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Effect of Socio-Economic Factors on Risk Behaviour of Farming Households: An Empirical Evidence of Small-Scale Crop Producers in Kwara State, Nigeria

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Abstract: The effect of socio-economic factors on risk behaviour of farming households in Kwara state was examined. Data were collected from 192 farming household randomly selected from two out of four agricultural zones in kwara state Nigeria. Data analysis was the use of frequency, percentage and ordinary least square multiple regression model. The results showed that majority of the farming households have larger household size with above 70% having more than 5 people in the families. It was also found out that more than 76% of the respondents cultivating below 1.5 ha of land. Positive relationships were found between the risk coefficient of the household and their access to extension services, Disposable income, amount of capital and membership of cooperative society. However, negative relationships were also found between the risk coefficient of the household and their household size, off farm income, proportion of cropped land, membership of cooperative society and their risk averseness. Hence, it is recommended that programmes and policies for small scale farmers should incorporate their risk behaviour and its relationship with their socio-characteristics.

Key words: Effect, socio-economic, risk, farming household, small scale

INTRODUCTION

Agricultural risks are prevalent throughout the world and they are particularly burdensome to small-scale farmers in developing countries. Production activities of these farmers is characterized by scattered small land holdings (Encyclopedia Britannica, 2004) with little hope for expansion; family labour; negligible capital investment; little or no savings or storage facilities (Okuneye, 2002) modern inputs such as fertilizers and other chemicals which are seldom used. In fact, the rural environmental setting (with little or no basic amenities) in which they live and operate, does not facilitate effective communication and diffusion of agricultural information. In addition, their cultural background, norms and beliefs prevent faster adoption and diffusion of new information. These farmers trek an average distance of about five to ten kilometers from house to farm. These factors make the small-scale farmers inadequately equipped against risk and uncertainties (Adubi, 2000).

Given this setting of the small-scale farmers, Nigerian governments have over time tried several strategies and introduced numerous policies and programme aimed at expanding the farmers' production, increasing the level, grade and varieties of their export crops. A number of policies and programmes have been introduced by the Nigerian Government to increase agricultural output. The success of all the various agricultural programmes has been minimal (Ukpong, 1993).

Given that the purpose of most government policies on Agriculture is to transform small-scale farmer's production, it is expedient to have an insight into the effect of socio-economic factors of the beneficiaries in order to understand how they react to and are affected by these policies on agriculture and rural development. The risk behaviour of the small-scale farmers determines the outcome of rural development programmes as farmers react to policy incentives when allocating resources.

The estimation of single-attribute risk coefficients of small-scale farmers and relating them to socio-economic variables is necessary to predict farmers' willingness to adopt new technology or participate in rural development programme. Hence, there is a need for a study to understand effect of the socio-economic factors on small-scale farmer's risk behaviour. The overall objective of this study is to examine the behaviour of small-scale farming households under the safety first principle. The specific objectives in the study include to describe the socio-economic characteristics of the farming households in kwara state and examine the effects of their socio-economic variables on their risk coefficients.

In the risk analysis, there have been series of decision theories used in analyzing and measuring the 'riskiness' of a decision in the farm. The earliest of these theories is decision theory (Bernoulli, 1738). This represents a normalized approach of risk choice based upon the decision maker's personal strength of belief or subjective probability about the occurrences of uncertain events and personal valuation or utility of potential consequence (Dillion, 1971). The Bernoullian decision theory suggested that the optimal behaviour of the decision maker is that which maximized expected utility and is cardinal measurable. The decision maker should maximizes his expected utility. The expected utility model provides a single valued index, which orders action choices according to the preferences of the decision maker.

The Bernoullian decision theory is characterized by the division of risky decision-making into two components of subjective probability and utility function of farmers. The latter component has been heavily criticized (Young, 1979; Binswanger, 1980).

Despite the fact that the Bernoullian Principle implies the existence of U(Z), it tells nothing of its precise form, nor does the decision maker intuitively know the algebraic form of his utility function. Dillion (1971) argued that a variety of different functional forms such as polynomial, logarithmic or exponential utility functions might be suitable. However, he recommended using the functions that provide simple manipulation.

Direct elicitation approach has been criticized as subject to bias from different interviewers, preference for specific probabilities, negative preference toward gambling, absence of realism in the game setting, lack of time and experience of the hypothetical choices and compounding of errors in the elicitation process (Young, 1979).

Fackler (1991) proposed an alternative means of getting utility function through median deviation concordance probabilities. A more practical approach is the derivation of a number of farm plans in the efficient E-V set and to present these to the farmer for his choice.

The E-V approach was therefore proposed as relevant to small-scale farmers decision making. The advantage of the E-V approach, however, is that only information on means and variance of the outcome distribution is needed (King and Robinson, 1984). The risk behaviour is quantified by the risk coefficient (absolute mean deviation of the farmer's income). This risk coefficient tends to reveal the ability of the farming households to take risk. Whittaker and Winter (1980), Adubi (1994, 2000), Allub (2000), Sekar and Ramasamy (2001), Ayinde *et al.* (2004, 2005) and Ayinde and Ayinde (2006) have also given various applications to this approach. Hence, this study used the Mean Absolute Deviation (MAD) to compute the risk coefficient.

MATERIALS AND METHODS

The study was carried out in Kwara state of Nigeria. The 16 Local Government Areas (LGA) have been divided into 4 zones by the Kwara State Agricultural Development Project (KWADP) in consonance with ecological characteristics and cultural practices. These zones are further divided into blocks on the basis of the extension-farmers ratio. The extension staffs are the Block Extension Agents (BEAs). A three-stage stratified random sampling technique was utilized to select the sample for the study. In the 1st stage, two out of the non-overlapping 4 zones divided by the KWADP were randomly selected. In the 2nd stage, half of the blocks in each of the 2 zones selected were randomly selected. While in the third stage, we utilized the farm families' population provided by KWADP (Table 1) to distribute a sample size of 200 into each zone using proportion allocation technique. Consequently, a random sample of 66 respondents was taken from zone A and 134 from Zone B based on the farming household population's proportion of the zones making a total of 200 selected, however only 192 was found useful (Table 1).

Both primary and secondary data were collected for this study. The primary data were collected during the 2005 production year through a survey with the aid of interview schedule administered to the heads of the selected farming households with the assistance of well trained enumerators. A pretest was carried out in order to standardize the survey instrument. Other information was obtained from the records of the Federal Office of Statistics (FOS), journals and relevant texts to supplement the primary data. Descriptive and Multiple Regression Analysis of data were employed for this study.

The multiple regression model was fitted and estimated using the Ordinary Least Square (OLS) method. The choice of the OLS method lies in its properties. This is to provide best, linear and unbiased estimators. The derive risk coefficients for individual farm's plan as the dependent variable. These risk coefficients were then

Table 1: Estimated populations of farm families of kwadp zones (kwara state agricultural development programme)

Zone	Existing number of blocks	Selected number of blocks	Farm families population	Number of respondents selected and used
A	4	2	23.444	66
B	5	3	47.015	134
Total	9	5	70.459	200

Source: ADP survey

related to the farming households' socio-economic variables through a backward method of stepwise variable selection procedure of regression analysis in order to seek an explanation for the differential degree of risk capability among small-scale farming households. The model apart from giving the quantitative relation between the variables and the risk coefficients; it also picked the variables in order of importance and contribution to the measured farm risk level. The regression model used (Eq. 10) follows after Adubi (1994), Allub (2000) and Sekar and Ramasamy (2001). The function in its implicit form is given by:

$$D = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7 X_8 X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, U) \quad (1)$$

Where,

D = Risk coefficients of farm plan. This is the estimated deviation of the individual farm's plan calculated with Eq. 3.

The Mean Absolute Deviation (MAD) or D for an activity (j) and for the whole farm over all states of nature (years) is estimated, respectively as follows:

$$D_j = S^{-1}\sum_{r} I\left(C_{rj} - C_J\right)X_J I \quad (2)$$

$$D = \frac{1}{n}\sum_{j=1}^{n} D_j \quad (3)$$

C_j = Expected returns of activity j.
X_j = Level of activity j.
C_{rj} = Returns of activity j for state of nature or observation r (N).
S = Number of states of nature.
X_1 = Household size.
X_2 = Years of formal education of the farming household head.
X_3 = Number of family members earning income.
X_4 = Access to extension services by the farming household which is a dummy variable, if have access is 1 otherwise is 0.
X_5 = Years of experience in farming of the farming household head.
X_6 = Available farm size in hectares.
X_7 = Proportion of cropped hectarage to total available farm area by the farming household.
X_8 = Proportion of off-farm income to total income of the farming household.
X_9 = Membership of a cooperative group by the farming household which is a dummy variable, if is a beneficiary member is 1 otherwise is 0.
X_{10} = Household disposable assets in naira.
X_{11} = Crop diversification as a proxy to Cultural Practice. It is a dummy variable, if diversifies is 1 otherwise is 0.
X_{12} = Amount of capital obtained in naira.
X_{13}, X_{14} = Dummy trap variables for the 3 risk behavioral groups.

RESULTS AND DISCUSSION

Socio-economic and demographic characteristics of the farming households: The most active age group is in the age group 21-40 where we have more than 50% of the respondents. The mean age of household heads in these zones are 40.65 and 37.92, respectively with a modal age group of 31-40. Consequently, production activities in these zones are on the increase. More than 50% of the sampled household heads have more than 19 years of farming experience in the zones.

From Table 2, above 70% of the farming households have more than 5 people. Majority in zone A have larger households. It is also shown that more than 50% of the household heads have less than 6 children except in zone A where about 53% of the household heads have above 5 children.

It is observed that the modal-class of the level of education in zone A "no formal education". This implies that the majority of the household heads in zone A have no formal education although some might had attended Adult Literacy Class and educational lectures organized by the extension officers via research institutes like Agriculture Development Project (ADP).

The modal class of the level of education in zone B is the post primary education. Thus, the majority of the household heads have formal education and this suggests that these farmers may be young school leavers. They are believed to have a high potential to take risks even though they may be constrained by other things.

In zone A and B, 11.5 and 10.9%, respectively were found to have university education. This may be due to unemployment problem of university graduates or these university graduates might have decided to take farming as a source of secondary income. This category of farmers is believed to have a high potential to take risks as there may be other sources of income.

It is further revealed in Table 2 that there is presence of more than 40% of the household heads from in zone B that have over 10 years of formal education. Consequently, it can be inferred that respondents from zone B may be more willing to risk taking than other zone.

Farm size is expressed in two forms: The available farm size and the cropped farm size. The available farm size is

Table 2: Socio-economic and demographic characteristics of the farming households

Characteristics	Frequency		
	Zone A	Zone B	Total
Age of household head			
21-30	8(12.5)	32(25.0)	40(20.83)
31-40	26(40.6)	66(51.6)	92(47.92)
41-50	20(31.3)	20(15.6)	40(20.83)
51-60	10(15.6)	2(1.6)	12(6.25)
61-70		8(6.2)	8(4.17)
Total	64(100.0)	128(100.0)	192(100.0)
Farming experience of household head			
0-9	4(6.2)	10(7.8)	14(7.29)
10-19	24(37.5)	30(23.4)	54(28.13)
20-29	22(34.5)	66(51.6)	88(45.83)
30-39	14(21.8)	10(7.8)	24(12.5)
40-49		8(6.3)	8(4.17)
>=50		4(3.1)	4(2.08)
Total	64(100.0)	128(100.0)	192(100.0)
Household size			
1-5	14(21.8)	38(29.7)	52(27.08)
6-10	14(21.8)	52(40.6)	66(34.38)
11-15	20(31.4)	18(14.1)	38(19.79)
16-20	6(9.4)	14(10.9)	20(10.42)
21-25	8(12.5)	6(4.7)	14(7.29)
26-30	2(3.1)		2(1.04)
Total	64(100.0)	128(100.0)	192(100.0)
Education level of household head			
No formal education	20(32.2)	4(3.2)	24(12.50)
Quaranic education	12(18.8)	16(12.5)	28(14.58)
Adult education	6(9.4)	14(10.9)	20(10.42)
Primary education	10(15.6)	6(4.7)	16(8.33)
Post primary education	10(15.6)	74(57.8)	84(43.75)
University education	6(9.4)	14(10.9)	20(10.42)
Total	64(100.0)	128(100.0)	192(100.0)
Year of formal education			
0-4	22(34.4)	8(6.3)	30(15.62)
5-9	22(34.4)	32(25.6)	54(28.13)
10-14	8(12.5)	46(35.6)	54(28.13)
15-19	10(15.6)	20(15.6)	30(15.62)
>19	2(3.1)	22(17.2)	24(12.50)
Total	64(100.0)	128(100.0)	192(100.0)
Available farm size (Hectare)			
<=2.99	20(31.3)	6(4.7)	26(13.54)
3.00-5.99	18(28.1)	10(7.8)	28(14.58)
6.00-8.99	8(12.5)	14(10.9)	22(11.46)
9.00-11.99	18(28.1)	70(54.7)	88(45.83)
12.00-14.99		12(9.4)	12(6.25)
>14.99		16(12.5)	16(8.33)
Total	64(100.0)	128(100.0)	192(100.0)
Cropped farm size (Hectare)			
<1.0	46(71.9)	22(17.2)	68(35.42)
1.0-1.49	12(18.8)	76(59.4)	88(45.83)
1.5-1.99	6(9.3)	28(21.9)	34(17.71)
2.0-2.49	0(0.00)	2(1.6)	2(1.04)
Total	64(100.0)	128(100.0)	192(100.0)
Source of capital			
Banking institution	0(0.00)	0(0.00)	0(0.00)
Personal saving	42(56.8)	112(38.1)	154(4.85)
Cooperative society	22(29.7)	122(41.5)	144(39.13)
Relatives/friends	8(10.8)	32(10.9)	40(10.87)
Nacb	2(2.7)	0(0.00)	2(0.54)
Govt	0(0.00)	28(9.5)	28(7.61)
Total	74(100.0)	294(100.0)	368(100.0)
Amount of capital obtained			
1-20000	28(43.8)	26(20.3)	54(28.13)
20001-40000	14(21.9)	38(29.7)	52(27.08)
40001-60000	4(6.2)	36(28.1)	40(20.83)
60001-80000	2(3.1)	2(1.6)	4(2.08)
80001-100000	2(3.1)	0(0.00)	2(1.04)
100001-120000	6(9.4)	20(1.6)	26(13.54)
>12000	8(12.5)	24(18.8)	32(16.67)
Total	32(100.0)	128(100.0)	192(100.0)
Farm income			
1-40000	8(12.5)	6(4.7)	14(7.29)
40001-80000	6(9.3)	24(18.8)	30(15.63)
80001-120000	8(12.5)	20(15.6)	28(14.58)
120001-160000	20(31.3)	16(12.5)	26(18.75)
160001-200000	2(3.1)	12(9.4)	14(7.29)
>20000	20(31.3)	50(39.1)	70(36.46)
Total	64(100.0)	128(100.0)	192(100.0)

Source: Field survey, 2005/2006, Figures in parenthesis are percentages

the amount of land the farming households have access to for cultivation. This includes cultivated land, land for following and land left uncultivated either due to poor finance or low production capacity of the farmers. The cropped farm size second farm size is the land utilized for cropping practices and is always expressed as the cropped area.

Table 2 reveals that more than half of the respondents in the zones possess more than 2.99 ha available for cropping purpose. The available land means are 2.49 and 4.47 for zone A and B. In addition, 12.5% of respondents in zone B even possess more than 14.99 ha. Thus, the farming household in zone B have larger land availability.

The means of cropped farm size are 1.38 and 2.13 ha for zone A and B. The overall cropped farm size average is 1.67 and it falls into the class of 1.5-1.99. It is also observed that more than 76% of the respondents in the zones cultivate below this class (<1.5 ha) while the remaining percentage (34%) cultivate more than 1.5 ha. This coupled with the earlier information on the available farm land indicates that not all the available land is used for planting. Consequently, there is room for fallowing and future possibility of production expansion.

Further enquiry shows that the rent is mostly in kind, paid at the end of the crop year in form of part produce from the farm. Few respondents complement this with a payment of ₦1,500.00 to ₦2,500.00 per acre as rent. Generally, in the zones about 4.0% of the respondents also received their land as gift from in-laws or relatives to farm for a period of time. This type of land tenure system is a temporary one. The land is only released as long as the owner has no serious need for it or is no under pressure from other family members for its use.

It was observed that the larger percentage of the respondents hope to get additional land through family and inheritance land. This family or inheried land is often fragmented. Though land is not limiting to these

respondents but land tenure system of fragmented family land still predominate the farming household operation in all the zones.

The capital inputs of small scale farming production mainly consist of simple hand tools, equipment and little cash. The farm tools consist of hoes, cutlasses, shovels, axes, knives and baskets. Consequently, little capital is needed for their farming.

In the zones, majority of the respondents got their capital from personal savings. This may be due to high interest rate from formal sources or from money lenders. In addition, there are a greater percent of the respondents that also got their capital from cooperative societies. This may also be due to easy accessibility to loan, lower interest rate offered in the societies and other benefits gotten from such societies.

The absence of respondents that got their capital from banking institution further supports the fact that the respondents avoid the stringent conditions and high interest rate of banks. This may indicate that farmers are trying to reduce the financial risk faced by them. There are about 10% of respondents in zone B that got there capital from Government. The Government of Kwara state has a project in this zone. The government therefore makes loan available for the farmers in this zone. These categories of respondents are likely to tend to be risk-takers in their behaviour.

The averages of amount of capital are ₦71,038.46 and ₦60,033.1 (Table 2). However, zone A and B has 21.9 and 20.4%, respectively of respondents that have more that ₦100,000 as capital. This may encourage them even to take a cropping system that require more capital than the other 2 zones and are likely to take more risk. About 21.8 and 23.4% of respondents in zone A and B, respectively earn below ₦80,001 as farm income annually while about 31.7 and 48.5% of respondents in zone A and B, respectively earn more ₦160,000 annually. The means of the total income of the sampled farming households are ₦149,238.50 and ₦214,321.90 in zone A and B, respectively. This is not low as compared with minimum wage which is ₦90,000 basic. However, it can be observed that respondents in zone D earn lower than other zones.

On further examination, it was discovered that majority of these farming household earn their income form off farm activities or other occupations such as blacksmittery, carpentry, tailoring, bricklaying, fishing, native medicine. In fact some of the respondents are even civil servants. However, about 46.2 and 14.1% of respondents in zone A and B have no other source of income apart from farming.

Table 3: Backward regression result for zone A

	Estimated coeff.	p-value
Household size	-0.641 (-7.774)*	0.000
Numbers of family members earning income	-0.326 (-4.651)*	0.006
Access to extension services	0.302 (3.719)*	0.000
Farming Experience	-0.125 (-1.813)**	0.076
Proportion of cropped	-0.726 (9.622)*	0.000
Proportion of off-farm income	-0.354 (-5.095)*	0.000
Membership of cooperative society	-0.304 (-4.174)*	0.000
Household disposable assets	0.695 (8.103)*	0.000
Amount of capital	-0.644 (8.504)*	0.000
Risk behaviour 1	0.329 (4.136)*	0.000
Risk behaviour 2	-0.292(2.652)*	0.011
No of steps	3	
N	64	
R^2	80.20	
F	21.549*	
Durbin-watson	1.749	

Figures in parenthesis are t-values in their absolute values, *= 5% level of significance, **= 10% level of Significance

Table 4: Backward regression result for zone B

	Estimated coeff.	p-value
Membership of cooperative	0.167 (2.143)*	0.034
Crop diversification	-0.422 (-5.376)*	0.000
Amount of capital	0.388 (5.243)*	0.000
No of steps	11	
N	128	
R^2	33.70	
F	20.673*	
Durbin-watson	1.922	

Figures in parenthesis are t-values in their absolute values, *= 5% level of significance

Effect of risk-coefficients to farming household socio-economic characteristics: Generally, the risk bearing capacity of the farming households can be explained by their socio-economic characteristics particular to each zone. The result of the Ordinary Least Square Regression (Backward method) is summarized in Table 3 and 4.

Household size is significantly at 5% and having negative effect on the risk capacity of the farming households in zone A. The larger the household size the higher the subsistence consumption need and given a fixed amount of land, the lower the willingness of the farmers to take risk. The household size reflects the consumption needs of household members. On further analysis, it was discovered that farming household in zone A have greater number of children (Table 2). The burden of coping with many children might have contributed to the farmers' risk averseness. The average household size in zone A is about 12 with up to 54% have up to 6 members and more.

Numbers of household members earning income is also significant at 5% and have negative impact on the risk capacity of farming household of zone A. One would expect numbers of household members earning income to have positive impact on risk ability. The income from these workers would have served as substitute in time of risk. However, this is not so. There is negative impact on

risk ability which indicates that the higher the numbers of household members earning income the lower the ability of the household heads to take risk. This might be that such household members made their income from other non-agricultural sources; hence they take less risk in agriculture and take more risk elsewhere.

The proportion of cropped area has a negative impact on the ability of farmers to take risk. This is consistent with both Pratt and Arrow formulation for increasing wealth (if possession of land is taken as a measure of wealth for the farmers) as well as Foster and Rauser (1991) findings following the logic of safety first, the positive impact of cropped area becomes less effective as income rises beyond subsistence requirement. Thus as more area are brought into cultivation, the impact of land on risk taking becomes negative.

The access to extension services has positive impact on ability of the farming households to take risk. It is significant only in zone A. This may be an indication that the extension work in zone A is having impact on the farming households risk behaviour. It may also indicate that the benefits from the extension work tend to increases the farming household willingness to take risk. The benefits from extension services may be inform of information on production, awareness' of new techniques, knowledge of Technical know-how and provision of improved inputs.

With extension services having positive impact, one expects farming experience to have positive effect on the farming household risk taking ability. However the farming experience is only having impact on the farming households in zone A and is negative. It may that their past bad experience hurts them and make them to be risk averse.

It is surprising and interesting that proportion of off-farm income have negative impact on farmers risk taking ability. Aprior, one expects this variable to influence farmer's ability to take risk positively. This result may be an indication that the off- farm income tend to provide the household heads its subsistence needs which contributes to the farmers risk averseness.

Membership of cooperative society is significant at 5% level for the zones A and B. Hence, it has effect on the farming household's ability to take risk but with different impact. Aprior, one expects this variable to influence farmer's ability to take risk positively as the society ought to share in their risk through giving of loan, selling of their produce and other benefits. This is may be so for farming households in zone B where the impact of the society is positive. However the impact of the society on the farming household's ability to take risk is negative in zone A. This result may be an indication that the cooperative society in this zone is not effective. Although, result in Table 2 revealed that the farming households in this zone also got capital from the societies however may be the very little of the capital is actually spent on the farm.

Household disposable asset is significant only in Zone A and has a positive impact on the ability of the farming households to take risk. It may imply as farmers' household disposable assets increases his confidence at taking risk increases. This may be because these assets tend to serve as security against risk. For instance someone with a pick-up van as assets will be willing to take higher risk than some with head basket for transportation of his output for marketing.

Amount of capital is significant at 5% level for the zones A and B. Hence, it has effect on the household's ability to take risk but with different impact. There can only be two interpretations for this observation. It may mean that as farmer's capital increases his confidence in risk taking. This may be that amount of capital tends to serve as security against risk and allows for higher hectarage cultivation. This is the case with zone B of which amount of capital has a positive impact. The presence of Government as a source of their capital (Table 2) in this zone also increases its willingness to take risk. The supply of capital by the Government to this zone was to encourage the rice grower to increase rice productivity (KWADP). Hence, this increases the farmers willingness to take risk in the cultivation of rice which is the predominant crop cultivated. The other interpretation may be that very little of the capital is actually spent on the farm since the amount obtained has negative impact on risk taking disposition. This is the case in zone A.

Crop diversification has negative impact on the ability to take risk. It is only significant in zone B. It is not surprising as crop diversification is in actual sense a means of reducing risk. The farming household with sole cropping actually has greater ability and willingness to take risk. The risk behaviour group is significant in zone A alone. The risk averseness a farmer is the less ability and the willingness to take risk. The reverse is the case with risk taking farmers.

CONCLUSION AND RECOMMENDATIONS

This study has also pointed out the relationship that existing between socio-economic characteristics and risk behaviour of farming households. The fact that regression analysis revealed significant socio-economic variables such as household size, household disposable income, amount of capital, risk behaviour, farming experience proportion of cropped land off-farm income, disposable assets, crop diversification and cooperative membership

may indicate that, apart from the expected behaviour of the farmers on the basis of economic reasoning and rationality as influenced by economic variables such as prices and other incentives, there exists a part of risk taking behaviour which is inherent in individuals resulting from his socio-economic characteristics. Emanating from the study is the need to group the farmers into effective societies, unions or cooperatives. This will facilitate positive interactions especially on risk sharing. This will present a collective bargaining front and serve as a conduct for transmitting government extension recommendations to the farmer. The extension service should be made more effective. The study has highlighted the significant of impact of extension services in the risk behaviour of farming household. The extension services should therefore be strengthened in terms of personal, educational and material needs. To this end, programmes and policies for small scale farmers should incorporate their risk behaviour and its relationship with their socio-characteristics.

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