Shocks and Factors Influencing Welfare among Cocoa Farming Households in Cross-Rivers State, Nigeria

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Abstract

Shocks are adverse events which generate reduction in income and influence the welfare of farming households of which cocoa farmers are not exempted; this study found the shocks peculiar to them and the factors influencing welfare among Cocoa Farming Households (CFHs) in cross rivers state. Primary data were collected with questionnaire using multi-stage technique; two local government areas (LGAs) were purposively chosen based on their volume of cocoa production and heavy presence of CFHs. From each of the LGAs, four villages were randomly chosen and in the third stage, 120 CFHs from Etung and Ikom LGAs were randomly selected proportionate to the number of CFHs in the villages. Data collected were subjected to descriptive analysis; and standard welfare function specified and estimated using the Logit Regression model. Results showed male headed households are 64.17% mean ages of household head cocoa farm and farm sizes as 45.93 ±13.91 23.30 ±16.46 years and 4.60 ±3.50 ha respectively. Shocks experienced are downward price fluctuations pest and diseases incidences, poor access to credit illness of household members poor harvest and labour shortage on cocoa farms. Factors influencing welfare negatively are illnesses of household members

Keywords; **shocks, welfare, cocoa farming households, cross-rivers, Nigeria**

Introduction:

Farming is an activity that depends majorly on environmental parameters which are controlled by nature. The effect of climate change cannot be overemphasised as it has a negative resultant effect on farming; increasing temperature, rainfall pattern, soil depletion, pests and diseases posing new risk challenges to food production (Neate, 2013). The risks and challenges attributed to farm practices are referred to as shocks. Shocks refer to adverse events which generate reduction in income that leads to a rise or fall in welfare of farming households (Lawal, 2016). Agricultural shocks such as heavy rains, flood, price and income fluctuations both idiosyncratic and covariate in nature are prevalent throughout the world and they are particularly burdensome to small-scale farmers in developing countries. The majority of the world's farming households still rely on agriculture for their livelihood and these could be truncated directly or indirectly by adverse events. In Nigeria, different shocks do affect farming households of which cocoa farming households are not exempted but the specific shocks peculiar to cocoa farmers in this area have not been empirically determined.

Objectives:

1. Determine the types of shocks experienced by cocoa farming households and their severity;
2. Find the factors influencing welfare among cocoa farming household in the study area.

Methodology:

The study was carried out in Cross-Rivers state, which is one of the high cocoa producing states in the country. The project found the different shocks that cocoa farming households do experience and their effects on the welfare of the farmers in Cross-Rivers state, Nigeria.

Well-structured questionnaire were administered to cocoa farming households in two different local governments (Etung and Ikom) which are very prominent areas for high volume cocoa production and presence of cocoa farming households. Data collected were subjected to descriptive analysis; and standard welfare functions which were specified and estimated using the Logit Regression model.
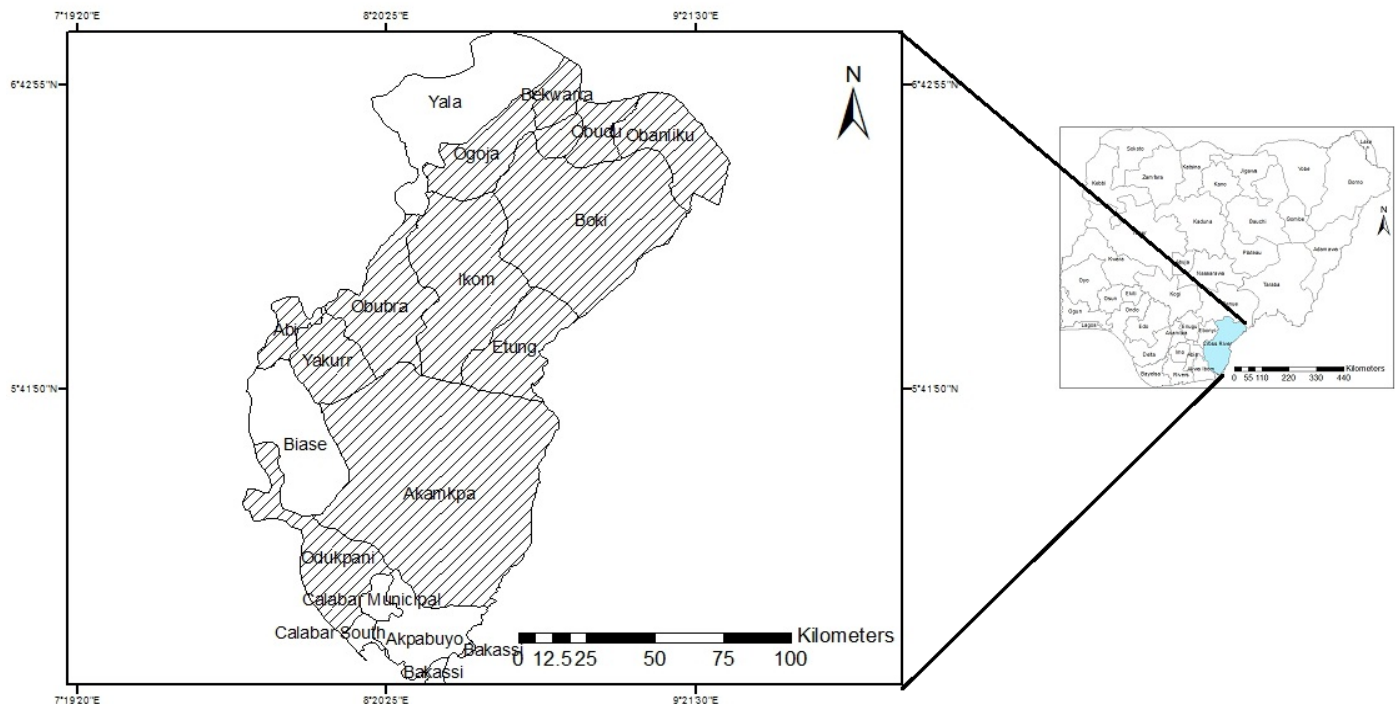

Figure 1: Map of Cross rivers state showing the surveyed local government areas (Etung and Ikom)

Results:

Socio-Economic Characteristics of Cocoa Farming Households in Cross-Rivers, State

The socioeconomic characteristics reveal that there are more male headed households involved in cocoa farming (64.17%).The mean age of household head 45.93 ±13.91years indicates that most

of the farmers are still in their prime active working years, while household size 8.0 ±5.00 persons shows that most of the households are large and for their welfare to improve; they need good harvest and equivalent returns (income) from such farms to keep up consumption and production needs. The respondents mean years of formal education is 10.85 ±4.62, which implies that on the average the household heads have basic primary and secondary education, with years of cocoa farming experience 18.78 ±12.96which indicates that majority have been in cocoa farming close to two decades. However, the mean age of cocoa farm is23.30 ±16.46 years which reflects that there are mixture of both new and old cocoa trees on the farm in cross rivers state and this will in no small measure enhance output from the farms. The mean farm size at 4.60±3.50 ha indicates that most of the farms are still small scale farms of which the income accruing to the farming households may/may not be adequate enough to feed the large household sizes of the farmers. About 80% of the farmers experience price fluctuations and only 56.7% of the farmers have access to credit for cocoa farm work which only 33.3% access from cooperative societies. Most cocoa farmers work on inherited lands while the quantity harvested in heavy season is more than that of the light season but obtained better prices in the light season probably due to scarcity of the produce in light season which made the cocoa beans command better pricing.

TABLE 1: Descriptive Statistics of Socio-Economic Characteristics of Cocoa Farming Households

Variables	Frequency	Percent	Mean	Standard deviation
Age of household head (years)			45.93	±13.91
Household Size			8.0	±5.35
Years of formal education			10.85	±4.62
Years of cocoa farming experience			18.78	±12.96
Age of cocoa farm (years)			23.30	±16.46
Farm size (ha)			4.60	±3.50
Sex of Household head				
Male	77	64.17		
Female	43	35.83		
Total	120	100.0		
Membership of association (Yes)	78	65.00		
(No)	42	35.00		
Access to credit (Yes)	68	56.70		
(No)	52	43.30		
Price fluctuation (Yes)	96	80.00		
(No)	24	20.00		
Ownership of cocoa land (Yes)	90	75.00		
(No)	30	25.00		
Sources of credit				
Cooperative	40	33.30		
Bank	8	6.70		
Moneylender	18	15.00		
Social group	12	10.00		

Friends/family	26	21.70	
Farmers' association	16	13.30	
Total	**120**	100.0	
Amount of credit requested(₦)		108, 510.69	±14,470.59
Amount of credit received (₦)		50, 467.41	±11,347.29
Distance to market (km)		9.53	±4.02
Quantity harvested in heavy season (kg/ha)		864.57	±494.66
Quantity harvested in light season (kg/ha)		375.11	±201.09
Price of cocoa in heavy season (₦/kg)		285.34	±156.43
Price of cocoa in light season (₦/kg)		509.48	±338.13

Source: Field Survey, 2017

Shock and Their Severity among Cocoa Farming Households

There are seven different shocks identified to be affecting cocoa farming households in Cross Rivers state Nigeria which are poor access to credit, illness, labour shortage, unfavourable government policies, price fluctuation, price fluctuation and poor harvest. Price fluctuation, pest and diseases incidences, poor harvests probably due to poor access to credit to purchase inputs happens to be major shocks ravaging the welfare of farmers in Cross river state; these shocks have high frequencies and severity of occurrence among cocoa farmers. Most of the cocoa farmers do cope by selling assets to get more money for production activities, try rehabilitation methods to deal with poor harvest and pest/diseases incidences, they also increase farm size, dispose off produce at best selling price offered to them and abide as much as possible by policies even though sometimes unfavourable to cocoa production

Table 2: Frequency of Shock, Severity of Shock and Coping methods

Shocks	No (%)	Yes(%) of CFHs	Frequency of Occurrence (Percent)	Severity (Percent)	Coping methods (Percent)
1. Poor access to credit	52(43.3)	68(56.7)	Often (49.9) Sometimes (43.3) Rarely (6.8)	High (68) Medium(20) Low (12)	Sell assets (40) Spend saving (16.1) Sell other products (2.5)
2. Illness	32(59.8)	88(40.2)	Often (38.7) Sometimes (28.7) Rarely (2.7)	High (36.9) Medium(1.4) Low (1.9)	Going to hospital (36.6) Spouse take over farm (2.2) No response (1.4)
3.Labour shortage	32(26.7)	88(73.3)	Often (38.5) Sometimes (2.7)	High (38.5) Low (2.7)	Borrow to pay labour (18.3) Pay high fee for labour (20.7) No response (2.2)
4. Unfavourable Govt. policy	42 (35)	78 (65)	Often (19.1) Sometimes(24.0)	High (12.0) Medium(39.6)	Abide by policy (18.9) Increase farmsize (28.4)

			Rarely (9.8)	Low (1.4)	Dodge policy (1.1)
5.Price fluctuation	16(13.3)	104(86.7)	Often (54.4) Sometimes (7.1) Rarely (4.6)	High (26.8) Medium(24.3) Low (14.8)	Sell at best price (36.1) Store produce (11.7) Try to abide (15.0) No response (3.0)
6.Pest /diseases	16(13.3)	104(86.7)	Often (57.9) Sometimes (25.3) Rarely (1.3)	High (63.7) Medium(4.1)	Use of Chemicals(58.0) Local method (9.3) Pest control (0.8)
7. Poor Harvest	20(16.7)	100(83.3)	Often (53.3) Sometimes (14.2) Rarely (4.3)	High (26.8) Medium(24.3) Low (14.8)	Try rehabilitating farm (26.7)

Source: Field Survey, 2017

Factor Influencing Welfare among Cocoa Farming Households

Logit model was applied to estimate the probability of welfare among cocoa farming households in cross rivers state Nigeria.

The logistic regression model describes the relationship between dichotomous response variable for instance W, coded to take the value of 1 or 0 and k explanatory variables $x_1, x_2,\ldots x_k$. W is a binary variable with Bernoulli distribution with parameter p= P(W-1), that is, p is the probability of success for the explanatory variables.

$$W_i = \frac{1}{1+\exp(-\beta 0 - \sum_{j=1}^{k} \beta j x i,j)}$$

Where: W= Welfare of the ith cocoa farming household in seasons ;
X_i= vector of explanatory variables;
W_i= 1 if a household reports experience of food availability and zero if otherwise.
The dependent variableWhere:
W_i= 1/0 = W_i ln (if a household reports experience food availability in between seasons

*Illness of household member:*The marginal effect estimate (0.2088) for illness among cocoa farming households is negative and significant (p<0.01). This means that an increase in ill health of the household members reduces the likelihood of welfare by 0.2088 among the cocoa farming households in cross-rivers state. This implies that occurrence of illness and sickness among members of cocoa farming households increases shock to welfare among cocoa farming households. This result is expected because a sick household cannot spend quality time or work

effectively on their cocoa farms. This reduces income, productivity and quality of the produce (a plantation of fully ripened pods, of which there is no one to harvest because they are down with sickness; such pods may be lost to pests and drying up of pods which reduces weights of cocoa beans which results in reduced income) and leads to shock and reduced welfare. This result corroborates the works of Foster (1995); Sahn 1989 and Christiaensens and Subbarao (2007), Lawal (2016) but differ from the results of Porter (2008) that reported that illness of the household members does not have significant impact on household welfare.

Price Increase is positive and significant (p<0.05) for welfare among cocoa farming households. This complies with a priori expectation as increase in price of cocoa increases the likelihood of welfare by 0.2354.

Poor harvest from cocoa farms is negative and significant for welfare (p<0.05) among cocoa farming households in cross river state as increase in poor harvest decreases the likelihood of welfare by 0.1666. This means less quantity of cocoa which is equivalent to lower income for the farming households.

Year of formal education also has a positive and significant (p<0.01) effect on cocoa farming household welfare as this parameter increases; it increases the likelihood of welfare by 0.0161among cocoa farming households.

*Farm Size*This variable has a positive coefficient and significant at 5 percent level. This implies that, the larger the farm size, the higher the likelihood of improving the welfare status of household by 0.0118, other things being equal for the cocoa farming households in cross river state.

Access to credit has a positive and significant (p<0.05) effect for increased likelihood of welfare for cocoa farming households by 0.1684. This implies that the more access cocoa farming households have the better improved will be their welfare because this allows them to smoothen consumption and production activities.

Table 3: Marginal Effect Estimates for Welfare in Cross River State

Variables	Coef.	dy/dx	Std. Err.	z	P>|z|
Illdeath	-.8581	-.2088 ***	.07189	-2.91	0.004
Priceincrea	.0014	.2354**	.09232	2.55	0.011
Porharvest	-.6729	-.1666**	.07757	-2.15	0.032
Hhsize	-.0605	-.0151	.01058	-1.43	0.153
Eduyear	.0644	.0161***	.00602	2.68	0.007
Agecoc	-.0035	-.0083	.00176	-0.50	0.616

Farmsize	.0472	.0118**	.00534	2.21	0.027
Accredit	.6808	.1684**	.07456	2.26	0.024
Extension	-.1264	-.0316	.07727	-0.41	0.683
Goodroad	.1283	-.0320	.06426	-0.50	0.618
Improvarty	.3969	.0988	.06429	1.54	0.124
Storagfacit	.0696	.0174	.06649	0.26	0.794

Source: Print Out Of Logit Regression   Number of obs=   120

LR chi2(12)   =   76.44

Prob> chi2   =   0.0000

Log likelihood = -150.12781   Pseudo R2   =   0.1604

*Significant at 10%; ** Significant at 5%; *** Significant at 1%

Conclusions and Recommendations:

This study found that most cocoa farmers experience both idiosyncratic and covariate shocks. The peculiar ones are the downward price fluctuations, pest and diseases incidences owing to poor access to credit to procure inputs, poor access to credit because of lack of collaterals, unfavourable government policies towards cocoa production and agriculture, illness of household members owing to hard labour, poor harvest because of pest and disease incidences and labour shortage due to migration of able bodied young men from cocoa growing areas.

Empirical finding show that illnesses of household members and poor harvest from cocoa farms have significant negative influence on the welfare of cocoa farming households while cocoa farm size, years of formal education, increase in price of cocoa and having access to credit are positively significant to influencing the welfare of cocoa farming households in Cross rivers state. The socio-economic characteristics shows that those still actively involved in cocoa farming in the state are still very active and hence the importance of making them have better welfare by giving them the motivation to increase production.

Efforts should be made to increase the land cultivable to cocoa farmers in the state by the government releasing more land for cocoa cultivation rather than the smallholdings inherited from family transcend to boost production. Also, the conditions for accessing credit should be made to include social capital where the social collateral will count rather than the stringent conditions of having to present physical collaterals which debars them from accessing adequate credit to procure inputs to control pest and diseases incidence which results in poor harvest on cocoa farms; the government should look into the aspect of policies and make them more pro-cocoa farmer and expedite action to setting up a new board to look into cocoa price regulations to make the business more profitable for and attractive for youths and the women folk.

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