AGRICULTURAL PRODUCTS MARKETING PROBLEMS AND FOOD SECURITY IN NIGERIA: THE STUDY OF IRISH POTATO MARKETING IN PLATEAU STATE.

AGBA DOMINIC ZAAN CCE,
UNIVERSITY OF JOS.
agbadominic@gmail.com

Abstract

This paper looks at the problem of food marketing as a necessary ingredient in achieving food security in Nigeria, using Irish Potato marketing in plateau State as a case study. To achieve this objective, primary data was collected during the 2011 farming season from two hundred food marketers consisting of sixty wholesalers and one hundred and forty retailers spread across six local government areas of the state, data was analyzed using descriptive and inferential statistics. The study found that middlemen make more returns compared to farmers' returns and that insecurity of lives and property arising from religious crises in the study area has the highest negative effects on food marketing. Hence, the paper calls for government intervention, the organized private sector and other capable individuals to assist in finding lasting solution to the problems identified in the study so as to assist Nigeria achieve the vision of food security.

Keywords: Agriculture, Marketing, Food security, Irish- potato

JEL classification Q13

INTRODUCTION

Agriculture is one of the most important sectors of the Nigerian economy. This is because it contributes more than 30% of the total annual GDP, employs about 70% of the labour force,

accounts for over 70% of the non-oil exports and, perhaps most important, provided over 80% of the food needs of the country, (Adegboye, 2004). Agriculture provided adequate food for the Nigerian populace both in quantity and quality during the era before independence in 1960. Helleiner, (1996) showed that in Nigeria, between 1950 and 1960, food production was at subsistence but self-sufficient level. The economy was experiencing rapid growth of 4.5% between 1958 and 1963, the driving force being a booming trade in agricultural commodities export, growing annually at 5.5%. The first decade of Nigerian independence (1960-1970) opened the way to food shortages as a result of declining agricultural production and increasing population growth rate. The increase in population at a rate considerably higher than the rate of increase in food production has continued to widen the gap between domestic food supply and domestic demand. This disparity has led to rising food prices (85-125% increases in many Nigerian cities) and declining foreign exchange earnings from agricultural exports. The interaction of these factors has led to food insecurity and the idea of self-sufficiency is becoming more and more difficult to achieve due to declining agricultural production and inefficient food marketing system (Helleiner, 1996).

As the food situation and the performance of the agricultural sector got worse, a number of agricultural development institutions were set up and special programmes and projects were launched. These include: National Accelerated Food Production Programme, (NAFPP) (1973); Agricultural Development Project, (ADP) (1975); Operation Feed the Nation, (OFN) (1976); River Basin Development Authorities,(RBDA) (1977); National Seed Service, (NSS) (1977); Agricultural Credit Guarantee Scheme,(ACGS) (1977); Rural Banking

Scheme, (RBS)(1977); Green Revolution, (GR)(1979); Directorate of Food Road and Rural Infrastructure, (DFRRI) (1986); National Agricultural Land Development Authority,(NALDA) (1992); National Fadama Development Project, (NFDP) (1992); Nigerian Agricultural Cooperatives and Rural Development Bank,(NACRDB) (2000); National Agricultural Development Fund, (NADF) (2002); Commodity Marketing and Development Companies, (CMDC) (2003). According to Ihimodu (2004), empirical records of many of these programmes and projects are not impressive enough to bring about the expected transformation of the sector. The food selfsufficiency ratio has fallen from 98% in early 1960s to less than 54% in 1986. In 1990, 18% of the population (14.4 million) was estimated to be critically food insecure and this has increased to 36% (32.7 million) in 1992 and further increased to 40.7% in 1996. During this period, over 40% of Nigeria's estimated population of 133 million people is food insecure (Idachaba, 2004). To be able to provide needed food for the rising Nigerian population, the government adopted the 'fire brigade' approach of food importation. (CBN, 2008). The idea of importing food to meet the food shortage was later dropped because food import bill grew substantially and was taking a larger share of the Gross Domestic Product. For example, in 1989, Nigeria's food import bill was about N2.1billion (about 0.8% of the total GDP) while it stood at about N226 billion in 2003 (about 3.1% of the total GDP).

The food problem was not peculiar to Nigeria. It attracted a global attention as more than 800 million people throughout the developing countries and some other 40 millions in developed world were said not to have enough food to meet their basic needs and millions more experience hunger, malnutrition, growth retardation and sometime death due to starvation. Idachaba (2004), observed that

food insecurity could be caused by supply-side factors and demand-side factors. One of the supply-side causes of food insecurity, as identified by Idachaba (2004), is food-marketing problem. He argued that the dwindling agricultural production in Nigeria is a confirmation of the unattractiveness of agriculture as a result of low returns and compensation being paid to farmers, which tend to discourage increased production. The food marketing problems are evidenced when farmers, who are the primary producers and who reside mostly in rural areas; could not get their produce to the market at the right time, thereby incurring considerable post-harvest losses and are not given better returns for their efforts. This perceived 'cheating' causes discouragement and leads to loss of interest in farming and consequently a reduction in food production.

Agricultural marketing extension is fundamental to agricultural produce marketing and a process of training the farmers on best ways to acquire farm inputs and distribute the output to maximize profit. It is argued further that desirable social and economic condition are basic for adjustment and useful challenges for group participation in extension training for food security and economic development policy and that, the socio-economic background of farmers constitute critical input to extension training needed to improve entrepreneurship skills among farmers for effective processing, storage and distribution of their farm produce (Agbarevo and Obinne, 2010a, b).

Irish Potato is one of the most important staple food crops in Nigeria. It is the second most common food crop after yam, Rice and Maize. Irish potato is a very important food crop for human beings. It provides energy, carbohydrates and some amount of protein. The output of Irish potatoes has continued to increase in Nigeria as more

and more people like it as a source of food. Although it grows better in Plateau and some parts of Nassarawa, Taraba, Bauchi and Kaduna states, it is consumed by almost everyone in Nigeria.

The objective of this paper is to examine food-marketing problems using Irish potato marketing in plateau State as a case study. The study has determined market efficiency and the distribution of market margin. It has also suggested measures that could be adopted to solve the identified problems thereby increasing food production and enhancing the prospect of food security in Nigeria.

Food Marketing, Food Production, and Food Security

World Bank (1986), defined food security as access by all people to food of adequate quantity and quality consistent with decent existence at all times. The World Food summit in 1996, described food security to exist when people have physical and economic access at all times to food in sufficient quantity and quality needed for their daily activities (World Bank, 1996). The challenges of food security can be at national, regional, local or household levels. At the national level for example, a nation is food secure when the majority of the population have access to food of adequate quantity and quality consistent with decent existence at all times. A region within a country is food secure when the majority of the population in that geo-political region has access to food of adequate quantity and quality consistent with decent existence at all times. A locality is food secure when the majority of the population in that locality has access to food of adequate quantity and quality consistent with decent existence at all times. At the household level, food security exists

when all members of the family have access to food of adequate quantity and quality consistent with decent existence at all times.

Food security is jointly determined by availability of food and accessibility to food. Availability of food is a function of food production, stock holding and food marketing (Von Braun ***et al,*** 1992). Certainly by raising agricultural productivity, (i.e increase the land area planted and increase yield per hectare), food availability could be increased. However, availability is not enough. The food produced must be distributed efficiently at minimum costs in-order to guarantee continuous availability of the food. This is the subject of food marketing.

Olayemi (1982), observed that food marketing is a very important but rather neglected aspect of agricultural development. More emphasis is usually placed, by government on policies to increase food production with little or no consideration on how to distribute the food produced efficiently and in a manner that will enhance increased productivity. In other words, food marketing by farmers and their families, mostly in the immediate post-harvest period usually involves a lot of costs and in Nigeria these costs are so high that lowering the costs through efficient marketing system may be as important as increasing agricultural production (Ahmed and Rustagi, 1987).

A good and well-coordinated national food marketing system can affect food production and household's food security in two ways. One, it can stimulate increased commercial activities that could generate more funds for plough back investments in both agricultural and agro-allied industrial sectors. The resultant increased agricultural productivity will lead to increased food production and increased food output. Secondly, it can lead to employment generation for both food

distributors and rural farmers. The involvement of rural people in food marketing could uplift the rural populace standard of living and increase their personal income thereby enhancing the prospect of food security at the households, local and national levels.

Availability of food at the household level requires that food must be available either through their own-farm operations or by purchasing the food from the market. In most cases, the food produced from own-farm operation is inadequate and this makes a good marketing system very important to ensure food availability. FAO (1997), submitted that if available food could be evenly distributed (through efficient national and international markets), each person would be assured of 2,700 calories a day, which is the recommended daily calorie intake. However, since available food is not evenly distributed (due to marketing inefficiencies and other problems), there are shortages of food in some regions but excess in some other regions. Therefore, the issue of how much food gets to the households, which is fundamental in household's food security, is a function of food production level, food marketing efficiency and the households' income level (Ladele and Ayoola, 1997). Subsequently, Ladele and Ayoola (1997), in their study on ''food marketing and its role in food security in Nigeria'', concluded that an efficient food marketing system would reduce post-harvest losses, ensure adequate returns to farmers' investment and stimulate expansion in food production thereby enhancing the level of food security in Nigeria.

Methodology

This study was carried out in Plateau State located in the north-central zone of Nigeria. The study covered six local government

areas of the state. The state is blessed with a vast area of fertile land that is suitable for production of crops such as yam, Irish potato, cassava, rice, maize, sorghum, cowpeas, groundnut, melon, okra, pepper, vegetables and perennial crops such as mangoes. Agricultural production in the state is largely traditional and small scale relying on manual labour implements. This strategic location of the state has allowed the development of good markets for agricultural products. For example there are several identified major food produce markets, which serve as meeting points for middlemen, buyers and farmers in Plateau State especially in the chosen local governments. Apart from the urban markets, there are also numerous local food markets where buyers meet on daily and seven-day sequence.

A typical food market in Plateau state is generally localized and consists of numerous independent small-scale farmers and itinerant retailers, who buy from farm gate usually lacking the wherewithal to continue the marketing functions further, re-sell the food produce at the nearest market place. The development of food marketing in the state might also be due to the influx of food produce from neighboring states of Benue, Nasarawa, Taraba, Kaduna, Bauchi, Adamawa as well as other Eastern states, Federal Capital Territory and far northern states. According to Adekanye (1971), there were no standardized measures of quantity and quality in Nigerian food markets. This situation is still prevalent in the food market today in the state, except the grading of meat and eggs that were an emerging feature in some urban markets. The choice of Plateau state for this study was deemed to be appropriate given its history in agriculture and food marketing.

Preliminary Survey and Data collection

A preliminary survey was carried out to identify the major food produce markets in the state. The survey assisted in the determination of marketing days and market intervals. During the preliminary survey, the questionnaire was pre-tested and the marketing channels for the food were identified. The meeting point for itinerant food crop marketers were also surveyed and the various entry routes of food crops from other states were identified. Primary and secondary data were collected for this study. The primary data were collected through the use of a structured questionnaire. The data were collected from two hundred food crop marketers consisting of 60 wholesalers and 140 retailers selected randomly from the fourteen identified major food markets in the state. The fourteen identified major food markets spread across six local government areas of the state. The questionnaire was carefully designed and pre-tested to ensure its adequacy for the study. The data collected included among others, the socio-economic background of the respondents, types of food crop sold, cost price and selling price of the various food crops per unit, marketing costs, marketing margins, value added activities and costs, and problems of marketing food produce. Secondary data were collected from Central Bank of Nigeria bulletins and other documented reports and earlier studies.

Methods of Analysis

The data collected were analyzed using descriptive and inferential statistics. The descriptive statistics make use of frequency distribution, means and percentages. Estimates of marketing margins

and marketing efficiency were obtained using the formula given by Kohls, (1985). According to Kohls (1985), marketing margin equals the difference between what the consumer pays and the farm gate price per unit of the food produce. Based on this formula and on the assumption that wholesalers buy directly from the farmers, while the retailers buy directly from the wholesalers, it then follows that wholesalers' margin equals wholesalers' selling price per unit minus farmers' selling price per unit. Also, retailers' margin equals retailers' selling price per unit minus wholesalers' selling price per unit. The net margin accruing to the wholesaler or the retailer is the difference between the market margin and the marketing costs. Marketing cost is the sum of transport cost, storage cost, labour cost and other costs. Marketing efficiency was calculated using the formula given by Olukosi and Isitor (1990) and used by Babatunde and Oyatoye (2004),The formula specified that:

$$\text{Marketing efficiency} = \frac{\text{Value added by marketing activities}}{\text{Marketing costs}} \times 100\% \quad \text{....(eqn.1)}$$

$$\text{In other words, Marketing efficiency} = \frac{\text{Net Margin}}{\text{Marketing costs}} \times 100\% \quad \text{…..(eqn.2)}$$

To calculate market margin and market efficiency, the average prices in naira per 50kg bag of dry shelled Irish Potatoes was used as given by the respondents in the various markets. This is to say that the calculation was based on the naira per bag of maize during 2011 cropping season.

Results and Discussion

Table 1. 2 presents the estimates of marketing margin and marketing efficiency in Irish Potato marketing in the selected local government areas during the 2011 cropping season.

Table 1.1: Marketing Margin and Marketing Efficiency in Selected Local Government Areas of Plateau State, August, 2011 season.

Local Govt	Farm gate price N/bag	Selling price N/bag	Market Cost N/bag	Market Margin N/bag	Net Margin N/bag	Market Efficiency
Bokkos	3000	3700	170	700	530	311.7
Mangu	2800	3800	200	200	1000	400
B/Ladi	3100	3800	220	700	480	218.1
Pankshin	2500	3700	180	1200	1020	566.6
Riyom	2700	3900	170	1200	1030	605.88
Jos South	3000	3850	170	850	680	400
Average	2850	3791.6	185	941.6	756.6	417.0

Source: Field Survey,(2011)

Table 1.1 shows that net marketing margin in naira per bag of Irish Potatoes range from N480.0 in B/Ladi local government to N1020 in Pankshin local government. The average marketing cost was N185.0/bag, which is about 19.6% of the average total marketing margin. The large difference between the lowest net margin and the highest net margin within the same state might be due to the difference in the socio-economic conditions between the markets. The average net market margin was N756.6 in the study area. Market efficiency was highest in Riyom local government (605.88%) and lowest in Barkin/ladi local government (218.1%). The average marketing efficiency in the area was 56%. The very high market efficiency could be interpreted to mean an efficient marketing system,

however, according to Olukosi and Isitor (1990), market efficiency is a function of both pricing and operational efficiency. This result could therefore be interpreted as meaning high pricing efficiency in Irish Potatoes marketing in the study area.

Table 1.2: Distribution of Total marketing Margin between Wholesalers and Retailers in selected Local Government Areas of Plateau State, August, 2011 season.

Local	Farm Gate	Market	Wholesaler selling	Retailer Selling Wholesaler	Retaillers	
Government	price N/bag	MarginN/Bag	price N/price	price N/bag	margin%	Margin%
Bokkos	3000	700	3500	3700	71.4(500)	28.5(200)
Mangu	2800	1000	3550	3800	75(750)	25(250)
B/Ladi	3100	700	3500	3800	57.1(400)	42.8(300)
Pankshin	2500	1200	3200	3700	58.3(700)	41.6(500)
Riyom	2700	1200	3600	3900	75(900)	25(300)
Jos South	3000	850	3700	3850	82.3(700)	17.6(150)
Average	2850	941.6	3508.3	3791.3	69.85(658.3)	30.1(283.3)

Source: Field Survey (2011)

From table 1.2, it can be seen that in all the local government areas, wholesalers' margin as a percentage of total marketing margin was higher than retailers' margin. The value added by the wholesalers or the retailers was quantified both in monetary terms and percentages, so it is expected that percentage margin accruable to each group of middlemen should be commensurate with the value added in the marketing chain. The average wholesalers' margin was 69.85% while that of the retailer was 30.1% of total marketing margin.

Food Marketing Problems

Food marketing problems as given by the respondents in the study area are presented in table1.3 below. Since there are multiple

responses, the problems are ranked according to the percentage of respondents who mentioned them.

Table1.3: Distribution of respondents according to types of marketing problems in selected local government areas of Plateau State, 2010/2011 season.

Marketing problems	No of respondents	Percentage of respondents
Transportation problem	151	75.5
Inadequate market infrastructure	130	65
Inadequate funding for food marketing	110	55
Insecurity of life and Property	181	90.5
Shortage of processing facilities	143	71.5
Seasonality and perishability of food produce	120	60
Lack of uniform measure, long chain of distributors etc	62	31

Source: Field survey, 2011

Transportation problems

Transportation is the second major problem of food marketing identified in the study. Transport facilities have been found to be highly inadequate. In most rural farm settlements, roads are not motorable in the months of July, August, and September, and sometimes roads are completely unavailable, this scenario makes it difficult for vehicles to get to the farm sites to move the farm produce to the markets. The state of the roads further increases post harvest losses through damages of food produce. In addition to this, there are no sufficient vehicles that can convey farm produce from the farm site to the markets; sometimes the available vehicles are not in good mechanical condition to convey goods from the farms to the markets. This makes transportation cost to account for a very high percentage of the marketing costs. Increased cost of petroleum products and spare parts has also led to increased transportation cost. Poor

maintenance and bad management affect the railway system of transportation. The combination of these factors led to increased transportation cost, which result in high consumer food prices that contribute in no small measure to food insecurity in the country. It is hoped that transportation of food products will improve given the resuscitation of the railway transport in Nigeria.

Inadequate Market Infrastructures

Apart from transportation problem, the problem of inadequate market infrastructures is also very evident in food marketing. Good storage and warehousing facilities such as lock-up stores, silos, and barns are lacking in most food markets. Especially potato food marketers do not have any form of storage facilities in the market. Insufficient storage facilities often lead to produce loss due to premature germination, fungal and bacteria attack, insects and rodents attack. All these often account for increased marketing cost leading to higher retail prices and reduced marketing efficiency. Market information is also inadequate. Sellers and buyers of food produce are not well informed about the sources of supply and thereby reducing potential efficiency in the market. Other market facilities such as communication, health and good toilets facilities as well as fire services, banking services, water supply and and the act of clean market environment which contribute to efficient food marketing are lacking in many rural and urban food markets covered in the study.

Inadequate fund for food marketing

Food marketing requires considerable investment of fund in the area of bulk purchases, development of storage facilities,

transport facilities and processing facilities. Many prospective food marketers are often discouraged because of inadequate fund needed for these investments. The inadequacy of fund prevents food marketers and farmers from expanding their business, in order to reduce costs due to economies of scale. The study revealed that most farmers get fund through personal savings to finance their marketing activities while some obtain funds through borrowing. Despite the high cost of borrowing from informal sources like thrift and credit societies, the fund provided is grossly inadequate for marketing.

Insecurity of Lives and Property

Insecurity of lives and property due to Religious conflicts has been found to be a major marketing problem in the study area. This problem has unfortunately become a national problem in Nigeria as there are always pockets of conflicts here and there. This study found that security problem is the major factor militating against marketing efficiency in the study area. See table 1.4. Above. Farmers complained that they have recorded a very high level of yield damages due to conflict as sometimes they are unable to go to their farms and the market due to fear of being killed by enemies and their yield gets spoiled or they sell at giveaway prices due to fear of outright damage. The farm is supposed to be frequently visited by farmers because of the activities of weeding, fertilizer application and harvesting. On the contrary many farmers within the study area are afraid to freely go their farms due to ethnic and religious conflicts. This factor no wonder has been found to have a more damaging effect on farmers output.

Shortage of processing facilities

Processing is an important marketing function through which value is added to the food produce. Efficient handling, packaging, grading and processing facilities are lacking in food marketing. Absence of adequate storage facilities Irish potatoes, compel their sale at low prices immediately after harvesting to avoid post-harvest losses. This depresses the income of farmers, reducing their purchasing power and results in lack of interest therefore in food production.

Seasonality and Perishability of agricultural products

The seasonal pattern of production and the perishable nature of food crops create some problems. Seasonality creates surpluses at harvest period, which must be sold at low prices, or stored for future sale at greater costs. During off-season periods there is shortage of these products, which leads to a gap in the supply-demand situation and high fluctuations in prices for food crops in the country. Perishability creates storage and processing problems and the resulting effect is devastating and further exacerbates the problem of food insecurity in Nigeria.

Other problems of food marketing identified in this study include, long chain of distributors, absence of uniform unit of measurement, small market size and high risk of road accident and armed robbery.

Conclusion and Recommendations

This study examines the food-marketing problems in Nigeria using Irish potato marketing in Plateau as a case study. The study

reviews the performance of the agricultural sector in Nigeria since independence. It also discusses the linkage between food production, food marketing and food security. With regards to Irish Potato marketing in Plateau State during the 2011 farming season, the study analyzed marketing margin and marketing efficiency. It also shows the distribution of marketing margin between the wholesalers and the retailers. The results show that the average farm gate price of Irish potato was N2850 per 100kg bag in the study area. The average marketing cost was N185/bag and the highest net marketing margin of N1030/bag was recorded at Riyom local government area; while the lowest net margin of N530/bag was recorded at Bokkos local government area. The average net marketing margin in the study area was N756.6/bag. Marketing efficiency range from 605.88% in Riyom, to 218.1% in B/Ladi local government area. The average market efficiency in the study area was 143.5%. Distribution of marketing margin shows that the wholesalers received on the average 68.1%; while the retailers received 31.9% of the total marketing margin. Some of the major problems of food marketing identified in the study include; transportation problem, inadequate market infrastructure, inadequate funding, Insecurity of Life and property, shortage of processing facilities, seasonality and perishability of food produce and lack of uniform measure, long chain of distributors etc.

To improve food marketing in general and Irish Potato marketing in particular so as to increase food production and enhance the prospect of food security in Nigeria, the following recommendations are suggested. There should be provision of adequate transportation facilities. This will entail the construction, expansion and maintenance of urban-to-rural and rural-to-rural roads.

Government should create conducive environment that would encourage private vehicle owners to set up commercial transportation services to the rural areas. Duties on new vehicles and spare parts should be reduced to make them affordable to intending transporters. Secondly, there is the need for the provision of basic market facilities like storage, health, communication and banking facilities, and water supply, fire and security services. Market associations, individuals, the organized private sector and non-governmental organizations could assist to provide these facilities. Farmers should also form market associations and marketing cooperative societies so that they can pool resources together and obtain credit from banks and other financial institutions for bulk purchasing and marketing. There should be increased investment in post-harvest technology research and development. In this regard, simple storage and processing equipment could be developed which can be used by farmers and marketers, so as to reduce post-harvest food losses in Nigeria. The need for ensuring the security of lives and property of farmers is necessary in ensuring food security in Nigeria.

REFERENCES

Adegboye, R.O. (2004). "Land, Agriculture and Food security in Nigeria". *3rd Faculty Lecture, Faculty of Agriculture,University of Ilorin*, 25/2/2004.

Adekanye, T. O. (1971). The Marketing and Consumption of Rice in Egba Division, Western Nigeria. Unpublished M.Phil Thesis, University of Nottingham, UK.

Adeyeye, V.A. (1992). *An Assessement of Food Security in Nigeria*. Final Report of a Study Commissioned by FAO, Rome.

Agbarevo, M.N.B., and Obinne, C.P.O. (2010). Agricultural Marketing Extension; Elements of Rural Sociology and Agricultural Extension. Uwani-Enugu.Teo Publishers, pp.190-198.

Agricultural Marketing Strategy and Pricing Policy, International Bank for Reconstruction and Development. Washington, USA.

Ahmed, R., and Rustagi, N. (1987). Marketing and Price Incentives in African and Asian Countries. in Elz, D. (ed),

Babatunde, R.O. (1998). "Problems of Marketing Agricultural Products in Nigeria: A Case Study of Maize Marketing in Kwara State of Nigeria (1960-1996)". *Unpublished B. Agric Degree Project,*

Bashir, W. (1986). *Food Crises and Government Response in Nigeria: Critique of the River Basin Development Authority Boston*. African Studies Center.

CBN. (2008). Central Bank of Nigeria Statistical Bulletins and Annual Report. 2008.

FAO. (1997). *Technical Background Document for the World Food Summit* Rome. Italy.

Gurkan, A.A. (1995). *The Mathematics of Hunger*. CERES 27(2): 31-33.

Helleiner, G.K. (1996). *Present Agricultural and Economic Growth in Nigeria.* Homewood Publisher, United Kingdom.

Idachaba, F.S. (1989). *"The nature of Nigerian food Problem".* Paper Presented at the National symposium on Nigerian food question organized by College of Agricultural Economic and Extension, University of Agriculture Makurdi, Nigeria.

Idachaba, F.S. (2004). *Food Security in Nigeria: Challenges under Democratic Dispensation.* 9th ARMTI Annual Lecture, Ilorin, 24/3/2004.

IFAD. (2009). Food Prices: *Smallholder Farmers can be Part of the Solution*. International Fund for Agricultural Development. Available online at www.ifad.org

IFPRI. (2008). *Determinants and Implications of the Growing Scale of Livestock farmers in Four Fast Growing Developing Countries*. 2033 K Street, NW, Washington DC, USA. Accessed from http://www.ifpri.org

Ihimodu, I. I. (2004). Marketing of Agricultural Products and the Food Security Programme in Nigeria. Paper Presented at the 13th Annual Congress of the Nigeria Rural Sociological Association at LAUTECH,Ogbomosho, Nigeria. November. In Shaib, B; Adedipe,N.O;Aliyu, A and Jir, M.M (eds); *Integrated Agricultural Production inNigeria; Strategies and Mechanisms for Food Security.* ***"Proceedings*** of the National Workshop on Nigeria Position at the World Food Summit", Abuja, Nigeria. pp 88.

Kohls, R.L. (1985). *Marketing of Agricultural Products.* Macmillan Publishers, New York, pp 83

Ladele, A.A. and Ayoola, G.B. (1997): Food Marketing and its Roles in Food Security in Nigeria:

Makinde, K. O. (2000) *Measurement and Determinatioin of food security in Northern Guinea Savannah of Nigeria.*

Unpublished PhD thesis, Department of Agricultural Economics, University of Ibadan, Nigeria.

NEPAD. (2009). *Brochure Supporting Farmer Organisation's Draft Projects– Promotion of a Portfolio of Models for the Integration of Small Scale Farmers in Agric Food Value Chain through Experience Sharing*. The New Partnership for Africa's Development (NEPAD)

Olayemi, J.K (1996) Food Security in Nigeria. Development Policy Center, Policy Report 2. Ibadan.

Olayemi, J. K. (1982): "Improved *Marketing as a Strategy for Generating Increased Food Production, A Nigerian Experience*." *West African Journal of Agricultural Economics,* 1(1): 21-26.

Olukosi, J. O. and Isitor, S.V (1990): *Introduction to Agricultural Market and Price; Principles and Applications***.**Agitab Publishers, Zaria. Pp. 34 *University of Ilorin,* Nigeria.

Von- Braun, J., Bouis, H., Kumar, S. and Pandya-Lorch, R. (1992): *Improving Food Security of the poor: Concept, Policy and Programs.* International Food Policy Research Institute, Washington, USA.

World Bank (1986): *Poverty and Hunger: Issues and Options for Food Security in Developing Countries.* A World Bank Policy Study, Washington, USA pp 1

World Bank (1996): *Poverty Reduction and the World Bank.* Washington, USA pp. 53

Zithutha, M. S (2010). *An Assessment of the Role of Small Scale Farming in Reducing Poverty in Kanyayo, Bizana District, Eastern Cape.* An unpublished Master's Thesis Dissertation, University of Kw

MONETARY POLICY AND UNEMPLOYMENT REDUCTION IN NIGERIA:AN EMPIRICAL INVESTIGATION

GIDEON G.GOSHIT
DEPARTMENT OF ECONOMICS
FACULTY OF SOCIAL SCIENCES
UNIVERSITY OF JOS, NIGERIA.
E – mail: gideongoshit@yahoo.com

and

J. H. LANDI (Ph.D)
DEPARTMENT OF ECONOMICS
FACULTY OF SOCIAL SCIENCES
UNIVERSITY OF JOS, NIGERIA.
E-mail:Jamland55@yahoo.com

Abstract

The rate of unemployment in Nigeria is alarming despite government efforts to reduce it. The government efforts in reducing this problem in the economy include the use of macroeconomic policies (both monetary and fiscal) among other policies and programmes. Monetary policy is a key element of macroeconomic management and its effectiveness is crucial to the overall economic performance of a country. The ultimate objective of monetary policy is to promote sound economic performance and high living standards for the citizens. This paper has empirically examined the role played by monetary policy instruments in reducing unemployment in Nigeria using a multiple regression model and data from the Central Bank of Nigeria (CBN). The OLS result revealed that money supply as a major monetary policy variable is positively and significantly related to unemployment reduction during the period under this investigation. The empirical result also revealed that monetary policy has significantly contributed to unemployment reduction in Nigeria during the period under this study. This underscores the fact that monetary policy instruments are very important policy instrument in achieving

the macroeconomic goal of unemployment reduction in the Nigerian economy. The paper however notes that the solution to the problem of unemployment in Nigeria cannot be found within one single macroeconomic policy in the system. The reality is that monetary policy, although necessary in achieving economic growth, cannot be used alone in the management of the economy to achieve high level of employment in Nigeria. An appropriate mix of fiscal policy measures that emphasizes greater commitment of public investment in education, health and infrastructure is critical to employment generation in the economy. The paper therefore submits that, given the critical role of the banking sector in enhancing the effectiveness of monetary policy in the economy, there is need for the CBN not only to create an enabling economic and financial environment for the evolution of a healthy and stable financial system in Nigeria, but also tackle the endemic problem of banking soundness in the system to enhance the effectiveness of monetary policy in the economy. It is believed that a virile and vibrant banking sector would enhance the effective transmission of monetary policy actions to the real sectors of the economy.

Keywords: Monetary Policy, Granger causality, Unemployment Reduction

JEL classification: C11, E25, E60

1. INTRODUCTION

One of the major goals of any economy is the achievement of high employment. The attainment of this macroeconomic objective has remained an issue that continues to receive attention in developing countries, particularly those in Africa where high-level poverty exists with increasing unemployment rates. The problem of unemployment has posed a great challenge to many countries (both developed and developing) particularly in Africa, and it has different dimensions. There are unemployment cases in which people receive incomes that are inadequate to support their basic needs, in terms of

food, clothing and shelter. There are also cases of disguised unemployment where people take up jobs that are below their educational attainment and experience. The worse case of all is that of people seeking for job opportunities but who cannot find any in the public or the private sector. Some people are willing and ready to set up enterprises themselves and engage in one type of economic activity or the other but are constrained by the prevailing poor macroeconomic environment. All these have contributed significantly to the high level of unemployment and poverty in Nigeria. The lack of access to investment capital and poor infrastructure are also constraints to investment and employment generation.

As dehumanizing as unemployment is in developing economies, the reduction in unemployment level is one of the most difficult challenges facing any country in the developing world where population is growing at geometrical progression while resources are growing at arithmetical progression if not stagnant and even deteriorating. It is important to note that the unemployment prevailing in any economy could be as a result of the outcome of the economic management and other factors that affect the economy. At the same time, monetary policy is one of the modern age's most potent tools for managing the economy. Monetary policy as one of the several economic policies available to a country for managing its economy is important in the process of attaining the macroeconomic goal of high employment. Given the economic, political and social repercussions of high level of unemployment in an economy and the importance of monetary policy in economic management, it is reasonable to ask if monetary policy can be used as a tool to help the unemployed. It is this possibility that we pursue in this paper. The paper therefore aims at investigating the causal relationship and impact of monetary policy

on reducing unemployment in Nigeria. To achieve this purpose, this paper is structured into six sections with the introduction as section one. Section two discusses conceptual and theoretical issues about employment and unemployment. Section three discusses stylized facts about unemployment situation in Nigeria. While section four specifies the methodology, data sources and the scope of this study, section five discusses the empirical results and findings of this study. Section six forms the concluding remark of the paper.

2. CONCEPTUAL AND THEORETICAL ISSUES

The International Labour Organization (ILO) defines the unemployed as numbers of the economically active population who are without work but available for and seeking work, including people who have lost their jobs and those who have voluntarily left work (World Bank, 1998). Although there seems to be convergence on this concept, its applications have been bedeviled with series of problems across the countries. Unemployment has been categorized as one of the serious impediments to social progress. Apart from representing a colossal waste of a country's manpower resources, it generates welfare loss in terms of lower output, thereby leading to lower income and well-being (Akinboyo, 1987).

There are several economic theories that explain the nature and causes of unemployment in an economy. Among these theories are the Classical, Keynesian, and the new microeconomic models. These theories attempt to explain the causes of unemployment and suggest policy options necessary for addressing the problem. The Classical theory of unemployment is closely linked with the writing of Pigou (Adebayo and Ogunrinola, 2007). It rests implicitly on the basic microeconomic formulation of Walras' general equilibrium model.

While the Classical theory explains unemployment in terms of institutional market impediments, Keynesian theory relates it to the deficiency in aggregate demand and the new Micro-Economist attribute the problem to poor information flow on attainable wage rates. The policy suggestions that flow from the three theories are; elimination of obstacle to real wage flexibility; stimulation of aggregate demand by means of expansionary fiscal policy; and better information flow on market situations. Drawing from these theories, it is not out of point to say that the theoretical foundation of unemployment is vast and it encompasses the entire spectrum of the Classical and neo- Classical, as well as the neo- Keynesian and new Classical schools in addition to the theories of endogenous growth. The linkage between unemployment, output and inflation and the implications are the major focus of macroeconomic policies. The theoretical nexus is the neo- Keynesian concept of "potential output", which at times is referred to as natural output. This level of output also corresponds to the natural rate of unemployment, or what is often referred to as the non- accelerating inflation rate of unemployment (NAIRU). In this particular framework, the built-in inflation rate is determined endogenously, that is, by the normal workings of the economy.

While it is generally agreed that monetary policy action have important impact on the economy, there is much less of a consensus regarding how to measure and analyze the effects of these actions (Oyejide, 2002). There are at least two major reasons for this. One relates to the continuing debate on transmission mechanism of monetary policy, the other has to do with the characteristic slow adjustment of economic agents to changes in monetary policy. One view of the transmission mechanism is that monetary policy actions

affect the economy primarily through their impact on the money supply. This view suggests that the Central Bank should focus on controlling money supply in the implementation of monetary policy. Another perspective postulates that interest rates as well as money supply have important effects on the economy. Hence, monetary policy actions influence the economy through both availability of credit and its price. The first view implies that monetary policy actions affect the economy primarily by determining aggregate spending which, in turn, directly affects the production of goods and services, hence the unemployment and inflation rates. The second view elaborates this relationship further by postulating that monetary policy actions influence a wide range of financial and non-financial variables which, in turn, affect the spending and saving decisions of economic agents (Oyejide, 2002). In this context, the effects of monetary policy actions are reflected first on financial variables, such as the discount rates, and monetary base which are closely related to reserve positions by the Central Bank.

There is also an overwhelming assumption that monetary policy should play a major role in achieving economic growth objectives. This economic growth is also said to include earning some incomes through employment; and employment through expansion in production in the economy. This makes the nature of the relationship between money, output and employment an important policy consideration. One of the most popular characterizations of the nature of this relationship is the quantity theory of money which links the money stock to the value of output that it finances. In the Keynesian analysis, monetary policy affects the level of economic activity through interest rate and credit conditions. In the quantity theory analysis, it is the changes in the quantity of money that

influence the level of economic activity (Ajayi and Ojo, 2006). The relationship between income (measured by GDP), money supply and prices can be expressed in a simple form as follows:

$Y = f(M_i)$ ……. (1)

$P = f(M_i)$…….. (2)

$M_i = f(B)$……... (3)

$M = f(P_i)$…… (4)

$Y = f(P)$……... (5)

$P = f(Y)$……... (6)

Where;

Y = Changes in income (GDP)

P = Changes in prices

M = Changes in money supply

B = Changes in Balance of Payments.

The balance of payments influences the money supply, while variation in the money supply determines the level and variation in the GDP and prices. The latter in turn influences or determines the GDP. The rate of growth of the national product also affects the price level. The rate of growth of the price level affects the growth in the money supply (Ajayi and Ojo, 2006). When the price level (or price stability) is viewed as an objective of policy, there is a negative relationship between the price level and the money supply. When the price level is rising, a decrease in the rate of the money supply is required.

The government influences investment, employment and output through monetary policy. This is done by increasing or decreasing money supply by monetary authorities. When the

objective of monetary policy is to achieve high level of employment, successive minimum and maximum rates of unemployment can be used as an indicator of need for a change. When the unemployment rate increases from a defined maximum, money supply should be expanded. This works in two ways. First, an expansion of money supply leads directly to increased expenditure on goods and services, and there should then be increased employment to produce the extra goods and services being demanded. This increase in employment invariably enhances income and thereby reduces poverty in the economy. On the other hand, Ajayi and Ojo (2006) opined that the alternative view of the transmission mechanism in which the increased money supply is seen to lead to a fall in interest rates, which in turn increases investment expenditure and thus leads to increased employment could be more potent in turn in poverty reduction.

Improving the quality and quantity of employment opportunities links economic growth to poverty reduction. It is on this premise that Batten and Hafer (1983) submitted that an alternative monetary policy which focuses on real variables including employment and faster GDP growth is both feasible and necessary if any developing country, especially Nigeria is to make more rapid progress in reducing poverty and generating sustainable development. Oni (2007) contended that the implementation of monetary policy directly impacts on employment and to generate better employment opportunities in Nigeria, the monetary policy must encourage employment-generating investment, facilitate sustainable economic expansion, and maintain economic stability. Batten and Hafer (1983) however, argued that the impact of monetary policy cannot be considered in isolation from the nature of the country's

financial institutions. These two policy areas are closely intertwined. The financial sector is a primary conduit through which monetary policy affects real economic outcomes, and monetary policy determines the amount and distribution of resources available to financial institutions. The link between unemployment rate and financial sector is basically through the interest rate, especially the lending rates, which represent the cost of funds to the private sector. Therefore tight monetary policies that emphasize high interest rates and restrict credit flows, with the view to combating inflation, are found to be disincentive to investment, private sector development, and employment-generating which may further deepen poverty incidence.

On the other hand, a recession or depression economic situation which aggravates unemployment could be addressed through the use of expansionary monetary policy. Jhingan (2004) asserts that when there is a fall in consumer demand for goods and services, and in business demand for investment goods, a deflationary gap emerges which results into unemployment situation. The Central Bank of the country can therefore intervene in this kind of situation for the purpose of encouraging employment and ultimately improving the standard of living in the economy by adopting an expansionary monetary policy that eases the credit market conditions and leads to an upward shift in aggregate demand. For this purpose, the Central Bank purchases government securities in the open market, lowers the reserve requirements of commercial banks, lowers the discount rate and encourages consumer and business credit through selective credit measures. By such measures, it decreases the cost and availability of credit in money market, leads to

employment of resources and ultimately improves the wellbeing of the poor in the economy.

Strong and widely accepted evidence shows that the natural rate of unemployment varies over time with substantial amplitude. The frictions in the labour market that account for positive normal levels of unemployment are not simple and mechanical. Instead, as a rich modern body of theory demonstrates, the natural rate of unemployment is an equilibrium in which the volumes of job-seeking by workers and worker-seeking by employers reach a balance controlled by fundamental determinants of the relative prices of the two activities. In recessions, unemployment rises, and job vacancies fall. In such situation, for monetary policy to be relevant and impact on the wellbeing of individuals depends on the policy measures put in place. For instance, monetary policy affects welfare by influencing the cost and availability of credit. An expansionary monetary policy reduces the cost of credit and thus, boosts investments. This would in turn increase output and employment and thus wellbeing (Central Bank of Nigeria, 2011). The reverse also holds when the monetary authorities seek to pursue a restrictive monetary policy.

The choice of the direction of monetary policy is contingent on prevailing economic and monetary conditions. Consequently, during a period of economic boom, the authorities could decide on non-accommodating monetary policy, by reducing the growth in money supply. The converse takes place when the authorities want to boost economic activities and encourage employment. That is, the monetary authority can increase the supply of money to the economy when it discovers that money is needed to grease the economic machinery for growth and development. Economic agents are thus, encouraged to borrow more money for investments or personal

consumption. This will increase the demand and supply of goods and services which will in turn make producers to employ more people or machines to produce more goods and services to meet the high levels of aggregate demand and eventually, higher levels of employment would be achieved in the economy.

The Central Bank of Nigeria (2011) posits that monetary policy also impact on the lives of individuals because of the influence of money supply on the allocation of resources in the economy. Money supply in the economy can be controlled if the monetary authorities observe that the supply of money is growing faster than the economy's capacity to produce goods and services. If the monetary authorities do not intervene to control the growth in money supply under the circumstance, it will lead to demand pull inflation. This is a signal that the amount of money in circulation is more than what the current volume of goods and services produced could optimally accommodate, and this is likely to be inflationary. If money supply is not controlled, economic agents would be discouraged from planning and further investment as they consider that their investments are not secured. This is because when there is inflation, the value of investments and currency holdings would be eroded. Rising inflation rate makes economic and financial environments unpredictable.

Monetary policy also gauges the expectation of the markets about future prices. When people in the financial markets think the Central Bank is not focused on containing inflation, they will be worried that inflation might accelerate over the next few years. They will then add a risk premium to long-term rates making the rates higher. This implies the market expectation about monetary policy tomorrow has a substantial impact on long-term interest rates today

(CBN, 2011). The monetary authorities try to address market expectations through a policy of moving gradually once they start changing interest rates or by disclosing the stance of policy in the foreseeable future.

Policy-induced changes in real interest rates affect the public's demand for goods and services mainly through changes in borrowers' costs, the availability of bank loans, and the wealth of households to purchase durable goods. A decrease in real interest rates lowers the cost of borrowing, which leads businesses to increase their level of investment spending, hence increase in employment which would in turn lead households to buy more durable goods. Lower real interest rates and a stable macroeconomic policy environment may increase banks' willingness to lend to businesses and households. This may increase spending especially by smaller borrowers who have limited access to credit, other than from banks (CBN, 2011). Lower real interest rates also make common stocks and related investments more attractive than bonds and other debt instruments resulting in the rise of stock prices. Households with stocks in their portfolios find that the value of their holdings is higher and the resultant increase in wealth makes them willing to spend more. Higher stock prices also make it more attractive for businesses to invest in plants and equipment by issuing stocks.

It is on the basis of the above that it is believed that macroeconomic policies (including monetary policy) are said to influence and contribute to the attainment of rapid sustainable economic growth aimed at poverty reduction through employment in a variety of ways. The extent to which policy makers are able to establish a track record of policy implementation will influence private

sector confidence which will, in turn, impact on investment, economic growth and poverty outcomes. The treatment of money is at the heart of macroeconomic policy-making in Nigeria for at least two reasons. First, money, in its various forms (i.e. cash or interest-bearing deposits), represents the single most important financial asset held by the non- bank private sector. Given its proportion in the portfolio of assets of wealth holders, changes in the real value of money have significant effects on wealth distribution. Secondly, it is widely accepted both in academic and in the larger society that the establishment and maintenance of macroeconomic stability are crucial for creating the appropriate environment for rapid and sustainable economic growth, as well as poverty reduction.

3. UNEMPLOYMENT IN NIGERIA: SOME STYLIZED FACTS

The problem of unemployment in the Nigerian economy started gathering serious momentum in the 1970s when the oil-led growth in the economy was not accompanied by growth in employment. This growth pattern induced rural – urban migration, which worsened the urban unemployment problem. It also exacerbated the neglect of agriculture, leading to food shortage, as well as rural underemployment and unemployment. Economic growth in post-independent Nigeria has not only been highly vulnerable, but has not been commensurate with the requirements of rapid poverty reduction and employment generation needed to absorb the rising number of the unemployed. In the 1970s the economy grew at an annual rate of 6.3 per cent. Also, there was impressive growth in consumption, investment and industrial output despite important structural problems associated with a post-civil war economy; unemployment was not widespread, and improvements in living standard was broadly noticeable (Iwanyemi, 2007). However,

although substantial expansion occurred in key macroeconomic indicators in the 1970s, there was little achievement in terms of establishing a strong foundation for sustainable economic development and employment generation as subsequent decades revealed.

After the oil boom, economic realities dictated a change in policy focus. There was the need to improve all the sectors simultaneously. However, the dwindling government revenue made the goal of economic diversification tricky. To date, the country is still struggling to synchronize agricultural and manufacturing sectors in order to create forward linkages. Thus in Nigeria, since the early 1980s, unemployment has assumed alarming and disturbing dimensions, with millions of abled-bodied persons who are willing to accept jobs at the prevailing rates being unable to find placements (Onwioduokit, 2007). In the first five years of the 1980s, for instance, Nigeria had a composite unemployment rate that was consistently over 6.0 per cent, compared to the highest rate of 4.3 per cent recorded in 1976. However, the urban unemployment rates increased from 4.4 to 5.2 per cent during the same period (Balogun et al, 2003).

The composite registered unemployment rate in the second half of 1980s increased from 5.3 per cent in 1986 to 7.0 per cent in 1987 and thereafter declined gradually to 4.5 per cent in 1989. In the decades of 1990s, the official unemployment figures were generally below 3.5 percent, with the highest rate of 3.5 per cent registered in 1990 and lowest rate of 1.8 per cent recorded in 1995 (Onwioduokit, 2007). Given this statistical figures on unemployment in Nigeria, Onwioduokit (2007) was quick to remark that, “without doubt, the accuracy of this data has been questioned in several quarters in

Nigeria". In 2000, the composite unemployment rate increased to 18.1 per cent, while the urban and rural unemployment rates were 14.2 per cent, and 19.8 per cent, respectively. The rate fell gradually to 12.2 per cent in 2002, nudged to 14.8 per cent in 2003, before decelerating to 11.8 per cent in 2004. The performance of both the urban and rural rates maintained a similar trend during the period (National Bureau of Statistics, 2005).

In 2005, data from the National Bureau of statistics showed that the number of registered unemployed with the Employment Exchange Offices increased by 1.3 per cent to 317,769. Further analysis from the same source shows that the number of registered unemployed in the professional and executive cadre rose significantly by 443.5 per cent to 22,533. In contrast, the number of registered unemployed lower-grade workers was 295, 236, representing a decrease of 4.6 per cent below the level in 2004. Furthermore, the result of the 2006 Nigerian Core Welfare Indicator (CWI) Survey by the National Bureau of Statistics indicated that general unemployment for persons 15 years and above was 3.8 per cent. The rate was higher in the urban areas (5.6 per cent) than the rural areas (5.2 per cent).

Furthermore, available estimates show that the national unemployment rate in 2008 was 12.8 per cent, compared to 10.9 per cent in 2007 (CBN, 2008). The increase in the unemployment rate was largely attributed to the increased number of school graduates with no matching job opportunities, a freeze in employment in many public and private sector institutions, the crash in the capital market which caused huge job losses, and continued job losses in the manufacturing and oil sectors (CBN, 2008). Table 1 below shows the

total population, labour force, the unemployed and the unemployment rates in Nigeria for the period 2004 – 2008.

Table 1: Labour Statistics in Nigeria; 2004-2008

Year	2004	2005	2006	2007	2008
Total Population	134,131,224	138,468,013	140,003,542	144,483,655	149,107,132
Total Labour Force	55,538,881	56,170,672	58,933,891	61,249,485	62,946,096
Total Employment	48,124,440	49,486,362	50,886,826	52,326,923	53,807,775
Total Unemployment	7,414,441	6,684,310	8,047,065	8,922,562	9,204,515
Unemployment Rate (%)	13.4	11.9	14.6	10.9	12.8

Source: Central Bank of Nigeria (2008). Annual Report and Financial Statements. Pp.104

The table above indicates that unemployment rate has been on the increase from 2004 to 2008 with a fall from 14.6 per cent in 2006 to 10.9 per cent in 2007 respectively. However, the total number of the unemployed increased progressively in 2006 and 2008 from 8,047, 065 to 9,204,515 respectively.

3. METHODOLOGY, SOURCES OF DATA AND THE SCOPE OF THE STUDY

Generally, a number of methods have been applied by many authors in analyzing the impact of monetary policy on economic performance in developing countries including Nigeria. Some of the approaches range from simple statistical techniques, econometric analyses; to general equilibrium analyses. However, this study

employs the Johansen co-integration framework to estimate the impact of monetary policy on unemployment reduction in Nigeria through quantitative monetary policy instruments. In order to verify the relationship between unemployment reduction and monetary policy variables, equation (8) is estimated using the Ordinary Least Squares (OLS) but in doing this, we first tested if the variables are stationary (integrated) of the same order. The theoretical frame work that gave rise to the model here is the Keynesian macroeconomic model which stipulates that monetary policy affects the level of economic activity through the interest rate and credit conditions. That is, monetary policy influences output and hence unemployment reduction in the economy. Therefore, the proper growth rate of money supply is crucial for the stable growth of output and employment. In specifying the model for this work, we state that unemployment can be reduced by monetary policy variables such as; money supply, interest rate, central bank discount rate, bank reserve requirement, bank liquidity ratio and banking sector's credit to the economy.

Put in other words, unemployment reduction is a function of monetary policy variables in the economy. However, it is a fact that other factors determine the level of employment in the economy. But our major concern in this paper is to determine the extent to which monetary policy variables can reduce unemployment rate in the economy without respect to other factors. Therefore, in this segment, attempt is made to investigate the relationship between unemployment reduction and monetary policy variables. The study adopts the simple method of correlation between the variables of interest (monetary policy variables) and unemployment rate in Nigeria. The choice of the variables was guided by economic theory (Keynesian Macro framework) discussed in part two of this paper.

The economic theory postulates that there should be negative relationship between unemployment reduction and interest rate (INTR), bank reserve requirement (BARR), and bank liquidity ratio (BLQR), while unemployment reduction is positively related to money supply (Ms) and banking sector's credit to the economy (BSCE). Thus, the relationship between money supply and unemployment reduction is expected to be positive; and also the relationship between banking sector's credit to the economy and unemployment reduction; meaning that as the money supply and banking sector's credit to the economy increases, unemployment reduction increases. On the other hand, as the interest rate (INTR), bank reserve requirement (BARR), bank liquidity ratio (BLQR) falls, unemployment reduction increases implying increase in employment level and vice versa.

Therefore, our unemployment reduction equation can be stated as:

UNEMPR = f (MS, INTR, INFR, CBDR, BARR, BLQR, BSCE…….(7)

This equation can be expressed in a log linear form as:

$$LogUEMPR_t=log\alpha_0+\alpha_1 Ms_t+ \alpha_2 logINTR_t+ \alpha_3 logINFR_t+ \alpha_4 logCBDR_t+ \alpha_5 logBARR_t +\alpha_6 logBLQR_t+ \alpha_7 logBSCE_t +u_t \quad \ldots\ldots(8)$$

α_1, α_4 and $\alpha_7 > 0$; α_2, α_3 α_5 and $\alpha_6 < 0$.

Where

$UNEMPR_t$ = unemployment reduction in the economy (represented by unemployment rate)

Ms_t = Money Supply

$INTR_t$ = Interest Rate (Bank Lending Rate)

$INFR_t$ = Inflation Rate

$CBDR_t$ = Central Bank Discount Rate

$BARR_t$ = Bank Reserve Requirement
$BLQR_t$ = Bank Liquidity Ratio
$BSCE_t$ = Banking Sector's Credit to the Economy
U_t = Error term

We therefore expect α_1, α_4, and α_7 to have positive sign as our a priori expectation while α_2, α_3, α_5 and α_6 to have negative sign.

Data Sources and Scope of the Study

The Data required for estimating the model were obtained from the following sources:

The Central Bank of Nigeria: Economic and Financial Review (2006); Central Bank of Nigeria Annual Report and Financial Statements (2004 and 2008); Central Bank of Nigeria: Statistical Bulletin (1996, 2003 and 2010 Editions); Central Bank of Nigeria: Bank Analysis System and National Bureau of Statistics. This paper is limited to the Nigerian economy and tries to estimate the impact of monetary policy variables on unemployment reduction in Nigeria. The data used were selected from the period of Structural Reforms in Nigeria 1986-2009 which indicates the period of the commencement of active market-based monetary policy implementation and the terminal year of the period of banking and monetary policy reforms in Nigeria.

5. Presentation of Empirical Results and Analysis

In order to check the time series properties of the data used in the estimation of the model, both the stationarity and co-integration tests were conducted to avoid spurious regression results. Conventionally, test for unit roots in data always precedes co-integration analysis. In testing for the stationarity of the variables,

Augmented Dickey-Fuller (ADF) test is often employed to determine the degree of integration of variables. That is, how many times a variable should be differenced to attain stationarity (Dickey and Fuller, 1979).

The results of the unit root test are presented in Table 2. Both the ADF and PP results indicate that only Ms, INTR and BSCE were stationary at levels, while CBDR, INFR, BARR, BLQR were found to be stationary after differencing, hence they are I(d) both at 5% critical value. The test was considered only at constant.

Table 2: The Unit- root Test Results Using ADF and PP Procedures

VARIABLE	ADF	5% Critical Value	ORDER OF INTEGRATION	PP	5% Critical Value	ORDER OF INTEGRATION	INCLUDED IN TEST Equation
UNEMPR	-6.027	-3.012	I(1)	-6.209	-3.012	I(1)	Constant
MS	21.487	-3.029	I(0)	8.705	-2.998	I(0)	Constant
INTR	-3.683	-3.040	I(0)	-4.463	-2.998	I(0)	Constant
INFR	-3.940	-3.012	I(1)	-4.232	-3.012	I(1)	Constant
CBDR	-6.701	-3.769	I(1)	-8.221	-3.004	I(1)	Constant
BARR	-4.615	-3.004	I(1)	-4.635	-3.004	I(1)	Constant
BLQR	-4.955	-3.004	I(1)	-5.049	-3.004	I(1)	Constant
BSCE	3.655	-1.96	I(0)	4.709	1.960	I(0)	None

Source: Author's computation

The long-run relationship among the variables was also examined using Johansen co-integration framework. The co-integration test from the trace statistic value results indicate that there are two (2) co-integrating vectors that exist in the system at 5% level while the Maximum Eigen value indicates one (1) co-integrating vector. It can then be inferred that a long-run relationship can be found between unemployment reduction and its determinants in the

system. The Johansen co-integration test results are reported in Table 3 below.

Table 3: Johansen Cointegration Test Results

HYPOTHESIS NO. OF (E(S)	EIGEN VALUE	TRACE VALUE	5% CRITICAL VALUE	MAX. EIGEN VALUE	5% CRITICAL VALUE	REMARK
NONE*	0.9684	201.9854	159.5929	76.0101	52.362	Rejected
r< =1*	0.8860	125.9752	125.6154	47.8219	49.230	Rejected
r<=2	0.7788	78.1533	95.7356	33.1948	40.077	Accepted

Trace test indicates 2 co-integrating equations at 5% significant level.

The Maximum Eigen value test indicate 1 co-integrating equation at the 0.05 level

*denotes rejection at the 0.05 level

**Mackinnon –Haug – Michetis (1999) p – values.

Source: Author's computation.

To examine the causal relationship between unemployment reduction and monetary policy variables, Granger causality test was carried out. The results are presented in Table 4 below.

Table 4: Granger Causality Test Results

Hull Hypothesis	F-Statistics	Probability	Causal inference
UNEMPR does not Granger Cause MS	3.96182	0.0400	Reject H_0
MS does not Granger Cause UNEMPR	0.71059	0.5062	Accept H_0
UNEMPR does not Granger Cause INFR	1.13533	0.3459	Accept H_0
INFR does not Granger Cause UNEMPR	0.97592	0.3982	Accept H_0
UNEMPR does not Granger	0.12760	0.8811	Accept H_0

Cause BLQR BLQR does not Granger Cause UNEMPR	6.73456	0.0076	Reject H_0
UNEMPR does not Granger Cause BSCE BSCE does not Granger Cause UNEMPR	3.48164 1.48718	0.0556 0.2556	Reject H_0 Accept H_0
UNEMPR does not Granger Cause CBDR CBDR does not Granger Cause UNEMPR	4.14914 0.36338	0.0341 0.7006	Reject H_0 Accept H_0

***Note**: Rejecting the null hypothesis means that one variable actually granger–causes the other; while accepting the null hypothesis confirms that there is no causality between both variables at 5per cent significance level.*

The test result shows that UNEMPR Granger causes MS, BSCE, and CBDR at 5 per cent significance level while BLQR Granger causes UNEMPR at 5 per cent significance level, all indicating unidirectional causality. Thus:

UNEMPR →MS
UNEMPR→BSCE
UNEMPR→ CBDR
BLQR → UNEMPR

The result also shows that there is no causal relationship between UNEMPR and Ms.

The results from the Ordinary Least Squares (OLS) are presented in Table 5 below.

Table 5: The Results of the estimated model (Ordinary Least Squares Result)

Variable	Coefficient	Standard error	T-Statistics	Probability
Constant	1.382428	3.172506	0.435753	0.6714
Ms	2.65E-05	3.18E-06	8.338841	0.0000
INTR	0.013061	0.090602	0.144159	0.8880
CBDR	-0.155579	0.120537	-1.290714	0.2233
BARR	-0.623688	0.184615	-3.378324	0.0062
BLQR	0.147823	0.062181	2.377306	0.0367
BSCE	-2.20E-05	3.37E-06	-6.522590	0.0000
INFR	0.051354	0.023191	2.214377	0.0488

R-squared	0.947535	Mean dependent var	6.505263
Adjusted R-squared	0.914148	S.D. dependent var	5.126779
S.E. of regression	1.502172	Akaike info criterion	3.947263
Sum squared resid	24.82173	Schwarz criterion	4.344922
Log likelihood	-29.49900	Hannan-Quinn criter.	4.014563
F-statistic	28.38046	Durbin-Watson stat	-2.396796
Prob(F-statistic)	0.000003		

Some of the coefficients of the variables of interest have the expected signs while some do not. The coefficients of Ms, CBDR and BARR, possess their expected signs while INTR, BLQR, BSCE and INFR do not. Also, majority of coefficients are significant at 1% level (Ms, BARR, BLQR, BSCE, and INFR) except INTR and CBDR.

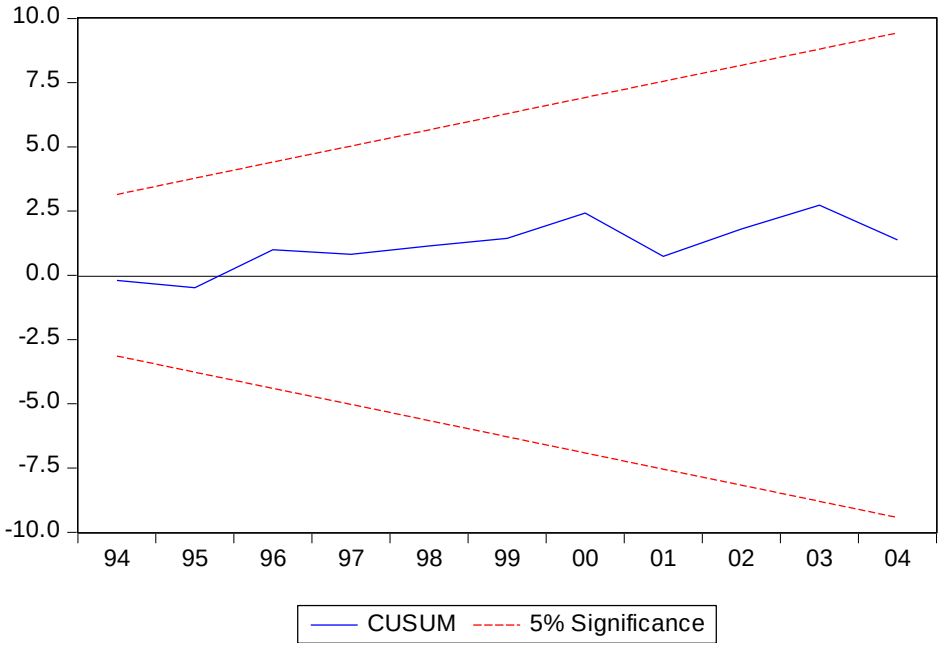
The result shows that money supply is positively and significantly related to unemployment reduction. This is consistent with economic theory and implies that expansionary monetary policy enhances employment creation and therefore reduces unemployment through productivity in the economy. The positive coefficient of money supply implies that a unit increase in money supply would lead to an over 265 per cent increase in unemployment reduction in the

economy. The result also indicates that interest rate did not possess the right sign, although it was not a major determinant of unemployment reduction during the period under this study and so also the coefficient of the Central Bank discount rate. The bank reserve ratio was negatively related to unemployment reduction and was also significant. This also implies that a unit increase in the reserve ratio would lead to a 65 per cent reduction in unemployment reduction. Bank liquidity ratio was also found to be positively and significantly related to unemployment reduction. This however contradicts the apriori expectation of the model. It implies that a unit increase in the bank liquidity ratio would lead to a 16 per cent increase in unemployment reduction. We can infer from this that the commercial banks were not actually adhering to the directives of the CBN to increase the ratio and could loan out more of their deposits rather than keeping more cash to meet the liquidity needs of their depositors.

The negative sign of banking sector's credit to the economy implies that there is an inverse relationship between unemployment reduction and banking sector's credit to the economy. It then violets the theoretical expectation that increases in bank credit to the economy will increase unemployment reduction in the economy. This also could mean that most of the banking sector's credit to the economy was not channelled into productive sectors of the economy to boost productivity but rather into other sectors that could even mare productivity hence unemployment reduction was not feasible. The result also confirms that in the short-run, increase in inflation rate has a positive impact on unemployment reduction in the economy. In other words, increase in inflation rate will lead to an increase in unemployment reduction (in employment).

In terms of goodness of fit of the model, the adjusted R^2 = 0.914148 is quite high after adjusting to degree of freedom, implying that changes in unemployment reduction are well explained by the explanatory variables included in the model. This means that about 91per cent variations in unemployment reduction are accounted for by the explanatory variables. The high value of the F-statistic (28.38046) implies that the variables are jointly statistically significant at 5 percent significant level. This therefore means that monetary policy has played a significant role in reducing unemployment in Nigeria during the period under investigation. The Durbin Watson statistics also revealed a negative serial correlation which indicates the absence of autocorrelation. That is, the data is free of serial correlation. The low value from the Akaike information criterion (AIC), and Schwartze Bayesian criterion (SBC) showed that the model is properly specified. The stability test of the model was also carried out and the results are reported in the figure 1 below.

Figure 4: Stability test



From the figure above, the model is stable over time. This is because the observed bound is lying between the two limits and is positive over time at 5 per cent critical value. By implication, the variables used in the model have the tendency of long-run relationship.

4. Policy Recommendations and Conclusion

The paper has empirically examined the role played by monetary policy in reducing unemployment in Nigeria using data from the CBN. The overall evidence from the study suggests that money supply as one of the major monetary policy variable is positively and significantly related to unemployment reduction in Nigeria during the period under investigation. This shows that money supply is an important monetary policy variable in the determination of employment level in Nigeria. Therefore, the conduct of monetary policy in Nigeria at any point in time should give adequate attention to the quantity of money in circulation to be able to attain the macroeconomic goal of unemployment reduction in the economy. That is, money supply in the economy can be controlled if money supply is growing faster than the economy's capacity to produce goods and services. This is an indication that the amount of money in circulation is more than what the current volume of goods and services produced could optimally accommodate, and this is likely to be inflationary. Therefore, general conclusion is that the solution to the problem of unemployment reduction in Nigeria does not solely lies in one macroeconomic policy in the system. That is, the solution to the problem of unemployment and poverty cannot be found within one single macroeconomic policy. The reality is that monetary policy, although necessary in achieving economic growth, cannot be used alone in the management of the economy to achieve high level of employment. An appropriate mix of fiscal policy measures that

emphasizes greater commitment of public investment in education, health and infrastructure is critical to employment generation in the economy. This therefore calls for a multi-disciplinary approach in understanding the causes and effects of unemployment and poverty as well as multi-policy approach in addressing the problem of unemployment in the economy. This requires a multi – policy approach in packaging policies and programmes for employment generation in specific social and economic environment. Therefore, the critical role of the banking sector in enhancing the effectiveness of monetary policy in the economy does not only call for the need for the CBN to create an enabling economic and financial environment for the evolution of a healthy and stable financial system in Nigeria, but also tackle the endemic problem of banking soundness in the system.

REFERENCES

Adebayo, A. A. & Ogunrinola, I. O. (2007). Contemporary Dimensions of Unemployment in Nigeria: A Special Challenge Under the National Economic Empowerment and Development Strategy. In: *Employment generation in Nigeria*. Annual Conference Proceedings of the Nigerian Economic Society, Calabar. 116-117

Ajayi, S. I. & Ojo, O. O. (2006). *Money and Banking: Analysis and Policy in the Nigerian Context*. Second Edition. Ibadan: Daily Graphics Nigeria Ltd. 276-291.

Akinboyo, G.B. (1987). Job creation as a productivity measure for employment problems in developing countries: the Nigeria and Holland experience. Increasing productivity in Nigeria. Lagos; National Productivity Centre. 57-81.

Balogun, E. D. et al (2003). Issues of employment and wages in Nigeria. *Contemporary Economic Policy Issues*. Central Bank of Nigeria. 92.

Batten, D. S. & Hafer, R. W. (1983). Relative impact of monetary and fiscal Actions on Economic activity. A cross–country comparison. *Federal Reserve Bank of St. Louis Review.* 5–12.

CBN, (2008). Annual Report and Financial Statements. 104.

CBN, (2011). *Understanding Monetary Policy Series No.1: What is Monetary Policy*? Central Bank of Nigeria.39-40.

Dickey, D. and Fuller, W. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association* (74): 427-431.

Iwanyemi, A. (2007). Modeling the Nigerian Economy for Growth and Employment. In: *Employment generation in Nigeria*. Annual Conference Proceedings of the Nigerian Economic Society, Calabar. 32.

Jhinghan, M. L. (2004*). Monetary Economics*. Delhi: Vrinda Publishers (p) Ltd.326-432.

National Bureau of Statistics (2005). *Statistical Facts Sheet*. FOS; Lagos.

Okigbo, P.N.C. (1991). Theoretical and Methodological Issues relating to unemployment in Nigeria. In: *Unemployment and Underemployment in Nigeria*. Annual Conference proceedings of the Nigerian Economic Society, Kaduna. 116-117.

Oni, B. (2007). Employment Generation: theoretical and Empirical Issues. In: *Employment generation in Nigeria*. Annual Conference Proceedings of the Nigerian Economic Society, Calabar. 18-19.

Onwiodiuokit, E.A. (2007).Character of Unemployment in Nigeria and its links with the Macroeconomy.In: *Employment generation in Nigeria*. Annual Conference Proceedings of the Nigerian Economic Society, Calabar. 69-70

Oyejide, T. A. (2002). Monetary Policy and its effects on the Nigerian Economy. NES proceedings of one-day seminar held on 23rd May, at Federal Palace Hotel, Lagos. 30-32.

World Bank (1998). *World Development Indicators*. The World Bank; Washington DC.

Appendix 1: Monetary Policy Variables used for Estimating the Model

YEAR	UNEMPLOYMENT RATE (UNEMPR) (%)	MONEY SUPPLY (Ms)-M_2 (N'million)	INTEREST RATE (INTR) (%)	INFLATION RATE (INFR) (%)	CENTRAL BANK DISCOUNT RATE (CBDR) (%)	BANK RESERVE REQUIREMENT (BARR) (%)	BANK LIQUIDITY RATIO (BLQR) (%)	BANKING SECTOR CREDIT TO THE ECONOMY (BSCE)-GROWTH RATE (%)
1986	5.3	23,806.40	10.50	5.40	10.0	1.7	36.4	36,820.3
1987	7.0	27,573.58	17.50	10.20	12.8	1.4	46.5	47,926.4
1988	5.3	38,356.80	16.50	38.30	12.8	2.1	45.0	57,326.3
1989	4.5	45,902.88	26.80	40.90	18.5	2.9	40.3	49,259.1
1990	3.5	52,857.03	25.50	7.50	18.5	2.9	44.3	57,674.9
1991	3.1	75,401.18	20.01	13.00	14.5	2.9	38.6	83,823.7
1992	3.4	111,112.31	29.80	44.50	17.5	4.4	29.1	171,071.0
1993	2.7	165,338.75	18.32	57.20	26.0	6.0	42.2	280,697.6
1994	2.0	230,292.60	21.00	57.00	13.5	5.7	48.5	439,113.8
1995	1.8	289,091.07	20.18	72.80	13.5	5.8	33.1	474,361.4
1996	3.4	345,853.96	19.74	29.30	13.5	7.5	43.1	371,079.0
1997	3.2	413,280.13	13.54	8.50	13.5	7.8	40.2	365,870.6
1998	3.2	488,145.79	18.29	10.00	14.3	8.3	46.8	519,510.6
1999	3.0	628,952.16	21.32	6.60	18.0	11.7	61.0	632,010.0
2000	18.1	878,457.27	17.98	6.90	14.0	9.8	64.1	472,011.7
2001	13.7	1,269,321.61	18.29	18.90	20.5	10.8	52.9	848,992.8
2002	12.2	1,508,172.91	24.40	12.90	16.5	10.6	52.5	1,311,910.0
2003	14.8	1,952,922.28	20.48	14.00	15.0	10.0	50.9	1,833,694.8
2004	13.4	2,131,820.08	19.15	15.00	15.0	8.6	50.5	1,993,610.7
2005	11.9	2,637,913.73	17.85	17.90	13.0	9.7	50.2	2,256,411.7*
2006	14.6	3,799,538.05	17.95	8.20	12.25	4.2	55.7	321,959.4*
2007	10.9	5,138,700.94	17.26	5.38	8.75	2.8	48.8	1,145,765.1*
2008	12.8	8,029,088.61	16.94	11.60	9.81	3.0	44.3	4,010,720.4*
2009	12.55*	9,456,480.31	18.36	12.5*	7.44	1.3	30.7	6,094,541.3*

*Fourth Quarter Value

Source: (i). Central Bank of Nigeria Statistical Bulletin, 1994, 1996, 2003, 2006 and 2010 Editions

(ii). Central Bank of Nigeria Annual Report and Statement of Account, 2004 &2010 Editions

(iii). Central Bank of Nigeria; Major Economic, Financial and Banking Indicators, September 2004

(iv). Central Bank of Nigeria; Economic and Financial review, 2006

(v). Central Bank of Nigeria: Bank Analysis System (BAS)

Appendix 2: The results of the estimated model (OLS results)

Dependent Variable: UNEMP
Method: Least Squares
Date: 03/04/12 Time: 16:49
Sample (adjusted): 1986 2004
Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.382428	3.172506	0.435753	0.6714
MS	2.65E-05	3.18E-06	8.338841	0.0000
CBLR	0.013061	0.090602	0.144159	0.8880
CBDR	-0.155579	0.120537	-1.290714	0.2233
BARR	-0.623688	0.184615	-3.378324	0.0062
BLQR	0.147823	0.062181	2.377306	0.0367
BSCE	-2.20E-05	3.37E-06	-6.522590	0.0000
INFR	0.051354	0.023191	2.214377	0.0488

R-squared	0.947535	Mean dependent var	6.505263
Adjusted R-squared	0.914148	S.D. dependent var	5.126779
S.E. of regression	1.502172	Akaike info criterion	3.947263
Sum squared resid	24.82173	Schwarz criterion	4.344922
Log likelihood	-29.49900	Hannan-Quinn criter.	4.014563
F-statistic	28.38046	Durbin-Watson stat	2.396796
Prob(F-statistic)	0.000003		