Analysis of the Impact of Savings and Credit Cooperative Societies on Output among Crop Farmers in Niger State, Nigeria: Double Difference Estimator from a Regression Analysis Approach

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Abstract

The study examined the impact of savings and credit cooperative societies on crop output among crop farmers in Niger State, Nigeria. Purposive and random sampling techniques were used to select 85 and 72 beneficiaries and non-beneficiaries of saving and credit cooperative societies (SACCOS). Data were obtained through a well-structured questionnaire. Descriptive statistics, Double difference estimator from a regression analysis were employed for data analysis. Results indicate that the difference between before and after values was 277.50kg, which is the second single difference. The double difference, that is, the difference between the two output differences is 296.03kg. This revealed that the double difference estimates of the crop output of beneficiaries and non-beneficiaries of SACCOS Credit had a positive value. Also, the result of double difference estimates from regression analysis revealed that the coefficient of the interaction term (T_i*P_t) had a positive coefficient of 296.029 and statistically significant at 5% level of significance. Among the constraints encountered by the farmers in their cooperative activities, high cost of farm inputs was ranked first which was followed by inadequate capital. Poor access to loan and high interest rate was ranked third and fourth constraints respectively. The study recommended that savings and credit cooperative societies should also intensify efforts in linking farmers to appropriate source of farm inputs. Also, farmers are encouraged to diversify their livelihood activities by engaging in non-farming activities in order to augment farm family income and thereby alleviate poverty among the respondents.

Keywords: Savings and Credit Cooperative, Crop output, Crop farmers, Niger State

Introduction

There has been a growth in the recognition of the importance of empowering all people of their access to all the factors of production including credit (Ahmad *et al.,* 2004). Cooperative Societies all over the globe have been seen as one of the ways of reaching out to the un-banked and the neglected in the society and not a few have come to see it as an alternative to the regular banking, since it, in most case provides members of the group the financial incentives without the rigours usually experienced in banking halls (Adewakun, 2012). Traditional cooperatives are common throughout Nigeria, but these groups tend to be small, with a common bond based on membership of a kinship, societal and low professional group (Adewakun, 2012). Savings and Credit Cooperative Societies are known to provide funding to their members at reasonable interest rate and without requirement of collateral. They are therefore vital organs for financing food crop production (Mavimbela *et al.*, 2010). However, no known work have been done on the extent to which these organs have been helpful towards combating poverty in Nigeria, the existing gap which this study attempt to fill.

The micro finance power of cooperative societies cannot be overemphasized. Apart from ready access to micro credits, Small Scale Enterprises (SSEs) obtain loans with soft and convenient term. The major emphasis in cooperative is on self-help, thus people cooperate because they realize that it is extremely difficult to achieve some goals alone (Ayoola, 2006, Alabi *et al.,* 2007, Oladejo 2008; Yunus, 2008). The best way of pushing the limit of economic problem of scarcity is by working together. This is because more can be accomplished when people coordinate their efforts with each other take concerns and talents of other into considerations (Reeve, 2003). Invariably, cooperative societies remain the better alternative to economic reconstruction of the government, but its vast potentials have always been jettisoned by the Nigerian Government (Zarafshani *et al.*, 2010). This study therefore analyzed impact of savings and credit cooperative societies' in combating poverty.

Cooperative organizations seem to be veritable sources of funding for smallholder farmers to earn extra income and to grow their own food (Mavimbela *et al.*, 2010). Nigerian government at different times has been launching different poverty alleviation programmes at different times by different regimes of government; yet the outcome is always a deviation from expectations (Girei *et al.*, 2013). Policy maker and governments have neglected these veritable sectors. The World Bank in its 'May 2013 Nigeria Economic Report' said the number

of Nigerians living in poverty was increasing too rapidly. A grim statistics of the population of Nigerians in abject poverty released by the National Bureau of Statistics which said that about 112million Nigerians live below the poverty line (National Bureau of Statistics, 2013). This followed another depressing disclosure by the World Bank, which also said that the population of Nigerians in poverty has increased considerably. The figure represents about 67% of the entire population and that the scourge will continue to rise if nothing is done to arrest it (World Bank, 2013). This bizarre picture requires an urgent intervention of which the proposed study on the savings and credit cooperative societies is one. The preponderance of the poor population in the activities of the informal sector of the Nigeria economy implies that any meaningful effort to reduce the incidence of poverty in the country most necessarily be focused on participants in this unrecognized yet important sector. Currently, there is a relatively scanty research on the activities of the informal financial institutions in most developing countries including Nigeria, especially as it relates to poverty reduction. This study was meant to fill this gap by providing first hand data and analyze the impact of Savings and Credit cooperative societies on crop output of farmers.

Arguments in favour of informal credit being a mechanism for reducing poverty has been made and there is strong opinion that the productive base of the poor will improve if given access to credit which will in turn enhance income growth (Montgomery and Weiss, 2005). In general, access to credit by the poor will improve their social networks, serve as cushion against unforeseen events (risk management) and enhance consumption smoothing. In other words, the availability of credit will help the poor to meet 'promotional' (income creating) and protectional (consumption smoothing) purposes. The transformation and emerging trends in the micro finance industry have brought to bear the need to ascertain if the original poverty focus of informal credit is still being maintained. Thus, it has become imperative and of great policy interest to answer the question of the impact of informal credit on the poor (particularly the core poor). Hence, there is the need to assess both the depth and breadth of outreach of informal credit programme, the impact of access to informal credit services on the welfare of clients and the costs of achieving the impact.

This study therefore, analyzes the impact of savings and credit cooperative societies on output among crop farmers in Niger State of Nigeria. Specifically analyze the impact of credit on crop output of beneficiaries and non-beneficiaries of SACCOS credit and describe the constraints faced by beneficiaries and non-beneficiaries of savings and credit cooperative societies in the study area.

Materials and Method
The study area
Niger State lies in the north central part of the country's geopolitical zones, between Latitude 9° 30" north of the equator and Longitude 6° 15" east of the prime meridian. It is one of the 36 States of Nigeria, created out of the defunct North- Western State. It shares border with the Republic of Benin (west), Zamfara State (North), Kebbi (North West), Kogi (South), Kwara (South West), Kaduna (North East) and the FCT (South East). The State is the largest state in Nigeria, as it covers about 86,000Sqkm (or about 8.6million hectares) representing about 9.3% of the total land area of the country. The farmers produce food crops such as guinea-corn, maize, cassava, cowpea and rice at subsistence level. At the end of 2012, the poverty rate of Niger State was estimated at 33.8% (National Bureau of Statistics, 2012). Based on the annual growth rate of 3.4%, the state has a projected population of 5,235,294 and 5,416,354 by 2014 and 2015 respectively (UNFPA, 2009).

Sampling Procedure
Purposive and random sampling techniques were used for this study. The first stage involved a purposive selection of these three (3) local government areas because of the availability of more members of savings and credit cooperative societies (SACCOS) of farmers' beneficiaries and non- beneficiaries with documented records among the three senatorial zones of the state. The three (3) local government areas selected represent the three (3) senatorial zones of the state.

The Local Government Areas covered include; Lapai (South), Bosso (East) and Wushishi (North). In the second stage, about 10% of the respondents from the beneficiaries and non-beneficiaries of SACCOS Credit from each of the three (3) LGAs were randomly selected with the aid of lottery method from the list of co-operators provided by the desk officer from Niger state Fadama coordination office.
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Methods of Data Collection
Primary data were used for this study. These were collected with the aid of structured questionnaire. Information collected include: socio-economic characteristics of beneficiaries and non-beneficiaries of SACCOS credit such as age, education level, household size, secondary occupation, farms size, farming experience, annual income, farm and non-farm income, amount of contribution by members of savings and credit cooperative societies.

The outputs of the major crops grown by the respondents were determined (maize, sorghum, millet, melon, soya bean, beniseed, cowpea, groundnut and rice) into kg-Grain Equivalents.

Analytical Techniques
Descriptive statistics
Descriptive statistics such as; percentages, frequency distribution table were used to identify the constraints faced by members of SACCOS in the study areas.

Double difference estimator
This model was used to assess impact of credit on the crop output of beneficiaries and non-beneficiaries of SACCOS credit. Information on both beneficiaries and non-beneficiaries were provided for before and after obtaining credit, it is literally a "difference of difference" (Albouy, 2010).

Note: % change in Crop output = $\dfrac{\text{Crop output after} - \text{Crop output before}}{\text{Crop output before}} \times 100\%$

A positive mean double difference indicates a credit impact on beneficiaries, while a negative mean double difference indicates that the credit had no impact on beneficiaries (Nkonya $et\ al$., 2008)The model is specified as:

$$DDE = \left[\left(\frac{1}{p}\sum_i^p \left(\overline{Y}_{tia} - \overline{Y}_{tib}\right)\right) - \left(\frac{1}{c}\sum_j^c \left(\overline{Y}_{oja} - \overline{Y}_{ojb}\right)\right)\right] \dots \dots \dots \text{(vii)}$$

Where:

$\overline{Y}_{tia} - \overline{Y}_{tib}$ = difference of mean crop output of beneficiaries after and before obtaining credit, respectively.

$\overline{Y}_{oja} - \overline{Y}_{ojb}$ = difference of mean crop output of non-beneficiaries after and before obtaining credit, respectively.

      P = number of beneficiaries.

      C = number of non-beneficiaries.

DDE = the difference between the mean changes in crop output for beneficiaries and non-beneficiaries.

Athey and Imbens (2006) worked on non-parametric approaches to difference-in-differences and it was adopted by Khandker $et\ al.,$ (2012). The regression model serve as a supporting technique to that which has been obtained by the double difference estimate (Khandker $et\ al.,$ 2012). However, in order to take observable heterogeneity of individuals into account, Verners calculated the double difference estimator from a regression model including other personal characteristics. It is specified as:

$Y_{it} = \alpha + \beta T_i + \gamma P_t + \delta\ (T_i{*}P_t) + \beta_1 X_1 + \beta_1 X_{2+\dots\dots\dots} + \beta_6 X_{6} + \varepsilon_{it}\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots$ (ix)

Where Y is the outcome of interest, T is the treatment and control groups which is indicated by dummy with equal one for those observations in treatment group and zero for control groups; P is the time period (first period is for before and second period is for after project) which is indicated by dummy with equal one for those observations in the treatment and control group in the second period (after) and zero for first period (before). The coefficient of interest, is the interaction term which is ($T_i{*}P_t$).

Y_{it} = crop output in period t of the project.

T_i = Dummy (1 if respondent i is beneficiaries and 0 otherwise)

P_t = Dummy (1 indicating after obtaining the credit and 0 before obtaining the credit).

$(T_i{*}P_t)$ = An interaction term between the treatment and time period.

β_i = Coefficient for the respective variables

X_1 = Age (years)

X_2 = Educational Level (years of schooling)

X_3 = Household Size (numbers of persons)

X_4 = Farming Experience (years)

X_5 = Secondary Occupation (Civil Servant=1, Artisan=2, Trading=3, Fishing=4, Others=5).

X_6 = Income Size (Naira/Annum)

ε_{it} = the error term of the regression with the variance σ^2

α, β, γ, δ are the regression parameters to be estimated.

Results and Discussion
Double difference estimates of the impact of credit on crop output of beneficiaries and non-beneficiaries of SACCOS credit
As shown in Table 1, the mean crop output difference of the beneficiaries was 2187.65 kg and 2761.18 kg before

and after obtaining credit. The difference between after and before values is 573.53kg, which is the first single difference. The mean output difference of the non- beneficiaries were 1943.33kg and 2220.83 kg before and after obtaining credit. The difference between before and after values is 277.50kg, which is the second single difference. The double difference, that is, the difference between the two output differences [573.53- 277.50] is 296.03kg. It indicates that the double difference estimates of the crop output of beneficiaries and non-beneficiaries of SACCOS Credit had a positive value. The implication is that credit had positive impact on the crop output of beneficiaries. A positive mean double difference in crop output value indicates positive impact of credit on beneficiaries output (Nkonya *et al*., 2008). Also, the beneficiaries and non-beneficiaries were able to increase their crop output by 26% and 14% respectively.

Table 1: Double difference estimates of the impact of credit on crop output of beneficiaries and non-beneficiaries of SACCOS credit

Group	Crop Output		Difference between Periods
	Before(Kg)	After(Kg)	
Beneficiaries	2187.65	2761.18	573.53
Non-Beneficiaries	1943.33	2220.83	277.50
Difference Between Groups	244.32	540.35	296.03

Impact of credit on crop output of beneficiaries and non-beneficiaries of SACCOS credit

The double difference estimator from a regression analysis of the impact of credit on crop output of respondents are presented in Table 2. The regression estimates served as a supporting technique to that which has been obtained by the double difference estimates. The main importance of estimating a regression since the results are identical to those obtained by simple differences is that other variables can be added to the right-hand side of the equation, allowing a different way of relaxing the stringent parallelism assumption associated with simple differences. It was found that the coefficient of the interaction term (T_i*P_t) had a positive coefficient of 296.029 and statistically significant at 5% level of significance. It indicates that of the six (6) variables included in the regression model, educational level, household size and income were statistically significant with crop output at 1% level of significance.

It indicates that the coefficient of the interaction term ($Ti*Pt$) between the crop output of beneficiaries and non- beneficiaries of SACCO's Credit had positive value and statistically significant. It means that credit had a positive and significant influence on the crop output of the respondents. The implication is that the crop output of the beneficiaries is significantly difference from the crop output of the non-beneficiaries in the study area. This result is consistent with the findings of Ezeh (2004) and Nkonya *et al.* (2008) who reported that Fadama project beneficiaries were better off than their non-beneficiary counter-part in terms of income and productivity.

The coefficient of educational level was found to be positive and significantly related with the respondent's crop output. This implies that increased level of education will lead to increase in crop output of the respondent. Education produces labour force that is more skilled and adaptable to the need of changing economy. It helps to unlock the natural talents and inherent enterprising qualities of the farmers. It enhances the farmer's ability to understand and evaluate new production techniques. This translates into higher crop output and productivity (Tasie, 2012).

The coefficient of household size was found to be positive and significantly related with the respondent's crop output. Implying that the more the number in the farmer's household the more the crop output. The implication is that the relatively large household size may likely enhance the family labour supply on the farms, hence supporting favourably, productive capacities of the farmers to increase their crop output. This finding is in tandem with the earlier findings of Amos (2007) who noted that farm household size was a significant determinant of cocoa productivity in the study area.

The coefficient of household income size was found to be positive and significantly related with the respondent's crop output. This means that farmer's income is positively related with level of respondents crop output. This implies that any increase in farm income will lead to an increase in crop output of respondents. The result is in agreement with the findings of Nwaobiala *et al.* (2009) where they found a positive relationship between income and output of Agip-Green River Project crop farmers in Rivers State, Nigeria.

Table 2: Result of double difference estimator from a regression analysis of the impact of credit on crop output of beneficiaries and non-beneficiaries of SACCOS credit

Variable	Coefficients	Standard Error	T-Value
Constant	2207.546***	558.235	3.955
T_i	282.603	775.173	0.365
P_t	277.500	171.485	1.618
(T_i*P_t)	296.029**	133.059	2.225
Age	-21.041	16.913	-1.244
Educational Level	255.227***	99.225	2.572
Household Size	91.325***	19.169	4.764
Farming Experience	-3.604	9.293	-0.388
Secondary Occupation	-13.002	11.590	-1.122
Income Size	0.00065***	0.00016	4.07471
R^2	0.599		
Adjusted R^{-2}	0.573		
F-value	37.534***		

*** Significant at 1%, ** Significant at 5% and * Significant at 10%

Constraints faced by beneficiaries and non-beneficiaries of savings and credit cooperative societies

The constraints faced by beneficiaries and non-beneficiaries of savings and credit cooperative societies are presented in Table 3. It was found that about 38% of the beneficiaries and approximately 28% of the non-beneficiaries ranked high cost of farm inputs as the major constraints. About 26% of the beneficiaries and 21% of the non-beneficiaries ranked inadequate capital as the second and third constraints, respectively. Also, about 22% of the beneficiaries and non-beneficiaries ranked poor access to loan as third and second constraints, respectively, while high interest rate charged on credit was ranked by 5% and 18% of the beneficiaries and non-beneficiaries as fifth and fourth constraints, respectively. Finally, illiterate level was ranked by 8% and 7% of the beneficiaries and non-beneficiaries as fourth and fifth. Government interference (government policy) was ranked by 1% and 4% of the beneficiaries and non-beneficiaries as the sixth constraints. The result of the analysis revealed that the non-beneficiaries mentioned poor access to credit, illiterate level and high interest rate charged as constraints they faced as members more than the beneficiaries. This finding agrees with that of Hyun *et al.* (2008) and Tekana *et al.* (2011) who observed that high cost of farm inputs, inadequate capital, poor access to loan, high interest rate charged, illiteracy level and government interference were among the constraints faced by members of cooperative societies.

Table 3: Constraints faced by beneficiaries and non-beneficiaries of savings and credit cooperative societies

Constraints	Beneficiaries			Non-beneficiaries		
	Frequency	Percentage	Rank	Frequency	Percentage	Rank
High Cost of Farm Inputs	80	38	1st	69	28	1st
Poor Access to Credit	45	22	3rd	54	22	2nd
Illiterate Level	16	8	4th	16	7	5th
Inadequate Capital	54	26	2nd	51	21	3rd
Government Interference	2	1	6th	11	4	6th
High Interest Rate Charged	11	5	5th	45	18	4th
Total	208*	100		246*	100	

Multiple Response Allowed*

Conclusion and Recommendations

A savings and credit cooperative society was found improving crop output of farmer. The double difference estimates of the crop output of beneficiaries and non-beneficiaries of saving and credit cooperative society's credit had a positive mean double difference value indicates that credit had positive impact on beneficiaries crop output and high cost of farm inputs as the foremost constraints. This showed that credit is an effective tool for increasing output. The study recommended that savings and credit cooperative societies should also intensify efforts in linking farmers to appropriate source of farm inputs. Also, farmers are encouraged to diversify their

livelihood activities by engaging in non-farming activities in order to augment farm family income and thereby alleviate poverty among the respondents.

References

Adebayo, C. O. (2004). Analysis of Rural Savings Mobilization for Poverty Alleviation in Ijumu Local Government Area of Kogi State. M.Sc Thesis, Ahmadu Bello University, Zaria, Kaduna State, Nigeria.

Adewakun, A. (2012). Cooperative as tool for enhancing financial inclusion, African Newspaper of Nigeria, Oct.13, P1.

Ahmad, S, Naveed, MS, and Ghafoor, A. (2004). Roles of micro finance in alleviating rural poverty: A Case study of Khushhali Bank programme in Rahim YarKhan–Pakistan. Int. J. Agric Biol, 6: 426–428.

Alabi, J., Alabi, G. and Ahiawodzi, S. (2007). Effect of Susu- a traditional micro finance mechanism on the Organised and Non- organised micro and small enterprises (MSEs) in Ghana. *African Journal of Business Management*, 1(8): 201-208.

Albouy, D. (2010). Program Evaluation and The Difference in Difference Estimator: Economics 131 section notes. PDF Adobe Document. Retrieved June 7, 2010 from www.emlab.berkeley.edu and www.docstoc .com.

Amos, T.T. (2007). An Analysis of Productivity and Technical Efficiency of Small Holder Cocoa Farmers in Nigeria. *Journal of Social Sciences*, 15(2): 127-133.

Athey, S. and Imbens, G. W. (2006). Identification and Inference in Nonlinear Difference-in Differences Models. *Econometrica,* 74(2): 431-497.

Ayoola, O. (2006). Nigerian Cooperative Movement: Yesterday, Today and Tomorrow. A paper presented at conference for cooperative leaders and members organize by cooperative federation of Nigeria South West Zone.

Ezeh, C.I. (2004). A comparative study of Fadama and non-Fadama crop farmers in Osisioma-Ngwa Local Government Area, Abia State, Nigeria. *Journal of Sustainable and Tropical Agricultural Research*, 11: 75-80.

Girei, A., Dire, B., Iliya, M.M. and Salihu, M. (2013). Analysis of Impact of National Fadama II Facility in Alleviating Poverty on Food Crop Farmers in Adamawa State, Nigeria. *Global Journal of Agricultural Research,* 1(3):8-15.

Hyun, H. (2008). Has Inflation Hurt the Poor? Regional Analysis in the Phillippines, ADB.

Khandker, S.R., Koolwal, G.B., Samad, H. (2012). Handbook on Impact Evaluation: Quantitative Methods and Practice. World Bank. Retrieved July 30, 2012 from https://openknowledge.worldbank.org/bitstream/handle/10986/2693/520990UB0EPI1101Official0Use0Only1.pdf? Sequence=1.Pp.280

Mavimbela, P., Masuku, M.B. and Belete, A. (2010) Contribution of savings and credit cooperatives to food crop production in Swaziland: A case study of smallholder farmers. *African Journal of Agricultural Research*, 5 (21):2868 - 2874.

Montgomery, H. and Weiss, J. (2005). Great Expectations: Microfinance and Poverty Reduction in Asia and Latin America. *ADB Institute Research Paper Series,* 63: 1-30.

National Bureau of Statistics (2012). Information on States of the Federal. Punch Newspaper, Jan.6.

National Bureau of Statistics (2013). Nigerians living below poverty line: Retrieved August 18, 2013, from nigeriapoliticsonline.

Nkonya, E., Philip, D., Mogues, T., Pender, J., Yahaya, M., Adebowale, G. J. and Arokoyo, T. (2008). Impact of apro-poor community-driven development project in Nigeria, PP 10 – 36. A report submitted to International Food Policy Research Institute on Sustainable solutions for ending hunger and poverty.

Nwaobiala, C. U., Ekedo, T.O and Ezah, C.I. (2009). Socio - Economic Determinants of Home Gardeners in Ishiagu, Ivo LGA of Ebonyi State, Nigeria. *International Journal of Agriculture, Food science and Eco system Research*, 1 (1): 188 - 192.

Oladejo, M. O. (2008). The Impact of Cooperative Societies as Micro credit Delivery Channel in the southwestern Nigeria. Unpublished MSc Thesis, Olabisi Onabanjo University, Ago Iwoye, Nigeria.

Reeves, M. (2003). A wealth of opportunities in a world of limits: Free Enterprises. Economics of Cooperation, Federal Reserve Bank of Dallas. Retrieved from *www.dallasfed.org*

Tasie, L. S. (2012). Farmer groups, input access and intragroup dynamics: A case study of targeted subsidies in Nigeria. IFPRI Discussion Paper 01197.

Tekana, S.S. and Oladele, O.I. (2011). Impact analysis of Taung irrigation scheme on household welfare among farmers in the North-West province, South Africa. *Journal of Human Ecology*, 36(1): 69-77.

UNFPA (2009). Population Figures and Growth rate based on 2006 Population and Housing Census (FRN GAZETTE VOL 94 JAN 2007 & VOL 96 FEB, 2009). Pp1-4.

World Bank (2013). Poverty has increased considerably in Nigeria. Retrieved August 18, 2013 from

nigeriapoliticsonline.

Yunus, M. (2008). Grameen Bank, Microcredit and Millennium Development Goals. Retrieved from *www.grameen.com www.grameen-info.org.*

Zarafshani K, Rostamitabar F, Hosseininia GH, Akbari M, Azadi H, (2010). Are agricultural production cooperatives successful? A case study of Western Iran. Am. Eurasian J. Agric. Environ. Sci, 8(4):482-486.

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