

Agricultural Credit and Production Efficiency of Small-Scale Farmers in South-Eastern Nigeria

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Abstract: The study researched the extent to which Smallholder Loan Scheme (SHLS) has been able to meet credit needs of the resource poor and improve their farm production. The effectiveness of the credit programme depends on the availability of adequate funds to enable farmers purchase the necessary technologies hence the need to compare the before merging beneficiaries with after merging counterparts. The study evaluated the production efficiency of farmers participating in the credit scheme and determined the effects of credit utilization on traditional farming in southwestern Nigeria. A multi-stage sampling technique was used to collect primary data using structured questionnaire from 216 beneficiaries from the selected financial institutions in the study area. Data were analyzed using descriptive statistics, multiple regression and Chow test. The study showed that the after margin beneficiaries are on the average, endowed with relatively more farm resources than their before merging counterparts. When the levels of resources of the latter were expressed as percentages of those of the former, land stood at 60%, hired labour 30%, family labour 48%, fixed capital 20% and modern material input stood at 27%. The marginal value productivities of land area cultivated and local material inputs are higher for before merging beneficiaries than for after merging beneficiaries. The foregoing is an indication of basic differences in the production behaviour of the two sets of farmers and thus can be concluded that the after merging beneficiaries are more technically efficient than the before merging beneficiaries.

Key words: Credit, production, efficiency, small scale farmers, NACRDB

INTRODUCTION

Agriculture has traditionally been acknowledged as the mainstay of the Nigerian economy.

The primary place it occupies in providing food and fiber for the people has made its productivity the most single factor in influencing the standard of living of many people in the developing countries. It is a farming business under going rapid changes, doing away with primitive methods of production and making use of improved technologies. To enhance the level of adoption of technological innovations and thus maintain the level of agricultural production, there is need to strengthen the financial capacity of the production. A major determinant in this respect is the availability of credit. It is a basic tool of production which provides the farmer with capital to acquire resources in time, in the advantageous amount and in efficient manner (Rahji, 2000).

A critical problem in credit availability and accessibility is how to bridge the gap between the provision of investment funds and their allocation to

small-scale producers. It was therefore felt that this problem could be resolved if there was a nationally coordinated effort to control the disbursement of agricultural credit. Thus, the federal government started to show concern for agricultural financing beginning from the first national development plan period (1962- 68) when an equivalent of N6.10 million was provided for agricultural credit. During the second plan period (1970-74) the concern of the federal government about a national agricultural credit institution to promote the development of agriculture led to the establishment of the Nigerian Agricultural and Cooperative Bank (NACB) in 1973.

The Agricultural Credit Guarantee Scheme Fund (ACGSF) was set up under Decree 20 of 1977 and commenced operations on April 3rd, 1978. It was established to provide some measure of risk coverage as an incentive to commercial bank to increase their lending to agriculture. The operations of Agricultural Credit Guarantee Scheme (ACGS) notwithstanding the agricultural sector have been severely disadvantaged

in terms of the allocation of commercial Bank loans relative to other sectors of the economy (Olomola, 1986). A further attempt to improve the credit situation is the involvement of Non- Bank institutions in the supply of agricultural credit. Towards this end, the government did restructure the operations of the ADP's livestock development projects and the River Basin and Rural Development Authorities (RBRDAS) to combine the provision of credit with improved cultural practices and supply of inputs in order to effect an improvement in agricultural production. In 1999, the Nigerian Agricultural Cooperative Bank was merged with risk assets of the Family Economic Advancement Programme (FEAP) and other Agricultural production facilitating bank like the People Bank of Nigerian (PBN) to become an integrated banking system called the Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB). It was to grant loans for agricultural production for the purposes of storage, distribution and marketing connected with such production to any state, group of states or any institution for on-lending to farmers, group of farmers or corporate body subject to the states or group of states institution guaranteeing repayment of the loan.

The rationale for this study derives from the need to determine the extent to which the Smallholder Loan Scheme (SHLS) has been able to meet credit needs of the resource poor and improve their farm production. The effectiveness of the credit programme depends on the availability of adequate funds to enable farmers purchase the necessary technologies. In principle if funds are made available to facilitate the purchase of modern production inputs, the productivity and hence incomes, of traditional farmers will improve and this will brighten the prospects for increased agricultural production. Since a farmer is considered to be motivated to participate in a credit programme by the possibility of such a programme to increase his output, his net income and thus his standard of living (Olomola, 1985). It is pertinent to examine the activities of SHLS of NACRDB to determine the extent to which the motivation of the participants can be justified accordingly. The broad goal of this study is to evaluate the impact of SHLS of NACRDB on the income of farmers, their pattern of production and production. The specific objectives are:

- To evaluate the production efficiency of farmers participating in the credit scheme.
- To determine the effects of credit utilization on traditional farming in the study area.

MATERIALS AND METHODS

In terms of geographical scope the study covers Oyo and Ondo states in Southwestern part of Nigeria.

A multi-stage sampling technique was used to select the respondents. Firstly, Oyo and Ondo states were purposively selected because they had higher number of the banks' branches with higher number of agricultural loan beneficiaries. The list of farmers who benefited from the credit scheme during 2004/2005 production season was obtained from each of the state offices of NACRDB. The list consist of existing beneficiaries right from the then NACB till date. The idea is to include borrower farmers of the institution before and after merging. Whose production behaviour will form the basis for comparison.

During the second stage, 6 branches were purposively chosen from each state based on the concentration of the applicants. Finally, in third stage having found that the average number of beneficiaries for each branch was 120 during the preliminary survey period 15% of the number that is 216 beneficiaries were randomly selected from each branch of the bank.

The data used in this study were collected during a survey mounted by the author within June-August, 2006. By mean of structured questionnaires data were obtained from a total of 216 beneficiaries through personal interviews conducted by trained enumerators. Information was solicited in respect of such variable as farm income expenditures on fertilizer, seed, pesticide herbicide, labour as well as amount of loan, quantity and prices of output and area of land cultivated before and after the merging of NACB with other parastatals.

Data collection covered the production year before the merging that is 1999/2000 production season and the production year proceeding the year of survey 2004/2005.

Conceptual framework: The impact of credit on agricultural production may be evaluated in a normative or behaviouristic framework or both depending on whether the research focus is ex ante or ex post. In a normative framework, programming models could be employed to assess what ought to be the impact of production. In a behaviouristic framework, what is of analytical interest is the assessment of what has been the impact of variations in farm capital investment, especially credit induced investments, on farm production and this could be accomplished through the application of production function models. The behavioural approach was adopted in the study.

An appropriate measure for assessing the production impact of a credit scheme is a comparison of the production efficiency of the beneficiaries before merging tool place and after the merging of NACB with FEAP and people's bank of Nigeria. Efficiency rather than profitability was chosen as the performance criterion for the study for several reasons. First, a condition for maximum profits is that farms be efficient. Second profitability is impacted by prices and other factors which are beyond the control of the borrower/farmer where as efficiency are more directly influenced by the farmer/beneficiaries. Third, from society's perspective, if significant inefficiencies exist then society as a whole can benefit by policies aimed at reducing the inefficiencies.

In a well supervised credit scheme, availability of credit in cash coupled with extension services should not only lead to the enhancement of on-farm capitalization but should also give room for better farm management and a more efficient utilization of resources with increased investment on modern inputs, farmer's production behaviour is expected to be re-oriented toward higher productivity and higher returns after the merging of the institution than would have been before merging when experiencing a weak financial strength due to inadequacy of funds. An assessment of the differentials in the production behaviour of beneficiaries will enable us to have a clear view point regarding the effectiveness of the credit scheme vis-a-vis the institution (NACRDB) and the impact of credit. The analysis is focused on testing the following hypothesis which derives from the objectives of the study.

H0: There is no significant difference between the production efficiency of beneficiaries before and after the merging of the institution.

Measuring production efficiency: Efficiency, as defined by Farrel (1957) has two components: technical efficiency and allocative efficiency. Technical efficiency is the ability of the firm to employ the best practice in an industry" such that not more than the necessary amount of a given set of inputs is used in producing the best level of output. Allocative efficiency is defined as the choice of the optimum combination of inputs consistent with relative factor prices. According to him, a firm is overall efficient if the firm is allocatively efficient as well as technically efficient.

Production is said to be efficiently organized under conditions of competition in the output and input markets when the marginal value product is equal to the marginal factor cost for each input used.

Olomola, 1988 noted that the appropriate method for testing production efficiency on individual farm is, first to hypothesize the behaviour of the producers and second to formulate a statistical model, Marginal Value Products (MVPs) could be obtained. As a test of production efficiency, common procedure of computing the ratio of marginal value products to Marginal Factor Cost (MFCs) is followed (Singh, 1977) as a decision rule if the ratio is not significantly different from unity, it is an indication that resources have been efficiently used on the farms; if the ratio is less than unity it implies that resources have been excessively used where as a ratio greater than unity indicates an under-utilization of resources.

Model specification: The production function model used to examine the differentials in the production efficiency of borrowers before and after merging of the institution can be specified implicitly as follows

$$Y = f(X_1, X_2, X_3, X_4, X_5)$$

Where

- Y = Gross Value of Output (₦)
- X₁ = Labour (Man-days)
- X₂ = Gross Cultivated Area (Ha)
- X₃ = Modern Material Inputs (₦)
- X₄ = Traditional Material Input (₦)
- X₅ = Depreciated Value of Fixed Capital (₦)

In terms of definition, the gross value of output has been defined as the value of all crops produced evaluated at the going market prices in the reference year retained in the stock. Human labour refers to hired and family labour and has been measured in terms of man-days of 8 h. According to Olomola (1988) the differences in the efficiency of labour have been taken into account by converting female and juvenile labour days into man-days on the criterion that four female labour days are equal to three man days and two juvenile labour days are equal to one man-day.

Local material inputs have been defined as the sum total of the value of traditional variety of seeds including rice, maize, cassava, yam and cocoyam. Modern material in puts refers to the sum total of the value of fertilizer insecticide, herbicide and improved seeds, (maize and rice). Fixed capital refers to depreciation on hoes and cutlasses in value terms.

Using the empirical data, the model was estimated in three functional forms specified as follows:

Linear function:

$$Y = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + \epsilon_i$$

Where b_0 is the constant term and b_i s are parameters which when estimated can be interpreted as marginal value products.

Semi log function:

$$Y = \ln b_0 + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 + b_5 \ln X_5 + \varepsilon_i$$

Where b is a constant term and the b_i s are the parameter to be estimated.

Cobb-douglass function:

$$\ln Y = \ln b_0 + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 + b_5 \ln X_5 + \varepsilon_i$$

Where b_0 is a constant term, ε_i is the error term and the b_i s are parameters which when estimated can be interpreted directly as elasticities.

RESULTS AND DISCUSSION

Socio-economic characteristics of the farmer: The highest percentage of the borrower farmer after the merging falls within the 31-50 years age bracket which could be regarded in active productive age group. The mean age of the borrower farmer before merging was 46 years to which 46% of them belong. The age factor in traditional agriculture is significant in at least two important respects. The first consideration is increased productivity while the second has to do with increased rate of adoption of innovations. Since traditional agricultural production systems still rely on rudimentary implements, powered by human muscle it means that very old farmers will face severe energy constraints and will be less productive than the younger and energetic farmers. Older farmers tend to be conservative and less vulnerable to the wind of change involving the adoption of modern technologies than the younger farmers (Table 1).

The number of years a farmer had spent in the farming business could give an indication of the practical knowledge which has been acquired. Over a number of years it is possible to observe an improvement in a farmer's production activities based upon his experience. Although, experience may not count in terms of risk taking, it is apt to have considerable influence on production efficiency. A younger farmer may be willing to take risk like for example; purchase modern farm inputs even when he has less experience. Farmers who have longer experience in farming may have become more efficient through trial and error.

As shown in Table 2, the beneficiaries before merging are well experienced in farming activities while they all have equal farming experience after merging the

Table 1: Age distribution of respondents

Age	Socio-economic variable			
	Before merging		After merging	
	Frequency	(%)	Frequency	(%)
<30	0	0	2.67	1.8
31-40	44	18.5	24.0	22.3
41-50	22	40.7	49.0	45.4
51-60	16	20.5	18.0	16.6
61-70	16	14.8	12.0	11.1
>70	6	5.5	3.0	2.8
Total	108	100.0	108.0	100.0

Source: Field survey, 2006

Table 2: Distribution of beneficiaries according to years of farming

Years of farming	After merging	
<10	16	14.8
10-20	23	21.3
21-30	45	41.7
31-40	22	20.4
41-50	2	1.8
>50	0	-
Total	108	100.0

Source: Field survey, 2006

Table 3: Distribution of beneficiaries' educational attainment

Level of education (years)	After merging	
No education	48	44.4
Modern school level	15	13.9
Primary education	33	30.6
Secondary education	8	7.4
Tertiary education	4	3.7

Source: Field survey, 2006

Table 4: Distribution of farming experience of the beneficiaries

Household size (years)	Before merging		After merging	
<5	15	13.9	10	9.3
5-9	18	53.7	64	59.3
10-14	12	20.4	12	11.1
15-19	12	11.1	15	13.9
20-24	1	0.9	7	6.4
Total	108	100.0	108	100.0

Source: Field survey, 2006

Table 5: Average production and resource employment pattern of farmers

Variable description	Farm sets		
	Before merging	After merging	Percentage
Land under cultivation (Ha)	3.14	5.23	60.0
Employment of labour (Man-day)	22.42	74.36	30.2
Family labour (man days)	427.23	886.39	48.2
Fixed capital (₦)	164.21	816.74	20.10
Traditional material input (₦)	1,240.51	890.22	71.8
Modern material input (₦)	260.51	960.72	27.1
Gross value of output (₦)	6417.35	12,735.17	50.4

Source: Field survey, 2006

institution. The relevance of the literacy level of farmers to farm productivity and production efficiency has been documented by several authors including Olomola (1986).

The educational attainment of a farmer does not only raise his productivity but also increases his ability to understand and evaluate the information on new techniques and processes being disseminated through extension. Table 3 shows that the literacy level among the sample of farmers included in this study is generally low with about 44% of no education at all. Although, the farmers will count more on their experience for increased productivity rather than their educational attainment

The availability of family labour for farm work depends, in no small way, on the size of the household members. The participation in farm work depends also on the opportunity cost and the age structure of household members. The productivity differences resulting from age differentials of family members can be controlled while determining available family labour by expressing it in man-days. That is, the number of days devoted by the male and female adults as well as juvenile members of the family could simply be converted to man days. The size of household depends on the marital status of the respondents and in particular, on the number of wives of the head of the household. Majority of both the beneficiaries before and after merging have between five and nine members in their household (Table 4).

Table 5 shows the average resource levels employed by both the beneficiaries before and after merging. The farm resources considered are land, labour capital and traditional and modern material inputs as previously defined. The after margin beneficiaries are on the average, endowed with relatively more farm resources than their before merging counterparts. When the levels of resources of the latter were expressed as percentages of those of the former, land stood at 60%, hired labour 30%, family labour 48%, fixed capital 20% and modern material input stood at 27%.

The larger resource base and a financially stronger institution enable the after merging beneficiaries to reap higher gross output value than when the institution was financially weak. That is before merging, the only exception is the traditional material inputs which are, as expected, more abundantly endowed and employed in traditional agricultural due to poor funding or insufficient.

Production function analysis: In an attempt to examine the production behaviour of the farmers, a production function was estimated in respects of the before and after merging beneficiaries of NACRDB. The model was estimated using the linear, semi-log and power functional forms and the results are shown in Table 6.

Table 6: Coefficients of estimated as dependent variable

Gross functional forms	Value of output as dependent variable						R ²
	b ₀	b ₁ (x ₁)	b ₂ (x ₂)	b ₃ (x ₃)	b ₄ (x ₄)	(b ₅) (x ₅)	
Linear function							
Before margin	-629.423	0.639 (0.821)	3,074.312** (295.711)	3.026 (8.2225)	2.972** (15.594)	-25.999* (0.65)	0.75
After margin	-2,783.415	3.472** (0.932)	2,985.224** (230.958)	1.256 (1.932)	-0.239 (0.780)	38.142* (10.272)	
Semi-log function							
Before margin	-14,384.731	-368.180 (217.602)	3,077.352 (659.124)	327.322 (202.111)	2,071.702** (227.378)	-464.218 (319.115)	0.81
After margin	-10,236.146	1,424.641* (621.373)	4,646.38** (875.215)	802.197 (604.187)	-16.252 (426.21)	1,941.035 (642.414)	0.63
Power-function							
Before margin	5.928	-0.342* (0.061)	0.633** (0.213)	-0.06 (0.023)	0.624** (0.057)	-0.082 (0.26)	0.82
After margin	6.228	0.423** (0.30)	0.622** (0.095)	0.385* (0.162)	0.087 (0.031)	0.217 (0.231)	0.75

Source: Field survey, 2006, Note: figures in parentheses are standard errors, * Significant at 5% level, ** Significant at 1% level, + significant at 10% level

Table 7: Estimates of factor-product elasticities, average and marginal product for before and after merging beneficiaries

	Labour	Land	Modern inputs	Traditional inputs	Fixed
Before beneficiaries					
Factor product elasticities	0.342* (0.061)	-0.633** (0.213)	-0.006 (0.023)	0.624** (0.037)	-0.082 (0.126)
Average product	113.11	4,158.12	162.20	7.89	218.22
Marginal	2.98	2,420.07	-2.28	5.03	-8.63
After merging					
Factor product elasticities	0.423** (0.030)	0.622** (0.095)	0.385 (0.162)	0.087 (0.031)	0.217 (0.231)
Average product	15.01	5,816.13	53.78	13.17	122.61
Marginal product	3.03	3,631.18	7.69	0.45	14.62

Source: Field survey, 2007, Note: Figures in parentheses are standard errors, ** Significant at 1% level, * Significant at 5% level, + Significant at 10% level

The estimated equations exhibit considerable variations in the explanatory power of the independent variables included in the models particularly in terms of signs, magnitude and significance levels of the coefficients obtained. The three functional forms adequately characterized the empirical data as indicated by the value of the coefficient of multiple determination R^2 in each case. The R^2 from the linear, semi-log and power functions show that 65, 63 and 75%, respectively, of the variations in the gross value of output of the after merging beneficiaries are explained by the explanatory variables included in the model.

The regression coefficients have the expected positive sign and those that are statistically significant are shown in Table 6. However, the coefficients of local materials inputs are not significant and have negative sign in the linear function. Similarly, R^2 from the linear, semi-log and power functions show that 75, 81 and 82%, respectively of the variation in the gross value of output of before merging beneficiaries are explained by the explanatory variables included in the model.

The Cobb-Douglass function provides the lead equation the choice of the power function is based on the value of coefficients R^2 , the appropriateness of signs and significance of coefficients. To facilitate a lucid explanation of the production behaviour of the set of farmers and their resource-use-pattern three important estimates derived from the fitted production function are used. They are factor-product elasticities, average product and marginal product. These estimates in respect of before and after merging beneficiaries are shown in Table 7.

Resource use on the sample farms: The output elasticity in respect of each of the inputs is less than unity thus indicating diminishing marginal returns to individual inputs. For instance, a change of 1% in labour input, land area, modern input, local material input and fixed capital holding in each case other factors constant, is associated with a change in the gross value of output of 0.423, 0.385 and 0.217%, respectively for the after merging beneficiaries.

The sum of elasticities (1.734) is greater than unity and in a Cobb-Douglas production function it is an indication of increasing returns to scale. For the before merging beneficiaries there is also an indication of diminishing marginal returns to each of the inputs. The elasticity coefficients indicate that a 1% change in labour, land area and local inputs holding in each case other factors constant, is associated with a change in the gross value of output of 0.342, 0.633 and 0.624%, respectively. Since the sum of the elasticities 0.827 is less than unity,

Table 8: Chow test of difference in technical efficiency of before and after merging beneficiaries

Estimated models	Observed variance ratio	Critical F-values at 1% and 5% levels of significance	
	F*	F _{0.01}	F _{0.05}
Y = f (X ₁ , X ₂ , X ₃ , X ₄ , X ₅)	6.737**	2.32	1.54
Q = f (X ₆ , X ₇ , X ₈ , X ₉)	7.875**	3.68	2.80
P = f (X ₁ , X ₂ , X ₃ , X ₄ , X ₅)	3.489**	2.32	1.54
V = f (X ₆ , X ₇ , X ₈ , X ₉)	4.122**	3.68	2.80

Source: Field survey, 2006, **Highly significant

the underlying production function for the before merging beneficiaries data set falls within the domain of decreasing returns to scale. The average product and Marginal Value Product (MVP) of each input were calculated at the geometric mean level for both before and after merging beneficiaries. The MVP can assume a positive or negative sign accordingly as resources are being used efficiently. The marginal value productivities of labour, fixed capital and modern material inputs are higher for after merging beneficiaries than before merging beneficiaries. On the other hand, the marginal value productivities of land area cultivated and local material inputs are higher for before merging beneficiaries than for after merging beneficiaries. The foregoing is an indication of basic differences in the production behaviour of the two sets of farmers. The negative marginal value productivities of fixed capital, labour and modern inputs easily bring to question the technical efficiency of the before merging in the use of these resources. With absolutely low values of output elasticities in respect of these inputs coupled with negative signs, the production methods of the before merging beneficiaries are technically inefficient.

To find out whether the before and after beneficiaries differ significantly in technical efficiency ground the chow test of equality was performed on the two estimated production functions. If the coefficients of the fitted equations are equal then there is no significant difference in the production behaviour of the two sets of farmers, in other words, there is no change in technical efficiency. The results of the chow test reject the hypothesis of equal technical efficiency (Table 8). It is therefore, inferred that the underlying production functions of the before and after merging beneficiaries do not belong to the same population meaning that technical efficiency differs significantly on the before and after merging beneficiaries' farms. Traditional theory of production stipulates that the more efficient farm will have a larger constant term than the less efficient one (Koutsoyiannis, 2001) leading to the conclusion that the after merging beneficiaries are more technically efficient than the before merging beneficiaries. The constant term, (6.228) in the production function of after merging borrowers is higher than that of (0.5928) of the before merging beneficiaries. This is an additional

Table 9: Test of difference between MVP and MFC in respect of before and after merging beneficiaries

Factor inputs	Before merging beneficiaries		After merging beneficiaries	
	MVP/MFC	t-value	MVP/MFC	t-value
Labour	-0.014	11.917**	0.513	3.312**
Fixed capital	-7132	0.639	13.618	0.637
Traditional material inputs	2.271	6.596**	0.639	0.416
Modern material inputs	-2.107	0.277	4.252	3.642*

Source: Field survey, 2006, **Significantly different from unity at 1% level, * Significantly different from unity at 5% level

indication of more efficient performance quite apart from signs and magnitudes of marginal value productivities earlier discussed. However it is of paramount importance to determine whether or not each group of farmers performs well in terms of allocative efficiency. By doing so it will be possible to know the impact of stable and strong financial institution on credit for proper and necessary adjustment required in the existing use of productive resources if agricultural production is to be increased profitably.

Allocative efficiency of 'before and after' merging beneficiaries: The judgments as to whether or not the farmers are allocatively efficient in the use of their resources has been based on the neoclassical requirement that each factor be paid equal to its marginal value productivity. A significant difference between marginal value product and marginal factor cost of individual inputs would indicate that indicate that the farmers are using their factors of production efficiently on the average. If the difference between the 2 is not significant, it means that the farmers are efficient on the average in the use of their productive resources. As a test of allocative efficiency the ratio of MVPs to MFCs was computed. The prevailing rate of interest (18.0%) was used to obtain the opportunity cost of capital. Wage rate among the after merging beneficiaries was estimated as N 600 man-day and N 400 per man-day for the before merging beneficiaries. For each variably the regression coefficient required to obtain a ratio of MVP/MFC of unity was also calculated. The coefficient from the fitted equation was then tested for statistically significant difference from the one required to obtain a ratio of unity. Table 9 showed that after merging borrowers are inefficient in the use of labour and modern material inputs as the MVP/MFC ratio for these inputs are observed to be significantly different from unity. However, fixed capital and traditional material inputs have been used efficiently, on the average, by the after merging borrowers. The before merging borrowers on the other hand have demonstrated inefficient use of traditional inputs and labour, whereas they have been efficient in their use of fixed capital and modern material

inputs. Both before and after merging beneficiaries engaged in excessive use of labour as indicated by the MVP/MFC ratio which is significantly less than unity in each case. It would have been possible to increase production on the average farms, if less man-day had been employed for cultivation. The excessive use of labour had resulted in negative MVP of labour in the case of before merging beneficiaries whose per hectare use of family labour is still greater than that of the after merging beneficiaries. The traditional material inputs, seeds and planting materials (maize, cassava, yam) were under-utilized by the before merging beneficiaries, whereas the after merging borrowers under-utilized the modern material inputs (which comprise pesticide, herbicide, fertilizer and improved seeds) as indicated by the MVP/MFC ratio which is significantly greater than unity in each case. Production could possibly have been increased significantly by using more of these resources.

DISCUSSION

This study has examined the impact of merging effects of Nigerian Agricultural Cooperatives and Rural Development Bank (NACRDB) on the agricultural production in southwestern Nigeria. It aims specifically at evaluating the production efficiency of beneficiaries before and after merging of Nigerian Agriculture and Cooperative Bank with FEAP and Peoples' Bank. The orientation of the study was guided by the hypothesis; there is no significant difference between the production efficiency of beneficiaries before and after merging of the institution. The socio-economic characteristics of the beneficiaries revealed that in terms of the number of years of farming, they could be regarded as well experienced. On educational attainment a generally low literacy level was observed among the sampled beneficiaries. About 44% of the borrowers before merging had between 5 and 9 household members while about 60% of the borrowers after merging are within the same group. In terms of resource endowments the after merging borrowers were endowed with relatively more farm resources than the before merging beneficiaries. The larger resource base enables the after merging beneficiaries to reap higher gross output value than those of the before-merging beneficiaries.

Production function was estimated in order to examine the production behaviour of the beneficiaries. The resource use efficiency of the beneficiaries was examined in respect of four resource inputs namely: Labour, fixed capital, traditional material inputs and modern material inputs. The after merging beneficiaries

are in-efficient in the use of land area cultivated and local material inputs. Their production pattern reflected increasing returns to scale. They however, demonstrated efficient use of fixed capital and modern material inputs. The before-merging beneficiaries operated within the domain of decreasing returns to scale. They were efficient in the use of land area cultivated and local materials inputs but inefficient in the use of modern inputs and labour. The hypothesis that the production behaviour of after merging beneficiaries may not be different from before merging beneficiaries was rejected following the result of the chow test which suggested significant difference in the underlying production functions of the two groups. Indeed the after-merging beneficiaries were found to be more technically efficient than the before-merging beneficiaries.

Policy recommendation: The results of the study showed that more loanable funds were available due to the merging effect and hence had increased the resource base and gross output value of borrowers. Similar impact is expected if the institution could maintain its financial strength.

The availability of credit has a positive effect on the productivity of the after-merging farmers particularly with the use of modern inputs which have found to constitute a significant determinant of production efficiency. Thus, an enabling environment should be created for improved loan recovery like a legal unit under an autonomous setting to prosecute loan defaulters so as to enhance the viability of the institution, specifically to prevent it from collapse under the pressure of loan default.

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