

Full Length Research Paper

Determining optimum farm credit need of small scale farmers in Benue State

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This study determined an optimum farm credit for small scale farmers in Benue State. A set of structured questionnaires were administered on 180 respondents randomly selected from eighteen communities in the state. Linear programming was used to obtain an optimum farm credit for farmers engaged in four farm enterprises in the study area, namely, yam and cassava mix, maize and sorghum mix, yam and sorghum mix and cassava and maize mix. The results showed that N58,498.80 was obtained as the optimum farm credit. This optimum solution further showed that farmers can only cultivate a total of 1.7 hectares of land from which a total of N499,304 can be generated as net revenue for the farm. The optimum farm credit determined for this model is subject to influence by socio-economic variable, such as farm size, cash, household size and educational status of farmers. It was then recommended among other things that financial institutions should increase their credit volume to farmers and that government should also remove all bottlenecks to land acquisition for farming.

Key words: Linear programming, farm credit, small scale farmers.

INTRODUCTION

In Nigeria, one of the major problems confronting small scale farmers is poor access to adequate capital even though small scale farmers produce the bulk of domestic agricultural output (Eze and Ibekwe, 2007). Agricultural sector in Nigeria was the major source of revenue and the dominant sector of the economy before the early 1970s. It was the major development drive of the economy employing over 80% of the active population (Anyanwu et al., 1997). It also contributed to over 60% of the nation's Gross Domestic Product (GDP) and provided nearly 100% of the economy's food requirement, raw materials to industries and the country's export earnings among others. However, when crude oil became a major export earner, agriculture began to falter as its contribution to GDP began to decline from over 60% in early 1970 to 40% (Aigbokhan, 2001). This further reduced to less than 26% between 2000 and 2007 (CBN, 2007). These indicate that the discovery of oil as the faster means of revenue brought about devastating neglect of the agricultural sector.

Due to the aforementioned problems, over a decade, most government policies have been directed towards accelerating economic development with the ultimate aim of transforming the economy into an industrialized one, as well as raising the welfare of the people. One of the sectors expected to act as a catalyst towards the realization of this goal is the agricultural sector. This is measured by increasing the output of the agricultural sector to meet the demand of the people and the industries. In order to increase the output of agricultural sector, government over the years has been giving priority to agriculture in its budget, directing financial institutions to make credit available to farmers. Agricultural credit is expected to play a vital role in agricultural development (Duong and Izumida, 2002).

Agricultural credit has over the years been identified as a major input in the development of the agricultural sector in Nigeria (CBN, 2005). The decline in the (capital) is viewed as more than just another resource such as labour, land equipment and raw materials. It determines access to all the resources on which farmers depend (Shephard, 1979). In most developing countries, agricultural credit is considered an important factor for increased agricultural production and rural development,

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because it enhances productivity and promotes standard of living by breaking the vicious cycle of poverty of small scale farmers (Adebayo and Adeola, 2008).

It has often been said (Ijere, 1993; Adeyemo, 1982) that credit institutions have a major role to play in enhancing food production. Agricultural credit is essential in agricultural development. If we want farmers to adopt new methods such as the use of improved seeds and higher producing livestock, simple hand operated machines, fertilizers and other agro-chemicals, there must be credit.

Roe (1997) asserted that production credit will permit farmers to buy improved production inputs that they would otherwise, have been unable to procure. If these inputs are profitable, credit would permit small holders to increase their agricultural production and at the same time repay and realize higher net farm income. One could say therefore, that the low level of savings and credit is partly responsible for low level of agricultural development in Nigeria.

Formal and institutional lending agencies in the field of agriculture are of a relatively recent origin. This group includes: Credit Departments of the State Ministries of Agriculture, Agricultural Cooperative Societies, Commercial and Merchant Banks and the Nigerian Agricultural Cooperative Bank (NACB). These institutions operate as lending agencies through which agricultural credits are expected to reach the small-scale farmers (Aku, 1986).

A breakdown of NACB's loan portfolio by World Bank (2000) has shown that over 80% of total loans disbursed have been to individuals rather than cooperative societies, while the highest proportion of the remainder went to corporate bodies. From the inception of the bank in 1973 to 1999, about 97% of loans were made to about 427,229 small holder farmers, over 2% to 19,412 investment programmes and less than 1% to about 40 government programmes.

The World Bank report further showed that average new loan amounts per borrower were small N12,007 in 1997 and N14,042 in 1998 which is about half of the Gross Domestic Product (GDP) per capita. As a result of the problems of total dependence on government and external agencies for loans and grants, the inability of the banks to mobilize savings deposits for clients and other related problems, the Federal Government of Nigeria in 2001 announced the merger of NACB with People's Bank of Nigeria (PBN) and Family Economic Advancement Programme (FEAP) and named it Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB).

The need for providing agricultural credit to farmers is universal. Even in highly developed countries of the world, agricultural credit has been an important instrument for fostering agricultural development including for improving efficiency and expanding production. Lack of capital is generally recognized as one of the major constraints to expanding production and modernizing

agriculture. To expand the scope of operation and adopt new technologies require the use of some improved inputs, which are not available on the farm and must be purchased.

Agricultural growth and development cannot be achieved against the background of farmers poor financial position. Good lending principles include that farmers should be given sufficient credit for their needs so as to make effective use and avoid diversion. It is therefore necessary to answer the question of what is the level of credit need of the farmers. Thus, the need for this study arises because of the conflicting information about the real credit need of small scale farmers in Nigeria (Umeh and Adebisi, 1998; Akande and Oni, 1999; Orebiyi and Njoku, 2001). Finally, some studies have been conducted majorly in the field of credit to farmers (Adeyemo, 1982; Ajani and Nkposong, 1999; Njoku, 1986; Oladosu et al., 1999; Orebiyi and Njoku, 2001), these studies were conducted majorly in the area of sources, types, procurement and utilization of credit. Variables like credit need have not been exhaustively examined especially in the area of study.

The main objective of this study was to determine the optimum farm credit need of small-scale farmers in Benue State while the specific objectives include:

1. To maximize net revenue from the farm enterprises subject to available resources.
2. To enable farmers plan for adequate use of farm credit.

Study area

Benue State derives its name from River Benue, the second largest river in Nigeria. The State created in 1976 is located in the Middle Belt of Nigeria. It is an area within the quadrilateral formed by latitudes 4 and 14° North of the Equator and longitudes 2.75 and 14.5° East of the Greenwich Meridian (NPC, 2006). The State shares boundaries with five other States, namely: Nasarawa to the North, Taraba to the East, Cross River to the South-East, Enugu to the South West, Kogi to the West. The South East part of the State also shares boundary with the Republic of Cameroon. The State is also bordered on the North by 280 km of River Benue, and is traversed by 202 km of River Katsina-Ala in the inland areas.

The State has a total area of about 30955 km² and administratively it is divided into 23 Local Government Areas with its headquarters at Makurdi. According to the 2006 census results, Benue State has a population of about 4.2 million (NPC, 2006).

There are two main ethnic groups in Benue State, namely Tiv, who represent about 72% of the total population and the Idoma who constitute slightly over 21% of the population. The Igede tribe represents 6% of the population; smaller communities of Hausa, Fulani,

Jukun Abakwa, Nyifon, Etulo, Igala and Igbo traders account for the remaining 1% of the population. About 75% of the population lives in the rural areas and the main occupation is farming.

Benue State has a tropical climate, which manifests two seasons. The rainy season is April to October while the dry season is from November to March. Annual average rainfall varies from 1750 mm on the Southern part of the State to 1250 mm in the North. In the mountain region Turan and Ikyurav-ya areas of Kwande Local Government, average rainfall rises up to 4000 mm. The hot season comes in mid-April with temperature between 32 and 38°C with high humidity. (BNARDA, 1999) The State stretches across the transition belt between the forest and savanna vegetation. Much of the area consists of undulating hills or grassy open space on the North and derived savanna in the South.

Benue State is referred to as the "Food Basket of the Nation" because of the abundance of its agricultural resources. About 80% of the State population is estimated to be involved directly in subsistence agriculture. The State is a major producer of food and cash crops like yam, cassava, rice, groundnuts and maize. Others include sweet potatoes, millet, sorghum, sesame and a wide range of others like soyabeans, sugarcane, oil palm, mango, citrus and banana. Irrigation farming along the bank of Rivers Benue and Katsina-Ala is a common feature. The State can boast of a great deal of livestock resources like goats, poultry, sheep, pigs and cattle which are traditionally reared on free range by small holder farmers. Though, the major occupation is crop farming, a lot of fishing activities are carried out on Rivers Benue and Katsina-Ala. Irrigation is widely practiced along the riverine areas during the dry season. Vegetable crops such as tomatoes, okro, carrot, onion, pepper and amaratus are grown in large quantities. It is also a common practice to find each farming family keeping one form of livestock or the other, such as poultry, rabbitry, piggery, sheep and goat on a small scale.

The strategic location of Benue State between the Southern forest regions and the Northern semi and grassland regions of the country makes it to have fertile land for agriculture with the estimated arable land constituting about 60% of the total area. Average farm size is 1.5 to 2.0 hectares (BNARDA, 1999).

MATERIALS AND METHODS

Benue State is delineated into three agricultural zones. The three zones include zone A, B and C. All the local government areas in each agricultural zone are similar in terms of vegetation, socio-cultural activities and agricultural practices. Three local government areas were therefore randomly selected from each of the three zones to get a total of nine local government areas involved in the survey.

From each of the nine local government areas selected, a random sample of two communities was selected from the list of the communities compiled.

Finally, from each of the eighteen communities a random sample

of 10 respondents who are loan beneficiaries from the bank was selected to give a total of 180 respondents. Primary data were collected through personal interview conducted with the use of structured questionnaires. Prior to the administration of the questionnaires, the questionnaires were pre-tested and necessary corrections were also made.

Model specification

Thierauf and Klekamp (1975) described linear programming as a term that covers a whole range of mathematical techniques that aim to optimize performance in term of combinations of resources. Linear programming is mathematically very complex. To avoid such complexity in the actual solving of problems, mathematicians have reduced their techniques down to a series of simple but lengthy procedures.

The algebraic expression of the linear programming model developed for this study with the objective to determine the optimum credit need is expressed as follows:

$$\text{Maximize } Z = \sum_{j=1}^n C_j X_j \quad (1)$$

$$\text{Subject to } \sum_{j=1}^n a_{ij} X_j \leq b_i \quad (2)$$

$$i = 1, \dots, M; j = 1, \dots, n \\ B_i \geq 0 \text{ and } X_j \geq 0 \quad (3)$$

where Z is the total net revenue from all the crop enterprises (cassava, yam sorghum and maize); C_j is the net revenue from cassava/yam, maize/sorghum, yam/sorghum and cassava/maize; A_{ij} is the level of inputs (land, labour, farm credit, cash reserve and debt) required per unit of the production activity; X_j is the level of cassava, yam, sorghum and maize production; B_i is the amount of farm credit available; N is the number of possible activities (that is, four activities, such as cassava, yam, sorghum and maize); M is the number of constraints (that is, land, labour, farm credit, cash reserve, debt, cassava, yam, sorghum and maize).

Disposal/slack activities of the model include borrowed cash, wages for labour, sale of cassava, sale of yam, sale of maize, sale of sorghum and loan repayment.

The data for the analysis of this model was taken from the costs and returns analysis prepared for the four farm enterprises that is, cassava, yam, maize and sorghum. These crops are chosen for this model because they are the most popular farm enterprises in the area of study in terms of output and the number of farmers engaged in their production.

The average farm size for the area is 1.7 hectares. The total sum of N100,000 farm credit per farmer at 20% interest rate was provided for in the model. A borrowing activity was also provided for in the model, which enables credit to be obtained and used when the need arises. The model was constructed with the objective to maximize net revenue from the farm enterprises subject to the available resources.

RESULTS AND DISCUSSION

The results of the linear programming output showed that a maximum of N499,304 was obtained as net revenue from the use of N58,496.80 as farm credit. In line with what is obtained in the area; the model devoted 1.7 ha

Table 1. Effect of farm credit on net revenue and farm output.

Level of farm credit (N)	Net revenue (N)	Cassava output (kg)	Yam output (kg)	Maize output (kg)	Sorghum output (kg)
0.0	341175	8500	1067	3044	0.000
10,000	368207	8500	2628	2524	0.000
20,000.00	395239	8500	4189	2003	0.00
30,000.00	422271	8500	5751	1483	0.00
40,000.00	449303	8500	7312	963	0.00
50,000.00	476335	8500	8873	442	0.00
60,000.00	499304	8500	10200	0.00	0.00
100,000.00	499304	8500	10200	0.00	0.00

Source: Compiled from the Optimum Farm Model, 2010.

Table 2. Effect of farm credit on farm size.

Level of farm credit (N)	Cassava/Yam (Ha)	Maize/Sorghum (Ha)	Yam/Sorghum (Ha)	Cassava/Maize (Ha)	Total farm size
0.0	0.18	0.00	0.00	1.52	1/7
10,000.0	0.44	0.00	0.00	1.26	1.7
20,000.0	0.70	0.00	0.00	1.00	1.7
30,000.0	0.96	0.00	0.00	0.74	1.7
40,000.00	1.22	0.00	0.00	0.48	1.7
50,000.00	1.48	0.00	0.00	0.22	1.7
60,000.0	1.70	0.00	0.00	0.00	1.7

Source: Compiled from Optimum Farm Model, 2010.

of land for the production of cassava/yam mixture, since the combination was most profitable of all the enterprises. The optimum solution shows that farmers can only cultivate a total of 1.7 hectares of land. In addition to the available land, capital resources, family labour and hired labour were also utilized. With all these resources farmers will be able to produce 8500 kg of cassava and 10200 kg of yams.

The model showed that labour and N41503, of farm credit were the surplus constraints. The major binding constraint in the model is land. The dual price shows that, if one hectare of land is added, the net revenue is expected to increase by N251355.20. Sensitivity analysis carried out showed that net revenue is expected to reduce if any other production course is taken order than cassava/yam and cassava/maize combinations.

The results of the optimum farm plan of the farm credit are presented in Tables 1, 2 and 3. The results showed that in order to obtain an optimum farm credit from farm plan, different levels of farm credit were used. The optimum farm credit is reached when the net revenue is maximum. That is, an increase in the level of farm credit can no longer bring further improvement on the net revenue.

When no farm credit was employed on the farm plan, net revenue of 341175 was obtained. Production output

for cassava, yam, maize and sorghum were 8500, 1067, 3044 and 0 kg, respectively.

Under the zero farm credit, the model shows that labour was surplus in the first, second, third and fourth quarter for the following values; 210, 236, 241 and 229 man-days, respectively. The major limiting constraints in the model under zero farm credit were cash and credit. The dual prices of the binding constraints show that if cash and credit are made available by one unit, respectively, the net revenue is expected to increase by N3.90 and N2.00, respectively.

When a farm credit of N10,000.00 was brought into the plan, the net revenue was N368,207. This implies that the employment of N10,000.00 farm credit into the farm plan generated additional N27,032 for the farm. The result further shows an improvement in the output of Yam. The farm size also increased from 0.18 to 0.44 hectares. All these were made possible because the farm credit enables farmers to increase his labour use.

The results also showed surplus labour in the first, second, third and fourth quarters of the year. Their values were 207, 235, 240 and 227 man-days, respectively. The limiting constraints are the same as those under zero farm credit.

When the credit level was increased to N20,000, the net revenue increased to N395239 which shows that the

Table 3. Effect of farm credit on labour demand.

Level of farm credit (₦)	Hired labour 1 (MD)	Hired labour 2 (MD)	Hired labour 3 (MD)	Hired labour 4 (MD)	Total labour (MD)
0.00	54	28	23	35	140
10,000.00	56	28	23	36	143
20,000.00	58	30	24	37	149
30,000.00	60	31	24	39	154
40,000.00	62	32	26	40	160
50,000.00	65	33	27	41	166
60,000.00	66	34	27	42	169
000.00	66	34	27	42	169

Source: compiled from the Optimum Farm Model, 2010.

addition of N10,000 to the initial farm credit brought an improvement of N27032 over the previous level. The result shows an improvement over the output of yam while cassava remained constant at 8500 kg. Both labour use and farm size increased. All these improvements show that optimum farm credit level has not been reached.

Credit level was raised to N30,000.00. The net revenue further increased to N422,271.27. This shows that the addition of N10,000.00 farm credit to the former level yielded additional revenue of N27,032.00. The result further shows an improvement in the production of yam. Both farm size and labour also increased.

The binding constraints under the N30,000.00 farm credit are the same as those of N20,000.00 farm credit. Labour remained surplus throughout the year. During the first quarter of the year 204 man-days of labour was surplus, 233 man-days were also surplus in the second quarter, 239 man-days in the third quarter and 225 man-days in the fourth quarter of the year.

Credit level was also raised to N40,000.00. The net revenue further increased to N449,303.28. This shows that additional N10,000.00 yielded additional revenue of N27,032.00. When credit level was raised to N50,000.00, the net revenue further increased by the same amount.

However at N60,000.00 level of farm credit, only N58,496.80 of the amount was used by the farm plan leaving a balance of N1503.20 unused. The employment of additional farm credit of N8,496.80 on the farm generated net revenue of N22,968.56. Yam production increased but slightly below what was obtained at N50,000.00 credit level.

As from N60,000 farm credit, credit that used to be binding constraint became surplus and labour continues to be surplus throughout the year.

When the farm credit was increased to N100,000.00, there was no further improvement in the net revenue and the level of resources used also remained the same. This goes to confirm that the optimum farm credit for the farm plan is N58,496.80. Land continued to be limiting constraint, while credit and Labour supply continued to be

surplus with increase in farm credit.

One of the major problems confronting Nigerian farmers is lack of farm planning. This model is designed to assist farmers in getting optimum farm credit as well as planning for adequate use of farm credit. This implies that with the level of resources available in this model which represent the true farm conditions of the farmers, a farm credit of about N58000 will be adequate to meet the extra financial needs on the farm.

Land and capital (cash) for a farmer who meets the resource conditions of the farm model were the major binding constraints in the plan, which implies that farmers cannot increase their production unless they are addressed. Therefore, for farmers to demand for more than the optimum farm credit recommended, they must be ready to increase their hectareage of land in order to accommodate the additional labour needed for the production of the farm enterprises.

The optimum farm credit determined for this model is subject to influence by some socio-economic variables such as farm size and cash. If all other resources remained constant, the more the farm size, the more will be the credit need of farmers. The more the cash in hand the less will be the credit need of farmers. Other variables that were found to positively influence credit needs were education and household size of farmers. This result also conforms to similar studies (Akande and Oni, 1999; Orebiyi and Njoku, 2001; Ajani and Nkposong, 1999).

CONCLUSION AND RECOMMENDATIONS

Agricultural credit plays a very important role in the improvement of the economy. From the findings of this study, it is apparent that farmers' requirements for farm credit in the State are not met. This conclusion is drawn from the fact that what is determined as the appropriate credit need is above the average credit institutions are offering in the State. Credit needs will increase as farming is further intensified to meet the needs of the growing population and to provide products for

agricultural exports. Land use intensification calls for more modern tools and equipment, improved seeds, more fertilizers and agro-chemicals of which make additional demand for credit.

The following recommendations are offered based on the findings of this study. The current average loan of N250000 advanced by financial institutions to farmers was found to be lower than the optimum of N58000 determined for them. It is therefore recommended that banks should provide more credit to farmers with the view to enable them increase production. The credit volume should be large enough to take charge of both production and consumption needs of farmers.

Land was found to be one of the major binding constraints to credit use in the area. With the granting of sufficient loan to farmers, increasing their farm size will enable them to use the surplus farm labour resources identified in this study and demand for more credit for further production. Government should therefore put in place a proper legislation to remove any obstacle to farmland acquisition.

Similarly, the extension unit of Agricultural Development Project should advise farmers on how to use the surplus farm labour resources identified in this study to grow crop with low land requirements in order not to waste them. One way of achieving this, is by growing vegetable crops which have short lifespan.

REFERENCES

- Adebayo OO, Adeola RG (2008). Sources and uses of agricultural credit by small scale farmers in Surulere Local Government Area of Oyo State. *Anthropologist*, 10(4): 313-314.
- Adeyemo R (1982). "Strategies for improving Agricultural Credit in Nigeria: *Saving and Development*"; 18 (2) pp 8-95.
- Agricultural Development Project (1993). Village Listing Survey. Lokoja. Kogi State Agricultural Development Project. Occasional Report.
- Aigokhan BE (2001). "Resuscitating Agricultural Production for Export." *Proceedings of the 10th Animal Conference of the Central Bank of Nigeria's Zonal Res. Units*.
- Ajani OI, Nkposong OE (1999). "Small Scale Farmers' Poverty Level: Implications for formal Agricultural Credit Sourcing in Oluyole L.G.A. of Oyo State". In Fabiyi, Y.L. and E.O. Idowu (Eds) *Poverty Alleviation and Food Security in Nigeria*: Ibadan. Nigeria Association of Agricultural Economics (N.A.A.E). pp 325-330.
- Akande SO, Oni TO (1999). "Problems Militating Against the Supply of Agricultural Credit in Nigeria". Ibadan. National Institute for Social. Economic Research (N.I.S.E.R) *Occasional Paper*.
- Akpan H, Ekpo (1999). "Public Expenditure and Economic Growth in a Petroleum Based Economy: Nigeria (1960-1992)". *Inter. J. Soc. Sci. Faculty of Social Sciences, University Uyo*, 1(1).
- Aku PS (1986). "Lending to Farmers through Commercial Banks in Developing Economics: The Nigeria Experience". *Agric. Sys.*, 32 (1) pp 111-119.
- Ali Ocholi (2010). Analysis of the performance of rural Banking on Agriculture Development in Nigeria: A Comparative Study of selected Banks in Benue State. Unpublished Ph.D Thesis. Department of Agricultural Economics, University of Agriculture, Makurdi.
- Anyanwu JC, Oyefusi A, Oikhenan Dimowo FA (1997). *The Structure of Nigerian Economy (1960-1977)*. Joanee Educational Publishers Ltd.
- BNARDA (2004). Benue Agricultural and Rural Development Authority.
- CBN (2007). Annual Report and Statement of Accounts for the year Ended 31st December, 2007.
- CBN (2008). Central Bank of Nigeria Statistical Bulletin, 50 years anniversary Edition, December, 2008.
- Central Bank of Nigeria (CBN) (2003). "Agricultural Development Issues of Sustainability. *Contemporary Economic Policy in Nigeria, Central Bank of Nigeria 2003*, pp. 185-213.
- Duong PB, Izumida Y (2002). *Rural Development Finance*: In Vietsnsam, A Micro-economic Analysis of Household Surveys *World Development*, 30(2).
- Ekechi AO (1996). "Interest Rate Policy on Bank Lending Behaviour". *Central Bank of Nigeria Economic and Financial Review* 35(2).
- Ekpedu ID (2006). "Review of the Agricultural Sector in Nigeria (1960-1989)". *Afri. J. Econ. Soc.*, 7(1).
- Eze CC, Ibekwe UC (2007). Determinants of loan repayment under the indigenous financial system in South Eastern Nigeria. *Soc. Sci.*, 2(2):116-120.
- Ibitoye SJ (2006) Economic Evaluation of Credit Requirements of Small-Scale farmers in Kogi, Nigeria. Unpublished Ph.D Thesis Department of Agricultural Economics University of Nigeria, Nsukka.
- Ijere MO (1993). "The Lessons of State Credit Institutions in Developing Countries: The Nigerian Experience". *J. Agric. Admin*, 6(4):85-95.
- Isijola CO (2000). "Impact of Financial Sector Reform on the Supply and Demand for Agricultural Credit in Nigeria". *First Bank Plc. Bi-Annual Review* 8(16).
- Iyoha MA (2004). *Applied Econometrics*, Second Edition, Mindex Publisher Benin City.
- Jhingan ML (2003). *Microeconomic Theory*. 11th Revised Edition, Vrinda Publication (P) Ltd. Delhi.
- Nanna OJ (2001). "Bank Lending Behaviour and Output Growth: An Empirical Analysis with Implication on Monetary Policy in Nigeria". *CBN Economic and Financial Review*, 40(3).
- National Population Commission (1992). The 1991 Population Census. Lagos Federal Republic of Nigeria.
- Njoku JE (1086). Loan Diversion; A cause of loan Default in Nigeria: Causes, Consequences and Preventive Measures. Paper Presented at The NACB Seminar at Owerri, Imo State 18th – 21st November.
- Obiechimina ME (2007). "Improving the Agricultural Sector towards Economic Development and Poverty Reduction in Nigeria". *CBN Bullion*, 31(4): 66-86.
- Oguamanam HM (1996). "Commercial Bank Credit to Agricultural Sector in Nigeria". *Paper presented at the 17th Annual conference of Central bank of Nigeria Agricultural Credit Officers* held at Hill Station Hotel, Jos.
- Ojameruaye EO, Oikhenan HE (2001). *First Course in Econometrics*. Published by H. Hennas Universal Service, Benin City.
- Oladosu IO, Laogun EA, Sebiotimo AO (1999). "Credit Utilization Behaviour of Farmers in Ogbomosho Zone of Oyo State, Nigeria". In Fabiyi YL. and EO. Idowu (Eds) *Poverty Alleviation and Food Security in Nigeria*. Ibadan. N.A.A.E. pp. 339-341.
- Orebiyi JS, Njoku JE (2001). Credit Procurement and Utilization by Rural Farmers from Selected Rural Credit Institution in Imo State, Nigeria. Paper presented at the Annual Conference of the N.A.A.E. Held at University of Nigeria, Nsukka. June 11-13.
- Otu Balogun (1991). "Credit Policy and Agricultural Development in Nigeria". *CBN Economic and Financial Review*. 29(2): 138-155.
- Rahji MAY, Fakayode SB (2009). "A Multinomial Logit Analysis of Agricultural Credit Rationing by Commercial Banks in Nigeria". *Int. J. Finan. Econ.* Euro J. Publ. Inc.
- Rodolphe Blavy (2005). Monitoring and Commitment in Bank Lending Behaviour. *IMF Working Paper*. Western Hemisphere Department.
- Roe AR (1997). "Financial System and Development in Africa". In Aryeetey, E.H., N. Hettige, M. Nissanke and M. Steel (Eds). *Financial Market Fragmentation in Ghana, Malawi, Nigeria and Tanzania. World Economic Review*. 11(2): 1-25.
- Shenggen Fan, Peter Hazell Sukdw Throat (1998). "Government Spending Growth and Poverty: An Analysis of Inter linkages in Rural India". Environmental and Production Technology Division of International Food Policy Research Institute, 2033 K Street N.W. Washington D.C. 2006 USA.
- Shepherd WG (1979). *Market Power and economic Welfare*. New York: Random House.
- Singh I, Squire L, Strauss J (1986). *Agricultural Household Models. Extension Application and Policy*, the Folm Hopkins University Press, London.

- Sloinnen JFM, How HR (1999). "Agricultural Credit Problems and Policies During the Transition to a Market Economy in Central and Eastern Europe". *Food Policy*, 24 (1999).
- Stiglitz J (1993). "Incentive Organizational Structures and contractual Choice in the Reform of Socialist Agriculture" In Beaverman A, Brooks K, Caki C (Eds). "The Agricultural Transition in Central and Eastern Europe and former USSR". World Bank, Washington D.C.
- Thierauf RJ, Klekamp RC (1975). *Decision Making Through Operation Research* (2nd Edition). New York, John Wiley and Sons pp. 551.
- Trzeciak-Duval A (2003). "Agricultural Finance and Credit Infrastructure Conditions, Policies and Channels. *Agricecon*,- Czech, 2003 (3): 106-112.
- Umeh JC, Adebisi AJ (1998). Capital Resource. Sourcing and Allocation in Food Crop Enterprises: An empirical Evidence from the Nigerian Small Scale Farmers. *J. Agri. Rural Development*. Federal Agricultural Co-ordinating Unit. 6(1) pp. 17-30.
- World Bank (2000). Rural Financial Market in Nigeria: Focus Note on the Issues and Options. *World Bank Rural Development Report No. 2*.