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The Effect of Agricultural Credit on Agricultural Productivity in Bichi Local Government Area, Kano State, Nigeria

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Abstract. This study was set out to investigate the impact of agricultural credit on farm productivity in Bichi Local Government, Kano State, Nigeria. The major objective of the study was to establish the effect of access to credit on agricultural productivity in Bichi, Kano State, Nigeria. The study used a sample size of 359 respondents. OLS regression was used to determine the effect of agricultural credit on farm productivity. The study revealed that credit access had a significant effect on agricultural productivity. The study concluded that credit access improves production however accessibility to credit is limited by high interest rates and lack of collateral security. The study recommended the need for the government to increase access to agricultural credit by farmers who do not have collateral security to present to commercial banks. This would be achieved by the government providing commercial banks with venture capital which allows farmers to borrow at subsidized rates. Furthermore, the government should encourage farmers to form cooperative unions so that they can be able to access credit from financial institutions without necessarily providing collateral security.

1. Introduction

Agricultural growth in Nigeria is increasingly recognized to be central to sustainable economic development. The sector plays a very significant role in addressing food security, poverty alleviation and human development challenges. However, in more recent years, there has been a marked deterioration in the productivity of Nigeria's agriculture (Amaza and Maurice, 2005). Many reasons have been advanced for the declining agricultural productivity y in Nigeria. One of the fact is attributed to the declining productivity in the sector due to farmers' limited access to credit facilities (Nwaru, 2004). According to Alfred (2005), acquisition and utilization of credit for agricultural purposes promote productivity and consequently improved food security status of a community. Increase productivity depends on adoption and technical efficiency of improved farming technologies (Obwona, 2002). In an effort to increase production rate among farmer, their purchasing power to acquire modern agricultural technologies should be improved. Most of the Nigerian farmers are small holders trapped in vicious

cycle of poverty. It has been argued that when agricultural credits are made accessible to farmers it will go a long way in breaking this cycle of poverty and liberating the farmers to improve their production by adopting modern farming technologies which could enhance their productivity and farmers' income.

2. Conceptual Perspective

Carter (2012) defined credit as obtaining control over the use of money at the present time in exchange for a promise to repay it at some future time. According to Sriram (2007), credit is a device for facilitating the temporary transfer of purchasing power from those who have surpluses of it to those who are in need of it. Nosiru (2010) defined agricultural credit as the amount of investment funds made available for agricultural production from resources outside the farm sector. According to Abbas (2003) agricultural credit is any of several credit vehicles used to finance agricultural transactions, including loans, notes, bills of exchange and banker's acceptances. These types of financing are adapted to the specific financial needs of farmers, which are determined by planting, harvesting and marketing cycles. In this study agricultural credit shall refer to the money farmers borrow from financial institutions intended to improve their agricultural production. This study measured agricultural credit using ability to access credit, purpose of credit, amount received, collateral security, and repayment period

Agricultural productivity refers to the output produced by a given level of input(s) in the agricultural sector of a given economy (Fulginiti and Perrin, 2011). According to Olayide and Heady (2012) agricultural productivity is the ratio of the value of total farm outputs to the value of total inputs used in farm production. In this study, agricultural productivity was measured using Area/ha; output/ha; tons of exported crops; and market price.

3. Contextual Perspective

Despite the important role played by credit, the farmers in Bichi local government suffer from lack of access to formal credit, which has significantly limited the ability of rural poor farmers to increase productivity (Akinbile, 2014).Most farmers in Bichi local government are in rural areas and their only source of income is farming, this makes their income seasonal since most of them do not farm all year round, this instability in income makes it difficult for banks and microfinance institutions (MFIs) to give out loans to them.

One of the reasons for the failure of credit scheme in Bichi local government is their supply-leading approach or their non-adaptation to the demand for the service by the rural households. Many of these farmers cannot farm on a large scale because they mostly use family labour for farming, so if the family size is small, farming a large piece of land would be very difficult. So the only other possibility would be to get paid labour for a larger farm which entails money to pay this extra labour. Banks and microfinance institutions always ask for collateral security before giving out loans, and these farmers have only their farm lands as collateral, but the principal problem is that most of these farm lands have no land title, which

makes them invalid to be used as collateral security making it difficult for them to have a loan (Oyeyinka, 2014).
Many efforts have been made by the Bichi local government to make funds available to famers so as to increase agricultural output in Bichi, but one problem remains, the modalities to fulfill to obtain these loans. For this strategy to be efficient the modalities to be fulfilled by farmers has to be reviewed, these loans should be designed such that the peasant farmers in the rural areas that represent a large proportion of the agricultural sector with no assets or collateral can have access to them. This research investigated the impact of credit on farm production in Bichi local government, Kano State, Nigeria.

4. Review of Related Literature

Credit is the trust which allow one party to provide money or resources to another party where that second party does not reimburse the first party immediately (there by generating a debt), but instead arranges either to repay or return those resources or other materials of equal value at a later date. (Nwaru et al. 2006). Nwaigbo (2014) noted that credit implies a promise by one party to pay another for money borrowed or goods and services received. Credit cannot be divorced from the banking sector as banks serve as a conduit for funds to be received in form of deposits from the surplus units of the economy and passed on to the deficit units who need funds for productive purposes. Banks are therefore debtors to the depositors of funds and creditors to the borrowers of funds. Bank credit is the borrowing capacity provided to an individual, government, firm or organization by the banking system in the form of loans.
According to CBN (2015), the amount of loans and advances given by the banking sector to economic agents constitute bank credit. Bank credit is often accompanied with some collateral that helps to ensure the repayment of the loan in the event of default. Credit channels savings into productive investment thereby encouraging economic growth. Thus, the availability of credit allows the role of intermediation to be carried out, which is important for the growth of the economy. The total domestic bank credit can be divided in to two: credit to the private sector and credit to the public sector. Thus, for this paper, we adopt the definition of credit given by CBN (2015), which is defined above.
Adebayo and Adeola (2008) observed that agricultural credit enhances productivity and promotes standard of living by breaking vicious cycle of poverty of the resource poor farmers. Similarly, Nwaru et al. (2006) observed that credit facilitates adoption of innovations leading to increased farm productivity and income, encourages capital formation and improves marketing efficiency.
Nasir (2007) found that credit plays a pivotal role in development. It helps farmers to undertake new investments and adopt new technologies to increase agricultural yield. Lack of access of the rural poor to institutional loan has negative impact for rural growth and well-being. Institutional loans are normally used for production and investment purposes while informal loans are squandered away on consumption. Being short- term, informal loans do not contribute to rural development, as these cannot be channeled to long-run productive activities.

5. Methodology

5.1 Analytical Framework

Ability to access credit can help farmers to increase their productivity in terms of output while using the credit for its intended purpose can help farmers to acquire more land hence increasing their productivity. The amount received coupled with using it for its intended purpose can also determine the output/ha which will determine how many tons to be exported. In addition to that, the availability of collateral security can enable the farmer to access credit and use it to promote production in terms of tons of exported crops if more land is bought.

5.2 Model specification

To investigate the impact of credit availability on farm productivity, the study used the following model specification:
Q=f (Credit, Sex, Age, Education, Land, Years of farming experience, Export, Whether owner hires labor, Number of paid workers)
Variable definition and measurement;
Q=productivity=output/ha,
Crd=credit; (**1** if got credit; **0**= otherwise),
Sex=gender of the farm owner; (**1**=male, **0**=female),
Age=age of farm owner (**0**=below 20; **1**=20-29; **2**=30-39; **3**=40-49; **4**=above 50),
Educ=educational level of farm owners (**0**=not educated, **1**=primary, **2**=secondary, **3**=higher institutions),
Land=land ownership (**0**=own land, **1**=otherwise),
Yrs=No of years of farming experience (**0**=less than 5 yrs, **1**=5-10 yrs; **2**=more than 10 yrs).
Export=if owner exports the produce (**1**=Yes, **0**=No),
NOL=whether owner hires labor (**1**=Yes, **0**=No),
Lbr=No of paid workers.

5.3 Research Design

A cross-sectional survey design was used in this study using both quantitative and qualitative approaches. According to Amin (2005) a cross-sectional survey design is flexible in both questionnaires and interviews. Quantitative approach was used to describe the statistics of the scores using indices that describe the current situation and investigate the relationships between the study variables using information gained from the questionnaires. Interviews and group discussions was aimed at expanding data obtained from quantitative data.

5.4 Research Instruments

5.4.1 Questionnaires

The researcher used closed ended questionnaires to collect primary data from the farmers regarding access to agricultural credit and their level of production. The researcher preferred questionnaires because they are easy to collect data with, since it takes short period of time and covers a larger population compared to other data collection tools.

5.4.2 Interviews

The study used interview guides to collect data from the selected key informants. This involved a face to face interview with 20 farmers. The researcher preferred to use face to face interviews because people tend to share a lot more information when someone is asking the questions in person and because it is much easier to ask a follow-up question and get examples to support what people are saying. The interview questions were in the lines of agricultural credit access and the level of production for export in terms of area (ha), output, exported and market price of the crops in the seasons of 2014 and 2015.

To quantitatively understand the effects of agriculture credit on productivity, researcher used a simple OLS regression. The quantitative data collected was from cross-sectional survey and the data analysis was done using SPSS 22.0. The table below gives the summary of the findings.

Variable	**Coefficient**	**P-Value**
Constant	2.223	0.021
Crd	0.04	0.001
Sex	0.068	0.023
Age	0.002	0.968
Educ	0.58	0.71
Land ownership	0.171	0.001
Yrs of experience	0.12	0.098
Export	0.341	0.003
Farm size	0.144	0.62
Lbr prob > F = 0.0027 R-square = 0.09417	0.167	0.008

Source: *Primary Data, 2015*

From the table above, we confirm that the model is fit since the p-value is 0.0027 which is less than 0.05. This implies that all variables comfortably fit in the model. The R - Square value is 0.90417 which implies that all the explanatory variables account for 0.94 percent variation in output.

Linearly our model becomes:

Q = 2.233 + 0.04Crd + 0.068Sex + 0.02 Age+ 0.58Educ + 0.171Land + 0.120Yrs + 0.341Export + 0.144 farm size + 0.167Lbr

6. Discussion of Findings

The results presented in Table revealed that agricultural credit had a positive coefficient of 0.04 and is significant at 5 percent level. This implies that those who get extra agricultural credit will increase their output by 0.04 units compared to those who did not get access to agricultural credit keeping other factors constant. Access to agricultural credit can help a farmer to acquire so many agricultural inputs such as farm tools, land, improved seed, hire more workers, use modern methods of farming, use chemicals to spray the crops hence protecting them from pests and diseases. The ability to use the agricultural credit for agricultural purposes can help a farmer to improve on his or her output. For example, when a farmer buys improved seeds, he or she will be able to getter better yields compared to those farmers who use local seeds. Not only that, improved seeds have the ability to weather resistance while others are both pest and disease resistant. The problem is that some improved seeds are too expensive for the local farmers hence agricultural credit come in handy. It can therefore be conclusively argued that agricultural credit when used for its rightful purpose can increase productivity when other factors of production are constant. This therefore implies that the farmers of Bichi local government should strive to make sure that they take the advantage of agricultural credit whenever possible for them to realize high level of productivity in their farms.

Furthermore, the table revealed that gender had a positive coefficient of 0.068 and a significant P-Value of 0.23 implying that keeping other factors constant; a male person increases output by 0.068 units compared to a female person. The results above imply that the male are more competent in agricultural activities compared to their female counterparts. This is because the men can do the farming, do the harvest, look for the market and means of transportation and use good level of bargaining power which the women do not have. Actually it is very difficult for a woman to do what men do in farming. These include cutting down heavy logs when clearing the farm land, carrying heavy sacks of manure and chasing after wild animals which are destructive to the crops, doing agricultural machinery repairs and maintenance, and supervising farm workers. The women can manage simple work such as weeding, winnowing, tilling land or harvesting. Naturally the strength of a man is far much beyond a woman's. Agricultural activities need manual labor, which the men have. This therefore makes the men to have a high chance of being more productive in the agricultural activities than the women. This is the reason why in this study, there is a significant impact of the male on agricultural output. This therefore implies that, the more the male, the more productive they will be since they cause 0.068 (6.8%) of agricultural output.

Similarly, the study revealed that Land has a coefficient of 0.171 and a significant P-value of 0.041 implying that owning land increases output by 0.171 units compared to not owning land other factors held constant. Land in Bichi is mostly inherited, however those who want to do farming and they cannot afford land often hire. The problem here is that hired land is expensive compared to the output that a farmer will reap out of the agricultural activity when he finally harvests the crop. This is the reason why farmers who use their land will not face such costs since the

land belongs to them. Whatever losses they might incur as a result of poor weather (that is drought or heavy rains), pests and diseases, may not have a greater impact on their expenses compared to the farmer who hires land and must pay the owner whether he has made a bumper harvest or not. For example, in a season when there is a drop in the prices at the market, the farmer who hired land will suffer more compared to the one who owns his or her land. Similarly, one may hire land whose production might have been too low because of overuse hence affecting the final output. In order to increase the productivity of such land, a farmer might decide to use manure which also ends up being too costly to maintain hence affecting the final out. It is therefore true to suggest that land ownership guarantees increase in out unit because all the expenses that a farmer who hired land goes through, a farmer who owns his own land does not incur such costs or drawbacks in their farming. This therefore means that it is better for farmers who hire land to just buy the land so that they can be able to enjoy the benefits of land ownership which comers with increase in output unit.

Not only that, table revealed that export had a coefficient of 0.341 with P- Value of 0.003 implying that if the owner exports produce, output will increase by 0.341 units compared to not exporting when other factors are held constant. Farmers who produce for export mostly use modern farming methods, farm in large chunks of land, use improved seeds, use irrigation technology during drought and have access to agricultural credit. The abilities mentioned above guarantees increase in the units of output for such a farmer. However, a subsistence farmer may only grow for consumption, since he or she farms in a small piece of land, and does not have access to improved seeds since it is beyond his 'league'. Often times such farmers cannot access agricultural credit since they are considered high 'risk' by commercial banks. This therefore implies that farmers who produce for output have better competitive advantage compared to their subsistence counterparts. The fact that they produce for export implies that they also make use of value addition which eventually is too profitable when sold at the international market compared to the local subsistence farmers who grow crops for home consumption and sell the remains in the local markets. Therefore, producing for export helps farmers to improve their farming methods which will eventually provide an assured increase in output unit. It is only unfortunate that not many farmers in Bichi are export farmers. Majority are instead subsistence farmers due to poverty and lack capacity to acquire modern farming tools.

Furthermore, the study revealed that Labour had a positive coefficient of 0.167 and a significant P-Value of 0.008 implying that hiring an extra unit of labour increases output by 0.167 units as compared to not hiring labour, other factors held constant. This implies that farmers who have the capacity to hire labor are well established farmers who can afford to pay labor on a daily, weekly or even monthly basis. Hiring labor in Bichi ranges from between 2,000 naira to 2,500 naira per day. This implies that it is very expensive for subsistence farmers. This is the reason why subsistence farmers use family members to till a small piece of land. Therefore, hiring labor implies that a farmer will clear a big piece of land and be able to produce high level of output intended for export.

In conclusion therefore, the following factors significantly influenced agricultural output: credit, sex, landownership, export and labour. However, the use of agricultural credit and land ownership influenced the greatest units of output. This therefore implies that more emphasis by farmers should be put on using credit and owning land in order to improve and increase their agricultural output units even further.

However, other variables like Age, Education, Years of experience and farm size could not be interpreted because of their insignificance at 5 percent level of significance

7. Conclusion

The study established that agricultural credit improves production for exports. This is because the farmers who borrow loans used it specifically for their farm intended purposes such as buying more land, using modern farming methods, buying improved seeds, employing more workers, buying fertilizers and buying pesticides. However, access to the credit has often not being easy given the fact that a lot of collateral security is required, the lengthy bureaucracy, the short term loan repayment period and the high interest rate. Furthermore, sex, land, export, and labor had significant influence on the output units. This is because, it was found that the male had higher chances of producing high units of output compared to their female counterparts while farmers that owned land were asserted to exert production of high output units compared to those that hired land. Similarly, farmers that produced for export could produce high volume of output units compared to those who produced for home consumption only. Not only that, farmers who used hired labor were found to likely produce high output unit compared to those that did not use hired labor.

8. Recommendations

There is need for the government to increase access to agricultural credit by farmers who do not have collateral security to present to commercial banks. This can be achieved by the government providing commercial banks with venture capital which allows farmers to borrow at subsidized rates.

In addition to that, the government should encourage farmers to form cooperative unions so that they can be able to access credit from financial institutions without necessarily providing collateral security.

The government should also provide grants to local farmers who have the potential of growing. For example, farmers who are producing for export but have limited financial capacity to expand could readily benefit such gestures.

Similarly, there is need for banks to open up branches in rural areas and avoid unnecessary stringent credit conditionalities that will discourage farmers from borrowing. This implies that the specialized banks should endeavour to create credit instruments and services that are tailored to the risks and cash flow patterns in the agricultural sector.

Not only that, there is need for commercial banks in Bichi local government to recognize the importance and value of increasing their agricultural loan portfolios and be committed to developing innovative financial instruments that will effectively deploy much needed capital to the local farmers who produce for export.

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