

Income Level of Fadama III Beneficiaries in Delta State as at Project Closure in December 2013

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Received: February 27, 2014

Accepted: March 25, 2014

Online Published: June 25, 2014

doi:10.5539/ijef.v6n7p176

URL: <http://dx.doi.org/10.5539/ijef.v6n7p176>

Abstract

As the Fadama III project intervention ends by December 2013 in Delta state, it became necessary to conduct a follow up study on the income level of Fadama III beneficiaries after the project midterm review (MTR). Ten Fadama III beneficiary households as well as ten non-beneficiary households were sampled from twelve participating local government areas in the state. This gave a total of 240 respondents composed of 120 beneficiaries and 120 non-beneficiaries. Data for the study were collected by the use of structured questionnaire. They were analysed using the Difference in Difference (DD) analytical tool to compare change in outcome of program for beneficiaries and non beneficiaries. Findings revealed that the current average level of income of participants of Fadama III project as at project closure in December 2013 is N106,829.75. This represents an income increase of N44,349.75 or 70.98% from the baseline income of N62,480.00 of Fadama III beneficiaries. On the other hand, the average income of Fadama III non beneficiaries grew to N85,997.22 from a baseline income of N63,572.00. This represents an increase of about 35.28%. 82.5% of the participants were able to generate an average income of N106,829.75, thus achieving an increase of 70.98% in income from participation in Fadama III project. This increase has surpassed the target of 75% of Fadama User households increasing their average real income by at least 40% by 2013 as set by the World Bank. Hence, it can be concluded that the project intervention in the State has impacted positively on the income of small scale farmers – both direct project beneficiaries and non project beneficiaries.

Keywords: Fadama III, beneficiaries, difference in difference (DD), income level

1. Introduction

Nigeria's rural economy till date is driven by agriculture. Until the early 1960s when Nigeria first discovered oil, popularly called the 'Black gold' at Oloibiri, agriculture was the mainstay of the overall economy and accounted for over 60% of global exports of palm oil, 30% of groundnut, and 15% of cocoa. However, NBS (2008) estimate show that the petroleum sector now generates about 95% of Nigeria's external earnings as against agriculture which contributes less than 5%. Like in many rich and poor countries, the issue of poverty and well-being has been of great concern. As a result, poverty reduction strategy processes (PRSP) have been at the centre-stage of development programs. Nigeria's government is more eager than ever to move its populace out of poverty while the rich nations are increasingly aware of the need to promote security through poverty reduction (NBS, 2004).

Nigeria governments (Federal, State and Local) over the years have been fighting poverty through the pursuit of policies/programmes that improves the productivity and income potentials of rural dwellers. In line with this, the Nigerian government has in collaboration with the World Bank established the Fadama projects, of which Delta State is participating in Fadama III. The Third National Fadama Development Project (NFDP-III) project is a nationally implemented World Bank assisted agricultural intervention project aimed at improving livelihood and incomes of rural users of land & water resources on a sustainable basis. The target beneficiaries in Delta state are Fadama User Groups engaged in farm and non-farm activities domiciled in 200 communities, where 59,429 group members are expected to be directly impacted upon (DSFCO, 2013).

The principal goal of the project which is to sustainably increase the income of beneficiaries is being achieved through financing investment in productive assets and community infrastructure; strengthening the capacities of States and Local Government to deliver efficient services and also promoting socially-inclusive and

environmentally sustainable management of natural resources. The project design provides for statutory six monthly Joint World Bank/FGN supervision Missions to assess project implementation progress. It also provides for thematic missions, unscheduled spot checks and back stopping by the various levels of supervision (World Bank, FGN, NFCO and Zonal Coordination office).

The Delta State Fadama Coordination Office has the responsibility of implementing the project in the State along the project's six (6) main components namely; Capacity Building Information and Communication Support, Small Scale Community Infrastructure, Advisory services and input Support, Support to ADP and Adaptive Research and On-Farm Demonstration, Productive Asset Acquisition for individual FUGs, Project Management, Monitoring and Evaluation.

The report of the midterm review (MTR) conducted on household income generation, progression and sustainability under Fadama III implementation in Delta State in September 2011, revealed that there was a 36.67% increase in the real income of Fadama III participants due to their participation in the project (DSFCO, 2011). This figure then was against the target of 40% increase in real income of programme participants as set by the World Bank. The study attributed the shortfall in the performance to the fact that most of the projects then had not run a full cycle. As the Fadama III project ends by December 2013, it becomes necessary to conduct a follow up study on the income level of Fadama III beneficiaries in Delta state as at project closure in December 2013, hence this study.

The objective of this study is therefore to estimate the average income of the Fadama III participants as at project end as well as determine the proportion of the participants that attained this estimated income level. It also ascertained the level and rate of increase in real income of beneficiaries from midterm to project end.

2. Methodology

2.1 Area of Study

This study was carried out in Delta state which is one of the 36 states of Nigeria. The state is one of the nine states of Nigeria's Niger Delta region known for their crude oil production. It has a population of 4.1 million (NPC, 2006). The state lies between longitude 5⁰⁰' and 6⁴⁵' East and Latitude 5⁰⁰' and 6³⁰' North. It has boundaries with Edo State on the north and Anambra State on the east as well as Bayelsa State on the south east. The State is a coastline State covering about 160 kilometers.

2.2 Sample Selection and Data Analysis

Out of the 25 local government areas (LGAs) in the Delta State, 20 LGAs participated in the Fadama III project. The 20 participating LGAs are Warri North, Patani, Isoko North, Isoko South, Ughelli South, Ughelli North, Ethiope West, Uvwie, Aniocha South, Aniocha North, Ukwuani, Ndokwa West, Ndokwa East, Okpe. Sapele, Ika South, Ika North East, Ethiope East, Oshimili North and Oshimili South.

Four local government areas were randomly sampled from each of the three agricultural zones of the state. This gave twelve local government areas. Ten Fadama III beneficiary households as well as ten Fadama III non-beneficiary households were sampled from each of the twelve local government areas. This gave a total of 240 respondents composed of 120 beneficiaries of Fadama III project and 120 non-beneficiaries.

Trained enumerators were used to collect data from the sampled respondents through the use of structured questionnaire. The Difference in Difference (DD) analytical tool was used to analyse the data generated. The analytical tool helped in estimating and comparing the change that had occurred in the outcome of participants and non-participants before and after the programme intervention.

2.3 Conceptual and Analytical Framework

2.3.1 Difference in Difference (Double Difference) Estimator

The difference in difference (or "double difference") estimator is defined as the difference in average outcome in the treatment group before and after treatment minus the difference in average outcome in the control group before and after treatment; it is literally a "difference of differences." This is double difference of the Ordinary Least Regression (OLS) Analysis in which income is the explanatory variable. The use of Difference in Difference (Double Difference) estimator which is also called the DD method was necessary because a cross-sectional comparison of changes in income of Fadama III beneficiaries and non beneficiaries cannot completely attribute the differences to programme intervention. This is why this study adopted a quasi-experimental method known as Double Difference (DD) method. This tool helped in assessing clearly the impact of Fadama III on the income of participants.

The DD method is a quasi-experimental tool that involves the selection of programme participants and non

participants who have similar observable characteristics from the same location (Baker, 2000; Chen et al., 2006; Nkonya et al., 2008; Ike, 2012; Simonyan & Omolehin, 2012, Ike, 2013). The tool quantitatively estimates and compares change in outcome of the beneficiaries and non beneficiaries before and after programme intervention (Chen et al., 2006). The use of this estimator has the advantage of netting out the effects of additive factors that have fixed (time-invariant) impacts on income indicator, or that reflect common trends affecting project beneficiaries and non-beneficiaries equally such as changes in prices (Ravallion, 2005). Verner and Verner (2006) concluded that a positive and significant income difference value estimated with the use of the DD method implied project intervention impact on beneficiary otherwise no impact.

To enable the use of this tool in this study, information was gathered before and after the programme on both participants and non-participants. Data on the baseline income level of Fadama III participants were available at the Delta State Fadama III Coordinating Office while that of the non participants were obtained through memory recall.

The Double Difference Estimation model has the formula as:

$$DD = \left[\frac{1}{m} \sum_{i=1}^m (Y_{1ia} - Y_{1ib}) \right] - \left[\frac{1}{n} \sum_{j=1}^n (Y_{0ja} - Y_{0jb}) \right]$$

Where

DD = Income difference between the groups;

M = number of beneficiaries;

N = number of non beneficiaries;

Y_{1ia} = Income of beneficiaries after the program;

Y_{1ib} = Income of beneficiaries before the program;

Y_{0ja} = Income of non beneficiaries after the program;

Y_{0jb} = Income of non beneficiaries before the program;

Paired student t-test was used to test the level of significance of the income difference.

3. Results and Discussion

3.1 Income Level of Respondent' Enterprise Engagements

The enterprise activities of the sampled respondent households were crop farming, livestock farming, Agroforestry, vulnerable groups, Agro processing as well as Fishing. The crop farmers sampled are those of cassava, yam and vegetable farmers while that of livestock were poultry and pig farmers. Agroforestry practitioners comprised bee keepers and snail farmers while in the vulnerable groups, cassava processors and rental service providers were sampled. Palm oil processing was identified for agro processing while Artisanal and aquaculture fishing were the components of the fisheries group (Table 1).

Table 1. Distribution of respondents by enterprise groups for beneficiaries and non beneficiaries

Enterprise	Fadama III Participants		Non Participants	
	Frequency	Percentage	Frequency	Percentage
Crop Farmers:				
Cassava farmers	9	7.5	12	10.0
Yam farmers	7	5.8	7	5.8
Vegetable farmers	9	7.5	11	9.2
Livestock Farmers:				
Pig farmers	5	4.2	4	3.3
Poultry farmers	19	15.8	12	10.0
Agroforestry:				
Snail farming	5	4.2	1	0.8
Bee keeping	6	5.0	7	5.8
Vulnerable Groups:				
Rentals	14	11.7	17	14.2
Cassava processing	10	8.3	14	11.7

Agro processing:				
Palm oil processing	5	4.2	7	5.8
Fisheries: (Artisanal & Aqu)	31	25.8	28	23.3
Total	120	100.0	120	100.0

Entries in the table show that 20.8% and 25% of the sampled Fadama III participants and non Fadama III participants were crop farmers. Also 20% and 13.3% Fadama III participants and non Fadama III participants were engaged in livestock farming. Snail farming and bee keeping constituted the agroforestry component with 9.2% as participants and 6.6% as the non participants.

The enterprise engagements of the vulnerable groups constituted about 20% of the respondents participating in the programme. The dominant enterprise among the vulnerable group was rental services which constituted 11.7% of the entire sampled participants and 14.2% of non participants. More than 90% of the respondents sampled as vulnerable groups were women. Artisanal/capture fisheries as well as aquaculture comprising concrete and earthen ponds constitute the fishery based enterprises and they make up about 25.8% of the sampled participant enterprises.

Findings reveal that the current average level of income of participants of Fadama III project as at project closure in December 2013 is N106,829.75 (Table 2).

Table 2. Distribution of Fadama III enterprise groups and non Fadama III enterprise groups according to income level as at Project Closure (December 2013)

Enterprise Category (FUG)	Fadama III Beneficiaries		Non Fadama III Beneficiaries	
	Income Level (₦)	Av. Income by ent. Group	Income Level (₦)	Avg. Income Level by ent. group
Crop Farmers:				
Cassava farmers	76,450.00		66,700.00	
Yam farmers	78,960.00		81,000.00	
Vegetable farmers	54,500.00		42,900.00	
		69,970.00		63,533.33
Livestock Farmers:				
Pig farmers	114,560.00		92,700.00	
Poultry farmers	172,885.00		105,790.00	
		143,722.50		99,245.00
Agroforestry:				
Snail farming	41,850.00		11,560	
Bee keeping	52,432.00		25,400	
		47,141.00		18,480.00
Vulnerable Groups:				
Rentals	40,400.00		30,750.00	
Cassava processing	50,290.00		26,100.00	
		45,345.00		28,425.00
Agro processing:				
Palm oil processing	184,600.00	134,600.00	121,070.00	120,000.00
Fisheries: (Artisanal & Aquaculture)	200,200.00	200,200.00	186,300.00	186,300.00

This represents an income increase of N44,349.75 or 70.98% from the baseline income of N62,480.00 of Fadama III beneficiaries. As it is with the Double Difference estimator, when the estimated value of income difference is positive and significant, it implied that there was an impact of the project intervention. Hence, this change in income is attributed to the household participation in Fadama III project. This increase in income has surpassed the 40% target set by the World Bank for Fadama User households.

On the other hand, the average income of Fadama III non beneficiaries grew to N85,997.22 from a baseline income of N63,572.00. This represents an increase of about 35.28%. The improved increase in the real income of the project participants from 11.6% during the midterm project review to 35.28% at project closure could be the as a result of spillover effects of project implementation on the whole communities.

3.2 Proportion of Fadama User Households that Attained the Increase in level of Income

A further analysis revealed that 82.5% of Fadama III user households were able to generate an average income of N106,829.75. Hence, 82.5% of the respondents have been able to achieve an increase of 70.98% in income (Table 3). The increase in income of 82.5% of direct project beneficiaries by 70.98% has surpassed the target of 75% of Fadama User households increasing their average real income by at least 40% by 2013 as set by the World Bank. Hence, it can be concluded that there has been a positive impact of the programme intervention in the state, particularly on the income of small scale farmers—both direct project beneficiaries and non project beneficiaries.

Table 3. Achievement of target Increase in Income among fadama III beneficiaries

Treatment Type	% Change in Income at Project End		
	24% and below	25-50%	Above 50%
Fadama III Beneficiaries	4.5	13.0	82.5
Non Fadama III Beneficiaries	26.3	68.5	5.2

3.3 Level and Rate of Increase in Income of Beneficiaries from Midterm to Project End

At midterm of Fadama III project, the average level of income of the participants was found to be N85,391.42 (DSFCO,2012). Between the project midterm at September 2011 to project closure at December 2013, the average income level has increased to N106,829.75. This implies an increase of N21,438.33 or 25.11% from midterm till project end. This noticeable increase in income between project midterm to closure could be attributed to the following: improved efficiency in the use of resources for production by Fadama users, timely provision of inputs to the participants by the project managers, increased rate of adoption of improved rate of adoption of Technology by the project beneficiaries amongst others.

4. Summary and Conclusions

The study estimated the income level of Fadama III beneficiaries in Delta state as at project closure in December 2013. It specifically determined average real of the beneficiaries in line with their enterprise engagements, the proportion of Fadama user households that attained the income level and determined the level and rate of increase of income of beneficiaries from midterm to project end. From each of the three agricultural zones of the state, four LGAs were randomly sampled. This gave twelve local government areas. Ten Fadama III beneficiary households as well as ten non-beneficiary households were sampled from each of the twelve local government areas. This gave a total of 240 respondents composed of 120 project participants 120 non participants. Data were collected by use of structured questionnaire and analysed using the Difference in Difference (DD) estimator.

Findings reveal that the average level of income of participants of Fadama III project as at project closure in December 2013 is N106,829.75. This represents an income increase of N44,349.75 or 70.98% from the baseline income of N62,480.00 of Fadama III beneficiaries. On the other hand, the average income of Fadama III non beneficiaries grew to N85,997.22 from a baseline income of N63,572.00. This represents an increase of about 35.28%.

82.5% of the Fadama III user households were able to generate an average income of N106,829.75 and thus were able to achieve an increase of 70.98% in income from participation in Fadama III project. This increase in income of 82.5% of direct project beneficiaries by 70.98% has surpassed the target of 75% of Fadama User households increasing their average real income by at least 40% by 2013 as set by the World Bank. Hence, it can be concluded that there has been a positive impact of the Fadama III project intervention in the state on the income of small scale farmers—both direct project beneficiaries and non project beneficiaries. At midterm review (MTR) of Fadama III project, the average level of income of the participants was found to be N85,391.42 (DSFCO,2012). Between the project midterm at September 2011 to project closure at December 2013, the average income level has increased to N106,829.75. This implies an increase of N21,438.33 or 25.11% from midterm till project end.

It is recommended that that Delta State Government should endeavour to sustain the gains made by Fadama III project in reducing poverty in the State by using the ADP extension staff for continuation of the job that will be left after project closure.

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