation of raw outputs into processed food products and industrial raw materials. Evidence of poor post-harvest performance is the generally low quality and consequent poor international competitiveness of post-harvest products[48].

[47] Eboh, E, C. (2004). Large scale arable crops farming development in Nigeria: Policy Questions and Current Challenges, Paper delivered at the 3rd Nigeria Agriculture Summit organised by Nigerian Economic Summit Group Ltd/Gte, held in Benin City. The estimates compare with those given by Obanu (1990).

[48] The Presidential Initiative on Cassava notes "Nigeria has no comparative advantage in the export of cassava chips and pellets due to high production costs and low level of processing technology coupled with the stiff competition from Thailand which currently dominates the cassava chips export market".

Examples are rice, cassava and palm produce. Cassava chips, starch and flour bear huge indirect processing and operational costs which undermine viability, profitability and international competitiveness. Similarly, the competitiveness of local cotton is compromised by poor quality, also due to poor processing. Sometimes, the price of Nigeria cocoa suffers undue discount in international markets on account of quality concerns. The local price of rice paddy is often high, such that it is difficult to produce processed rice at internationally competitive rates. The relatively high price of rice paddy is linked to the low farm-level rice productivity and the attendant high unit costs of production.

Typically, the commodity subsectors are characterised by a paradox - whereby there glut of some commodities at the farm-gate while processors and end-users lack sufficient stocks as raw materials in factories. One vivid case is cassava. This underscores the fact that there are information, infrastructure and coordination gaps in the agricultural value chains which precipitate market failures.

Water resources management and irrigation – inefficient and unsustainable use remain critical drawbacks (Eboh and others, 1997; Eboh, 2010)

Irrigation potentials indicate large scope for multi-season and more productive agriculture in Nigeria. Currently, irrigated production accounts for a marginal share of total crop output. Less than 10% of the total irrigable area estimated at about 2.50-3.14 million ha. Irrigation contributes only 0.6% of the total grain output and 2.3% of total output of vegetables. Most of the

large-scale public sector irrigation schemes established in the 1980s have become non-operational due to high operating costs, poor maintenance and lack of ownership by intended beneficiaries (World Bank, 2003). There are about 160 dams[49] in Nigeria, most of which are poorly managed and, in many cases, barely operational with no reservoir operations rules, little or no maintenance, with 10-20% of the water being effectively utilized. In many cases the evaporation from storage, at 20-30% exceeds the water utilization. Moreover, irrigation efficiency is estimated at about 20% (World Bank, 2003). As at 2004, government had developed only about 20% of the area planned for public sector irrigation; similarly, only 32% of the developed area was actually irrigated. A number of factors are responsible for this situation. They include absence of coherent irrigation subsector development policy and strategy, lack of rigorous financial and economic viability studies, inappropriate management and maintenance regimes, irregular and insufficient funding coupled with poor cost recovery, high capital and operating costs, inadequate complementary farm support services, and low level of project ownership by the direct beneficiaries (FAO, 2008). Consequently, Nigeria is missing huge economic opportunities to use irrigated agriculture to drive agricultural productivity, employment and incomes.

Technology and inputs – low level of use (Eboh, 2003; Eboh 2005b; Eboh 2007)

[49] Most of the dams are ageing and deteriorating, others have technical defects that increase safety risks.

Despite the pivotal role of improved technology and modern inputs in accelerating agricultural productivity, agricultural production is characterised by low incidence of use of modern inputs such as fertiliser, improved seeds and agrochemicals. More than 90% of the total national crop output is produced by smallholders cultivating less than 2 ha of farmland. Existing use of improved seeds/planting materials is put at 12% of potential demand. Fertilizer use is estimated to be below 15 kg of nutrients/ha, compared to Africa average of about 25kg/ha and world average of about 90 kg/ha.

Agricultural output is increasing....., at the expense of forests/woodlands (Eboh, 1995; Eboh and others, 2006)

Because agricultural growth has largely been driven by land expansion, there has been increased degradation of forests and woodlands occasioned by increased land clearance for crop farming. The role of forests and woodlands as sources of fuel, medicinal materials and fruit-foods and as well as in mitigating global warming is threatened by land clearance for arable agriculture. The rate of deforestation in Nigeria is estimated at about 2.6% per annum, one of the highest in Africa. Our recent analysis[50] indicates that cropland expansion is increasingly taking place on marginal land with lower yields, forced by lack of

[50] Eboh, E. C., Larsen, B., Oji, K. O., Achike, A. I., Ujah, O. C., Oduh, M., Uzochukwu, S. A., and Nzeh, C. C. P. (2006). Renewable Natural Resources, Sustainable Economic Growth and Poverty Reduction in Nigeria. AIAE Research Paper 1. Enugu: African Institute for Applied Economics.

productivity gains in agriculture and lack of off-farm and urban income opportunities for a rapidly increasing population. This trend has aggravated competition between cropland and forest, and between cropland and rangeland. For instance, analysis of the land use and vegetation change data in Nigeria (1976/78-1993/95) shows that while area under forest declined by 16%, area under arable cropland increased by 13%. The apparent competition between forest and cropland can be attributed to the fact that the pressure to increase crop outputs has over the years been met through progressive encroachment of forest- and wood-lands. Environmental degradation is aggravated by overgrazing, soil erosion, drought, desertification and indiscriminate tree felling. Overall, continued degradation of the forests and woodlands undermine long-term sustainability of agricultural growth.

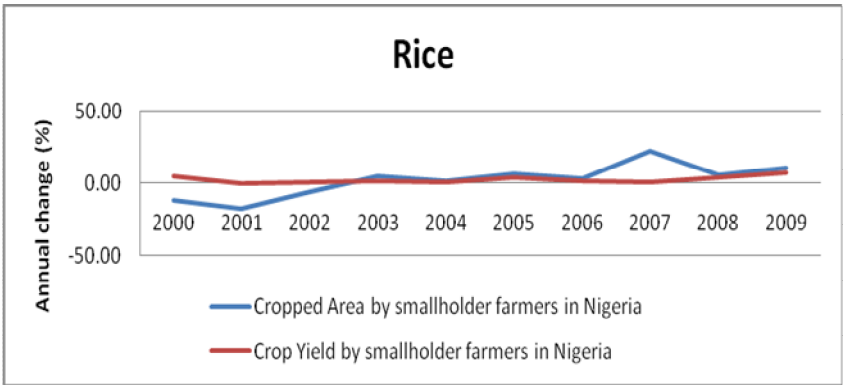

Figure 9. Change in cropped rice area vs change in rice yield (annual %) 2000-2009
Source: Data from National Food Reserve Agency (NAFRA), 2010.

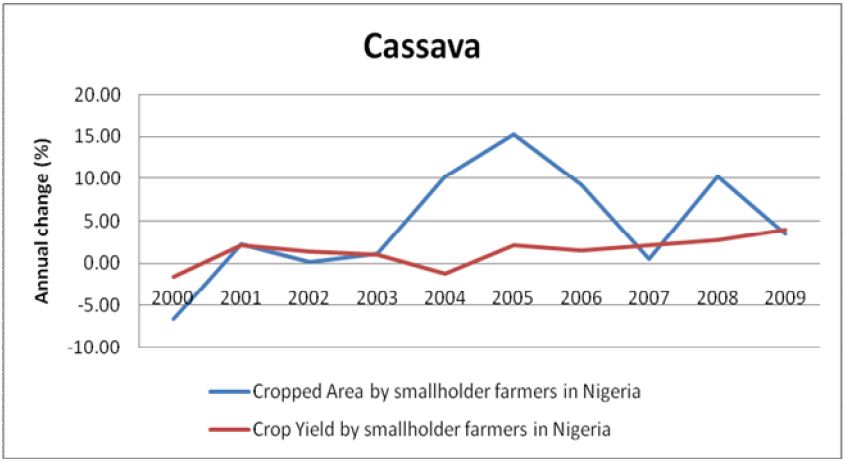

Figure 10. Cassava area vs cassava yield (annual %) 2000-2009
Source: Data from National Food Reserve Agency (NAFRA), 2010.

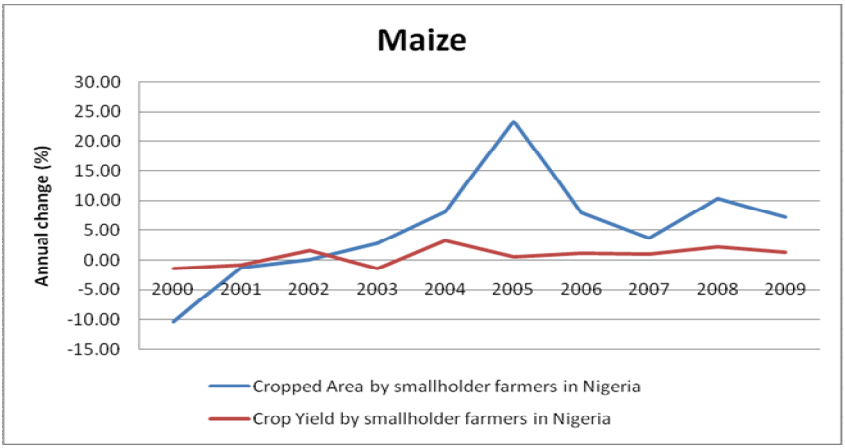

Figure 11. Maize area vs maize yield (annual %) 2000-2009
Source: Data from National Food Reserve Agency (NAFRA), 2010.

These trends underscore the need for "environmental impact decoupling[51]" – that is, delinking "output growth" from "deforestation" or "woodland conversion".

Low integrity and credibility of policy and institutions – policy landscape is fraught with contradictions, discontinuities and feedback challenges (Okereke and Eboh, 1990; Eboh, 2003a).

The policy environment is far from conducive. There is lack of follow-through in policies and programmes. An example is the Presidential Initiatives on some commodities. The policy on 10% inclusion of cassava flour in bread is almost dead, and was never even implemented.

Like in other sectors, there is high turnover of administrative and policy regimes. The situation hampers institutional memory and policy learning by policymakers and technocrats. In the last 10 years alone, the Permanent Secretary in the Federal Ministry of Agriculture has changed 7 times. Even the institutional framework for agricultural sector has not been spared. There have been frequent changes of the institutional framework such that we have had Ministry of Agriculture and Rural Development, Ministry of Agriculture and Water Resources at different times.

[51] This implies the situation whereby "economic goods" is detached from "environmental bads".

Policy responses are not sufficiently holistic and integrated. Sometimes, policies do not yield the desired results either because they are not implementable (because of poor design) or they are poorly implemented (because of lack of political will, inadequate executive capacity and/or corruption). Take the case of 30% duty on imported rice, an instrument aimed at promoting local rice production. The fact that importers can bring in rice through the Cotonou port at 5% import duty encourages rampant smuggling, which the Customs Agency is not adequately equipped to cope with. In effect, the intentions of the 30% import duty on rice are not being realised.

Many initiatives are not adequately coordinated for synergy and so do not add-up. One example is cotton. For instance, the policy instruments that promote production are not simultaneously complemented with those that promote processing, value addition and product market development. Targeting of policy incentives remains very inchoate and ineffective. The apparent high incidence of unintended beneficiaries in many state-led incentive schemes is counterproductive. One clear case is the subsidy on fertiliser. The real intended beneficiaries often do not get fertiliser at the subsidised price. The targeting models fuel rent-seeking and expose the distribution and marketing systems to corruption.

The agricultural development models[52] promoted under donor-assisted initiatives in Nigeria suffer from the poor policy

[52] An example is the ADP model, Commercial Agriculture Project, USAID MARKETS, DFID PropCom.

environment. Though the models are largely demonstrative, government institutional uptake has been very poor. The impacts and sustainability of these models are undermined by lack of adoption, replication and ownership.

One important policy-related constraint is the plethora of negative feedback from other sectors of the economy. Often times, trade, exchange rate and investment policies as well as monetary, fiscal and credit policies impact negatively on the agricultural sector. For example, increased trade openness could lead to the crowding out of domestic agricultural outputs because of lack of competitiveness relative to imported equivalents. Illegal imports of agricultural products into the country through border smuggling undermine the effectiveness of tariff instrument. The poor economic governance and weak public financial management that bedevil the country have hampered agricultural development, just like other economic development sectors such as health, education and industry. Infrastructure bottlenecks are particularly adverse on agricultural value chain development particularly transportation, processing and marketing.

9.0 CONCLUSION: TACKLING THE PARADOX IN THE MARCH TO Y2020

PARADIGM SHIFTS IN STRATEGY AND SUBSTANCE

(Eboh and others, 2010, Eboh and Ogbu, 2010)

It is imperative for paradigm shifts of agricultural development from production-oriented to market-led, from farming as a production module to business enterprise module, from sporadic or unstable funding[53] to systematic sustained funding, from inconsistency and discontinuity in policies to coherence and stability in policies, from 'blind' open-ended public subsidies to 'targeted' object-oriented public subsidy. It is important for agricultural, trade and industrial policies to be closely knit, rightly synchronized and well-coordinated to reduce adverse feedbacks and contradictions. The case of cassava and rice are vivid examples of how the lack of synchrony of agriculture, trade and industry policies can precipitate contradictory outcomes. The new agricultural economy should be market-oriented (not market-led)[54], private sector-driven and government-led. Emphasis should move away from merely promoting "sufficiency" to promoting "efficiency"[55],

[53] Ad hoc spending does not allow for monitorable benchmarks in terms of outcomes and impact. As such it is not clear whether the spending is 'additive' or merely 'substitutive'.

[54] Development cannot be market-led. It should rather be government-led. Government sets the framework and provides leadership in the development process, not the markets. The market is an economic mechanism, an instrument, not the leader.

[55] Sufficiency is a political imperative, while efficiency is an economic imperative. But, both need not be conflicting. Finding trade-off through appropriate policies remains a major challenge.

competitiveness, economic linkages and sustainability of domestic agriculture.

TACKLING NEGATIVE ENVIRONMENTAL FOOTPRINTS OF AGRICULTURE

The quality and amount of renewable natural resources, agroecological and environmental systems set limits to what and how much can be produced, except where technology and innovations have boosted production possibilities. Because of agriculture's critical dependence upon ecological resources and environmental services, it is in agriculture's interest not to undermine them. Sustainable agricultural development entails that current resource use does not diminish the prospects of continued flow of outputs into the future. It is imperative that agriculture meets the critical benchmarks of ecosystem compatibility, resource efficiency, climate change mitigation and adaptation and environmental integrity. I therefore propose the use of "environmental footprints index"[56] to evaluate the environmental sustainability of agricultural development programmes and projects.

The needed paradigm shift will incorporate decoupling[57] in conceptual and empirical senses. Decoupling infers not just the

[56] The 'environmental footprints index' is a composite (aggregate) of weighted performance in the domains including land-use optimization, soil fertility management, ecosystem compatibility, climate change adaptation, land degradation impacts and water efficiency.

[57] Decoupling refers to the principle and practice of delinking rates of economic growth and increases in human welfare from increases in resource consumption and increases in adverse social and environmental impacts. It denotes the scenario

'farming systems' approach of the 1970-80s but 'ecosystems' models of sustainable resource use.

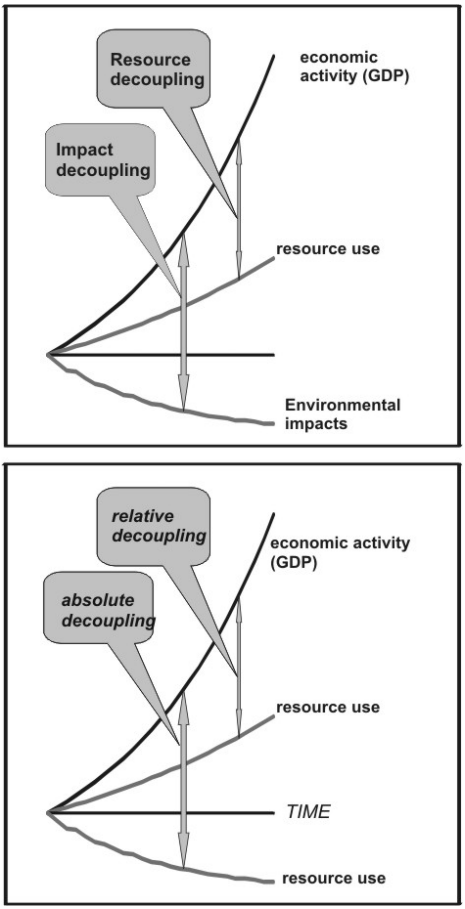

Figure 12. Resource and Impact decoupling
Source: Fisher-Kowalski and Swilling 2010.

whereby economic growth and welfare improvements do not necessitate increases in resource extraction/consumption and/or increases in negative environmental impacts.

Another important dimension of needed paradigm shift is imperative of following through the policy life-cycle.

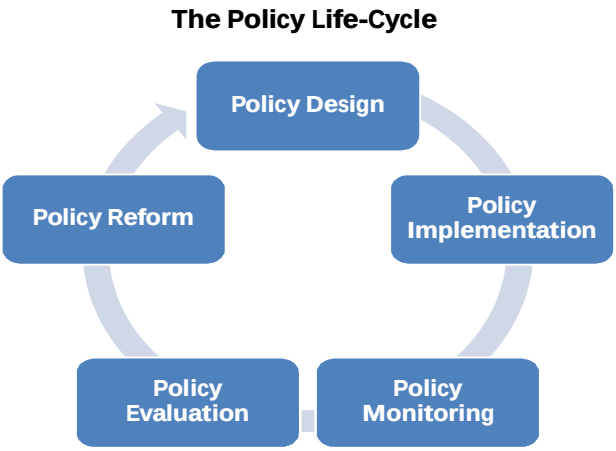

Figure 13. Policy life-cycle

It is essential for agricultural policies and programmes to go through "Policy Varietal Tests[58]". This will include pre-implementation appraisal and post-implementation evaluation. The pre-implementation tests should help to scrutinize policies for levels of tolerance to political, socioecultural and institutional/administrative stress. On the other hand, the *ex post* evaluation will help to improve policy reforms. In addition, policies and programmes need to be systematically sequenced so as to reap the gains of progressive learning, evaluative thinking and cumulative improvements in functioning, effectiveness and impacts. This is the way to ensure viability, effectiveness, legitimacy and sustainability of policies and programmes.

[58] The necessity for such 'tests' is also stressed by Idachaba (2000).

VALUE CHAIN DEVELOPMENT (Eboh, 2007; Eboh and others, 2008; Eboh and Lemchi, 2010)

Agriculture linkages with industry and services should be developed based on the value chain model. The value chain model entails holistic and synergistic engagement of the entire range of agribusiness and economic activities and services in the production, processing, storage, transportation, distribution and marketing of agricultural outputs. Value chain approach coupled with agro-industrial development is critical to wealth creation and employment generation. Without good business environment, Nigeria's agricultural-industry value chains will continue to lag in international competitiveness. Value chain development should be multilayered, comprehensive and integrated and oriented to building sustainable capabilities at the enterprise and sector levels. This model is detailed in Eboh (2008). The first layer should be direct commodity-specific market-oriented programmatic interventions that enhance post-harvest handling and preservation, agro-processing and the industrial uptake of agricultural products. The next layer should be business environment enhancement through easing the infrastructure and regulatory constraints and thereby reduce the cost of doing business (see Eboh and Lemchi, 2010).

Value chain development, rather than supply-based orientation holds the prospects for sustainable agricultural growth and linkages with industry and services. Hence, I propose the use of

a non-parametric measure - Value Chain Compliance Index[59] (VCCI) - to benchmark agricultural commodity development interventions.

SOUND AGRICULTURAL GOVERNANCE (Eboh, 1999; Eboh, 2008; Eboh and Ogbu, 2010)

Good governance[60] is absolutely crucial. The agricultural value chain is beset with facilitation, systemic and services gaps which underpin the market failures (missing markets and weak markets). Agricultural input- and output-markets suffer institutional and structural deficiencies including information asymmetries, price rigidities, logistics failures, cost escalations, skills gaps and weak regulation. These gaps underscore the critical role of government in providing public goods and mitigating externalities (Eboh, 1999). These factors limit the rapid and effective transmission of feedback from market to production. In addition, they hamper efficient market pricing and market growth. Another dimension of the need for gap-filling is the asymmetry of risks and returns in agricultural production. Because of the biotic and climate-dependent nature of agriculture, production is highly vulnerable to risks that are

[59] The index denotes a composite (weighted) measure of the extent to which interventions solve the constraints along the commodity value chain in an integrated and holistic manner.

[60] Governance denotes the set of political systems, institutions, policies and services by which the state exercises sovereign responsibilities in setting the rules of the game, providing public goods, mitigating externalities and maintaining law and order.

external to the farm. Often, in comparison to other economic sectors, the returns in farming often do not match the potential risks. As a result, there is disincentive for private investments. Agricultural governance should function to help alleviate market gaps, mitigate risks and foster synergy and equitable terms of trade between agriculture and other economic sectors. These imperatives are advocated by Eboh and others, 2010.

EVIDENCE-BASED POLICYMAKING/PROGRAMMING: Connecting the 'Gown' and the 'Town'– (Eboh, 2005a; Eboh, 2005d; Eboh 2008; Eboh and Ogbu, 2010)

For agricultural development to become effective and sustainable, policies and programmes must be based on research insights. The innovation model of interface between research, policy and enterprise is indispensable for optimizing the economic contributions of agriculture. Currently, there is wide gap (and lack of feedback) between agricultural research and agricultural sector policymaking. and between agricultural research and agricultural enterprise The gap can be ameliorated through the creation of institutional frameworks to broker links between the 'gown' and the 'town'. The universities can and should develop clear institutional mechanisms in the mannere of innovation networks to connect university agriculture research with private enterprise (industry and services). Such initiative will facilitate, coordinate and nurture the testing, utilization and commercialization of products and innovations from university research. Innovation networking models necessitate mindset change among researchers, policymakers and businesspeople.

The mindset needs to change from "isolation and distrust" to "mutuality" in accountability and responsibility. Researchers, whether in the universities, public and private research institutes, should show leadership in promoting research paradigm shift. Research-based solutions should become less prescriptive and less normative but more nuanced, more reflective and more engaging with real-life problems.

An important new dimension of the needed paradigm shift in many developing country contexts is the move from conventional "research and development"[61] (R & D) towards proactive "research for development"[62] (R4D). At the African Institute for Applied Economics, we have recorded considerable success and useful experiences in fostering connections between the 'gown' and 'town'. The Better Business Initiative (BBI), Business Environment and Competitiveness across Nigerian States (BECANS) and stylized research-based workshops with policymakers and practitioners are vivid linkage models. The Stellenbosch University[63] in South Africa is one the world's leading lights in aligning academic and research expertise to national and international development agenda and in

[61] "Research and development" describes a situation whereby it is assumed that practitioners will take up research results, products and innovations. But, "research for development" describes a situation whereby research systems deliberately institute mechanisms to promote the utilisation of research results, products and innovations.

[62] For example, the International Institute of Tropical Agriculture (IITA) has in recent years implemented paradigm shift to 'research for development', within its overarching mission of "research to nourish Africa".

[63] The University's "Hope Project" provides the sustainable development framework for meeting the needs and solving the constraints of local communities, the larger society and economy through education, research and community engagement.

connecting the ‘gown’ and ‘town’. I urge that teaching, learning and research in our universities be harnessed to make bolder footprints in Nigeria’s race for accelerated economic growth and competitiveness, poverty reduction, sustainable human development.

Mr. Vice Chancellor, Distinguished Professors, Colleagues, Lions and Lionesses, Ladies and Gentlemen, I am most grateful for your kind attention. May God bless us you all. Thank you very much.

CONSULTED LITERATURE

Alpuerto, V., Diao, X., Salau, S., Nwafor, M. (2009). Agricultural investment for growth and poverty reduction in Nigeria. Nigerian Strategy Support Programme (NSSP) Background Paper 001. International Food Policy Research Institute (IFPRI) and International Institute for Tropical Agriculture (IITA).

Bowden, E. V. (1985). *Economic evolution: Principles, issues, ideas.... through the looking glass of time*. Ohio: South-western Publishing Co.

Browne, R. S. and Cummings, R. J. (1984). The Lagos plan of action vs the Berg report: Contemporary issues in African economic development. Monographs in African Studies. Washington, D. C.: International Food Policy Research Institute.

Cornia, G. A., Jolly, R. and Stewart, F. (eds). (1987). *Adjustment with a human face. Vol. 1, protecting the vulnerable and promoting growth.* Oxford: Clarendon Press.

Delgado, C. L. (1995). Africa's changing agricultural development strategies: Past and present paradigms as a guide to the future. Food, Agriculture and the Environment Discussion Paper 3. Washington D. C.: International Food Policy Research Institute.

Diao, X., Nwafor, M. and Alpuerto, V. (2009). Options for agricultural growth for poverty reduction in Nigeria.

Nigerian Strategy Support Programme (NSSP) Background Paper 2. International Food Policy Research Institute (IFPRI) and International Institute for Tropical Agriculture (IITA).

Eboh, E.C. (2003a). "Analysis of competitiveness and performance in the Nigerian agriculture sector, 1992-2001" *Study Report submitted to World Bank Country Office*. Abuja, Nigeria.

Eboh, E. C., Lemchi, J. I., Nwajiuba, C., Enwere, N. and Osa-Afiana, L. (2008). *Agricultural processing and post-harvest conditions in Nigeria: Enterprise-level experiences and policy implications.* Research Report. African Institute for Applied Economics.

Eboh, E. C. (1993). "A Principal Component Modelling of Agricultural Intensification: Theoretical and Empirical Reflections in Eastern Nigeria." *Modelling, Measurment and Control*, D, Vol. 8, No. 1, pp. 35-54.

Eboh, E. C., Amakom, U. and Oduh, M. (2007). *Budget and public expenditure across Nigerian states – BECANS Working Paper 3.* Enugu: African Institute for Applied Economics.

Eboh, E. C. and Lemchi, J. I. (2010). *Business environment in Nigerian states 2010: tackling the security challenge.* Enugu: African Institute for Applied Economics.

Eboh, E. C. (2010). Critical drawbacks to efficient and sustainable water economy in Nigeria. Paper

prepared for the Water Working Group of the International Panel on Sustainable Resource Management, United Nations Environment Programme (UNEP), Paris, France.

Eboh, E. C. (2005c). Critical success factors for agribusiness growth in Nigeria. Paper presented at the 4th Nigerian Agriculture Summit. 6 November 2005.

Eboh, E. C. (2005c). Cultural inclinations, modernisation and development of agricultural systems in Nigeria. Paper presented at the 2005 World Food Day Celebration organised by the Federal Ministry of Agriculture, Abuja.

Eboh, E. C. (2007). Developing agricultural value chain towards Nigeria's vision 20-2020. Paper presented at the 6th Nigeria Agriculture Summit, 6-7 December 2007, Abuja.

Eboh, E. C. (2009). *Fiscal federalism, subnational governance and MDGs in Nigeria.* AIAE Research Paper 4. Enugu: African Institute for Applied Economics.

Eboh, E. C. and Ogbu, O. (2010). *Global economic crisis and Nigeria: Taking the right lessons and avoiding the wrong lessons*. Enugu: African Institute for Applied Economics.

Eboh, E. C. (2003d). "Implications of greater private sector role in agricultural growth for Nigerian tertiary agricultural education." In Temu, A. (ed.). *Building agricultural and natural resources education in Africa: Quality and relevance of tertiary education.*

Proceedings of International Conference/Workshop of African Network for Agroforestry Education (ANAFE), International Centre for Research on Agroforestry (ICRAF), Nairobi, Kenya.

Eboh, E. C. and Omaliko, C.P.E. (1997). Institutional reform, price deregulation and technological change in smallholder agriculture: A study of Nigeria's river basin development authorities and their clientele farmers. ATPS Working Paper. No. 16. Nairobi: African Technology Policy Studies Network.

Eboh, E. C. (2004). Large scale arable crops farming development in Nigeria: Policy questions and current challenges. Paper delivered at the 3rd Nigeria Agriculture Summit organised by Nigerian Economic Summit Group Ltd/Gte, held in Benin City.

Eboh, E. C. (2005d). "Linking economic research and policy: Opportunities and challenges. In Eboh, E. C. (ed.) (2005). *Promoting Nigeria's non-oil private sector through appropriate policies and institutions: Evidence and recommendations.* Enugu: African Institute for Applied Economics.

Eboh, E. C., Oji, O. O., Oji, O. G., Amakom, U. S., Ujah, O. C. (2005). Nigeria agriculture and ECOWAS common agricultural policy: Opportunities and challenges. Research Report of African Institute for Applied Economics.

Eboh, E. C. (1999). *Political economy of national development: Issues and perspectives.* Lagos: Academic

Publications and Development Resources Ltd. Lagos.

Eboh, E. C. (1995). "Poverty, population growth and environmental degradation: The vicious cycle of human misery." In Eboh, E. C., Okoye, C.U. and Ayichi, D. (eds.). *Rural development in Nigeria: Concepts, processes and prospects.* Enugu: AutoCentury Publishing Co. Ltd.

Eboh, E. C., Ujah, O. C. and Nzeh, C. E. P. (2010). "The global financial and economic crisis as an opportunity to re-think Nigeria's agricultural sector strategy". In Eboh, E. C. and O. Ogbu, *Global economic crisis and Nigeria: Taking the right lessons and avoiding the wrong lessons*. Enugu: African Institute for Applied Economics.

Eboh, E. C., Chidiebelu, S. A. N. D., Achike, A. I., Igbokwe, E. M., Oji, K. O., Ujah, O. C., Alimba, O., Ukeje, S., Nwosu, A. C., Irene, C. J. and Okoye, C. U. (2004). *Policy and legislative agenda for Nigerian agriculture*. Study Report. African Institute for Applied Economics. Enugu.

Eboh, E. C. (2003b). *The poverty reduction strategy process in Nigeria*. Addis Ababa: Economic Commission for Africa.

Eboh, E. C. (ed.) (2005a). *Promoting Nigeria's non-oil private sector: Evidence and recommendations.* Enugu: African Institute for Applied Economics.

Eboh, E. C., Larsen, B., Oji, K. O., Achike, A. I., Ujah, O. C., Oduh, M., Uzochukwu, S. A. and Nzeh, C. C. P. (2006). *Renewable natural resources, sustainable economic growth and poverty reduction in Nigeria*. AIAE Research Paper 1. Enugu: African Institute for Applied Economics.

Eboh, E. C., Okoye, C. U. and Ayichi, D. (eds.). (1995). *Rural development in Nigeria: concepts, processes and prospects.* Enugu: AutoCentury Publishing Co. Ltd.

Eboh, E. C. (2008). What state-level strategies will achieve sustained agricultural productivity, growth and development? Paper presented at the International Conference on Food Security, 23-24 July, 2008. Abuja.

Eicher, C. K. and Staatz, J. M. (eds.). (1990). *Agricultural development in the third world*. Baltimore and London: The John Hopkins University Press.

Fisher-Kowalski, M. and Swilling M. 2010. Decoupling the use of natural resources and environmental impacts from economic activity: Scoping the Challenges. Draft Report of the Decoupling Working Group of the International Panel for Sustainable Resource Management. United Nations Environment Programme. Paris.

FMAWR - Federal Ministry of Agriculture and Water Resources. (2008). National food security programme. August 2008. Abuja.

Goldin, I. and Reinert, K. (2006). *Globalisation for development: Trade, finance, aid, migration and policy*. The International Bank for Reconstruction and Development/The World Bank, Washington D. C. and Palgrave Macmillan, New York.

Government of the Federal Republic of Nigeria. (2006). Support to NEPAD-CAADP implementation – bankable investment project profile. *National Programme for Food Security, Vol. III of IV.* Abuja.

Idachaba, F. S. (2000). Desirable and Workable Agricultural Policies for Nigeria in the First Decade of the 21st Century. The First in the Series of Departmental Lectures on Topical Issues in Nigerian Agriculture. Department of Agricultural Economics. University of Ibadan.

Ihimodu, I. I. (1994). "Nigeria's experience with medium-term planning". In Mike I. Obadan and Gene O. Ogiogio. (eds.). *Planning and budgeting in Nigeria: Institutional and policy reforms.* Ibadan: National Centre for Economic Management and Administration (NCEMA). Pp. 99-122.

Meier, G. M. (1995). *Leading issues in economic development*. Oxford and New York: Oxford University Press Inc.

Meier, G. M. (2001). "The old generation of development economists and the new". In Gerald M. Meier and Joseph E. Stiglitz, (eds.). *Frontiers of development economics: The future in perspective.* New York: Oxford University Press for International Bank for

Reconstruction and Development/The World Bank. Washington D. C.

Meier, G. M. and Stiglitz, J. E. (eds). (2001). *Frontiers of development economics: The future in perspective*. Oxford: Oxford University Press.

NPC – National Planning Commission. (2004). *National economic empowerment and development strategy (NEEDS)*. Abuja: National Planning Commission.

NPC – National Planning Commission. (2009). Nigeria vision 20: 2020 – Economic transformation blueprint. October 2009. Abuja.

Okereke, O. and Eboh, E. C. (1990). "Agricultural Policy and National Development." In Ikeme, A. I. (ed.). *Challenges of agriculture in national development*. Enugu: Optimal Computer Press Ltd.

Okorie, A. and Eboh, E. C. (1990). "Fundamentality of agriculture in national development." In Ikeme, A. I. (ed.). *Challenges of agriculture in national development*. Enugu: Optimal Computer Press Ltd.

Stevens, R. D. and Jabara, C. L. (1988). *Agricultural development principles: Economic theory and empirical evidence*. Baltimore and London: The John Hopkins University Press.

Tomori, S. (1979). "Agriculture, forestry and fishing". In F. A. Olaloku, F. O. Fajana, S. Tomori and I. I. Ukpong, (eds.). *Structure of the Nigerian economy*. London: Macmillan Press Ltd.

UNCTAD. (2008). *The least developed countries report 2008 – Growth, poverty and the terms of development partnership*. New York and Geneva: United Nations.

UNCTAD. (2009). *The least developed countries report 2009 – The state and development governance*. New York and Geneva: United Nations.

World Bank. (1981). *Accelerated development in sub-Saharan Africa: An agenda for action.* Washington, D. C.: World Bank.

World Bank. (2003). *Second national FADAMA project description*. Abuja.